INTERNATIONAL STANDARD

ISO/IEC 10737

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Information technology — Elements of management information related to the OSI Transport layer

Technologies de l'information — Éléments d'information de gestion concernant la couche Transport OSI

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 10737 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.284.

This second edition cancels and replaces the first edition (ISO/IEC 10737:1994), which has been technically revised. It also incorporates Amendment 1:1994, Amd.1:1994/Cor.1:1997, Amendment 2:1996 and Technical Corrigendum 1:1997.

Annexes A to G form an integral part of this International Standard.

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Introduction

This Recommendation | International Standard is one of a set of Recommendations and International Standards produced to facilitate the interconnection of open systems. The set of Recommendations and International Standards covers the services, protocols and management information required to achieve such interconnection.

This Recommendation | International Standard is positioned with respect to other related Recommendations and International Standards by the layers defined in the *Reference Model for Open System Interconnection* (see ITU-T Rec. X.200 | ISO/IEC 7498-1). In particular, it is concerned with the definition of Transport Layer management information.

This Recommendation | International Standard is an update of ITU-T Rec. X.284 (1994) and ISO/IEC 10737:1994 to incorporate all Amendments and Technical Corrigenda.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – ELEMENTS OF MANAGEMENT INFORMATION RELATED TO THE OSI TRANSPORT LAYER

1 Scope

This Recommendation | International Standard provides the specification of management information within an Open System related to those operations of the OSI Transport Layer specified by ITU-T Recommendations and ISO/IEC International Standards. Specifics on how Transport Layer management is accomplished is beyond the scope of this Recommendation | International Standard. Transport Layer management information is defined by specifying:

- the managed object class definition of Transport Layer Managed Objects following guidelines put forth by the *Structure of Management Information* (ITU-T Recommendations X.720-X.724 and ISO/IEC 10165);
- the relationship of the Managed Objects and attributes to both the operation of the layer and to other objects and attributes of the layer; and
- the action type operations on the attributes of Transport Layer Managed Objects that are available to OSI Systems Management.

Annexes D, E, F and G, which are integral parts of this Recommendation | International Standard, provide ICS proformas associated with Transport Layer management information.

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2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model.*
- ITU-T Recommendation X.214 (1995) | ISO/IEC 8072:1996, *Information technology – Open Systems Interconnection – Transport service definition.*
- ITU-T Recommendation X.224 (1995) | ISO/IEC 8073:1997, *Information technology – Open Systems Interconnection – Protocol for providing the connection-mode transport service.*
- ITU-T Recommendation X.234 (1994) | ISO/IEC 8602:1995, *Information technology – Protocol for providing the OSI connectionless-mode transport service.*
- ITU-T Recommendation X.701 (1997) | ISO/IEC 10040:1998, *Information technology – Open Systems Interconnection – Systems management overview*.
- ITU-T Recommendation X.710 (1997) | ISO/IEC 9595:1998, *Information technology – Open Systems Interconnection – Common management information service.*
- ITU-T Recommendation X.711 (1997) | ISO/IEC 9596-1:1998, *Information technology – Open Systems Interconnection – Common management information protocol: Specification.*

- CCITT Recommendation X.720 (1992) | ISO/IEC 10165-1:1993, *Information technology – Open Systems Interconnection – Structure of management information: Management information model*.
- CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information*.
- CCITT Recommendation X.722 (1992) | ISO/IEC 10165-4:1992, *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*
- ITU-T Recommendation X.723 (1993) | ISO/IEC 10165-5:1994, *Information technology – Open Systems Interconnection – Structure of management information: Generic management information.*
- ITU-T Recommendation X.724 (1996) | ISO/IEC 10165-6:1997, *Information technology – Open Systems Interconnection – Structure of management information: Requirements and guidelines for implementation conformance statement proformas associated with OSI management*.
- CCITT Recommendation X.730 (1992) | ISO/IEC 10164-1:1993, *Information technology – Open Systems Interconnection – Systems Management: Object management function.*
- CCITT Recommendation X.731 (1992) | ISO/IEC 10164-2:1993, *Information technology – Open Systems Interconnection – Systems Management: State management function.*
- CCITT Recommendation X.732 (1992) | ISO/IEC 10164-3:1993, *Information technology – Open Systems Interconnection – Systems Management: Attributes for representing relationships.*
- CCITT Recommendation X.733 (1992) | ISO/IEC 10164-4:1992, *Information technology – Open Systems Interconnection – Systems Management: Alarm reporting function*.
- CCITT Recommendation X.734 (1992) | ISO/IEC 10164-5:1993, *Information technology – Open Systems Interconnection – Systems Management: Event report management function*.
- CCITT Recommendation X.735 (1992) | ISO/IEC 10164-6:1993, *Information technology – Open Systems Interconnection – Systems Management: Log control function*.

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1).*

  ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1).*

- CCITT Recommendation X.209 (1988), *Specification of basic encoding rules for Abstract Syntax Notation One (ASN.1).*

  ISO/IEC 8825:1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

- ITU-T Recommendation X.290 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts.*

  ISO/IEC 9646-1:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts.*

- ITU-T Recommendation X.291 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Abstract test suite specification.*

  ISO/IEC 9646-2:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract Test Suite specification.*

- ITU-T Recommendation X.296 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Implementation conformance statements.*

  ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements.*

- CCITT Recommendation X.700 (1992), *Management framework for Open Systems Interconnection (OSI) for CCITT applications.*

  ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework.*

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3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1 Basic Reference Model

This Recommendation | International Standard makes use of the following terms defined in *OSI Reference Model* (see ITU-T Rec. X.200 | ISO/IEC 7498-1):

a) Open System;

b) (N)-service-access-point;

c) Transport Layer;

d) Transport Protocol;

e) Layer Management;

f) Systems management.

3.2 Information model

This Recommendation | International Standard makes use of the following terms defined in *Structure of Management Information: Management Information Model* (see CCITT Rec. X.720 | ISO/IEC 10165-1):

a) Attributes;

b) Attribute type;

c) Containment;

d) Distinguished Name;

e) Inheritance;

f) Managed Object;

g) Management Operations;

h) Notifications;

i) Object Class;

j) Relative Distinguished Name;

k) Subclass;

l) Superclass.

3.3 Guidelines for the Definition of Managed Objects (GDMO)

This Recommendation | International Standard makes use of the following terms defined in *Structure of Management Information: Guidelines for the Definition of Managed Objects* (see CCITT Rec. X.722 | ISO/IEC 10165-4):

a) Managed Object Class Definition;

b) Template;

c) Parameter.

3.4 Management framework

This Recommendation | International Standard makes use of the following term defined in *Management Framework for Open Systems Interconnection* (see CCITT Rec. X.700 | ISO/IEC 7498-4):

– Management Information.

4 Abbreviations

Within the Managed Object definitions and GDMO templates, the following abbreviations are used in the standard-name element of a document-identifier when making references to other documents:

DMI	CCITT Rec X.721 (1992) | ISO/IEC 10165-2:1992
GMI	ITU-T Rec X.723 (1993) | ISO/IEC 10165-5:1994

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For the purposes of this Recommendation | International Standard, the following abbreviations apply:

AK TPDU	Data Acknowledge TPDU
CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
DR TPDU	Disconnect Request TPDU
EA TPDU	Expedited Acknowledge TPDU
ED TPDU	Expedited Data TPDU
ER TPDU	Error TPDU
GDMO	Guidelines for Definition of Managed Objects
IVMO	Initial Values Managed Object
MCS	Management Conformance Summary
MICS	Management Information Conformance Statement
MO	Managed Object
MOCS	Managed Object Conformance Statement
MRCS	Managed Relationship Conformance Statement
NC	Network Connection
NCC	Network Connection Control
NCMS	Network Connection Management Subprotocol
OSI	Open Systems Interconnection
PM	Protocol Machine
RDN	Relative Distinguished Name
TC	Transport Connection
TPDU	Transport Protocol Data Unit
TSAP	Transport Service Access Point

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5 Elements of transport layer management information

5.1 Managed object hierarchy

5.1.1 Summary of managed objects

The following set of managed objects are defined for the OSI Transport Layer:

a) Transport subsystem managed object (transportSubsystem, see 5.3);

b) Transport entity managed object (transportEntity, see 5.4);

c) Connectionless-mode transport protocol machine managed object (clmodeTPM, see 5.5);

d) Connection-oriented transport protocol machine managed object (comodeTPM, see 5.6);

e) TSAP managed object (tSAP, see 5.7);

f) Transport connection managed object (transportConnection, see 5.8.1);

g) Transport connection initial values managed object (transportConnectionIVMO, see 5.8.2).

h) NCMS protocol machine managed object (ncmsPM, see subclause 5.9);

i) Network connection control managed object (ncc, see subclause 5.10.1);

j) Network connection control initial value managed object (nccIVMO, see 5.10.2).

These Managed Objects represent OSI Management's view of those elements of an Open System which support the OSI Transport Service subject to OSI management operations.

5.1.2 Containment hierarchy

The containment hierarchy is illustrated in Figure 1. Managed Objects which can have multiple instances are illustrated by multiple boxes. These objects are defined in detail in the following subclauses.

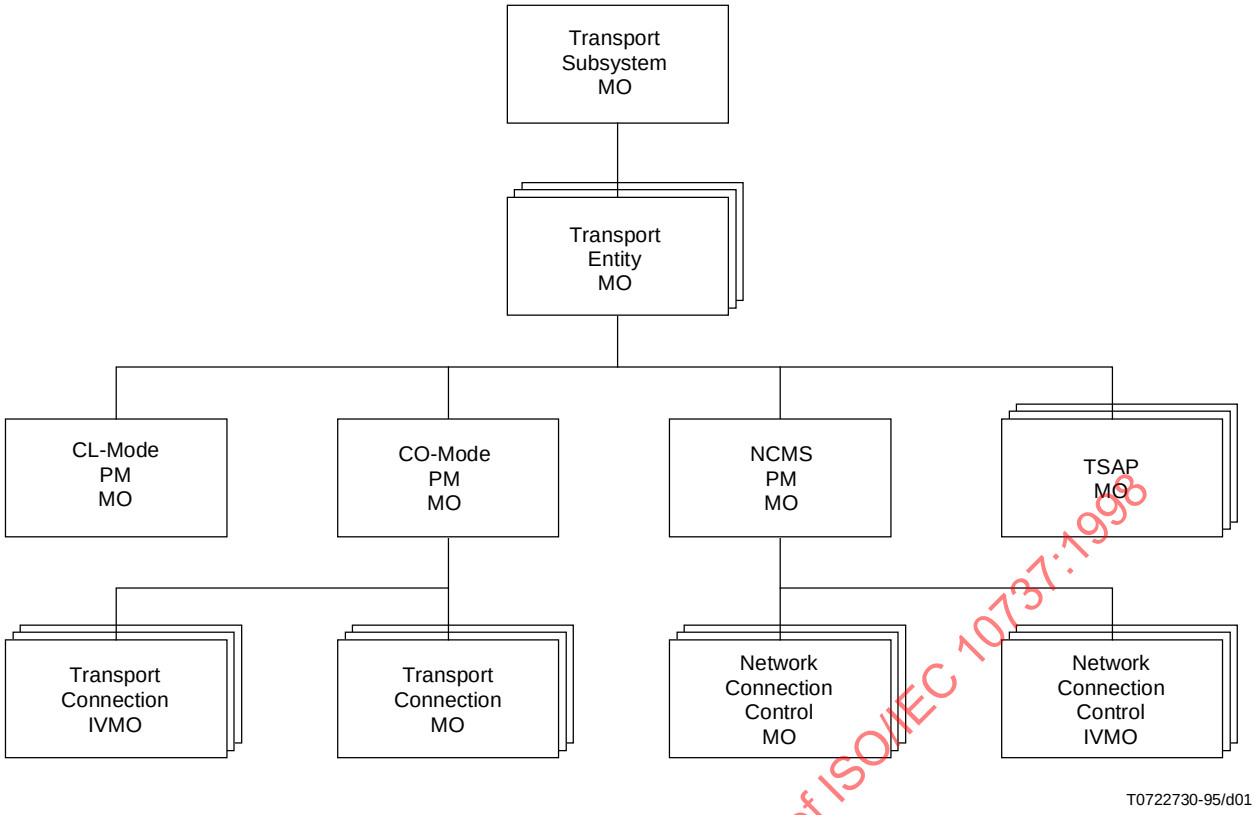

Figure 1 – Transport Layer containment hierarchy

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5.1.3 Relationships

5.1.3.1 General description

The use of Relationship attributes is illustrated by examples in Annex C. The following describes the individual relationships for Transport Layer in more detail.

5.1.3.2 Layer n – 1 services

The Transport Layer Entity has a relation (actualNSAP) to the NSAP MO.

5.1.3.3 Connections

There is a relationship (underlyingConnectionNames) between a Transport Connection MO and its underlying Network LayerConnection MO (if one exists).

5.1.4 Minimum event filtering capabilities

The Transport Layer management definitions embodied in this Recommendation | International Standard imply the frequent and possibly excessive generation of notifications during regular layer operation. These notifications are especially useful for effective fault management where they facilitate the tracing and pinpointing of error situations. To avoid the excessive dissemination of these event reports under normal operating conditions, it is advisable for a managed system to have as a minimum the capability to perform discrimination based on:

a) the source Managed Object class;

b) the object Identifier values in the probable cause and specific problems field of Communication alarms, and the communication type field of Communication informations.

5.1.5 Use of optional fields

Where reference is made in this Recommendation | International Standard to ASN.1 syntax defined in ITU-T Rec. X.723 | ISO/IEC 10165-5 or CCITT Rec. X.721 | ISO/IEC 10165-2, only the following fields shall be employed:

a) those which are not OPTIONAL in the ASN.1 syntax;

b) those which are OPTIONAL, but whose use is explicitly required by this Recommendation | International Standard;

c) those which are OPTIONAL, but whose ASN.1 type is SET OF MngmntExtension.

The use of any other field is prohibited.

5.2 Common transport layer GDMO definitions

commonCreationDeletion-B BEHAVIOUR

DEFINED AS

!Managed object class imports the X.721 | 10165-2 objectCreation and objectDeletion notifications. Used as follows:

ObjectCreation – Generated whenever an instance of the managed object class is created. Implementations may optionally include the sourceIndicator parameter in the notification. If creation occured as a result of internal operation of the resource, the value 'resourceOperation' is used. If creation occured in response to a management operation, the value 'managementOperation' is used. A value of 'unknown' may be returned if it is not possible to determine the source of the operation. None of the other optional parameters are used.

ObjectDeletion – Generated whenever an instance of the managed object class is deleted. Implementations may optionally include the sourceIndicator parameter in the notification. If deletion occured as a result of internal operation of the resource, the value 'resourceOperation' is used. If deletion occured in response to a management operation, the value 'managementOperation' is used. A value of 'unknown' may be returned if it is not possible to determine the source of the operation. None of the other optional parameters are used.!;

commonStateChange-B BEHAVIOUR

DEFINED AS

!Managed object class imports the X.721 | 10165-2 stateChange notification. Used to report the changes to the operationalState attribute, and where present, the administrativeState attribute. A single parameter set is included in the State change definition field. Only the (mandatory) attributeId and (optional) newAttributeValue parameters are used.!;

octetsSentReceivedCounter-B BEHAVIOUR

DEFINED AS

!The octetsSentCounter and octetsReceivedCounter shall count only user data octets in valid data TPDUs. They shall not count user data octets in data TPDUs which are rejected for any reason, nor user data octets in non-data TPDUs.!;

successfulConnectionEstablishment-B BEHAVIOUR

DEFINED AS

!This Package imports the communicationsInformation notification from "GMI". It is used to report the following events: successfulConnectionEstablishment: Generated when a connection is successfully established. However the precise synchronization between the notification and the corresponding protocol and service interface interactions is not defined by this Recommendation | International Standard. The value TLM.successfulConnectionEstablishment shall be reported in the informationType field.!;

deactivateConnection-B BEHAVIOUR

DEFINED AS

!The deactivate action causes the connection to be terminated. The termination should occur as rapidly as practical, but no particular time constraints are implied. Typically, this action simulates a disconnect request received across the service interface. If a more rapid means for terminating the connection exists, then this should be used. The termination shall occur in conformance to the protocol standard. The Managed Object remains in existence after completion of the Deactivate Action. It is subsequently deleted when the connection is terminated, in the same way as if the connection has been terminated by other means. A Deactivate action may fail (with the ProcessingError response) if it is temporarily not possible to terminate the connection.!;

resettingTimer-B BEHAVIOUR

DEFINED AS

!This attribute specifies the interval between certain events in the operation of the protocol state machine. If the value of the attribute is changed to a new value while the protocol state machine is in operation, the implementation shall take the necessary steps to ensure that for any time interval which was in progress when the corresponding attribute was changed, the next expiration of that interval takes place no later than the expiration of the interval in progress or the specified interval whichever is the sooner. The precision with which this time shall be implemented shall be the same as that associated with the basic operation of the timer attribute.!;

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5.3 Transport subsystem managed object

```
-- Managed Object for Transport Layer Subsystem
-- There is exactly one of these MOs within
-- a system. It exists to provide a container for the layer entity MOs.
--
-- The transportSubsystem managed object cannot be created or deleted
-- explicitly by management operation. It exists inherently in a system;
-- created and deleted as part of system operation.

transportSubsystem MANAGED OBJECT CLASS
        DERIVED FROM "GMI":subsystem;
-- which is derived from  "DMI":top
        CHARACTERIZED BY transportSubsystem-P PACKAGE
            ATTRIBUTES
                "GMI":subsystemId
                    INITIAL VALUE TLM.transportSubsystemId-Value
                    GET;

            ;;
REGISTERED AS {TLM.moi transportSubsystem (1)};

-- Name Bindings

transportSubsystem-system  NAME BINDING
        SUBORDINATE OBJECT CLASS transportSubsystem AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS "DMI":system AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":subsystemId;
REGISTERED AS {TLM.nboi transportSubsystem-system (1)};
```

5.4 Transport entity managed object

```
-- There may be multiple instances of these MOs within a system.
-- Its definition permits it to be deleted and created explicitly by
-- management operation, or to be created and deleted automatically
-- as part of system operation.

transportEntity MANAGED OBJECT CLASS
        DERIVED FROM "GMI":communicationsEntity;
-- which is derived from "DMI":top
        CHARACTERIZED BY transportEntity-P PACKAGE
            BEHAVIOUR tEPackageImportedNotifications-B,
                commonCreationDeletion-B;
            ATTRIBUTES
                actualNSAP GET,
                checksumErrorsDetected GET,
                protocolErrors GET,
                targetNSAP GET-REPLACE ADD-REMOVE,
                undecodedNSDUs GET;
            ATTRIBUTE GROUPS
-- The following attribute group is present in each of the transport
-- MOs which define counters. It allows all of the
-- counters to be retrieved in a single request.
                "GMI":counters
                    checksumErrorsDetected
                    protocolErrors
                    undecodedNSDUs;
            NOTIFICATIONS
-- protocolErrorNotification;
-- The following notification is issued by the entity MO
-- because in some cases it may be impossible to associate the
-- protocol Error with any of the protocol Machines.
```

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```
                "DMI":communicationsAlarm
                    tEProtocolErrorPDUHeader
                    tEProtocolErrorSourceAddress
                    tEProtocolErrorReasonCode,
                "DMI":objectDeletion,
                "DMI":objectCreation;;;
REGISTERED AS {TLM.moi transportEntity (2)};

-- Behaviours

-- Definition of the tEPackageImportedNotifications and of the mapping
-- of specific protocol error parameters into the fields of
-- communicationsAlarm Notification.
--

tEPackageImportedNotifications-B BEHAVIOUR
        DEFINED AS
            !Notification issued when a Transport Entity receives a PDU which is invalid or contains a protocol error. The
            notification includes the header of the invalid PDU, the source N-Address, and the reason why the PDU is
            considered to be in error. The Reason code appears only if the protocol error relates to the connection-mode
            protocol, and if it has been possible to relate the PDU to a particular connection. The reason code is the value
            placed in the corresponding parameter of the ER TPDU, if sent. The tEPackage imports the
            communicationsAlarm Notification from DMI, in order to report the ProtocolError event. The probableCause
            shall be set to TLM.communicationsProtocolError. The tEProtocolErrorPDUheader,
            tEProtocolErrorSourceAddress and tEProtocolErrorReasonCode are exported as parameters in the
            additionalInformation field of the communicationsAlarm. The significance subparameter of each item of the
            problemData shall be set to the value 'False' (i.e. not significant) so that a managing system receiving the event
            will be less likely to reject it. The perceivedSeverity shall be set to Minor. A subsequent communicationsAlarm
            with a perceivedSeverity value of 'Cleared' shall not be generated. No other fields or parameters shall be used,
            with the exception of further parameters in the additionalInformationfield.!;

-- Name Bindings

transportEntity-transportSubsystem-Automatic NAME BINDING
        SUBORDINATE OBJECT CLASS transportEntity AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportSubsystem AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":communicationsEntityId;
        BEHAVIOUR transportEntity-transportSubsystem-Automatic-B BEHAVIOUR
            DEFINED AS
                !This name binding shall be used when the transportEntity MO is created automatically by the operation
                of the system. The details of this operation are outside the scope of this Recommendation.!;;
REGISTERED AS {TLM.nboi transportEntity-transportSubsystem-Automatic (11)};

transportEntity-transportSubsystem-Management NAME BINDING
        SUBORDINATE OBJECT CLASS transportEntity AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportSubsystem AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":communicationsEntityId;
        BEHAVIOUR transportEntity-transportSubsystem-Management-B BEHAVIOUR
            DEFINED AS
                !This name binding shall be used when the transportEntity MO is created by management.!;;
        CREATE;
        DELETE;
REGISTERED AS {TLM.nboi transportEntity-transportSubsystem-Management (12)};

-- Attributes

actualNSAP ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.LocalDistinguishedNames;
        MATCHES FOR EQUALITY, SET-INTERSECTION;
        BEHAVIOUR actualNSAP-B BEHAVIOUR
            DEFINED AS
                !The actual MO name(s) of the NSAP(s)
                in use by this Transport Entity!;;
REGISTERED AS {TLM.aoi actualNSAP (4)};
```

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```
checksumErrorsDetected ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR clChecksumErrorsDetected-B BEHAVIOUR
            DEFINED AS
                !The number of PDUs received with an incorrect checksum!;;
REGISTERED AS {TLM.aoi checksumErrorsDetected (6)};

protocolErrors ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR protocolErrors-B BEHAVIOUR
            DEFINED AS
                !Counter associated to protocol errors!;;
REGISTERED AS {TLM.aoi protocolErrors (7)};

targetNSAP ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.LocalDistinguishedNames;
        MATCHES FOR EQUALITY, SET-INTERSECTION;
        BEHAVIOUR targetNSAP-B BEHAVIOUR
            DEFINED AS
                !The MO name(s) of the NSAP(s) to be used by this Transport Entity. The value of this attribute cannot
                be changed unless the Operational State of the entity is Off. An implementation may permit it to be set
                only at creation of the transportEntity MO. An implementation may permit the size of the set to be
                restricted to 1. An implementation may permit a null value (empty set) to be specified, in which case some
                system-dependent auto configuration takes place!;;
REGISTERED AS {TLM.aoi targetNSAP (3)};

undecodedNSDUs ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR undecodedNSDUs-B BEHAVIOUR
            DEFINED AS
                !Number of NSDUs that cannot be attributed to any protocol machines!;;
REGISTERED AS {TLM.aoi undecodedNSDUs (5)};

-- Parameters

tEProtocolErrorPDUHeader PARAMETER
        CONTEXT EVENT-INFO;
        WITH SYNTAX TLM.PDUHeaderSyntax;
        BEHAVIOUR pDUHeader-B BEHAVIOUR
            DEFINED AS
                !Header of the invalid PDU that caused the event.
                Returned in the problemData field of a communicationsAlarm notification!;;
REGISTERED AS {TLM.proi tEProtocolErrorPDUHeader (1)};

tEProtocolErrorSourceAddress PARAMETER
        CONTEXT EVENT-INFO;
        WITH SYNTAX TLM.SourceAddressSyntax;
        BEHAVIOUR sourceAddress-B BEHAVIOUR
            DEFINED AS
                !Source-N-Address of the invalid PDU that caused the event. Returned in the problemData field of a
                communicationsAlarm notification!;;
REGISTERED AS {TLM.proi tEProtocolErrorSourceAddress (2)};

tEProtocolErrorReasonCode PARAMETER
        CONTEXT EVENT-INFO;
        WITH SYNTAX TLM.ReasonCodeSyntax;
        BEHAVIOUR reasonCode-B BEHAVIOUR
            DEFINED AS
                !Reason why the PDU is in error as placed in the corresponding parameter of the ER TPDU. Returned in
                the problemData field of a communicationsAlarm notification. This parameter is optional!;;
REGISTERED AS {TLM.proi tEProtocolErrorReasonCode (3)};
```

5.5 Connectionless-mode transport protocol machine managed object

```
-- There is no more than one of these MOs per Transport Entity.
-- Its definition permits it to be created and deleted explicitly by
-- management operation, but in some systems it will exist inherently
-- and neither creation nor deletion by management operation
-- will be possible. Name bindings are defined for both cases.
--
```

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```
-- When the protocol Machine is operable, the operationalState shall
-- have the value 'enabled'; otherwise it shall have the value
-- 'disabled'.
--
-- Transitions of operationalState shall be reported using the
-- stateChange notification. An clmodeTPM MO may be created in the
-- 'enabled' operational state.

clmodeTPM MANAGED OBJECT CLASS
        DERIVED FROM "GMI":clProtocolMachine;
-- which is derived from  "DMI":top
        CHARACTERIZED BY clmodeTPM-P PACKAGE
            BEHAVIOUR
                clPackageImportedNotifications-B,
                commonStateChange-B,
                commonCreationDeletion-B;
            ATTRIBUTES
                "DMI":administrativeState GET-REPLACE,
                "GMI":clProtocolMachineId
                    INITIAL VALUE TLM.clmodeTPMId-Value
                    GET,
                clChecksumOption REPLACE-WITH-DEFAULT GET-REPLACE,
                "DMI":octetsSentCounter GET,
                "DMI":octetsReceivedCounter GET,
                "DMI":pdusSentCounter GET,
                "DMI":pdusReceivedCounter GET,
                undeliverablePDUsCounter GET;
            ATTRIBUTE GROUPS
                "DMI":state
                    "DMI":administrativeState
                    "DMI":operationalState,
                "GMI":counters
                    "DMI":octetsSentCounter
                    "DMI":octetsReceivedCounter
                    "DMI":pdusSentCounter
                    "DMI":pdusReceivedCounter
                    undeliverablePDUsCounter;
            ACTIONS
                "GMI":activate,
                "GMI":deactivate;
            NOTIFICATIONS
                "DMI":objectCreation,
                "DMI":objectDeletion,
                "DMI":stateChange,
                "DMI":communicationsAlarm
                    clPMPDUHeader
                    clPMSourceAddress;
            ;;
REGISTERED AS {TLM.moi clmodeTPM (3)};

-- Behaviours

-- Definition of the clPackageImportedNotifications and
-- of the mapping of specific  parameters into the fields
-- of communicationsAlarm Notification.

clPackageImportedNotifications-B BEHAVIOUR
        DEFINED AS
            !The clmodeTPM-P package imports communicationsAlarm from DMI, in order to report the Undeliverable
            PDU event. The probableCause is set to TLM.communicationsProtocolError. The clPMPDUheader and
            clPMSourceAddress are reported as parameters in the additionalInformation field of the
            communicationsAlarm. The significance subparameter of each item of the additionalInformation shall be set to
            the value 'False' (i.e. not significant) so that a managing system receiving the event will be less likely to reject
            it. The perceivedSeverity shall be set to Minor. A subsequent communicationsAlarm with a perceived Severity
            value of 'Cleared' shall not be generated. No other fields or parameters shall be used, with the exception of
            further parameters in the additionalInformationfield.!;
```

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-- Name Bindings

clmodeTPM-transportEntity-Management NAME BINDING
SUBORDINATE OBJECT CLASS clmodeTPM AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
WITH ATTRIBUTE "GMI":clProtocolMachineId;
BEHAVIOUR clmodeTPM-transportEntity-Management-B BEHAVIOUR
DEFINED AS
!The name binding that applies when the clmodeTPM managed object can be explicitly created and deleted by management!;;
CREATE;
DELETE ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS {TLM.nboi clmodeTPM-transportEntity-Management (3)};

clmodeTPM-transportEntity-Automatic NAME BINDING
SUBORDINATE OBJECT CLASS clmodeTPM AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
WITH ATTRIBUTE "GMI":clProtocolMachineId;
BEHAVIOUR clmodeTPM-transportEntity-Automatic-B BEHAVIOUR
DEFINED AS
!The name binding that applies when the clmodeTPM managed object cannot be explicitly created and deleted by management!;;
REGISTERED AS {TLM.nboi clmodeTPM-transportEntity-Automatic (9)};

-- Attributes

clChecksumOption ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR clChecksumOption-B BEHAVIOUR
DEFINED AS
!Enables use of the checksum option in ITU-T Rec. X.234 | ISO/IEC 8602 PDUs (in the absence of over-riding local controls) use (TRUE) or non-use (FALSE)!;;
REGISTERED AS {TLM.aoi clChecksumOption (9)};

undeliverablePDUsCounter ATTRIBUTE
DERIVED FROM "GMI":nonWrapping64BitCounter;
BEHAVIOUR undeliverablePDUsCounter-B BEHAVIOUR
DEFINED AS
!Counter associated with the notification
as recommended in GDMO 9.8.5 (the notification may be suppressed)!;;
REGISTERED AS {TLM.aoi undeliverablePDUsCounter (10)};

-- Parameters

clPMPDUHeader PARAMETER
CONTEXT EVENT-INFO;
WITH SYNTAX TLM.PDUHeaderSyntax;
BEHAVIOUR clPMPDUHeader-B BEHAVIOUR
DEFINED AS
!Header of the PDU that cannot be delivered. Returned in the problemData field of a communicationsAlarm notification!;;
REGISTERED AS {TLM.proi clPMPDUHeader (4)};

clPMSourceAddress PARAMETER
CONTEXT EVENT-INFO;
WITH SYNTAX TLM.SourceAddressSyntax;
BEHAVIOUR clPMsourceAddress-B BEHAVIOUR
DEFINED AS
!Source N-Address.
Returned in the problemData field of a communicationsAlarm notification!;;
REGISTERED AS {TLM.proi clPMSourceAddress (5)};

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5.6 Connection-oriented transport protocol machine managed object

```
-- There is no more than one of these MOs per Transport Entity.
-- Its definition permits it to be created and deleted explicitly by
-- management operation, but in some systems it will exist inherently
-- and neither creation nor deletion by management operation
-- will be possible. Name bindings are defined for both cases.
--
-- When the protocol machine is operable, the operationalState shall
-- have the value 'enabled'; otherwise it shall have the value
-- 'disabled'.
--
-- Transitions of operationalState shall be reported using the
-- stateChange notification. An comodeTPM MO may be created in the
-- 'enabled' operational state.

comodeTPM MANAGED OBJECT CLASS
        DERIVED FROM "GMI":coProtocolMachine;
-- which is derived from "DMI":top
        CHARACTERIZED BY comodeTPM-P PACKAGE
            BEHAVIOUR
                commonStateChange-B,
                commonCreationDeletion-B,
                comodeTPMImportedNotifications-B;
            ATTRIBUTES
                "DMI":administrativeState GET-REPLACE,
                "DMI":octetsReceivedCounter GET,
                "DMI":octetsSentCounter GET,
                    "GMI":coProtocolMachineId
                    INITIAL VALUE TLM.comodeTPMId-Value GET,
                localErrorDisconnects GET,
                localSuccessfulConnections GET,
                localUnsuccessfulConnections GET,
                maxConnections REPLACE-WITH-DEFAULT GET-REPLACE,
                maxOpenConnections REPLACE-WITH-DEFAULT GET,
                openConnections GET,
                remoteErrorDisconnects GET,
                remoteSuccessfulConnections GET,
                remoteUnsuccessfulConnections GET,
                unassociatedTPDUs GET;
            ATTRIBUTE GROUPS
                "DMI":state
                "DMI":administrativeState
                "DMI":operationalState,
-- The following attribute group is present in each of the transport
-- MOs  which define counters.  It allows all of the
-- counters to be retrieved in a single request.
            "GMI":counters
                "DMI":octetsSentCounter
                "DMI":octetsReceivedCounter
                openConnections
                localSuccessfulConnections
                remoteSuccessfulConnections
                localUnsuccessfulConnections
                remoteUnsuccessfulConnections
                localErrorDisconnects
                remoteErrorDisconnects
                unassociatedTPDUs
                maxOpenConnections;
            ACTIONS
                "GMI":activate,
                "GMI":deactivate;
```

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```
        NOTIFICATIONS
            "DMI":objectCreation,
            "DMI":objectDeletion,
            "DMI":stateChange,
-- incomingConnectionRejected
            "GMI":communicationsInformation
                rejectionCause
                callingNSAPAddress-PAR
                calledNSAPAddress-PAR
                callingTSelector-PAR
                calledTSelector-PAR
                networkConnectionIDs-PAR;;;
REGISTERED AS {TLM.moi comodeTPM (4)};

-- Behaviours

comodeTPMImportedNotifications-B BEHAVIOUR
        DEFINED AS
            !The comodeTPM-P package imports the communicationsInformation notification from "ITU-T Rec. X.723 |
            ISO/IEC 10165-5" in order to report when an incoming connection is rejected. The value
            TLM.incomingConnectionRejected shall be reported in the informationType field. The rejection Cause,
            Calling NSAP Address, Called NSPA Address, Calling TSelector, Called TSelector and Network ConnectionId
            shall be reported as parameters in the informationData field!;

-- Name Bindings

comodeTPM-transportEntity-Management NAME BINDING
        SUBORDINATE OBJECT CLASS comodeTPM AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":coProtocolMachineId;
        BEHAVIOUR comodeTPM-transportEntity-Management-B BEHAVIOUR
            DEFINED AS
                !The name binding that applies when the comodeTPM managed object can be explicitly created and
                deleted by management!;;
        CREATE;
        DELETE ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS {TLM.nboi comodeTPM-transportEntity-Management (4)};

comodeTPM-transportEntity-Automatic NAME BINDING
        SUBORDINATE OBJECT CLASS comodeTPM AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":coProtocolMachineId;
        BEHAVIOUR comodeTPM-transportEntity-Automatic-B BEHAVIOUR
            DEFINED AS
                !The name binding that applies when the comodeTPM managed object cannot be explicitly created and
                deleted by management!;;
REGISTERED AS {TLM.nboi comodeTPM-transportEntity-Automatic (10)};

-- Attributes

localErrorDisconnects ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR localErrorDisconnects-B BEHAVIOUR
            DEFINED AS
                !The number of transport disconnects initiated by the local entity upon issuing a DR TPDU with an error
                code other than "Normal disconnect initiated by Service User", or upon issuing an ER TPDU!;;
REGISTERED AS {TLM.aoi localErrorDisconnects (18)};

localSuccessfulConnections ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR localSuccessfulConnections-B BEHAVIOUR
            DEFINED AS
                !Number of transport connections initiated by the local entity which have reached the Open state!;;
REGISTERED AS {TLM.aoi localSuccessfulConnections (14)};
```

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```
localUnsuccessfulConnections ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR localUnsuccessfulConnections-B BEHAVIOUR
            DEFINED AS
                !The number of (local) unsuccessful transport connections initiated by the local Transport Entity which
                failed to reach the Open State. (Retransmission of CR TPDUs is not included in this counter)!;;
REGISTERED AS {TLM.aoi localUnsuccessfulConnections (16)};

maxConnections ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Integer;
        MATCHES FOR EQUALITY, ORDERING;
        BEHAVIOUR maxConnections-B BEHAVIOUR
            DEFINED AS
                !The maximum number of simultaneously open transport connections allowed by the Transport Entity.
                There may be a period during which the openConnection attribute has a value which is greater than
                maxConnections. During this period, it shall not be permitted to initiate or accept new connections. It is a
                local matter whether action is taken to reduce the number of open connections to a value less than or
                equal to maxConnections by terminating connections chosen in an implementation-dependent manner.
                Whether or not such action is taken, there may be a period during which the openConnections attribute
                has a value which is greater than maxConnections.!;;
REGISTERED AS {TLM.aoi maxConnections (13)};

maxOpenConnections ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Integer;
        MATCHES FOR EQUALITY, ORDERING;
        BEHAVIOUR maxOpenConnections-B BEHAVIOUR
            DEFINED AS
                !The highest number of simultaneously open transport connections which has occurred since the last
                REPLACE-WITH-DEFAULT operation. The effect of this operation is to set the attribute to the number
                of currently open connections. Multiple managers need to coordinate their actions to avoid confusion!;;
REGISTERED AS {TLM.aoi maxOpenConnections (21)};

openConnections ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Integer;
        MATCHES FOR EQUALITY, ORDERING;
        BEHAVIOUR openConnections-B BEHAVIOUR
            DEFINED AS
                !The number of transport connections which are in the Open state as defined in the state tables for ITU-T
                Rec. X.224 | ISO/IEC 8073. Updated upon each connection establishment and release!;;
REGISTERED AS {TLM.aoi openConnections (12)};

remoteErrorDisconnects ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR remoteErrorDisconnects-B BEHAVIOUR
            DEFINED AS
                !The number of disconnects initiated by a peer Transport Entity upon issuing a DR TPDU with an error
                code other than "Normal disconnect initiated by Session Entity" or upon issuing an ER TPDU!;;
REGISTERED AS {TLM.aoi remoteErrorDisconnects (19)};

remoteSuccessfulConnections ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR remoteSuccessfulConnections-B BEHAVIOUR
            DEFINED AS
                !Number of transport connections initiated by a remote entity which have reached the Open state!;;
REGISTERED AS {TLM.aoi remoteSuccessfulConnections (15)};

remoteUnsuccessfulConnections ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR remoteUnsuccessfulConnections-B BEHAVIOUR
            DEFINED AS
                !The number of (remote) unsuccessful transport connections initiated by a remote Transport Entity
                which failed to reach the open state!;;
REGISTERED AS {TLM.aoi remoteUnsuccessfulConnections (17)};

unassociatedTPDUs ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR unassociatedTPDUs-B BEHAVIOUR
            DEFINED AS
                !The number of TPDUs received which could not be associated with a Transport Connection. This
                counter is incremented only for such TPDUs received over the CONS!;;
REGISTERED AS {TLM.aoi unassociatedTPDUs (20)};
```

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```
-- Parameters

rejectionCause PARAMETER
        CONTEXT EVENT-INFO;
        WITH SYNTAX TLM.DeletionCauseSyntax;
        BEHAVIOUR rejectionCause-B BEHAVIOUR
            DEFINED AS !Reason why the incoming Connection was rejected!;;
REGISTERED AS {TLM.proi rejectionCause (7)};
```

5.7 TSAP managed object

```
-- There is one tSAP MO for each TSAP currently
-- recognized by the containing Transport Entity.
-- Its definition permits it to be created and deleted by Management
-- operation or to be created and deleted automatically as part
-- of system operation.
-- Some implementations may require TSAP  MOs to be created
-- explicitly through management before they can be used.
-- Others may create them automatically when a user entity attaches
-- itself to them (in some implementation-dependent fashion).
-- In this case, it is recommended that the naming convention
-- be used whereby  the name of the Managed Object
-- is the representation in hexadecimal of the Transport Selector of
-- the TSAP, so that it is possible to configure Transport Users
-- without system specific knowledge.

tSAP MANAGED OBJECT CLASS
        DERIVED FROM "GMI":sap1;
-- which is derived from "DMI":top;
        CHARACTERIZED BY tSAP-P PACKAGE
            BEHAVIOUR commonCreationDeletion-B;
            ATTRIBUTES
                "GMI":sap1Address
                    INITIAL VALUE DERIVATION RULE tSAPAddress-B GET;
            NOTIFICATIONS
                "DMI":objectCreation,
                "DMI":objectDeletion;
        ;;
REGISTERED AS {TLM.moi tSAP (5)};

-- Behaviours

tSAPAddress-B BEHAVIOUR
        DEFINED AS
            !If the package is created using the tSAP-transportEntity-Automatic name binding, it is recommended that the
            naming convention be used whereby the name of the MO is the representation in Hexadecimal of the
            Transport Selector of the TSAP. If the package is created using the tSAP-transportEntity-Management name
            binding, the initial value shall be specified in the CMIP create!;

-- Name Bindings

tSAP-transportEntity-Automatic NAME BINDING
        SUBORDINATE OBJECT CLASS tSAP AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":sapId;
        BEHAVIOUR tSAP-transportEntity-Automatic-B BEHAVIOUR
            DEFINED AS
                !This Name Binding corresponds to the use of TSAPs which are automatically created!;;
REGISTERED AS {TLM.nboi tSAP-transportEntity-Automatic (5)};
```

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```
tSAP-transportEntity-Management NAME BINDING
        SUBORDINATE OBJECT CLASS tSAP AND SUBCLASSES;
        NAMED BY
            SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
            WITH ATTRIBUTE "GMI":sapId;
        BEHAVIOUR tSAP-transportEntity-management-B BEHAVIOUR
            DEFINED AS
                !This Name Binding corresponds to the use of TSAPs which are explicitly created by management. The
                value of the tsapID attribute shall be included in the Create operation, otherwise the create operation
                will fail!;;
        CREATE;
        DELETE;
REGISTERED AS {TLM.nboi tSAP-transportEntity-Management (6)};
```

5.8 Transport connection managed object and IVMO

5.8.1 Transport connection managed object

```
-- There may be multiple instances of these Managed Objects
-- within a connection-oriented protocol Machine. Each corresponds
-- to a Transport Connection. A transportConnection is created
-- automatically as part of system operation. A transportConnection may
-- be deleted automatically as part of system operation or
-- may be deleted as a result of the deactivate management operation.
-- A transportConnectionIVMO may be used as the source
-- of initial values of attributes of a transportConnectionMO.
--
-- This section defines the Transport Connection Managed Object. The
-- Transport Connection Managed Object contains the set of attributes
-- characterizing the manageable aspects of a
-- Transport Layer Protocol Connection.
--
-- An MO of this class exists corresponding to each active Transport
-- Connection, i.e. for which a CR
-- TPDU has been sent or received and which has not yet been
-- terminated. An MO may also exist prior to transmission of a CR TPDU,
-- corresponding to interactions across the service interface.
-- The precise synchronization of the creation and deletion of the MO
-- with the protocol exchanges corresponding to the Transport Connection
-- is not however defined by this standard. For example,
-- there may be a visible delay after transmission or reception of a CR
-- TPDU or interaction at the service interface before the MO is created
-- and becomes visible to management. A Transport
-- Connection MO is not required for terminated connections whose
-- References have been placed in the Frozen state (for Class 4
-- operation), although according to the above the MO may remain
-- visible for some time after the connection has in other respects been
-- terminated.

transportConnection MANAGED OBJECT CLASS
        DERIVED FROM "GMI":singlePeerConnection;
-- which is derived from "DMI":top
        CHARACTERIZED BY transportConnection-P PACKAGE
            BEHAVIOUR
                initialValues-B,
                connectionCreationDeletion-B,
                successfulConnectionEstablishment-B,
                deactivateConnection-B,
                transportConnection-B BEHAVIOUR
                    DEFINED AS
                        !The following point should be noted with regard to items inherited from elsewhere: octets
                        sent/received counters count only octets of user data, not protocol control information.!;;
```

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```
        ATTRIBUTES
            "DMI":octetsReceivedCounter GET,
            "DMI":octetsSentCounter GET,
            "DMI":pdusReceivedCounter GET,
            "DMI":pdusRetransmittedErrorCounter GET,
            "DMI":pdusSentCounter GET,
            calledNSAPAddress GET,
            calledTSelector GET,
            callingNSAPAddress GET,
            callingTSelector GET,
            connectionDirection GET,
            localReference GET,
            maxTPDUSize GET,
            networkConnectionIDs GET,
            protocolClass GET,
            protocolErrors GET,
            remoteReference GET,
            respondingNSAPAddress GET;
        ATTRIBUTE GROUPS
            "GMI":counters
                "DMI":octetsReceivedCounter
                "DMI":octetsSentCounter
                "DMI":pdusReceivedCounter
                "DMI":pdusSentCounter
                "DMI":pdusRetransmittedErrorCounter
                protocolErrors;
        NOTIFICATIONS
            "DMI":objectCreation
                transportConnectionName
                protocolClass-PAR
                maxTPDUSize-PAR
                callingTSelector-PAR
                calledTSelector-PAR
                callingNSAPAddress-PAR
                calledNSAPAddress-PAR
                respondingNSAPAddress-PAR
                connectionDirection-PAR
                networkConnectionIDs-PAR,
            "DMI":objectDeletion
                transportConnectionName
                protocolClass-PAR
                maxTPDUSize-PAR
                callingTSelector-PAR
                calledTSelector-PAR
                callingNSAPAddress-PAR
                calledNSAPAddress-PAR
                respondingNSAPAddress-PAR
                connectionDirection-PAR
                networkConnectionIDs-PAR
                objectDeletionCause,
-- successfulConnectionEstablishment
                "GMI":communicationsInformation
-- The following parameters are reported in the informationData field
                transportConnectionName
                protocolClass-PAR
                maxTPDUSize-PAR
                callingTSelector-PAR
                calledTSelector-PAR
                callingNSAPAddress-PAR
                calledNSAPAddress-PAR
                respondingNSAPAddress-PAR
                connectionDirection-PAR
                networkConnectionIDs-PAR;
    ;;
```

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```
CONDITIONAL PACKAGES
        transportConnectionClass1-P
            PRESENT IF
                !At the initiating side,  present if  class 1 is requested or can be accepted following class negotiation
                procedures. At the responding side, present if class 1 is chosen!,
        transportConnectionClass2-P
            PRESENT IF
                !At the initiating side,  present if  class 2 is requested or can be accepted following class negotiation
                procedures. At the responding side, present if class 2 is chosen!,
        transportConnectionClass3-P
            PRESENT IF
                !At the initiating side,  present if  class 3 is requested or can be accepted following class negotiation
                procedures. At the responding side, present if class 3 is chosen!,
        transportConnectionClass4-P
            PRESENT IF
                !At the initiating side,  present if  class 4 is requested or can be accepted following class negotiation
                procedures. At the responding side, present if class 4 is chosen!,
        transportConnectionNCMS-P
            PRESENT IF !NCMS is implemented!;
REGISTERED AS {TLM.moi transportConnection (7)};
```

5.8.2 Transport connection initial value managed object

```
-- There may be multiple instances of the transportConnectionIVMO
-- in a system. A transportConnectionIVMO may be used to supply initial
-- values for the attributes of automatically created
-- transportConnection MOs.
--
-- The values supplied in an IVMO may be overridden by values
-- supplied in an implementation-specific manner across the service
-- interface.
--
-- Its definition permits it to be created and deleted explicitly by
-- management operation.

transportConnectionIVMO MANAGED OBJECT CLASS
        DERIVED FROM "DMI":top;
        CHARACTERIZED BY transportConnectionIVMO-P PACKAGE
            BEHAVIOUR use-of-initialValues-B;
            ATTRIBUTES
                transportConnectionIVMOId GET,
                protocolClasses REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
                maxTPDUSize REPLACE-WITH-DEFAULT GET-REPLACE;
-- DEFAULT VALUE is implementation dependent
        ;;
        CONDITIONAL PACKAGES
            transportConnectionIVMOClass1-P
                PRESENT IF Transport Class 1 is implemented,
            transportConnectionIVMOClass2-P
                PRESENT IF Transport Class 2 is implemented,
            transportConnectionIVMOClass3-P
                PRESENT IF Transport Class 3 is implemented,
            transportConnectionIVMOClass4-P
                PRESENT IF Transport Class 4 is implemented;
REGISTERED AS {TLM.moi transportConnectionIVMO (6)};
```

5.8.3 Elements of management Information for transportConnection MO and transportConnection IVMO

```
-- Conditional Packages

transportConnectionIVMOClass1-P PACKAGE
        BEHAVIOUR transportConnectionIVMOClass1-P-B BEHAVIOUR
            DEFINED AS !When Class 1 is implemented!;;
        ATTRIBUTES
            networkExpeditedData REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            receiptConfirmation REPLACE-WITH-DEFAULT GET-REPLACE,
```

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```
-- DEFAULT VALUE is implementation dependent
                reassignmentTime REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
                transportExpeditedService REPLACE-WITH-DEFAULT GET-REPLACE;
-- DEFAULT VALUE is implementation dependent
REGISTERED AS {TLM.poi transportConnectionIVMOClass1-P (1)};

transportConnectionIVMOClass2-P PACKAGE
        BEHAVIOUR transportConnectionIVMOClass2-P-B BEHAVIOUR
            DEFINED AS !When Class 2 is implemented!;;
        ATTRIBUTES
            explicitFlowControl REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            extendedFormat REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            maximumWindow REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            transportExpeditedService REPLACE-WITH-DEFAULT GET-REPLACE;
-- DEFAULT VALUE is implementation dependent
REGISTERED AS {TLM.poi transportConnectionIVMOClass2-P (2)};

transportConnectionIVMOClass3-P PACKAGE
        BEHAVIOUR transportConnectionIVMOClass3-P-B BEHAVIOUR
            DEFINED AS !When Class 3 is implemented!;;
        ATTRIBUTES
            extendedFormat REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            reassignmentTime REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            maximumWindow REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            transportExpeditedService REPLACE-WITH-DEFAULT GET-REPLACE;
REGISTERED AS {TLM.poi transportConnectionIVMOClass3-P (3)};

transportConnectionIVMOClass4-P PACKAGE
        BEHAVIOUR transportConnectionIVMOClass4-P-B BEHAVIOUR
            DEFINED AS !When Class 4 is implemented!;;
        ATTRIBUTES
            checksumNonuse REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            extendedFormat REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            inactivityTime REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            maxTransmissions REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            retransmissionTime REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            windowTimer REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            maximumWindow REPLACE-WITH-DEFAULT GET-REPLACE,
-- DEFAULT VALUE is implementation dependent
            transportExpeditedService REPLACE-WITH-DEFAULT GET-REPLACE;
REGISTERED AS {TLM.poi transportConnectionIVMOClass4-P (4)};

transportConnectionClass1-P PACKAGE
        BEHAVIOUR transportConnectionClass1-P-B BEHAVIOUR
            DEFINED AS !When Class 1 is implemented!;;
        ATTRIBUTES
            networkExpeditedData GET,
            reassignmentsAfterFailure GET,
            reassignmentTime GET,
            receiptConfirmation GET,
            transportExpeditedService GET;
REGISTERED AS {TLM.poi transportConnectionClass1-P (5)};

transportConnectionClass2-P PACKAGE
        BEHAVIOUR transportConnectionClass2-P-B BEHAVIOUR
            DEFINED AS !When Class 2 is implemented!;;
```

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```
        ATTRIBUTES
            extendedFormat GET,
            explicitFlowControl GET,
            transportExpeditedService GET;
REGISTERED AS {TLM.poi transportConnectionClass2-P (6)};

transportConnectionClass3-P PACKAGE
        BEHAVIOUR transportConnectionClass3-P-B BEHAVIOUR
            DEFINED AS !When Class 3 is implemented!;;
        ATTRIBUTES
            extendedFormat GET,
            reassignmentTime GET,
            reassignmentsAfterFailure GET,
            transportExpeditedService GET;
REGISTERED AS {TLM.poi transportConnectionClass3-P (7)};

transportConnectionClass4-P PACKAGE
        BEHAVIOUR transportConnectionClass4-P-B BEHAVIOUR
            DEFINED AS !When Class 4 is implemented!;;
        ATTRIBUTES
            acknowledgeTime GET,
            checksumNonuse GET,
            extendedFormat GET,
            inactivityTime GET,
            maxTransmissions GET,
            retransmissionTime GET,
            transportExpeditedService GET,
            windowTimer GET;
REGISTERED AS {TLM.poi transportConnectionClass4-P (8)};

transportConnectionNCMS-P PACKAGE
        BEHAVIOUR transportConnectionNCMS-P-B BEHAVIOUR
            DEFINED AS !When NCMS is implemented!;;
        ATTRIBUTES
            relatingNCCMONames GET;
REGISTERED AS {TLM.poi transportConnectionNCMS-P(9)};

-- Behaviours

initialValues-B BEHAVIOUR
        DEFINED AS
            !When an instance of the transportConnection MO is created using the transportConnection-comodeTPM
            name binding, the initial values for some of the attributes of the transportConnection MO may be supplied by
            an instance of the transportConnectionIVMO MO. The means by which an instance (if any) of the
            transportConnectionIVMO are identified are a local matter.!;

use-of-initialValues-B BEHAVIOUR
        DEFINED AS
            !The creation of an instance of the transportConnection MO using the transportConnection-comodeTPM
            name binding may reference an instance of the transportConnectionIVMO MO under the conditions specified
            by the transportConnection MO. When this occurs, some of the initial values of the attributes of the instance of
            the transportConnection MO may be supplied by the values of the attributes in the specified instance of the
            transportConnectionIVMO. However, any such value may be overridden by a value supplied by local means
            (for example across an internal interface). Where values are supplied by the IVMO, the initial value of an
            attribute of transportConnection MO shall be the value of the corresponding attribute in the
            transportConnectionIVMO (that is, which has the same attribute template label).!;

connectionCreationDeletion-B BEHAVIOUR
        DEFINED AS
            !Managed object class imports the X.721 | 10165-2 objectCreation and objectDeletion notifications for
            transportConnection.The precise synchronization between these notifications and related protocol and service
            interactions is not defined by this Recommendation | International Standard. In addition, where a connection
            is attempted as a result of an interaction at a single interface (i.e. either the protocol or the service), and fails
            before any interaction occurs at the other, it is a local matter whether a managed object is created or not, i.e.
            whether the creation and deletion events occur or not.
```

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ObjectCreation – Generated whenever an instance of the managed object class is created. The sourceIndicator parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the additionalInformation field which contains the following parameters:

transportConnectionName
protocolClass-PAR
maxTPDUsize-PAR
callingTselector-PAR
calledTSelector-PAR
callingNSAPAddress-PAR
calledNSAPAddress-PAR
respondingNSAPAddress-PAR
connectionDirection-PAR
networkConnectionIDs-PAR.

ObjectDeletion – Generated whenever an instance of the managed object class is deleted. The sourceIndicator parameter shall be set to the value 'resourceOperation'. None of the other optional parameters are used, with the exception of the additionalInformation field which contains the following parameters:

transportConnectionName
protocolClass-PAR
maxTPDUsize-PAR
callingTselector-PAR
calledTSelector-PAR
callingNSAPAddress-PAR
calledNSAPAddress-PAR
respondingNSAPAddress-PAR
connectionDirection-PAR
networkConnectionIDs-PAR
objectDeletionCause.!;

-- *Name Bindings*

transportConnection-comodeTPM NAME BINDING
SUBORDINATE OBJECT CLASS transportConnection AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS comodeTPM AND SUBCLASSES;
WITH ATTRIBUTE "GMI":connectionId;
REGISTERED AS {TLM.nboi transportConnection-comodeTPM (8)};

transportConnectionIVMO-comodeTPM NAME BINDING
SUBORDINATE OBJECT CLASS transportConnectionIVMO AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS comodeTPM AND SUBCLASSES;
WITH ATTRIBUTE transportConnectionIVMOId;
CREATE WITH-REFERENCE-OBJECT;
DELETE;
REGISTERED AS {TLM.nboi transportConnectionIVMO-comodeTPM (7)};

-- *Attributes*

acknowledgeTime ATTRIBUTE
DERIVED FROM "GMI":timer;
BEHAVIOUR acknowledgeTime-B BEHAVIOUR
DEFINED AS
!Value of local Acknowledge Timer (as defined in ITU-T Rec. X.224 | ISO/IEC 8073) in use for the connection. Unit is in seconds!;;
REGISTERED AS {TLM.aoi acknowledgeTime (47)};

calledNSAPAddress ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.OctetString;
MATCHES FOR EQUALITY;
BEHAVIOUR calledNSAPAddress-B BEHAVIOUR
DEFINED AS
!The Called NSAP Address received at the network service interface at N-connection establishment when operating over the CONS, or with the N-Unitdata indication that conveyed the CR TPDU when operating over the CLNS!;;
REGISTERED AS {TLM.aoi calledNSAPAddress (58)};

calledTSelector ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.OctetString;
MATCHES FOR EQUALITY;

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```
        BEHAVIOUR calledTSelector-B BEHAVIOUR
            DEFINED AS
                !The "Called TSAP Identifier" specified at connection establishment!;;
REGISTERED AS {TLM.aoi calledTSelector (56)};

callingNSAPAddress ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.OctetString;
        MATCHES FOR EQUALITY;
        BEHAVIOUR callingNSAPAddress-B BEHAVIOUR
            DEFINED AS
                !The Calling NSAP Address specified at the network service interface at N-connection establishment
                when operating over the CONS, or for each N-Unitdata.request interaction when operating over the
                CLNS!;;
REGISTERED AS {TLM.aoi callingNSAPAddress (57)};

callingTSelector ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.OctetString;
        MATCHES FOR EQUALITY;
        BEHAVIOUR callingTSelector-B BEHAVIOUR
            DEFINED AS
                !The "Calling TSAP Identifier" specified at connection establishment!;;
REGISTERED AS {TLM.aoi callingTSelector (55)};

checksumNonuse ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Boolean;
        MATCHES FOR EQUALITY;
        BEHAVIOUR checksumNonuse-B BEHAVIOUR
            DEFINED AS
                !Enables negotiation/indicates non-use of checksum. In transportConnectionIVMO, enables negotiation of
                checksum non-use (Class 4 only) during connection establishment. TRUE enables non-use, FALSE
                disables it. In transportConnection, indicates whether checksum non-use has been selected for the
                connection (TRUE) or not (FALSE). During connection establishment, this attribute represents the
                desired value and not necessarily the value which will ultimately be used.!;;
REGISTERED AS {TLM.aoi checksumNonuse (43)};

connectionDirection ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.ConnectionDirectionSyntax;
        MATCHES FOR EQUALITY;
        BEHAVIOUR connectionDirection-B BEHAVIOUR
            DEFINED AS
                !Indicates the direction of the connection. The value Incoming means that it was initiated by the remote
                Transport Entity, the value Outgoing means that it was initiated by the local Transport Entity.!;;
REGISTERED AS {TLM.aoi connectionDirection (60)};

explicitFlowControl ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Boolean;
        MATCHES FOR EQUALITY;
        BEHAVIOUR explicitFlowControl-B BEHAVIOUR
            DEFINED AS
                !Enables negotiation/indicates use of explicit Flow Control. In transportConnectionIVMO, enables
                negotiation of non-use of explicit flow control (Class 2 only) during connection establishment. TRUE
                enables non-use, FALSE disables it. In transportConnection, indicates whether non-use of explicit flow
                control has been selected for the connection (TRUE) or not (FALSE). For connections not using Class 2 of
                the protocol, this attribute has the value False. During connection establishment, this attribute represents
                the desired value and not necessarily the value which will ultimately be used!;;
REGISTERED AS {TLM.aoi explicitFlowControl (45)};

extendedFormat ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Boolean;
        MATCHES FOR EQUALITY;
        BEHAVIOUR extendedFormat-B BEHAVIOUR
            DEFINED AS
                !Enables negotiation/indicates use of extended TPDU format. In transportConnectionIVMO, enables
                negotiation of extended TPDU format (for the classes where this is appropriate) during transport
                connection establishment. TRUE enables use of extended format, FALSE disables it. In
                transportConnection, indicates whether extended TPDU format is in use (TRUE) or not (FALSE).
                For connections not using Class 4 of the protocol, this attribute will be False. During connection
                establishment, this attribute represents the desired value and not necessarily the value which will
                ultimately be used!;;
REGISTERED AS {TLM.aoi extendedFormat (41)};
```

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inactivityTime ATTRIBUTE
DERIVED FROM "GMI":timer;
BEHAVIOUR inactivityTime-B BEHAVIOUR
DEFINED AS
!Value of inactivity time (as defined in ITU-T Rec. X.224 | ISO/IEC 8073) in use for the connection. Unit is in seconds!;;
REGISTERED AS {TLM.aoi inactivityTime (46)};

localReference ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Integer;
MATCHES FOR EQUALITY;
BEHAVIOUR localReference-B BEHAVIOUR
DEFINED AS
!The local reference number (as defined in ITU-T Rec. X.224 | ISO/IEC 8073) in use for the connection!;;
REGISTERED AS {TLM.aoi localReference (53)};

maximumWindow ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Integer;
MATCHES FOR EQUALITY,ORDERING;
BEHAVIOUR maximumWindow-B BEHAVIOUR
DEFINED AS
!The maximum window permitted to be given on the connection at any time. Buffering or other implementation constraints or policies may cause a smaller value to be used.!;;
REGISTERED AS {TLM.aoi maximumWindow (36)};

maxTPDUSize ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Integer;
MATCHES FOR EQUALITY,ORDERING;
BEHAVIOUR maxTPDUSize-B BEHAVIOUR
DEFINED AS
!The maximum TPDU size negotiated for the connection. Implementation constraints or policies, or relating to the remote NSPA or Transport Entity, may cause a smaller value to be used as an initial value for negotiation. During connection establishment, this attribute represents the desired value and not necessarily the value which will ultimately be used!;;
REGISTERED AS {TLM.aoi maxTPDUSize (51)};

maxTransmissions ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Integer;
MATCHES FOR EQUALITY,ORDERING;
BEHAVIOUR maxTransmissions-B BEHAVIOUR
DEFINED AS
!The maximum number of transmissions as defined (for Class 4 only) as the parameter 'N' in ITU-T Rec. X.224 | ISO/IEC 8073!;;
REGISTERED AS {TLM.aoi maxTransmissions (52)};

networkConnectionIDs ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.LocalDistinguishedNames;
MATCHES FOR SET-COMPARISON,SET-INTERSECTION;
BEHAVIOUR networkConnectionIDs-B BEHAVIOUR
DEFINED AS
!The Network Connection(s) which support the Transport Connection. If the TC is running over the CLNS, this attribute has the value of the empty set.!;;
REGISTERED AS {TLM.aoi networkConnectionIDs (61)};

networkExpeditedData ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR networkExpeditedData-B BEHAVIOUR
DEFINED AS
!Enables negotiation/indicates use of Network Expedited in transportConnectionIVMO, enables the negotiation of use or non-use of Network Expedited Data (for Class 1 only) during transport connection establishment. TRUE enables use of Network Expedited Data, FALSE disables it. In transportConnection, indicates whether Network Expedited Data is in use (TRUE) or not (FALSE). For connections not using Class 1, the value will always be False. During connection establishment, this attribute represents the desired value and not necessarily the value which will ultimately be used!;;
REGISTERED AS {TLM.aoi networkExpeditedData (42)};

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```
protocolClass ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.ProtocolClassSyntax;
        MATCHES FOR EQUALITY;
        BEHAVIOUR protocolClass-B BEHAVIOUR
            DEFINED AS
                !The protocol class in use on the connection, as negotiated during connection establishment.
                During connection establishment (before the connection reaches the OPEN state) this indicates what is
                currently preferred and not necessarily the ultimate class which will be used for the connection!;;
REGISTERED AS {TLM.aoi protocolClass (40)};

protocolClasses ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.ProtocolClassesSyntax;
        MATCHES FOR SET-COMPARISON,SET-INTERSECTION;
        BEHAVIOUR protocolClasses-B BEHAVIOUR
            DEFINED AS
                !The preferred/alternate set of protocol classes which may be stated at connection establishment. The
                default value is implementation dependent, but must be consistent with the class negotiation rules of
                ITU-T Rec. X.224 | ISO/IEC 8073!;;
REGISTERED AS {TLM.aoi protocolClasses (26)};

reassignmentsAfterFailure ATTRIBUTE
        DERIVED FROM "GMI":nonWrapping64BitCounter;
        BEHAVIOUR reassignmentsAfterFailure-B BEHAVIOUR
            DEFINED AS
                !The total number of times the TC has been reassigned to NC!;;
REGISTERED AS {TLM.aoi reassignmentsAfterFailure (62)};

reassignmentTime ATTRIBUTE
        DERIVED FROM "GMI":timer;
        BEHAVIOUR reassignmentTime-B BEHAVIOUR
            DEFINED AS
                !The value of the Reassignment Time (as defined in ITU-T Rec. X.224 | ISO/IEC 8073) to be conveyed or
                established during connection establishment. Unit is in seconds!;;
REGISTERED AS {TLM.aoi reassignmentTime (48)};

receiptConfirmation ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Boolean;
        MATCHES FOR EQUALITY;
        BEHAVIOUR receiptConfirmation-B BEHAVIOUR
            DEFINED AS
                !Enables negotiation/indicates use of receipt confirmation. In transportConnectionIVMO, enables
                negotiation of use of network receipt confirmation (Class 1 only) during transport connection
                establishment. TRUE enables use, FALSE enables non-use. In transportConnection, indicates whether
                use of network receipt confirmation has been selected for the connection (TRUE) or not (FALSE).
                For connections not using Class 1 of the protocol, this attribute has the value False. During connection
                establishment, this attribute represents the desired value and not necessarily the value which will
                ultimately be used!;;
REGISTERED AS {TLM.aoi receiptConfirmation (44)};

relatingNCCMONames ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.LocalDistinguishedNames;
        MATCHES FOR SET-COMPARISON,SET-INTERSECTION;
        BEHAVIOUR relatingNCCMONames-B BEHAVIOUR
            DEFINED AS
                !This attribute indicates the NCC MO(s)!;;
REGISTERED AS {TLM.aoi relatingNCCMONames (66)};

remoteReference ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Integer;
        MATCHES FOR EQUALITY;
        BEHAVIOUR remoteReference-B BEHAVIOUR
            DEFINED AS
                !The remote reference number (as defined in ITU-T Rec. X.224 | ISO/IEC 8073) in use for the
                connection!;;
REGISTERED AS {TLM.aoi remoteReference (54)};
```

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```
respondingNSAPAddress ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.OctetString;
        MATCHES FOR EQUALITY;
        BEHAVIOUR respondingNSAPAddress-B BEHAVIOUR
            DEFINED AS
                !The Responding NSAP Address received at network service interface at N-connection establishment.
                The value of this attribute is only meaningful when operating over the CONS, and when the N-connection
                was initiated by Transport Entity. Otherwise, the value is not meaningful and no constraints are applied
                to the value!;;
REGISTERED AS {TLM.aoi respondingNSAPAddress (59)};

retransmissionTime ATTRIBUTE
        DERIVED FROM "GMI":timer;
        BEHAVIOUR resettingTimer-B,retransmissionTime-B BEHAVIOUR
            DEFINED AS
                !Initial or current value for the Local Retransmission Time as defined in ITU-T Rec. X.224 |
                ISO/IEC 8073. Another value may be adopted initially based on knowledge concerning the remote
                system. The current value may change during the lifetime of the connection, based on observations of
                traffic on the connection or other information concerning the remote Transport Entity. The value of this
                attribute is used in the absence of other information. Unit is in seconds!;;
REGISTERED AS {TLM.aoi retransmissionTime (49)};

transportConnectionIVMOId ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.NamingString;
        MATCHES FOR EQUALITY,SUBSTRINGS;
        BEHAVIOUR transportConnectionIVMOId-B BEHAVIOUR
            DEFINED AS !The name of this instance of transportConnectionIVMO!;;
REGISTERED AS {TLM.aoi transportConnectionIVMOId (25)};

transportExpeditedService ATTRIBUTE
        WITH ATTRIBUTE SYNTAX TLM.Boolean;
        BEHAVIOUR transportExpeditedService-B BEHAVIOUR
            DEFINED AS
                !Indicated whether the Transport Expedited Service is provided (true) or not (False).!;;
REGISTERED AS {TLM.aoi transportExpeditedService (65)};

windowTimer ATTRIBUTE
        DERIVED FROM "GMI":timer;
        BEHAVIOUR windowTimer-B BEHAVIOUR
            DEFINED AS
                !Value of Window Timer as defined in ITU-T Rec. X.224 | ISO/IEC 8073. The value of this attribute is
                meaningful only for connections using Class 4 of the protocol. For other connections no constraint is
                placed on the value to be returned. Unit is in seconds!;;
REGISTERED AS {TLM.aoi windowTimer (50)};

-- Parameters

  calledNSAPAddress-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE calledNSAPAddress;;

calledTSelector-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE calledTSelector;;

callingNSAPAddress-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE callingNSAPAddress;;

callingTSelector-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE callingTSelector;;

connectionDirection-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE connectionDirection;;

maxTPDUSize-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE maxTPDUSize;;
```

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```
networkConnectionIDs-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE networkConnectionIDs;;

objectDeletionCause PARAMETER
        CONTEXT EVENT-INFO;
        WITH SYNTAX TLM.DeletionCauseSyntax;
        BEHAVIOUR objectDeletionCauseB BEHAVIOUR
            DEFINED AS
                ! Reason why the Transport Connection Object is being deleted!;;
REGISTERED AS {TLM.proi objectDeletionCause (6)};

protocolClass-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE protocolClass;;

respondingNSAPAddress-PAR PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE respondingNSAPAddress;;

transportConnectionName PARAMETER
        CONTEXT EVENT-INFO;
        ATTRIBUTE "GMI":connectionId;;
```

5.9 NCMS protocol machine managed object

```
ncmsPM MANAGED OBJECT CLASS
   DERIVED FROM "DMI":top;
   CHARACTERIZED BY ncmsPM-P PACKAGE
      BEHAVIOUR
      commonCreationDeletion-B,
      commonStateChange-B,
      ncmsPMPackageImportedNotifications-B,
      ncmsPM-B BEHAVIOUR
      DEFINED AS
        !This managed object class represents the part of transport entity that performs the
        NCMS protocol.
        Only one instance of this managed object class may exist within a TEMO instance.!
       ;
      ;

ATTRIBUTES
   ncmsPMId GET,
   "DMI":administrativeState GET-REPLACE,
   "DMI":operationalState GET;
ACTIONS
   "GMI":activate,
   "GMI":deactivate;

NOTIFICATIONS
   "DMI":communicationsAlarm
       ncmsPMPDUHeader   -- this is a parameter --
       ncmsPMSourceAddress,   -- this is a parameter --
   "DMI":objectCreation,
   "DMI":objectDeletion,
   "DMI":stateChange
   ;;
;

REGISTERED AS{TLM.moi ncmsPM (8)};

-- Behaviours

ncmsPMPackageImportedNotifications-B BEHAVIOUR
   DEFINED AS
       !The ncmsPM-P package imports communicationsAlarm from DMI, in order to report the failure of NC sharing. The
       probableCause is set to
       TLM.communicationsProtocolError. The ncmsPMPDUHeader and ncmsPMSourceAddress are reported as
       parameters in the additionalInformation field of the communicationsAlarm.
```

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The significance subparameter of each item of the additionalInformation shall be set to the value 'False' (i.e. not significant) so that a managing system receiving the event will be less likely to reject it.
The perceivedSeverity shall be set to Minor.
A subsequent communicationsAlarm with a perceived Severity value of 'Cleared' shall not be generated. No other fields or parameters shall be used, with the exception of further parameters in the additionalInformation field.!
;

-- *Name Bindings*

ncmsPM-transportEntity-Management NAME BINDING
SUBORDINATE OBJECT CLASS ncmsPM AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
WITH ATTRIBUTE ncmsPMId;
BEHAVIOUR
ncmsPM-transportEntity-B BEHAVIOUR
DEFINED AS
!The name binding that applies when the ncmsPM managed object is explicitly created by management.!
;
;
CREATE;
DELETE ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS{TLM.nboi ncmsPM-transportEntity-Management (13)};

ncmsPM-transportEntity-Automatic NAME BINDING
SUBORDINATE OBJECT CLASS ncmsPM AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS transportEntity AND SUBCLASSES;
WITH ATTRIBUTE ncmsPMId;
BEHAVIOUR
ncmsPM-transportEntity-Automatic-B BEHAVIOUR
DEFINED AS
!The name binding that applies when the ncmsPM managed object is created.
The name binding that applies when the ncmsPM managed object can not be explicitly created by management.!
;
;
REGISTERED AS{TLM.nboi ncmsPM-transportEntity-Automatic (14)};

-- *Attribute*

ncmsPMId ATTRIBUTE
WITH ATTRIBUTE SYNTAX TLM.NameType;
MATCHES FOR EQUALITY;
BEHAVIOUR
ncmsPMId-B BEHAVIOUR
DEFINED AS
!The attribute that is used in naming instances of the ncms Protocol Machine managed object class.!
;
;
REGISTERED AS{TLM.aoi ncmsPMId (67)};

-- *Parameters*

ncmsPMPDUHeader PARAMETER
CONTEXT EVENT-INFO;
WITH SYNTAX TLM.PDUHeaderSyntax;
BEHAVIOUR ncmsPMPDUHeader-B BEHAVIOUR
DEFINED AS
!Header of the PDU that causes the failure of NC sharing.
Returned in the problemData field of a communicationsAlarm notification.!
;
;
REGISTERED AS{TLM.proi ncmsPMPDUHeader (8)};

ncmsPMSourceAddress PARAMETER
CONTEXT EVENT-INFO;
WITH SYNTAX TLM.SourceAddressSyntax;

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```
    BEHAVIOUR ncmsPMSourceAddress-B BEHAVIOUR
        DEFINED AS
          !Source N-Address.
          Returned in the problemData field of a communicationsAlarm notification.!
        ;
    ;
REGISTERED AS{TLM.proi ncmsPMSourceAddress (9)};
```

5.10 Network connection control managed object and initial value managed object

5.10.1 Network connection control managed object

```
ncc MANAGED OBJECT CLASS
    DERIVED FROM "DMI":top;
    CHARACTERIZED BY ncc-P PACKAGE
        BEHAVIOUR
          nccInitialValues-B,
          ncc-B BEHAVIOUR
          DEFINED AS
              !This managed object class represents the management aspect of the information needed to control the network
              connections by NCMS.
              Multiple instances of this managed object class may exist within a NCMSPM MO instance. This MO is created and
              deleted as a result of NCMS operation.!
          ;
        ;
        ATTRIBUTES
          nccId GET,
          nc-COL GET,
          nc-REC GET,
          nc-REF GET,
          nc-PREF GET,
          nc-Right GET,
          ncRecoveries GET,
          ttrNCTime GET,
          tpdNCTime GET,
          tfrNCTime GET,
          sourceOfAllocation GET,
          "GMI":underlyingConnectionNames GET;

        NOTIFICATIONS
          "DMI":objectCreation,
          "DMI":objectDeletion;
    ;
;
REGISTERED AS{TLM.moi ncc (9)};
```

5.10.2 Network connection control initial value managed object

```
nccIVMO MANAGED OBJECT CLASS
    DERIVED FROM "DMI":top;
    CHARACTERIZED BY nccIVMO-P PACKAGE
        BEHAVIOUR
            use-of-nccInitialValues-B,
           nccIVMO-B BEHAVIOUR
            DEFINED AS
                !This managed object class represents the set of initial values for NCC MO instances.
                Multiple instances of this managed object class may exist within a NCMSPM MO instance.
                The relationship between instances of NCC MO and NCCIV MO is not specified in this Recommendation |
                International Standard.!
            ;
        ;
        ATTRIBUTES
            nccIVMOId  GET,
            nc-COL  REPLACE-WITH-DEFAULT GET-REPLACE,
            nc-REC  REPLACE-WITH-DEFAULT GET-REPLACE,
            nc-PREF  REPLACE-WITH-DEFAULT GET-REPLACE,
```

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```
            nc-Right  REPLACE-WITH-DEFAULT GET-REPLACE,
            ttrNCTime  REPLACE-WITH-DEFAULT GET-REPLACE,
            tpdNCTime  REPLACE-WITH-DEFAULT GET-REPLACE,
            tfrNCTime   REPLACE-WITH-DEFAULT GET-REPLACE;
    ;
;
REGISTERED AS{TLM.moi nccIVMO(10)};
```

-- NCC Initial values behaviour

```
nccInitialValues-B BEHAVIOUR
    DEFINED AS
        !When an instance of the NCC MO is created using the ncc-ncmsPM name binding, the initial values for some of the
        attributes of the NCC MO may be supplied by an instance of the NCC IVMO. The means by which an instance(if any) of
        the NCC IVMO are identified are a local matter.!
    ;
```

-- Use of NCC initial values behaviour

```
use-of-nccInitialValues-B BEHAVIOUR
    DEFINED AS
        !The creation of an instance of the NCC MO using the ncc-ncmsPM name binding may reference an instance
        of NCC IVMO. When this occurs, some of the initial values of the attributes of the instance of NCC MO may be supplied
        by the values of the attributes in the specified instance of the NCC IVMO.
        However any such value may be overridden by a value supplied by local means (for example across an internal
        interface). Where values are supplied by the IVMO, the initial values of an attribute of NCC MO shall be the value of
        the corresponding attribute in the NCC IVMO (that is, which has the same attribute template label).!
    ;
```

-- Name Binding

```
ncc-ncmsPM NAME BINDING
    SUBORDINATE OBJECT CLASS ncc AND SUBCLASSES;
    NAMED BY
        SUPERIOR OBJECT CLASS ncmsPM AND SUBCLASSES;
        WITH ATTRIBUTE nccId;
    BEHAVIOUR
        ncc-ncmsPM-B BEHAVIOUR
        DEFINED AS
            !The name binding that applies when the ncc managed object is created and deleted.!
        ;
    ;
    CREATE WITH-REFERENCE-OBJECT;
    DELETE;
REGISTERED AS{TLM.nboi ncc-ncmsPM (15)};

nccIVMO-ncmsPM NAME BINDING
    SUBORDINATE OBJECT CLASS nccIVMO AND SUBCLASSES;
    NAMED BY
        SUPERIOR OBJECT CLASS ncmsPM AND SUBCLASSES;
        WITH ATTRIBUTE nccIVMOId;
    BEHAVIOUR
        nccIVMO-ncmsPM-B BEHAVIOUR
        DEFINED AS
            !The name binding that applies when the nccIV managed object is created and deleted.!
        ;
    ;
    CREATE WITH-REFERENCE-OBJECT;
    DELETE;
REGISTERED AS{TLM.nboi nccIV-ncmsPM(16)};
```

--- Attribute

```
nccId ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NameType;
    MATCHES FOR EQUALITY;
```

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```
    BEHAVIOUR
        nccId-B BEHAVIOUR
        DEFINED AS
            !The attribute that is used in naming instances of the network connection control managed object class.!
        ;
    ;
REGISTERED AS{TLM.aoi nccId (68)};

nccIVMOId ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NameType;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nccIVMOId-B BEHAVIOUR
        DEFINED AS
            !The attribute that is used in naming instances of the network connection control initial value managed object class.!
        ;
    ;
REGISTERED AS{TLM.aoi nccIVMOId (69)};

nc-COL ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NC-COLSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nc-COL-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the collision algorithm as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073. In
            NCCIV managed object, indicates the collision algorithm to be used. In NCC managed object, indicates the collision
            algorithm in use.!
        ;
    ;
REGISTERED AS{TLM.aoi nc-COL (70)};

nc-PREF ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NC-PREFSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nc-PREF-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the preference the initiator has to keep the network connection as defined in Annex B of
            ITU-T Rec. X.224 | ISO/IEC 8073. In NCCIV managed object, indicates the preference to be used. In NCC managed
            object, indicates the preference in use.!
        ;
    ;
REGISTERED AS{TLM.aoi nc-PREF (71)};

nc-REC ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NC-RECSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nc-REC-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the recovery optimization option as defined in Annex B of ITU-T Rec. X.224 |
            ISO/IEC 8073. In NCCIV managed object, indicates the recovery optimization option to be used. In NCC managed
            object, indicates the recovery optimization option in use.!
        ;
    ;
REGISTERED AS{TLM.aoi nc-REC (72)};

nc-REF ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NC-REFSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nc-REF-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the nc-reference as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073.!
        ;
    ;
REGISTERED AS{TLM.aoi nc-REF (73)};
```

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```
ncRecoveries ATTRIBUTE
    DERIVED FROM "GMI":nonWrapping64BitCounter;
    BEHAVIOUR
        ncRecoveries-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the total number of network connection successful recoveries.!
        ;
    ;
REGISTERED AS{TLM.aoi ncRecoveries (74)};

nc-Right ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.NC-RightSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        nc-Right-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the type of right of use as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073. In
            NCCIV managed object, indicates the type of right of use to be used. Namely, the value "my-side" means "SA",
            "remote-side" means "RA" and "both-sides" means "RR". In NCC managed object, indicates the type of right of use
            in use.!
        ;
    ;
REGISTERED AS{TLM.aoi networkConnectionRight (75)};

sourceOfAllocation ATTRIBUTE
    WITH ATTRIBUTE SYNTAX TLM.SourceOfAllocationSyntax;
    MATCHES FOR EQUALITY;
    BEHAVIOUR
        sourceOfAllocation-B BEHAVIOUR
        DEFINED AS
            !The attribute that indicates the transport entity that established the network connection at the first time during the
            life time of an NC reference.!
        ;
    ;
REGISTERED AS{TLM.aoi sourceOfAllocation (76)};

tfrNCTime ATTRIBUTE
    DERIVED FROM "GMI":timer;
    BEHAVIOUR
        tfrNCTime-B BEHAVIOUR
        DEFINED AS
            !Value of the TFR-NC timer as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073.!
        ;
    ;
REGISTERED AS{TLM.aoi tfrNCTime (77)};

tpdNCTime ATTRIBUTE
    DERIVED FROM "GMI":timer;
    BEHAVIOUR
        tpdNCTime-B BEHAVIOUR
        DEFINED AS
            !Value of the TPD-NC timer as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073.!
        ;
    ;
REGISTERED AS{TLM.aoi tpdNCTime (78)};

ttrNCTime ATTRIBUTE
    DERIVED FROM "GMI":timer;
    BEHAVIOUR
        ttrNCTime-B BEHAVIOUR
        DEFINED AS
            !Value of the TTR-NC timer as defined in Annex B of ITU-T Rec. X.224 | ISO/IEC 8073.!
        ;
    ;
REGISTERED AS{TLM.aoi ttrNCTime (79)};
```

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6 ASN.1 modules

```
TLM {joint-iso-ccitt transport-layer(14) management(0) tlAsn1Module(2) 0}
DEFINITIONS IMPLICIT TAGS ::= BEGIN
-- EXPORTS ; --  --  everything
IMPORTS communicationsProtocolError
FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}
NameType
FROM ASN1DefinedTypesModule {ccitt recommendation m gnm(3100) informationModel(0)
        asn1Modules(2) asn1DefinedTypesModule(0)}
BaseManagedObjectId
FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)};
```

6.1 Object Identifier definitions

6.1.1 Abbreviations

```
tloi OBJECT IDENTIFIER ::= {joint-iso-ccitt transport-layer(14) management(0)}
sseoi OBJECT IDENTIFIER ::= {tloi standardSpecificExtension(0)}
moi OBJECT IDENTIFIER ::= {tloi objectclass(3)}
poi OBJECT IDENTIFIER ::= {tloi package(4)}
proi OBJECT IDENTIFIER ::= {tloi parameter(5)}
nboi OBJECT IDENTIFIER ::= {tloi namebinding(6)}
aoi OBJECT IDENTIFIER ::= {tloi attribute(7)}
agoi OBJECT IDENTIFIER ::= {tloi attributeGroup(8)}
acoi OBJECT IDENTIFIER ::= {tloi action(9)}
noi OBJECT IDENTIFIER ::= {tloi notification(10)}
```

6.1.2 Other Object Identifier definitions

```
successfulConnectionEstablishment OBJECT IDENTIFIER ::= {sseoi informationtype(4)
successfulConnectionEstablishment (1)}
incomingConnectionRejectedType OBJECT IDENTIFIER ::= {sseoi informationtype(4)
incomingConnectionRejected (2)}
```

6.2 Other definitions

```
Boolean ::= BOOLEAN

ConnectionDirectionSyntax ::= ENUMERATED {outgoing(0),incoming(1)}

clmodeTPMId-Value GraphicString ::= "CLTPM"

comodeTPMId-Value GraphicString ::= "COTPM"

DeletionCauseSyntax ::= ENUMERATED
{protocolError(0),networkServiceProvider(1),remoteCongestion(3),
localCongestion(4)}

NamingString ::= GraphicString

Integer ::= INTEGER

LocalDistinguishedName ::= CMIP-1.BaseManagedObjectId

LocalDistinguishedNames ::= SET OF LocalDistinguishedName

NC-COLSyntax::=ENUMERATED{nc-COL0(0)}

NC-PREFSyntax::=ENUMERATED{highest(0),
                           medium(1),
                           lowest(3)}

NC-RECSyntax::=ENUMERATED{pleaseDoNotRecover(0),
                          pleaseRecover(1)}

NC-REFSyntax::=INTEGER

NC-RightSyntax::=ENUMERATED{my-side(1),
                            remote-side(2),
                            both-sides(3)}
```

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```
OctetString ::= OCTET STRING

ProtocolClassSyntax ::= ENUMERATED {
class0(0), class1(1), class2(2), class3(3), class4(4)}

ProtocolClassesSyntax ::= SET OF ProtocolClassSyntax

PDUHeaderSyntax ::= OCTET STRING(SIZE(1..255))

ReasonCodeSyntax ::= INTEGER

SourceAddressSyntax::=OCTET STRING

SourceOfAllocationSyntax ::=ENUMERATED{local(0),
                                       remote(1)}

transportSubsystemId-Value GraphicString ::= "TransportSubsystem"

END
```

7 Conformance

Implementations claiming to conform to this Recommendation | International Standard shall comply with the conformance requirements as defined in the following subclauses.

7.1 Conformance requirements to this Recommendation | International Standard

7.1.1 Static conformance

The implementation shall conform to the requirements of this Recommendation | International Standard in the manager role, the agent role, or both roles. A claim of conformance to at least one role shall be made in Table D.1.

If a claim of conformance is made for support in the manager role, the implementation shall support at least one management operation or notification or action of the managed objects specified by this Recommendation | International Standard. The conformance requirements in the manager role for those management operations, notifications and actions are identified in Table D.3 and further tables referenced by Annex D.

If a claim of conformance is made for support in the agent role, the implementation shall support one or more instances of the transport subsystem managed object class, the transport entity managed object class and the TSAP managed object class identified in Table D.4 and further tables referenced by Annex D.

If a claim of conformance is made for support in the agent role, the implementation shall support at least one name binding identified in Table D.7 for each supported managed object.

The implementation shall support the transfer syntax derived from the encoding rules specified in CCITT Rec. X.209 | ISO/IEC 8825 named {joint-iso-ccitt asn1(1) basicEncoding(1)} for the abstract data types referenced by the definitions for which support is claimed.

7.1.2 Dynamic conformance

Implementations claiming to conform to this Recommendation | International Standard shall support the elements of procedure and definitions of semantics corresponding to the definitions for which support is claimed.

7.1.3 Management implementation conformance statement requirements

Any MCS proforma, MICS proforma, MOCS proforma, and MRCS proforma which conform to this Recommendation | International Standard shall be technically identical to the proformas specified in Annexes D, E, F, and G preserving table numbering and the index numbers of items, and differing only in pagination and page headers and footers.

The supplier of an implementation which is claimed to conform to this Recommendation | International Standard shall complete a copy of the Management Conformance Summary (MCS) provided in Annex D as part of the conformance requirements together with any other ICS proformas referenced as applicable from that MCS. Any MCS, MICS, MOCS and MRCS which conform to this Recommendation | International Standard shall:

- describe an implementation which conforms to this Recommendation | International Standard;
- have been completed in accordance with the instructions for completion given in ITU-T Rec. X.724 | ISO/IEC 10165-6;
- include the information necessary to uniquely identify both the supplier and the implementation.

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7.2 Protocol specific conformance requirements

The supplier of an implementation which is claimed to conform to this Recommendation | International Standard shall support at least one protocol identified in Table D.2.

7.2.1 Conformance to the management operation of ITU-T Rec. X.224 | ISO/IEC 8073

An implementation claiming conformance to ITU-T Rec. X.224 | ISO/IEC 8073 in the agent role as a managed implementation shall:

a) conform to ITU-T Rec. X.284 | ISO/IEC 10737 as defined in 7.1;

b) support the comodeTPM MO, the transportConnection MO and transportConnectionIVMO MO;

c) support the ncmsPM MO, the ncc MO and nccIVMO MO, if the supplier of an implementation support network connection management subprotocol.

7.2.2 Conformance to the management operation of ITU-T Rec. X.234 | ISO/IEC 8602

An implementation claiming conformance to ITU-T Rec. X.234 | ISO/IEC 8602 in the agent role as a managed implementation shall:

a) conform to ITU-T Rec. X.284 | ISO/IEC 10737 as defined in 7.1;

b) support the clmodeTPM MO.

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Annex A

Allocation of Object Identifiers

(This annex forms an integral part of this Recommendation | International Standard)

The following Object Identifiers have been allocated by this Recommendation | International Standard. Object Identifiers which had been allocated when the equivalent Recommendation | International Standard was at the draft stage have not been re-allocated. If any modification, other than a change to the behaviour clause, has been made to any template which had been allocated an Object Identifier, the new template has been allocated a new Object Identifier and the old Object Identifier [identified thus: *obsolete* (1)] shall not be re-used.

joint-iso-ccitt (2)
ms (9)
smi (3)
part2 (2)
asn1Module (2)
(1)
transport-layer (14)
management (0)
standardSpecificExtension (0)
informationtype (4)
successfulConnectionEstablishment (1)
incomingConnectionRejected (2)
tlAsn1Module (2)
(0)
objectclass (3)
transportSubsystem (1)
transportEntity (2)
clmodeTPM (3)
comodeTPM (4)
tSAP (5)
transportConnectionIVMO (6)
transportConnection (7)
ncmsPM (8)
ncc (9)
nccIVMO (10)

package (4)
transportConnectionIVMOClass1-P (1)
transportConnectionIVMOClass2-P (2)
transportConnectionIVMOClass3-P (3)
transportConnectionIVMOClass4-P (4)
transportConnectionClass1-P (5)
transportConnectionClass2-P (6)
transportConnectionClass3-P (7)
transportConnectionClass4-P (8)
transportConnectionNCMS-P (9)

parameter (5)
tEProtocolErrorPDUHeader (1)
tEProtocolErrorSourceAddress (2)
tEProtocolErrorReasonCode (3)
clPMPDUHeader (4)
clPMSourceAddress (5)
objectDeletionCause (6)
rejectionCause (7)
ncmsPMPDUHeader (8)
ncmsPMSourceAddress(9)

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namebinding (6)
- **transportSubsystem-system (1)**
- ***obsolete* (2)**
- **clmodeTPM-transportEntity-Management (3)**
- **comodeTPM-transportEntity-Management (4)**
- **tSAP-transportEntity-Automatic (5)**
- **tSAP-transportEntity-Management (6)**
- **transportConnectionIVMO-comodeTPM (7)**
- **transportConnection-comodeTPM (8)**
- **clmodeTPM-transportEntity-Automatic (9)**
- **comodeTPM-transportEntity-Automatic (10)**
- **transportEntity-transportSubsystem-Automatic (11)**
- **transportEntity-transportSubsystem-Management (12)**
- **ncmsPM-transportEntity-Management (13)**
- **ncmsPM-transportEntity-Automatic (14)**
- **ncc-ncmsPM (15)**
- **nccIVMO-ncmsPM (16)**

attribute (7)
- ***obsolete* (1)**
- ***obsolete* (2)**
- **targetNSAP (3)**
- **actualNSAP (4)**
- **undecodedNSDUs (5)**
- **checksumErrorsDetected (6)**
- **protocolErrors (7)**
- ***obsolete* (8)**
- **clChecksumOption (9)**
- **undeliverablePDUsCounter (10)**
- ***obsolete* (11)**
- **openConnections (12)**
- **maxConnections (13)**
- **localSuccessfulConnections (14)**
- **remoteSuccessfulConnections (15)**
- **localUnsuccessfulConnections (16)**
- **remoteUnsuccessfulConnections (17)**
- **localErrorDisconnects (18)**
- **remoteErrorDisconnects (19)**
- **unassociatedTPDUs (20)**
- **maxOpenConnections (21)**
- ***obsolete* (22)**
- ***obsolete* (23)**
- ***obsolete* (24)**
- **transportConnectionIVMOId (25)**
- **protocolClasses (26)**
- ***obsolete* (27)**
- ***obsolete* (28)**
- ***obsolete* (29)**
- ***obsolete* (30)**
- ***obsolete* (31)**
- ***obsolete* (32)**
- ***obsolete* (33)**
- ***obsolete* (34)**
- ***obsolete* (35)**
- **maximumWindow (36)**
- ***obsolete* (37)**
- ***obsolete* (38)**
- ***obsolete* (39)**
- **protocolClass (40)**
- **extendedFormat (41)**
- **networkExpeditedData (42)**
- **checksumNonuse (43)**
- **receiptConfirmation (44)**
- **explicitFlowControl (45)**
- **inactivityTime (46)**
- **acknowledgeTime (47)**

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reassignmentTime (48)
retransmissionTime (49)
windowTimer (50)
maxTPDUSize (51)
maxTransmissions (52)
localReference (53)
remoteReference (54)
callingTSelector (55)
calledTSelector (56)
callingNSAPAddress (57)
calledNSAPAddress (58)
respondingNSAPAddress (59)
connectionDirection (60)
networkConnectionIDs (61)
reassignmentsAfterFailure (62)
***obsolete* (63)**
***obsolete* (64)**
transportExpeditedService (65)
relatingNCCMONames (66)
ncmsPMId (67)
nccId (68)
ncclVMOId (69)
nc-COL (70)
nc-PREF (71)
nc-REC (72)
nc-REF (73)
ncRecoveries (74)
networkConnectionRight (75)
sourceOfAllocation (76)
tfrNCTime (77)
tpdNCTime (78)
ttrNCTime (79)

attributeGroup (8)
action (9)
notification (10)

END

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Annex B

Shorthand description of Managed Objects

(This annex forms an integral part of this Recommendation | International Standard)

The information in this annex is intended only to give a broad outline of the Transport Layer Management Specification. While the information contained herein has been derived from the GDMO text in this Recommendation | International Standard, it should be treated with caution, as there may be errors.

The following abbreviations are used to describe the property lists of attributes:

G	Get
R	Replace
RWD	Replace With Default
A	Add
RM	Remove

The following abbreviations are used for external label references:

DMI	CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992
GMI	ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994

Template types with a '*' suffix (for example ATTRIBUTE*) refer to template types defined in conditional packages. All inherited templates, except those inherited from 'top', are included in each Managed Object Class.

The inheritance hierarchy is illustrated in Figure B.1.

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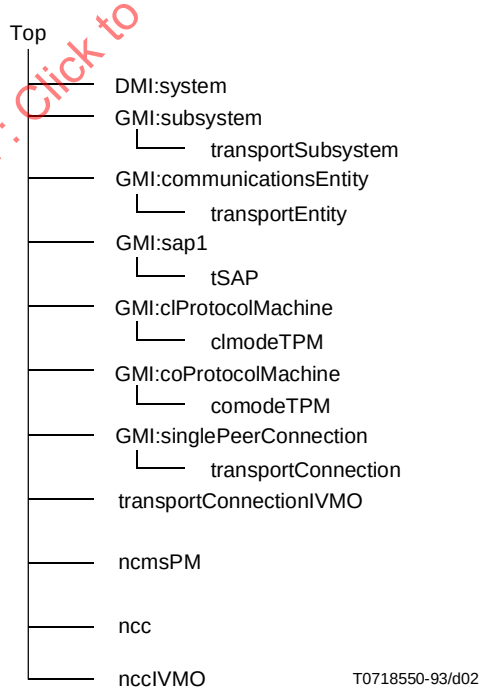

Figure B.1 – Inheritance Hierarchy

MANAGED OBJECT CLASS transportConnectionIVMO DERIVED FROM (DMI:top) CONTAINED IN (comodeTPM)

checksumNonuse ATTRIBUTE* (G, R, RWD)
enables negotiation/indicates non-use of checksum
explicitFlowControl ATTRIBUTE* (G, R, RWD)
enables negotiation/indicates use of explicit Flow Control
extendedFormat ATTRIBUTE* (G, R, RWD)
enables negotiation/indicates use of extended TPDU Format
inactivityTime ATTRIBUTE* (G, R, RWD)
Value of inactivity time (as defined in ISO 8073)
maxTPDUSize ATTRIBUTE (G, R, RWD)
The maximum TPDU size negotiated for the connection
maxTransmissions ATTRIBUTE* (G, R, RWD)
The maximum number of transmissions
maximumWindow ATTRIBUTE* (G, R, RWD)
The maximum window permitted to be given on the connection
networkExpeditedData ATTRIBUTE* (G, R, RWD)
enables negotiation/indicates use of Network Expedited
protocolClasses ATTRIBUTE (G, R, RWD)
The preferred/alternate set of protocol classes
reassignmentTime ATTRIBUTE* (G, R, RWD)
The value of the Reassignment Time
receiptConfirmation ATTRIBUTE* (G, R, RWD)
enables negotiation/indicates use of Receipt Confirmation
retransmissionTime ATTRIBUTE* (G, R, RWD)
Initial or Current value for the Local Retransmission Time
transportConnectionIVMOId ATTRIBUTE (G)
The name of this instance of the Transport Connection IVMO
transportExpeditedService ATTRIBUTE* (G, R, RWD)
Indicates whether the Transport Expedited Service is provided
windowTimer ATTRIBUTE* (G, R, RWD)
Value of Window Timer as defined in ITU-T Rec. X.224 | ISO/IEC 8073

END MANAGED OBJECT CLASS transportConnectionIVMO

MANAGED OBJECT CLASS transportConnection DERIVED FROM (GMI:singlePeerConnection) CONTAINED IN (comodeTPM)

DMI:objectCreation NOTIFICATION
DMI:objectDeletion NOTIFICATION
DMI:octetsReceivedCounter ATTRIBUTE (G)
DMI:octetsSentCounter ATTRIBUTE (G)
DMI:pdusReceivedCounter ATTRIBUTE (G)
DMI:pdusRetransmittedErrorCounter ATTRIBUTE (G)
DMI:pdusSentCounter ATTRIBUTE (G)
GMI:communicationsInformation NOTIFICATION
GMI:connectionId ATTRIBUTE (G)
GMI:supportedConnectionNames ATTRIBUTE* (G)
This attribute contains the distinguished names of managed objects that represent connections
GMI:underlyingConnectionNames ATTRIBUTE (G)
acknowledgeTime ATTRIBUTE* (G)
Value of local Acknowledge Timer
calledNSAPAddress ATTRIBUTE (G)
The Called NSAP Address received
calledTSelector ATTRIBUTE (G)
The "Called TSAP Identifier" specified
callingNSAPAddress ATTRIBUTE (G)
The Calling NSAP Address specified
callingTSelector ATTRIBUTE (G)
The "Calling TSAP Identifier" specified
checksumNonuse ATTRIBUTE* (G)
enables negotiation/indicates non-use of checksum
connectionDirection ATTRIBUTE (G)
Indicates the direction of the connection
explicitFlowControl ATTRIBUTE* (G)
enables negotiation/indicates use of explicit Flow Control
extendedFormat ATTRIBUTE* (G)
enables negotiation/indicates use of extended TPDU
inactivityTime ATTRIBUTE* (G)
Value of inactivity time (as defined in ITU-T Rec. X.224 | ISO/IEC 8073)

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localReference ATTRIBUTE (G)
The local reference number (as defined in ITU-T Rec. X.224 | ISO/IEC 8073)
maxTPDUSize ATTRIBUTE (G)
The maximum TPDU size negotiated for the connection
maxTransmissions ATTRIBUTE* (G)
The maximum number of transmissions
networkConnectionIDs ATTRIBUTE (G)
The Network Connection(s) which support the Transport Connection
networkExpeditedData ATTRIBUTE* (G)
enables negotiation/indicates use of Network Expedited
protocolClass ATTRIBUTE (G)
The protocol class in use on the connection
protocolErrors ATTRIBUTE (G)
Counter associated to protocol errors
reassignmentTime ATTRIBUTE* (G)
The value of the Reassignment Time
reassignmentsAfterFailure ATTRIBUTE* (G)
The total number of times the TC has been reassigned
receiptConfirmation ATTRIBUTE* (G)
enables negotiation/indicates use of receipt Confirmation
relatingNCCMONames ATTRIBUTE* (G)
This attribute indicates the NCC MO(s)
remoteReference ATTRIBUTE (G)
The remote reference number (as defined in ITU-T Rec. X.224 | ISO/IEC 8073)
respondingNSAPAddress ATTRIBUTE (G)
The Responding NSAP Address received
retransmissionTime ATTRIBUTE* (G)
Initial or Current value for the Local Retransmission Time
transportExpeditedService ATTRIBUTE* (G)
Indicated whether the Transport Expedited Service is provided
windowTimer ATTRIBUTE* (G)
Value of Window Timer as defined in ITU-T Rec. X.224 | ISO/IEC 8073
END MANAGED OBJECT CLASS transportConnection

MANAGED OBJECT CLASS tSAP DERIVED FROM (GMI:sap1) CONTAINED IN (transportEntity)
DMI:objectCreation NOTIFICATION
DMI:objectDeletion NOTIFICATION
GMI:sap1Address ATTRIBUTE (G)
GMI:sapId ATTRIBUTE (G)
GMI:userEntityNames ATTRIBUTE (G)
END MANAGED OBJECT CLASS tSAP

MANAGED OBJECT CLASS comodeTPM DERIVED FROM (GMI:coProtocolMachine) CONTAINED IN (transportEntity)
DMI:administrativeState ATTRIBUTE (G, R)
DMI:objectCreation NOTIFICATION
DMI:objectDeletion NOTIFICATION
DMI:octetsReceivedCounter ATTRIBUTE (G)
DMI:octetsSentCounter ATTRIBUTE (G)
DMI:operationalState ATTRIBUTE (G)
DMI:stateChange NOTIFICATION
GMI:activate ACTION
GMI:coProtocolMachineId ATTRIBUTE (G)
GMI:communicationsInformation NOTIFICATION
GMI:deactivate ACTION
localErrorDisconnects ATTRIBUTE (G)
The number of transport disconnects initiated by the local entity
localSuccessfulConnections ATTRIBUTE (G)
Number of transport connections initiated by the local entity
localUnsuccessfulConnections ATTRIBUTE (G)
The number of (local) unsuccessful transport connections
maxConnections ATTRIBUTE (G, R, RWD)
The maximum number of simultaneously open Transport connections
maxOpenConnections ATTRIBUTE (G, RWD)
The highest number of simultaneously open Transport connections
openConnections ATTRIBUTE (G)
The number of transport connections which are in the open state
remoteErrorDisconnects ATTRIBUTE (G)
The number of disconnects initiated by a peer entity

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```
        remoteSuccessfulConnections ATTRIBUTE  (G)
            Number of transport connections initiated by a remote entity
        remoteUnsuccessfulConnections ATTRIBUTE  (G)
            The number of (remote) unsuccessful transport connections
        unassociatedTPDUs ATTRIBUTE  (G)
            The number of TPDUs received which could not be associated
END MANAGED OBJECT CLASS comodeTPM

MANAGED OBJECT CLASS clmodeTPM DERIVED FROM (GMI:clProtocolMachine) CONTAINED
IN (transportEntity)
        DMI:administrativeState ATTRIBUTE  (G, R)
        DMI:communicationsAlarm NOTIFICATION
        DMI:objectCreation NOTIFICATION
        DMI:objectDeletion NOTIFICATION
        DMI:octetsReceivedCounter ATTRIBUTE  (G)
        DMI:octetsSentCounter ATTRIBUTE  (G)
        DMI:operationalState ATTRIBUTE  (G)
        DMI:pdusReceivedCounter ATTRIBUTE  (G)
        DMI:pdusSentCounter ATTRIBUTE  (G)
        DMI:stateChange NOTIFICATION
        GMI:activate ACTION
        GMI:clProtocolMachineId ATTRIBUTE  (G)
        GMI:deactivate ACTION
        GMI:totalRemoteSAPs ATTRIBUTE* (G)
            Counts the number of remote (N) SAPs that the containing clProtocolMachine communicated
        clChecksumOption ATTRIBUTE  (G, R, RWD)
            Enables use of the checksum option in ITU-T Rec. X.234 | ISO/IEC 8602 PDUs
        undeliverablePDUsCounter ATTRIBUTE  (G)
            Counter associated with the notification
END MANAGED OBJECT CLASS clmodeTPM

MANAGED OBJECT CLASS transportEntity DERIVED FROM (GMI:communicationsEntity) CONTAINED
IN (transportSubsystem)
        DMI:communicationsAlarm NOTIFICATION
        DMI:objectCreation NOTIFICATION
        DMI:objectDeletion NOTIFICATION
        DMI:operationalState ATTRIBUTE  (G)
        GMI:communicationsEntityId ATTRIBUTE  (G)
        GMI:localSapNames ATTRIBUTE  (G)
        actualNSAP ATTRIBUTE  (G)
            The actual MO name(s) of the NSAP(s)
        checksumErrorsDetected ATTRIBUTE  (G)
            The number of PDUs received with an incorrect checksum
        protocolErrors ATTRIBUTE  (G)
            Counter associated to protocol errors
        targetNSAP ATTRIBUTE  (G, R, A, RM)
            The MO name(s) of the NSAP(s) to be used
        undecodedNSDUs ATTRIBUTE  (G)
            Number of NSDUs that cannot be attributed
END MANAGED OBJECT CLASS transportEntity

MANAGED OBJECT CLASS transportSubsystem DERIVED FROM (GMI:subsystem) CONTAINED
IN (DMI:system)
        GMI:subsystemId ATTRIBUTE  (G)
END MANAGED OBJECT CLASS transportSubsystem

MANAGED OBJECT CLASS ncmsPM DERIVED FROM (DMI:top)
CONTAINED IN (transportEntity)
   ncmsPMId ATTRIBUTE (G)
   DMI:administrativeState ATTRIBUTE (G,R)
   DMI:operationalState ATTRIBUTE (G)
   GMI:activate ACTION
   GMI:deactivate ACTION
   DMI:communicationsAlarm NOTIFICATION
   DMI:objectCreation NOTIFICATION
   DMI:objectDeletion NOTIFICATION
   DMI:stateChange NOTIFICATION
END MANAGED OBJECT CLASS ncmsPM
```

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```
MANAGED OBJECT CLASS ncc DERIVED FROM (DMI:top)
CONTAINED IN (ncmsPM)
   nccId ATTRIBUTE (G)
   nc-COL ATTRIBUTE (G)
   nc-REC ATTRIBUTE (G)
   nc-REF ATTRIBUTE (G)
   nc-PREF ATTRIBUTE (G)
   nc-Right ATTRIBUTE (G)
   ncRecoveries ATTRIBUTE (G)
   ttrNCTime ATTRIBUTE (G)
   tpdNCTime ATTRIBUTE (G)
   tfrNCTime ATTRIBUTE (G)
   sourceOfAllocation ATTRIBUTE (G)
   GMI:underlyingConnectionName ATTRIBUTE (G)
   DMI:objectCreation NOTIFICATION
   DMI:objectDeletion NOTIFICATION
END MANAGED OBJECT CLASS ncc

MANAGED OBJECT CLASS nccIVMO DERIVED FROM (DMI:top)
CONTAINED IN (ncmsPM)
   nccIVMOId ATTRIBUTE (G)
   nc-COL ATTRIBUTE (G,R,RWD)
   nc-REC ATTRIBUTE (G,R,RWD)
   nc-REF ATTRIBUTE (G,R,RWD)
   nc-PREF ATTRIBUTE (G,R,RWD)
   nc-Right ATTRIBUTE (G,R,RWD)
   ttrNCTime ATTRIBUTE (G,R,RWD)
   tpdNCTime ATTRIBUTE (G,R,RWD)
   tfrNCTime ATTRIBUTE (G,R,RWD)
END MANAGED OBJECT CLASS nccIVMO
```

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Annex C

Examples of the use of relationship attributes

(This annex forms an integral part of this Recommendation | International Standard)

This annex provides examples of the use of relationship attributes, both within the Transport Layer and also between the Transport Layer and its adjoining layers. These examples are not intended to be exhaustive. Relationships for other protocol combinations may be constructed in a similar manner, and a particular implementation may be capable of supporting multiple protocols simultaneously. For example, Transport Connections over CONS at the same time as Transport Connections over CLNS. Such possibilities have only been omitted for reasons of clarity.

In order to illustrate the use of cross layer relationships it has been necessary to include diagrams which represent some of the Session and Network Layer Managed Objects in the Figures C.1 to C.3. However these are for illustrative purposes only, and the relevant layer management Recommendations | Internarional Standards should be consulted for accurate details or complete picture of these managed objects.

The examples are as illustrated in Figures C.1 to C.3.

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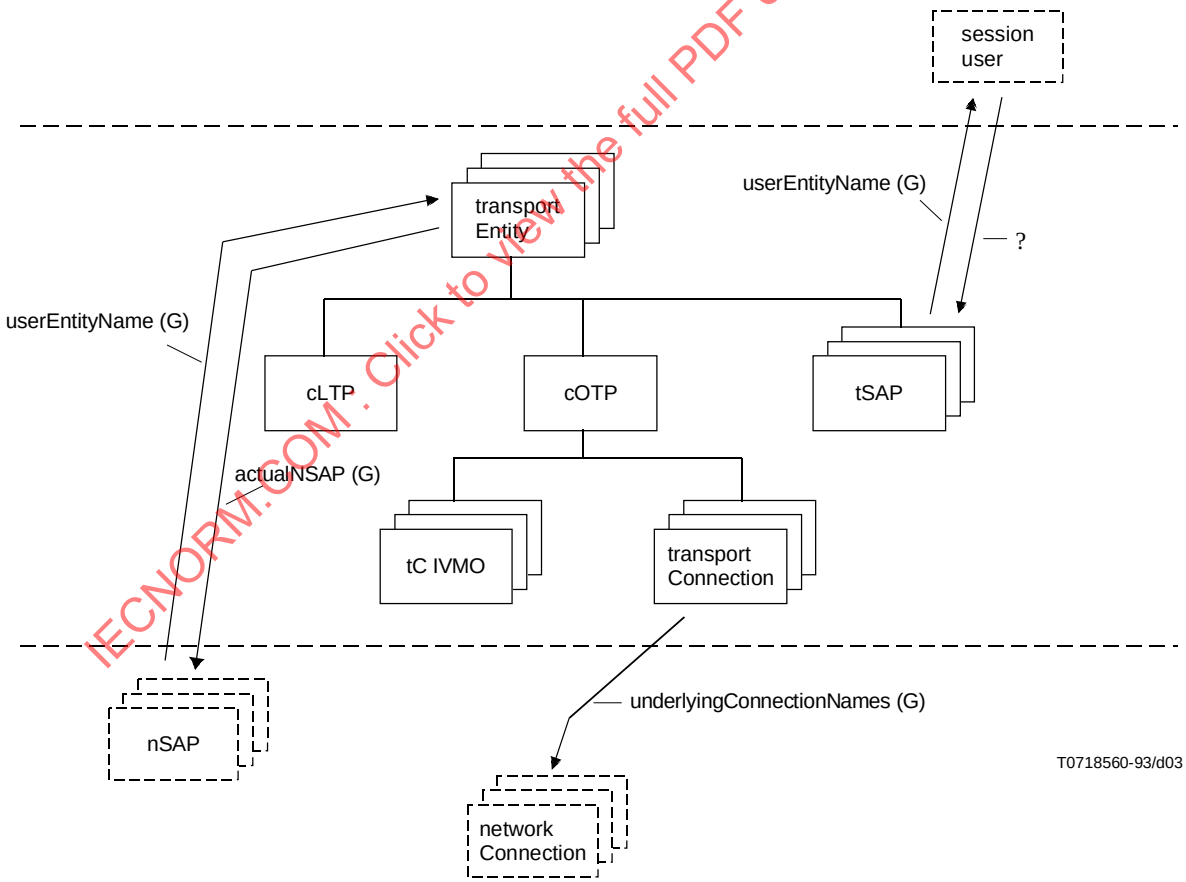

Figure C.1 – COTP over CONS

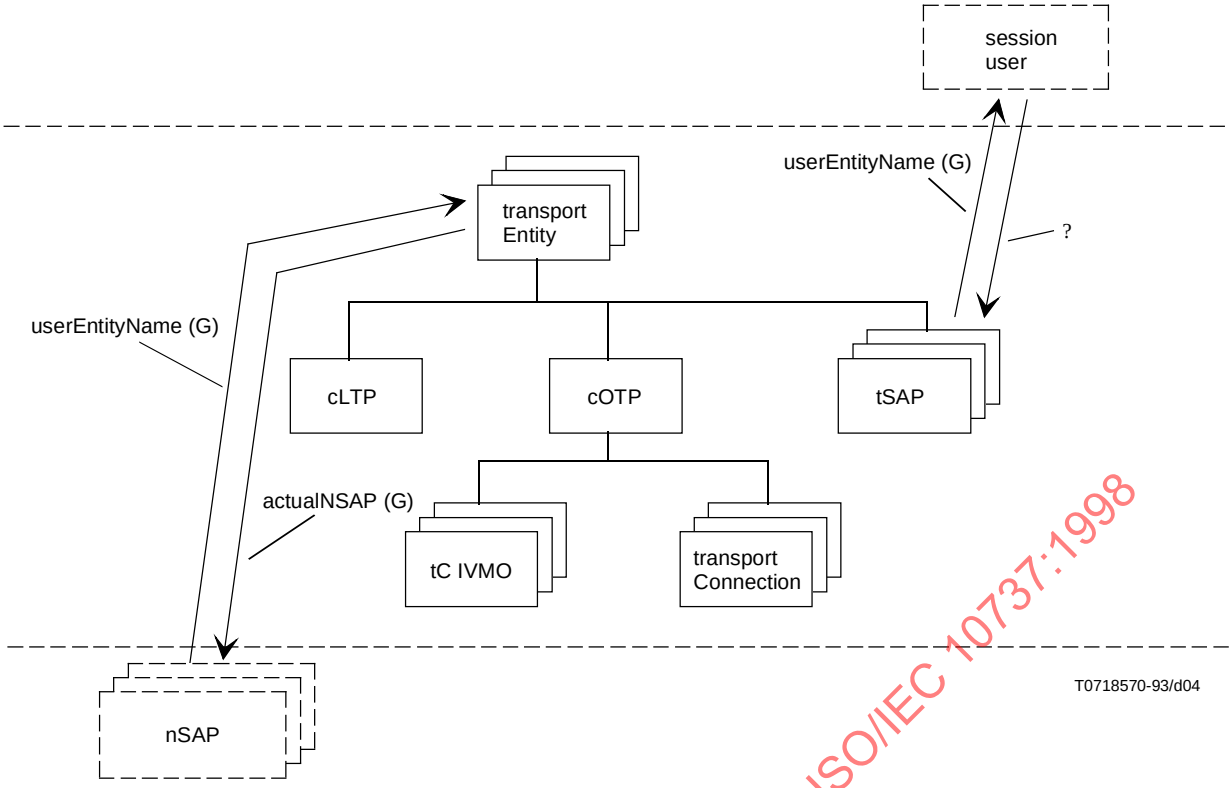

Figure C.2 – COTP over CLNS

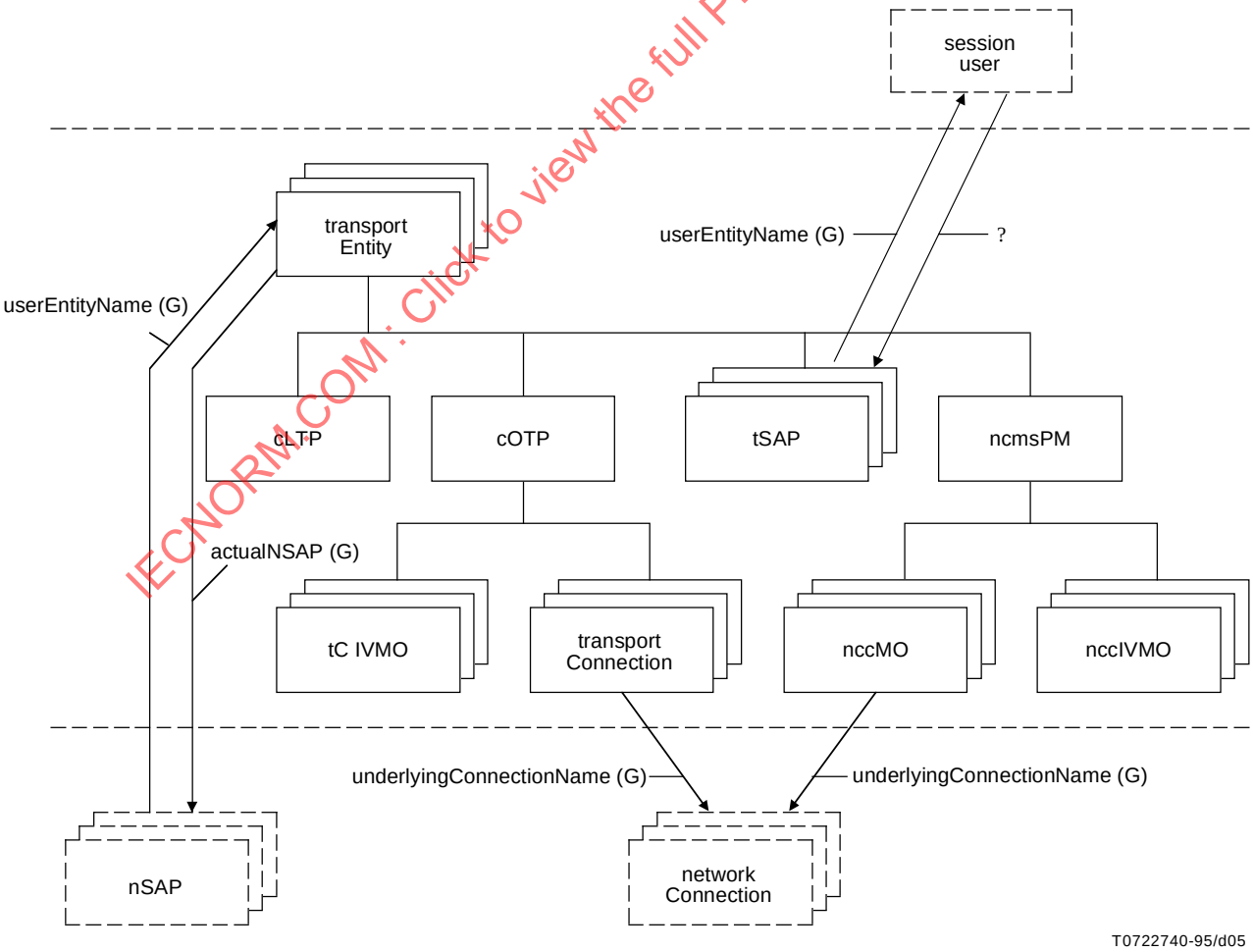

Figure C.3 – COTP using NCMS over CONS

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Annex D[1)]

MCS proforma

(This annex forms an integral part of this Recommendation | International Standard)

D.1 Introduction

D.1.1 Purpose and structure

The Management Conformance Summary (MCS) is a statement by a supplier that identifies an implementation and provides information on whether the implementation claims conformance to any of the listed set of documents that specify conformance requirements to OSI management.

The MCS proforma is a document, in the form of a questionnaire, that when completed by the supplier of an implementation becomes the MCS.

D.1.2 Instructions for completing the MCS proforma to produce an MCS[2)]

The supplier of the implementation shall enter an explicit statement in each of the boxes provided. Specific instruction is provided in the text which precedes each table.

D.1.3 Symbols, abbreviations and terms

For all annexes of this Recommendation | International Standard, the following common notations, defined in ITU-T Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7, are used for the Status column:

- m Mandatory
- o Optional
- c Conditional
- x Prohibited
- – Not applicable or out of scope

NOTE 1 – “c”, “m”, and “o” are prefixed by a “c:” when nested under a conditional or optional item of the same table.

NOTE 2 – “o” may be suffixed by “.N” (where N is a unique number) for mutually exclusive or selectable options among a set of status values. Support of at least one of the choices (from the items with the same values of N) is required.

For all annexes of this Recommendation | International Standard, the following common notations, defined in ITU-T Rec. X.291 | ISO/IEC 9646-2 and ITU-T Rec. X.296 | ISO/IEC 9646-7 are used for the Support column:

- Y Implemented
- N Not implemented
- – No answer required
- Ig The item is ignored (i.e. processed syntactically but not semantically)

D.2 Identification of the implementation

D.2.1 Date of statement

The supplier of the implementation shall enter the date of this statement in the box below. Use the format DD-MM-YYYY.

Date of statement

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1) **Copyright release for MCS proforma**
Users of this Recommendation | International Standard may freely reproduce the MCS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed MCS.

2) Instructions for completing the MCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

D.2.2 Identification of the implementation

The supplier of the implementation shall enter information necessary to uniquely identify the implementation and the system(s) in which it may reside, in the box below.

D.2.3 Contact

The supplier of the implementation shall provide information on whom to contact if there are any queries concerning the content of the MCS, in the box below.

D.3 Identification of the Recommendation | International Standard in which the management information is defined

The supplier of the implementation shall enter the title, reference number and date of the publication of the Recommendation | International Standard which specifies the management information to which conformance is claimed, in the box below.

Recommendation | International Standard to which conformance is claimed

D.3.1 Technical corrigenda implemented

The supplier of the implementation shall enter the reference numbers of implemented technical corrigenda which modify the identified Recommendation | International Standard, in the box below.

D.3.2 Amendments implemented

The supplier of the implementation shall state the titles and reference numbers of implemented amendments to the identified Recommendation | International Standard, in the box below.

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D.4 Management conformance summary

The supplier of implementation shall state the capabilities and features supported and provide summary of conformance claims to Recommendations | International Standards using the tables in this annex.

The supplier of the implementation shall specify the roles that are supported in Table D.1.

Table D.1 –Roles

Index	Roles supported	Status	Support	Additional information
1	Manager role support	o.1		
2	Agent role support	o.1		

The supplier of the implementation shall specify the protocols that are supported in Table D.2.

Table D.2 – Protocol

Index	Protocol supported	Status	Support	Additional information
1	Connection-mode support	o.2		
2	Connectionless-mode support	o.2		

The supplier of the implementation shall specify support for management information in the manager role in Table D.3.

Table D.3 – Manager role minimum conformance requirement

Index	Item	Status	Support	Additional information
1	Operations on managed objects	c1		
2	Object creation notification for Transport entity managed object	c1		
3	Object deletion notification for Transport entity managed object	c1		
4	Communications Alarm notification for Transport entity managed object	c1		
5	Object creation notification for Connectionless-mode transport protocol machine managed object	c2		
6	Object deletion notification for Connectionless-mode transport protocol machine managed object	c2		
7	State change notification for Connectionless-mode transport protocol machine managed object	c2		
8	Communications Alarm notification for Connectionless-mode transport protocol machine managed object	c2		
9	Activate action for Connectionless-mode transport protocol machine managed object	c2		
10	Deactivate action for Connectionless-mode transport protocol machine managed object	c2		
11	Communications information notification for Connection-oriented transport protocol machine managed object	c3		
12	Object creation notification for Connection-oriented transport protocol machine managed object	c3		
13	Object deletion notification for Connection-oriented transport protocol machine managed object	c3		
14	State change notification for Connection-oriented transport protocol machine managed object	c3		
15	Activate action for Connection-oriented transport protocol machine managed object	c3		
16	Deactivate action for Connection-oriented transport protocol machine managed object	c3		
17	Object creation notification for TSAP managed object	c1		
18	Object deletion notification for TSAP managed object	c1		
19	Communications information notification for Transport connection managed object	c3		
20	Object creation notification for Transport connection managed object	c3		

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Table D.3 *(concluded)*

Index	Item	Status	Support	Additional information
21	Object deletion notification for Transport connection managed object	c3		
22	Communications information notification for NCMS protocol machine managed object	c4		
23	Object creation notification for NCMS protocol machine managed object	c4		
24	Object deletion notification for NCMS protocol machine managed object	c4		
25	State change notification for NCMS protocol machine managed object	c4		
26	Activate action for NCMS protocol machine managed object	c4		
27	Deactivate action for NCMS protocol machine managed object	c4		
28	Object creation notification for Network connection control managed object	c4		
29	Object deletion notification for Network connection control managed object	c4		
c1: f D.1/1a then o.3 else – c2: if D.1/1a and D.2/2a then o.3 else – c3: if D.1/1a and D.2/1a then o.3 else – c4: if D.1/1a and D.2/1a then o else –				

The supplier of the implementation shall specify support for management information in the agent role, in Table D.4.

Table D.4 – Agent role minimum conformance requirement

Index	Item	Status	Support	Additional information
1	Transport subsystem managed object	m		
2	Transport entity managed object	m		
3	Connectionless transport protocol machine managed object	c5		
4	Connection oriented transport protocol machine managed object	c6		
5	Transport SAP managed object	m		
6	Transport connection managed object	c6		
7	Transport connection initial values managed object	c6		
8	NCMS protocol machine managed object	c7		
9	Network connection control managed object	c7		
10	Network connection control initial values managed object	c7		
c5: if D.1/2a and D.2/2a then m else – c6: if D.1/2a and D.2/1a then m else – c7: if D.1/2a and D.2/1a then o else –				

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Table D.5 – Logging of event records

Index		Status	Support	Additional information
1	Does the implementation support logging of event records in agent role?	c8		
c8: if D.1/2a then o else –				

NOTE – Conformance to this Recommendation | International Standard does not require conformance to CCITT Rec. X.735 | ISO/IEC 10164-6.

The supplier of the implementation shall provide information on claims of conformance to any of the Recommendations | International Standards summarized in Tables D.6 through D.8. For each Recommendation | International Standard that the supplier of the implementation claims conformance to, the corresponding conformance statement(s) shall be completed, or referenced by, the MCS. The supplier of the implementation shall complete the Support, Table numbers and Additional information columns.

In Tables D.6 to D.8, the Status column is used to indicate whether the supplier of the implementation is required to complete the referenced tables or referenced items. Conformance requirements are as specified in the referenced tables or referenced items and are not changed by the value of the MCS Status column. Similarly, the Support column is used by the supplier of the implementation to indicate completion of the referenced tables or referenced items.

Table D.6 – MOCS support summary

Index	Identification of the document that includes the MOCS proforma	Table numbers of MOCS proforma	Description	Con-straints and values	Status	Support	Table numbers of MOCS	Addi-tional infor-mation
1	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.1 – F.4	transportSubsystem	–	m			
2	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.5 – F.11	transportEntity	–	m			
3	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.12 – F.19	clmodeTPM	–	c9			
4	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.20 – F.27	comodeTPM	–	c10			
5	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.28 – F.32	tSAP	–	m			
6	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.33 – F.39	transportConnection	–	c11			
7	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.40 – F.43	transportConnectionIVMO	–	c12			
8	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.44 – F.47	communicationInformationRecord	–	c13			
9	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.48 – F.54	ncmsPM	–	c14			
10	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.55 – F.59	ncc	–	c15			
11	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table F.60 – F.63	nccIVMO	–	c16			
12	"CCITT Rec. X.730 | ISO/IEC 10164-1"	Table C.1 – C.4	objectCreationRecord	–	c17			
13	"CCITT Rec. X.730 | ISO/IEC 10164-1"	Table C.5 – C.8	objectDeletionRecord	–	c17			
14	"CCITT Rec. X.731 | ISO/IEC 10164-2"	Table C.1 – C.4	stateChangeRecord	–	c17			
15	"CCITT Rec. X.733 | ISO/IEC 10164-4"	Table C.1 – C.4	alarmRecord	–	c17			

c9: if D.4/3a then m else –
c10: f D.4/4a then m else –
c11: if D.4/6a then m else –
c12: if D.4/7a then m else –
c13: if (D.4/4a or D.4/6a or D.4/8a) and D.5/1a then m else –
c14: if D.4/8a then m else –
c15: if D.4/9a then m else –
c16: if D.4/10a then m else –
c17: if D.5/1a then m else –

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Table D.7 – MRCS support summary

Index	Identification of the document that includes the MRCS proforma	Table numbers of MRCS proforma	Description	Constraints and values	Status	Support	Table numbers of MRCS	Additional information
1	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/1	transportSubsystem-system	–	o.4			
2	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": subsystem-system	–	o.4			
3	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/3	transportEntity-transportSubsystem-Automatic	–	o.5			
4	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/4	transportEntity-transportSubsystem-Management	–	o.5			
5	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsEntity-subsystems	–	o.5			
6	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/6	clmodeTPM-transportEntity-Automatic	–	c18			
7	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/7	clmodeTPM-transportEntity-Management	–	c18			
8	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/8	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": clProtocolMachine-entity	–	c18			
9	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/9	comodeTPM-transportEntity-Automatic	–	c19			
10	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/10	comodeTPM-transportEntity-Management	–	c19			
11	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/11	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": coProtocolMachine-entity	–	c19			
12	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/12	tSAP-transportEntity-Automatic	–	o.8			
13	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/13	tSAP-transportEntity-Management	–	o.8			
14	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/14	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sap1-communicationsEntity	–	o.8			
15	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/15	transportConnection-comodeTPM	–	c20			
16	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/16	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": singlePeerConnection-coProtocolMachine	–	c20			
17	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/17	transportConnectionIVMO-comodeTPM	–	c21			
18	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/18	ncmsPM-transportEntity-Automatic	–	c22			
19	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/19	ncmsPM-transportEntity-Management	–	c22			
20	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/20	ncc-ncmsPM	–	c23			
21	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table G.1/21	nccIVMO-ncmsPM	–	c24			
22	"CCITT Rec. X.735 | ISO/IEC 10164-6"	Table D.1/1	logRecord-log	–	c25			

c18: if D.6/3a then o.6 else –
c19: if D.6/4a then o.7 else –
c20: if D.6/6a then o.9 else –
c21: if D.6/7a then m else –
c22: if D.6/8a then o.10 else –
c23: if D.6/9a then m else –
c24: if D.6/10a then m else –
c25: if D.6/8a or D.6/12a or D.6/13a or D.6/14a or D.6/15a then o else –

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Table D.8 – MICS support summary

Index	Identification of the document that includes the MICS proforma	Table numbers of MICS proforma	Description	Con-straints and values	Status	Support	Table numbers of MICS	Addi-tional infor-mation
1	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table E.1 – E.23	Management operations	–	c26			
2	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table E.24	Notifications	–	c27			
3	"ITU-T Rec. X.284 | ISO/IEC 10737"	Table E.25	Actions	–	c28			

c26: if D.3/1a then m else –

c27: if D.3/2a or D.3/3a or D.3/4a or D.3/5a or D.3/6a or D.3/7a or D.3/8a or D.3/11a or D.3/12a or D.3/13a or D.3/14a or D.3/17a or D.3/18a or D.3/19a or D.3/20a or D.3/21a or D.3/22a or D.3/23a or D.3/24a or D.3/25a or D.3/28a or D.3/29a then m else –

c28: if D.3/9a or D.3/10a or D.3/15a or D.3/16a or D.3/26a or D.3/27a then m else –

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Annex E[3)]

MICS proforma

(This annex forms an integral part of this Recommendation | International Standard)

E.1 Introduction

The purpose of this MICS proforma is to provide a mechanism for a supplier of an implementation which claims conformance, in the manager role, to management information specified in this Recommendation | International Standard, to provide conformance information in a standard form.

E.2 Instructions for completing the MICS proforma to produce a MICS[4)]

The MICS proforma contained in this annex is comprised of information in tabular form, in accordance with ITU-T Rec. X.724 | ISO/IEC 10165-6. In addition to the general guidance given in ITU-T Rec. X.724 | ISO/IEC 10165-6, the additional information columns shall be used to identify the object class for which the management operations are supported. The supplier of the implementation shall state which items are supported in the tables below and, if necessary, provide additional information.

E.3 Symbols, abbreviations and terms

The MICS proforma contained in this annex is comprised of information in tabular form, in accordance with ITU-T Rec. X.291 | ISO/IEC 9646-2.

The notations used in the Status and Support columns are specified in D.1.3.

E.4 Statement of conformance to the management information

E.4.1 Attributes

The specifier of a manager role implementation that claims to support management operations on the attributes specified in this Recommendation | International Standard shall import a copy of Tables E.1 through E.11 and complete them.

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3) **Copyright release for MICS proforma**
Users of this Recommendation | International Standard may freely reproduce the MICS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed MICS.

4) Instructions for completing the MICS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

E.4.1.1 The transport subsystem managed object

See Table E.1.

Table E.1 – transportSubsystem Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	–		o.11		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	–		o.11		–		–		–		–		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	–		o.11		–		–		–		–		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	–		o.11		–		–		–		–		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": subsystemId	{2 9 3 5 7 11}	GraphicString	–		o.11		–		–		–		–		

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E.4.1.2 The transport entity managed object

See Table E.2.

Table E.2 – transportEntity Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	actualNSAP	{2 14 0 7 4}	SET OF other	–		o.11		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c1		o.11		–		–		–		–		
3	checksumErrorsDelected	{2 14 0 7 6}	INTEGER	–		o.11		–		–		–		–		
4	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsEntityId	{2 9 3 5 7 0}	GraphicString	c1		o.11		–		–		–		–		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": localSapNames	{2 9 3 5 7 6}	SET OF ObjectInstance	–		o.11		–		–		–		–		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c1		o.11		–		–		–		–		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c1		o.11		–		–		–		–		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	–		o.11		–		–		–		–		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c1		o.11		–		–		–		–		
10	protocolErrors	{2 14 0 7 7}	INTEGER	–		o.11		–		–		–		–		
11	targetNSAP	{2 14 0 7 3}	SET OF other	c1		o.11		o.11		o.11		o.11		–		
12	undecodedNSDUs	{2 14 0 7 5}	INTEGER	–		o.11		–		–		–		–		
c1: if E.16/1a then o.11 else –																

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E.4.1.3 The connectionless-mode transport protocol machine managed object

See Table E.3.

Table E.3 – clmodeTPM Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState	{2 9 3 2 7 31}	ENUMERATED	c2		o.11		o.11		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c2		o.11		–		–		–		–		
3	clChecksumOption	{2 14 0 7 9}	BOOLEAN	c2		o.11		o.11		–		–		o.11		
4	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": clProtocolMachineId	{2 9 3 5 7 2}	GraphicString	c2		o.11		–		–		–		–		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c2		o.11		–		–		–		–		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c2		o.11		–		–		–		–		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	–		o.11		–		–		–		–		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	–		o.11		–		–		–		–		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	–		o.11		–		–		–		–		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c2		o.11		–		–		–		–		

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Table E.3 *(concluded)*

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter	{2 9 3 2 7 86}	INTEGER	–		o.11		–		–		–		–		
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter	{2 9 3 2 7 88}	INTEGER	–		o.11		–		–		–		–		
13	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": totalRemoteSAPs	{2 9 3 5 7 13}	INTEGER	–		o.11		–		–		–		–		
14	undeliverablePDUsCounter	{2 14 0 7 10}	INTEGER	–		o.11		–		–		–		–		
c2: f E.17/1a then o.11 else –																

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E.4.1.4 The connection-oriented transport protocol machine managed object

See Table E.4.

Table E.4 – comodeTPM Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState	{2 9 3 2 7 31}	ENUMERATED	c3		o.11		o.11		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c3		o.11		–		–		–		–		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": coProtocolMachineId	{2 9 3 5 7 3}	GraphicString	c3		o.11		–		–		–		–		
4	localErrorDisconnects	{2 14 0 7 18}	INTEGER	–		o.11		–		–		–		–		
5	localSuccessfulConnections	{2 14 0 7 14}	INTEGER	–		o.11		–		–		–		–		
6	localUnsuccessfulConnections	{2 14 0 7 16}	INTEGER	–		o.11		–		–		–		–		
7	maxConnections	{2 14 0 7 13}	INTEGER	c3		o.11		o.11		–		–		o.11		
8	maxOpenConnections	{2 14 0 7 21}	INTEGER	–		o.11		–		–		–		o.11		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c3		o.11		–		–		–		–		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c3		o.11		–		–		–		–		
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	–		o.11		–		–		–		–		
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	–		o.11		–		–		–		–		
13	openConnections	{2 14 0 7 12}	INTEGER	–		o.11		–		–		–		–		
14	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	–		o.11		–		–		–		–		

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Table E.4 *(concluded)*

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
15	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
16	remoteErrorDisconnects	{2 14 0 7 19}	INTEGER	–		o.11		–		–		–		–		
17	remoteSuccessfulConnections	{2 14 0 7 15}	INTEGER	–		o.11		–		–		–		–		
18	remoteUnsuccessfulConnections	{2 14 0 7 17}	INTEGER	–		o.11		–		–		–		–		
19	unassociatedTPDUs	{2 14 0 7 20}	INTEGER	–		o.11		–		–		–		–		
c3: if E.18/1a then o.11 else –																

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E.4.1.5 The TSAP managed object

See Table E.5.

Table E.5 – tSAP Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c4		o.11		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c4		o.11		–		–		–		–		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c4		o.11		–		–		–		–		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c4		o.11		–		–		–		–		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sap1Address	{2 9 3 5 7 8}	INTEGER	–		o.11		–		–		–		–		
6	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sapId	{2 9 3 5 7 10}	GraphicString	c4		o.11		–		–		–		–		
7	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": userEntityNames	{2 9 3 5 7 15}	SET OF ObjectInstance	–		o.11		–		–		–		–		
c4: if E.19/1a then o.11 else –																

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E.4.1.6 The transport connection managed object

See Table E.6.

Table E.6 – transportConnection Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	acknowledgeTime	{2 14 0 7 47}	SEQUENCE	–		o.11		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	–		o.11		–		–		–		–		
3	calledNSAPAddress	{2 14 0 7 58}	OCTET STRING	–		o.11		–		–		–		–		
4	calledTSelector	{2 14 0 7 56}	OCTET STRING	–		o.11		–		–		–		–		
5	callingNSAPAddress	{2 14 0 7 57}	OCTET STRING	–		o.11		–		–		–		–		
6	callingTSelector	{2 14 0 7 55}	OCTET STRING	–		o.11		–		–		–		–		
7	checksumNonuse	{2 14 0 7 43}	BOOLEAN	–		o.11		–		–		–		–		
8	connectionDirection	{2 14 0 7 60}	ENUMERATED	–		o.11		–		–		–		–		
9	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": connectionId	{2 9 3 5 7 1}	GraphicString	–		o.11		–		–		–		–		
10	explicitFlowControl	{2 14 0 7 45}	BOOLEAN	–		o.11		–		–		–		–		
11	extendedFormat	{2 14 0 7 41}	BOOLEAN	–		o.11		–		–		–		–		
12	inactivityTime	{2 14 0 7 46}	SEQUENCE	–		o.11		–		–		–		–		
13	localReference	{2 14 0 7 53}	INTEGER	–		o.11		–		–		–		–		
14	maxTPDUSize	{2 14 0 7 51}	INTEGER	–		o.11		–		–		–		–		
15	maxTransmissions	{2 14 0 7 52}	INTEGER	–		o.11		–		–		–		–		
16	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	–		o.11		–		–		–		–		
17	networkConnectionIDs	{2 14 0 7 61}	SET OF other	–		o.11		–		–		–		–		
18	networkExpeditedData	{2 14 0 7 42}	BOOLEAN	–		o.11		–		–		–		–		
19	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	–		o.11		–		–		–		–		
20	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	–		o.11		–		–		–		–		
21	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	–		o.11		–		–		–		–		

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Table E.6 *(concluded)*

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
22	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	–		o.11		–		–		–		–		
23	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter	{2 9 3 2 7 86}	INTEGER	–		o.11		–		–		–		–		
24	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusRetransmittedErrorCounter	{2 9 3 2 7 87}	INTEGER	–		o.11		–		–		–		–		
25	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter	{2 9 3 2 7 88}	INTEGER	–		o.11		–		–		–		–		
26	protocolClass	{2 14 0 7 40}	ENUMERATED	–		o.11		–		–		–		–		
27	protocolErrors	{2 14 0 7 7}	INTEGER	–		o.11		–		–		–		–		
28	reassignmentTime	{2 14 0 7 48}	SEQUENCE	–		o.11		–		–		–		–		
29	reassignmentsAfterFailure	{2 14 0 7 62}	INTEGER	–		o.11		–		–		–		–		
30	receiptConfirmation	{2 14 0 7 44}	BOOLEAN	–		o.11		–		–		–		–		
31	relatingNCCMONames	{2 14 0 7 66}	SET OF other	–		o.11		–		–		–		–		
32	remoteReference	{2 14 0 7 54}	INTEGER	–		o.11		–		–		–		–		
33	respondingNSAPAddress	{2 14 0 7 59}	OCTET STRING	–		o.11				–		–		–		
34	retransmissionTime	{2 14 0 7 49}	SEQUENCE	–		o.11		–		–		–		–		
35	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": supportedConnectionNames	{2 9 3 5 7 12}	SET OF ObjectInstance	–		o.11		–		–		–		–		
36	transportExpeditedService	{2 14 0 7 65}	BOOLEAN	–		o.11		–		–		–		–		
37	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": underlyingConnectionNames	{2 9 3 5 7 14}	SET OF ObjectInstance	–		o.11		–		–		–		–		
38	windowTimer	{2 14 0 7 50}	SEQUENCE	–		o.11		–		–		–		–		

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E.4.1.7 The transport connection IVMO

See Table E.7.

Table E.7 – transportConnectionIVMO Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	o.11		o.11		–		–		–		–		
2	checksumNonuse	{2 14 0 7 43}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
3	explicitFlowControl	{2 14 0 7 45}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
4	extendedFormat	{2 14 0 7 41}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
5	inactivityTime	{2 14 0 7 46}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		
6	maxTPDUSize	{2 14 0 7 51}	INTEGER	o.11		o.11		o.11		–		–		o.11		
7	maxTransmissions	{2 14 0 7 52}	INTEGER	o.11		o.11		o.11		–		–		o.11		
8	maximumWindow	{2 14 0 7 36}	INTEGER	o.11		o.11		o.11		–		–		o.11		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
10	networkExpeditedData	{2 14 0 7 42}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	o.11		o.11		–		–		–		–		
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
13	protocolClasses	{2 14 0 7 26}	SET OF ENUMERATED	o.11		o.11		o.11		–		–		o.11		
14	reassignmentTime	{2 14 0 7 48}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		
15	receiptConfirmation	{2 14 0 7 44}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
16	retransmissionTime	{2 14 0 7 49}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		
17	transportConnectionIVMOId	{2 14 0 7 25}	GraphicString	–		o.11		–		–		–		–		
18	transportExpeditedService	{2 14 0 7 65}	BOOLEAN	o.11		o.11		o.11		–		–		o.11		
19	windowTimer	{2 14 0 7 50}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		

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E.4.1.8 The communication information record managed object ["ITU-T Rec. X.723 | ISO/IEC 10165-5:1994"]

See Table E.8.

Table E.8 – communicationInformationRecord Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	–		o.11		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	–		o.11		–		–		–		–		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	–		o.11		–		–		–		–		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	–		o.11		–		–		–		–		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": logRecordId	{2 9 3 2 7 3}		–		o.11		–		–		–		–		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": loggingTime	{2 9 3 2 7 59}		–		o.11		–		–		–		–		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": managedObjectClass	{2 9 3 2 7 60}		–		o.11		–		–		–		–		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": managedObjectInstance	{2 9 3 2 7 61}		–		o.11		–		–		–		–		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": eventType	{2 9 3 2 7 14}		–		o.11		–		–		–		–		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": eventTime	{2 9 3 2 7 13}		–		o.11		–		–		–		–		
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": notificationIdentifier	{2 9 3 2 7 16}		–		o.11		–		–		–		–		

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Table E.8 *(concluded)*

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": correlatedNotifications	{2 9 3 2 7 12}		–		o.11		–		–		–		–		
13	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": additionalText	{2 9 3 2 7 7}		–		o.11		–		–		–		–		
14	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": additionalInformation	{2 9 3 2 7 6}		–		o.11		–		–		–		–		
15	informationType	{2 14 0 7 43}		–		o.11		–		–		–		–		
16	informationData	{2 14 0 7 45}		–		o.11		–		–		–		–		

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E.4.1.9 The NCMS Protocol Machine managed object

See Table E.9.

Table E.9 – ncmsPM Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState	{2 9 3 2 7 31}	ENUMERATED	c5		o.11		o.11		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c5		o.11		–		–		–		–		
3	ncmsPMId	{2 14 0 7 67}	GraphicString	c5		o.11		–		–		–		–		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c5		o.11		–		–		–		–		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": ObjectClass	{2 9 3 2 7 65}	ObjectClass	c5		o.11		–		–		–		–		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	–		o.11		–		–		–		–		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c5		o.11		–		–		–		–		
c5: if E.21/1a then o.11 else –																

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E.4.1.10 The Network Connection Control managed object

See Table E.10.

Table E.10 – ncc Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	o.11		o.11		–		–		–		–		
2	nccId	{2 14 0 7 68}	GraphicString	o.11		o.11		–		–		–		–		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
4	ncc-COL	{2 14 0 7 70}	ENUMERATED	–		o.11		–		–		–		–		
5	nc-REC	{2 14 0 7 72}	ENUMERATED	–		o.11		–		–		–		–		
6	nc-REF	{2 14 0 7 73}	INTEGER	–		o.11		–		–		–		–		
7	nc-PREF	{2 14 0 7 71}	ENUMERATED	–		o.11		–		–		–		–		
8	nc-Right	{2 14 0 7 75}	ENUMERATED	–		o.11		–		–		–		–		
9	ncRecoveries	{2 14 0 7 74}	INTEGER	–		o.11		–		–		–		–		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	o.11		o.11		–		–		–		–		
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
12	ttrNCTime	{2 14 0 7 79}	SEQUENCE	–		o.11		–		–		–		–		
13	tpdNCTime	{2 14 0 7 78}	SEQUENCE	–		o.11		–		–		–		–		
14	tfrNCTime	{2 14 0 7 77}	SEQUENCE	–		o.11		–		–		–		–		
15	sourceOfAllocation	{2 14 0 7 76}	ENUMERATED	–		o.11		–		–		–		–		
16	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": underlyingConnectionNames	{2 9 3 5 7 14}	SET OF ObjectInstance	–		o.11		–		–		–		–		

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E.4.1.11 The Network Connection Control Initial Value managed object

See Table E.11.

Table E.11 – nccIVMO Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	o.11		o.11		–		–		–		–		
2	nccIVMOId	{2 14 0 7 69}	GraphicString	o.11		o.11		–		–		–		–		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
4	ncc-COL	{2 14 0 7 70}	ENUMERATED	o.11		o.11		o.11		–		–		o.11		
5	nc-REC	{2 14 0 7 72}	ENUMERATED	o.11		o.11		o.11		–		–		o.11		
6	nc-PREF	{2 14 0 7 71}	ENUMERATED	o.11		o.11		o.11		–		–		o.11		
7	nc-Right	{2 14 0 7 75}	ENUMERATED	o.11		o.11		o.11		–		–		o.11		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	o.11		o.11		–		–		–		–		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	o.11		o.11		–		–		–		–		
10	ttrNCTime	{2 14 0 7 79}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		
11	tpdNCTime	{2 14 0 7 78}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		
12	tfrNCTime	{2 14 0 7 77}	SEQUENCE	o.11		o.11		o.11		–		–		o.11		

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E.4.2 Attribute groups

The specifier of a manager role implementation that claims to support management operations on the attribute groups specified in this Recommendation | International Standard shall import a copy of Tables E.12 through E.15 and complete them.

E.4.2.1 The transport entity managed object

See Table E.12.

Table E.12 – transportEntity Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	checksumErrorsDetected protocolErrors undecodedNSDUs	o.11		–		

E.4.2.2 The connectionless-mode transport protocol machine managed object

See Table E.13.

Table E.13 – clmodeTPM Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter undeliverablePDUsCounter	o.11		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": state	{2 9 3 2 8 1}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	o.11		–		

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E.4.2.3 The connection-oriented transport protocol machine managed object

See Table E.14.

Table E.14 – comodeTPM Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	localErrorDisconnects localSuccessfulConnections localUnsuccessfulConnections maxOpenConnections "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter openConnections remoteErrorDisconnects remoteSuccessfulConnections remoteUnsuccessfulConnections unassociatedTPDUs	o.11		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": state	{2 9 3 2 8 1}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	o.11		–		

E.4.2.4 The transport connection managed object

See Table E.15.

Table E.15 – transportConnection Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusRetransmittedErrorCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter protocolErrors	o.11		–		

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E.4.3 Create and delete management operations

The specifier of a manager role implementation that claims to support the create or delete management operations on the managed objects specified in this Recommendation | International Standard shall import a copy of Tables E.16 through E.23 and complete them.

E.4.3.1 The transport entity managed object

See Table E.16.

Table E.16 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	transportEntity MO	o		
1.1	Create with reference object	–	–		
2	Delete support	transportEntity MO	o		

E.4.3.2 The connectionless-mode transport protocol machine managed object

See Table E.17.

Table E.17 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	clmodeTPM MO	o		
1.1	Create with reference object	–	–		
2	Delete support	clmodeTPM MO	o		

E.4.3.3 The connection-oriented transport protocol machine managed object

See Table E.18.

Table E.18 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	comodeTPM MO	o		
1.1	Create with reference object	–	–		
2	Delete support	comodeTPM MO	o		

E.4.3.4 The TSAP managed object

See Table E.19.

Table E.19 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	tSAP MO	o		
1.1	Create with reference object	–	–		
2	Delete support	tSAP MO	o		

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E.4.3.5 The transport connection intial value managed object

See Table E.20.

Table E.20 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	transportConnection IVMO	o.11		
1.1	Create with reference object	–	o.11		
2	Delete support	transportConnection IVMO	o.11		

E.4.3.6 The NCMS protocol machine managed object

See Table E.21.

Table E.21 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	ncmsPM MO	o		
1.1	Create with reference object	–	–		
2	Delete support	ncmsPM MO	o		

E.4.3.7 The network connection control managed object

See Table E.22.

Table E.22 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	ncc MO	o.11		
1.1	Create with reference object	–	o.11		
2	Delete support	ncc MO	o.11		

E.4.3.8 The network connection control initial value managed object

See Table E.23.

Table E.23 – Create and delete support

Index	Operation	Constraints and values	Status	Support	Additional information
1	Create support	ncc IVMO MO	o.11		
1.1	Create with reference object	–	o.11		
2	Delete support	ncc IVMO MO	o.11		

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E.4.4 Notifications

The specifier of a manager role implementation that claims to support the notifications specified in this Recommendation | International Standard shall import a copy of Table E.24 and complete it.

Table E.24 – Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": communicationsAlarm	{2 9 3 2 10 2}		c6				1.1	AlarmInfo		**Information Syntax** SEQUENCE	c6		
								1.1.1	probableCause	{2 9 3 2 7 18}	CHOICE	c:m		
								1.1.1.1	globalValue	–	OBJECT IDENTIFIER	c:m		
								1.1.1.2	localValue	–	INTEGER	c:m		
								1.1.2	specificProblems	{2 9 3 2 7 27}	SET OF CHOICE	c:m		
								1.1.2.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:m		
								1.1.2.2	INTEGER	–	INTEGER	c:m		
								1.1.3	perceivedSeverity	{2 9 3 2 7 17}	ENUMERATED	c:m		
								1.1.4	backedUpStatus	{2 9 3 2 7 11}	BOOLEAN	c:m		
								1.1.5	backUpObject	{2 9 3 2 7 40}	ObjectInstance	c:m		
								1.1.6	trendIndication	{2 9 3 2 7 30}	ENUMERATED	c:m		
								1.1.7	thresholdInfo	{2 9 3 2 7 29}	SEQUENCE	c:m		

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Table E.24 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
					Con-firmed	Non-con-firmed								
								1.1.7.1	triggeredThreshold	–	AttributeId	c:m		
								1.1.7.2	observedValue	–	CHOICE	c:m		
								1.1.7.2.1	integer	–	INTEGER	c:m		
								1.1.7.2.2	real	–	REAL	c:m		
								1.1.7.3	thresholdLevel	–	CHOICE	c:m		
								1.1.7.3.1	up	–	SEQUENCE	c:m		
								1.1.7.3.1.1	high	–	CHOICE	c:m		
								1.1.7.3.1.1.1	integer	–	INTEGER	c:m		
								1.1.7.3.1.1.2	real	–	REAL	c:m		
								1.1.7.3.1.2	low	–	CHOICE	c:m		
								1.1.7.3.1.2.1	integer	–	INTEGER	c:m		
								1.1.7.3.1.2.2	real	–	REAL	c:m		
								1.1.7.3.2	down	–	SEQUENCE	c:m		
								1.1.7.3.2.1	high	–	CHOICE	c:m		
								1.1.7.3.2.1.1	integer	–	INTEGER	c:m		
								1.1.7.3.2.1.2	real	–	REAL	c:m		
								1.1.7.3.2.2	low	–	CHOICE	c:m		
								1.1.7.3.2.2.1	integer	–	INTEGER	c:m		
								1.1.7.3.2.2.2	real	–	REAL	c:m		
								1.1.7.4	armTime	–	Generalized Time	c:m		
								1.1.8	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	c:m		

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Table E.24 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
					Con-firmed	Non-con-firmed								
								1.1.9	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	c:m		
								1.1.9.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								1.1.9.2	sourceObjectInst	–	ObjectInstance	c:m		
								1.1.10	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	c:m		
								1.1.10.1	attributeID	–	AttributeId	c:m		
								1.1.10.2	oldAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								1.1.10.3	newAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								1.1.11	monitoredAttributes	{2 9 3 2 7 15}	SET OF Attribute	c:m		
								1.1.12	proposedRepairActions	{2 9 3 2 7 19}	SET OF CHOICE	c:m		
								1.1.12.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:m		
								1.1.12.2	INTEGER	–	INTEGER	c:m		
								1.1.13	additionalText	{2 9 3 2 7 7}	GraphicString	c:m		
								1.1.14	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	c:m		
								1.1.14.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.14.2	significance	–	BOOLEAN	c:m		
								1.1.14.3	information	–	ANY DEFINED BY identifier	c:m		

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Table E.24 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectCreation	{2 9 3 2 10 6}		c7				2.1	ObjectInfo		**Information Syntax** SEQUENCE	c7		
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	c:m		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	c:m		
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	c:m		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	c:m		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:m		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	c:m		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	c:m		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:m		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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Table E.24 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectDeletion	{2 9 3 2 10 7}		c8				3.1	ObjectInfo		**Information Syntax** SEQUENCE	c8		
								3.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	c:m		
								3.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	c:m		
								3.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	c:m		
								3.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	c:m		
								3.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								3.1.4.2	sourceObjectInst	–	ObjectInstance	c:m		
								3.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	c:m		
								3.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	c:m		
								3.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								3.1.6.2	significance	–	BOOLEAN	c:m		
								3.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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Table E.24 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": stateChange	{2 9 3 2 10 14}		c9				4.1	StateChangeInfo		**Information Syntax** SEQUENCE	c9		
								4.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	c:m		
								4.1.2	attributeIdentifierList	{2 9 3 2 7 8}	SET OF AttributeId	c:m		
								4.1.3	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	c:m		
								4.1.3.1	attributeID	–	AttributeId	c:m		
								4.1.3.2	oldAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								4.1.3.3	newAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								4.1.4	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	c:m		
								4.1.5	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	c:m		
								4.1.5.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								4.1.5.2	sourceObjectInst	–	ObjectInstance	c:m		
								4.1.6	additionalText	{2 9 3 2 7 7}	GraphicString	c:m		
								4.1.7	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	c:m		
								4.1.7.1	identifier	–	OBJECT IDENTIFIER	c:m		
								4.1.7.2	significance	–	BOOLEAN	c:m		
								4.1.7.3	information	–	ANY DEFINED BY identifier	c:m		

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Table E.24 *(concluded)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsInformation	{2 9 3 5 10 0}		c10				5.1	CommunicationsInformation		**Information Syntax** SEQUENCE	c10		
								5.1.1	informationType	{2 9 3 5 7 5}	OBJECT IDENTIFIER	c:m		
								5.1.2	informationData	{2 9 3 5 7 4}	SET OF SEQUENCE	c:m		
								5.1.2.1	identifier	–	OBJECT IDENTIFIER	c:m		
								5.1.2.2	significance	–	BOOLEAN	c:m		
								5.1.2.3	information	–	ANY DEFINED BY identifier	c:m		

c6: if D.3/4a or D.3/8a then m else –
c7: if D.3/2a or D.3/5a or D.3/12a or D.3/17a or D.3/20a or D.3/23a or D.3/28a then m else –
c8: if D.3/3a or D.3/6a or D.3/13a or D.3/18a or D.3/21a or D.3/24a or D.3/29a then m else –
c9: if D.3/7a or D.3/14a or D.3/25a then m else –
c10: if D.3/11 or D.3/19 or D.3/22a then m else –

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E.4.5 Actions

The specifier of a manager role implementation that claims to support the actions specified in this Recommendation | International Standard shall import a copy of Table E.25 and complete it.

Table E.25 – Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information	Subindex	Action field name label	Constraints and values	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": activate	{2 9 3 5 9 0}		c11			1.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	c11		
							1.1.1	identifier	OBJECT IDENTIFIER	c:m		
							1.1.2	significance	BOOLEAN	c:o		
							1.1.3	information	ANY DEFINED BY identifier	c:m		
							1.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	c:m		
							1.2.1	identifier	OBJECT IDENTIFIER	c:m		
							1.2.2	significance	BOOLEAN	c:m		
							1.2.3	information	ANY DEFINED BY identifier	c:m		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": deactivate	{2 9 3 5 9 1}		c12			2.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	c12		
							2.1.1	identifier	OBJECT IDENTIFIER	c:m		
							2.1.2	significance	BOOLEAN	c:o		

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Table E.25 *(concluded)*

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information	Subindex	Action field name label	Constraints and values	Status	Support	Additional information
							2.1.3	information	ANY DEFINED BY identifier	c:m		
							2.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	c:m		
							2.2.1	identifier	OBJECT IDENTIFIER	c:m		
							2.2.2	significance	BOOLEAN	c:m		
							2.2.3	information	ANY DEFINED BY identifier	c:m		
c11: if D.3/9a or D.3/15a or D.3/26a then m else – c12: if D.3/10a or D.3/16a or D.3/27a then m else –												

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E.4.6 Parameters

The specifier of a manager role implementation that claims to support the parameters specified in this Recommendation | International Standard shall import a copy of Table E.26 and complete it.

Table E.26 – Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	tEProtocolErrorPDUHeader	{2 14 0 5 1}	EVENT-INFO communicationsAlarm	c13		
2	tEProtocolErrorReasonCode	{2 14 0 5 3}	EVENT-INFO communicationsAlarm	c13		
3	tEProtocolErrorSourceAddress	{2 14 0 5 2}	EVENT-INFO communicationsAlarm	c13		
4	clPMPDUHeader	{2 14 0 5 4}	EVENT-INFO communicationsAlarm	c14		
5	clPMSourceAddress	{2 14 0 5 5}	EVENT-INFO communicationsAlarm	c14		
6	calledNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	c15		
7	calledTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	c15		
8	callingNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	c15		
9	callingTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	c15		
10	networkConnectionIDs-PAR	(Not registered)	EVENT-INFO communicationsInformation	c15		
11	rejectionCause	{2 14 0 5 7}	EVENT-INFO communicationsInformation	c15		
12	calledNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
13	calledTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
14	callingNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
15	callingTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
16	networkConnectionIDs-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
17	connectionDirection-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
18	maxTPDUSize-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
19	protocolClass-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
20	respondingNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	c16		
21	transportConnectionName	(Not registered)	EVENT-INFO communicationsInformation	c16		
22	calledNSAPAddress-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
23	calledTSelector-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
24	callingNSAPAddress-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
25	callingTSelector-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
26	connectionDirection-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
27	maxTPDUSize-PAR	(Not registered)	EVENT-INFO objectCreation	c17		

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Table E.26 *(concluded)*

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
28	networkConnectionIDs-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
29	protocolClass-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
30	respondingNSAPAddress-PAR	(Not registered)	EVENT-INFO objectCreation	c17		
31	transportConnectionName	(Not registered)	EVENT-INFO objectCreation	c18		
32	calledNSAPAddress-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
33	calledTSelector-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
34	callingNSAPAddress-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
35	callingTSelector-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
36	connectionDirection-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
37	maxTPDUSize-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
38	networkConnectionIDs-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
39	objectDeletionCause	{2 14 0 5 6}	EVENT-INFO objectDeletion	c18		
40	protocolClass-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
41	respondingNSAPAddress-PAR	(Not registered)	EVENT-INFO objectDeletion	c18		
42	transportConnectionName	(Not registered)	EVENT-INFO objectDeletion	c18		
43	ncmsPMPDUHeader	(Not registered)	EVENT-INFO communicationsInformation	c19		
44	ncmsPMSourceAddress	(Not registered)	EVENT-INFO communicationsInformation	c19		

c13: f D.3/4a then m else –
c14: if D.3/8a then m else –
c15: if D.3/11a then m else –
c16: if D.3/19a then m else –
c17: if D.3/20a then m else –
c18: if D.3/21a then m else –
c19: if D.3/22a then m else –

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Annex F[5)]

MOCS proforma

(This annex forms an integral part of this Recommendation | International Standard)

F.1 Introduction

The purpose of this MOCS proforma is to provide a mechanism for a supplier of an implementation of a Recommendation | International Standard which claims conformance to a managed object class, to provide conformance information in a standard form.

F.1.1 Instructions for completing the MOCS proforma to produce a MOCS[6)]

The MOCS proforma contained in this annex is comprised of information in tabular form, in accordance with ITU-T Rec. X.724 | ISO/IEC 10165-6. The supplier of the implementation shall state which items are supported in the tables below and if necessary provide additional information.

F.1.2 Symbols, abbreviations and terms

The MOCS proforma contained in this annex is comprised of information in tabular form, in accordance with ITU-T Rec. X.291 | ISO/IEC 9646-2.

The notations used in the Status and Support columns are specified in D.1.3.

F.2 The transport subsystem managed object

F.2.1 Statement of conformance to the managed object class

See Table F.1.

Table F.1 – transportSubsystem Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	transportSubsystem	{2 14 0 3 1}		

If the answer to the actual class question in Table F.1 is No, the supplier of the implementation shall fill in the actual class support Table F.2.

Table F.2 – transportSubsystem Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

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5) **Copyright release for MOCS proforma**

Users of this Recommendation | International Standard may freely reproduce the MOCS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed MOCS. Instructions for completing the MOCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

6) Instructions for completing the MOCS proforma are specified in ITU-T Rec. X.724 | ISO/IEC 10165-6.

F.2.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.3.

Table F.3 – transportSubsystem Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c1		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c2		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": subsystemP1		Mandatory	m		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
5	transportSubsystem-P		Mandatory	m		
c1: if F.1/1b then – else m c2: if F.3/1a then m else –						

F.2.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.4. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.4 – transportSubsystem Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c3		c4		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	x		m		x		–		–		x		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	x		m		x		–		–		x		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c5		c6		c5		c5		c5		c5		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": subsystemId	{2 9 3 5 7 11}	GraphicString	x		m		x		–		–		–		

c3: if F.3/1a then x else –
c4: if F.3/1a then m else –
c5: if F.3/2a then x else –
c6: if F.3/2a then m else –

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F.3 The transport entity managed object

F.3.1 Statement of conformance to the managed object class

See Table F.5.

Table F.5 – transportEntity Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	transportEntity	{2 14 0 3 2}		

If the answer to the actual class question in Table F.5 is No, the supplier of the implementation shall fill in the actual class support Table F.6.

Table F.6 – transportEntity Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

F.3.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.7.

Table F.7 – transportEntity Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c7		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsEntityP1		Mandatory	m		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c8		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
5	transportEntity-P		Mandatory	m		
c7: if F.5/1b then – else m c8: if F.7/1a then m else –						

F.3.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.8. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.8 – transportEntity Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	actualNSAP	{2 14 0 7 4}	SET OF other	c9		m		c10		c10		c10		c10		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c11		c12		–		–		–		–		
3	checksumErrorsDetected	{2 14 0 7 6}	INTEGER	c9		m		c10		–		–		c10		
4	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsEntityId	{2 9 3 5 7 0}	GraphicString	c13		m		x		–		–		x		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": localSapNames	{2 9 3 5 7 6}	SET OF ObjectInstance	c9		m		c10		c10		c10		c10		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c13		m		x		–		–		x		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c14		m		x		–		–		x		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	x		m		x		–		–		x		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c15		c16		c17		c17		c17		c17		
10	protocolErrors	{2 14 0 7 7}	INTEGER	c9		m		c10		–		–		c10		
11	targetNSAP	{2 14 0 7 3}	SET OF other	c14		m		m		m		m		c10		
12	undecodedNSDUs	{2 14 0 7 5}	INTEGER	c9		m		c10		–		–		c10		

c9: if F.5/1b or G.1/3a or G.1/4a then x else –
c10: if F.5/1b then x else –
c11: if F.7/1a then (if G.1/4a then o else x) else –
c12: if F.7/1a then m else –
c13: if G.1/4a then o else x
c14: if G.1/4a then m else x
c15: if F.7/3a then (if G.1/4a then o else x) else –
c16: if F.7/3a then m else –
c17: if F.7/3a then x else –

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F.3.4 Attribute group

See Table F.9.

Table F.9 – transportEntity Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	checksumErrorsDetected protocolErrors undecodedNSDUs	m		c10		

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F.3.5 Notifications

See Table F.10.

Table F.10 – transportEntity Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": communicationsAlarm	{2 9 3 2 10 2}		m			tEProtocolErrorPDUHeader tEProtocolErrorReasonCode tEProtocolErrorSourceAddress	1.1	AlarmInfo		**Information Syntax** SEQUENCE	m		
								1.1.1	probableCause	{2 9 3 2 7 18}	CHOICE	m		
								1.1.1.1	globalValue	–	OBJECT IDENTIFIER	o.1		
								1.1.1.2	localValue	–	INTEGER	o.1		
								1.1.2	specificProblems	{2 9 3 2 7 27}	SET OF CHOICE	o		
								1.1.2.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:o.2		
								1.1.2.2	INTEGER	–	INTEGER	c:o.2		
								1.1.3	perceivedSeverity	{2 9 3 2 7 17}	ENUMERATED	m		
								1.1.4	backedUpStatus	{2 9 3 2 7 11}	BOOLEAN	o		
								1.1.5	backUpObject	{2 9 3 2 7 40}	ObjectInstance	o		
								1.1.6	trendIndication	{2 9 3 2 7 30}	ENUMERATED	o		
								1.1.7	thresholdInfo	{2 9 3 2 7 29}	SEQUENCE	o		
								1.1.7.1	triggeredThreshold	–	AttributeId	c:m		
								1.1.7.2	observedValue		CHOICE	c:m		
								1.1.7.2.1	integer	–	INTEGER	c:o.3		
								1.1.7.2.2	real	–	REAL	c:o.3		
								1.1.7.3	thresholdLevel	–	CHOICE	c:o		
								1.1.7.3.1	up	–	SEQUENCE	c:o.4		

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Table F.10 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								1.1.7.3.1.1	high	–	CHOICE	c:m		
								1.1.7.3.1.1.1	integer	–	INTEGER	c:o.5		
								1.1.7.3.1.1.2	real	–	REAL	c:o.5		
								1.1.7.3.1.2	low	–	CHOICE	c:o		
								1.1.7.3.1.2.1	integer	–	INTEGER	c:o.6		
								1.1.7.3.1.2.2	real	–	REAL	c:o.6		
								1.1.7.3.2	down	–	SEQUENCE	c:o.4		
								1.1.7.3.2.1	high	–	CHOICE	c:m		
								1.1.7.3.2.1.1	integer	–	INTEGER	c:o.7		
								1.1.7.3.2.1.2	real	–	REAL	c:o.7		
								1.1.7.3.2.2	low	–	CHOICE	c:m		
								1.1.7.3.2.2.1	integer	–	INTEGER	c:o.8		
								1.1.7.3.2.2.2	real	–	REAL	c:o.8		
								1.1.7.4	armTime	–	GeneralizedTime	c:o		
								1.1.8	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								1.1.9	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								1.1.9.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								1.1.9.2	sourceObjectInst	–	ObjectInstance	c:o		
								1.1.10	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	o		
								1.1.10.1	attributeID	–	AttributeId	c:m		
								1.1.10.2	oldAttributeValue	–	ANY DEFINED BY attributeID	c:o		
								1.1.10.3	newAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								1.1.11	monitoredAttributes	{2 9 3 2 7 15}	SET OF Attribute	o		
								1.1.12	proposedRepairActions	{2 9 3 2 7 19}	SET OF CHOICE	o		

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Table F.10 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								1.1.12.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:o.9		
								1.1.12.2	INTEGER	–	INTEGER	c:o.9		
								1.1.13	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								1.1.14	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								1.1.14.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.14.2	significance	–	BOOLEAN	c:o		
								1.1.14.3	information	–	ANY DEFINED BY identifier	c:m		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectCreation	{2 9 3 2 10 6}		m				2.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:o		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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Table F.10 *(concluded)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectDeletion	{2 9 3 2 10 7}		m				3.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								3.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								3.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								3.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								3.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								3.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								3.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								3.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								3.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								3.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								3.1.6.2	significance	–	BOOLEAN	c:o		
								3.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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F.3.6 Parameters

See Table F.11.

Table F.11 – transportEntity Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	tEProtocolErrorPDUHeader	{2 14 0 5 1}	EVENT-INFO communicationsAlarm	m		
2	tEProtocolErrorReasonCode	{2 14 0 5 3}	EVENT-INFO communicationsAlarm	m		
3	tEProtocolErrorSourceAddress	{2 14 0 5 2}	EVENT-INFO communicationsAlarm	m		

F.4 The connectionless-mode transport protocol machine managed object

F.4.1 Statement of conformance to the managed object class

See Table F.12.

Table F.12 – clmodeTPM Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	clmodeTPM	{2 14 0 3 3}		

If the answer to the actual class question in Table F.12 is No, the supplier of the implementation shall fill in the actual class support Table F.13.

Table F.13 – clmodeTPM Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

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F.4.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.14.

Table F.14 – clmodeTPM Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c18		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": clProtocolMachineP1		Mandatory	m		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": clProtocolMachineP2	{2 9 3 5 4 1}	"there is a requirement to keep statistics concerning remote connectionless protocol machines that this protocol machine communicates with"	o		
4	clmodeTPM-P		Mandatory	m		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c19		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
c18: if F.12/1b then – else m c19: if F.14/1a or F.14/3a then m else –						

F.4.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.15. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.15 – clmodeTPM Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState	{2 9 3 2 7 31}	ENUMERATED	c20		m		m		–		–		c21		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c22		c23		–		–		–		–		
3	clChecksumOption	{2 14 0 7 9}	BOOLEAN	c20		m		m		–		–		m		
4	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": clProtocolMachineId	{2 9 3 5 7 2}	GraphicString	c24		m		x		–		–		x		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c24		m		x		–		–		x		
6	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c20		m		x		–		–		x		
7	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	c25		m		c21		–		–		c21		
8	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	c25		m		c21		–		–		c21		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	x		m		x		–		–		x		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c26		c27		c28		c28		c28		c28		

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Table F.15 *(concluded)*

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace		Add		Remove		Set to default		Additional information
				Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter	{2 9 3 2 7 86}	INTEGER	c25		m		c21		–		–		c21		
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter	{2 9 3 2 7 88}	INTEGER	c25		m		c21		–		–		c21		
13	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": totalRemoteSAPs	{2 9 3 5 7 13}	INTEGER	c29		c30		c21		–		–		c21		
14	undeliverablePDUsCounter	{2 14 0 7 10}	INTEGER	c25		m		c21		–		–		c21		

c20: if G.1/7a then m else x
c21: if F.12/1b then x else –
c22: if F.14/1a then (if G.1/7a then o else x) else –
c23: if F.14/1a then m else –
c24: if G.1/7a then o else x
c25: if F.12/1b or G.1/6a or G.1/8a then x else –
c26: if F.14/5a then (if G.1/7a then o else x) else –
c27: if F.14/5a then m else –
c28: if F.14/5a then x else –
c29: if F.14/3a and (F.12/1b or G.1/6a or G.1/8a) then x else –
c30: if F.14/3a then m else –

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F.4.4 Attribute groups

See Table F.16.

Table F.16 – clmodeTPM Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter undeliverablePDUsCounter	m		c21		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": state	{2 9 3 2 8 1}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	m		c21		

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F.4.5 Notifications

See Table F.17.

Table F.17 – clmodeTPM Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
					Con-firmed	Non-con-firmed								
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": communicationsAlarm	{2 9 3 2 10 2}		m			clPMPDUHeader clPMSourceAddress	1.1	AlarmInfo		**Information Syntax** SEQUENCE	m		
								1.1.1	probableCause	{2 9 3 2 7 18}	CHOICE	m		
								1.1.1.1	globalValue	–	OBJECT IDENTIFIER	o.1		
								1.1.1.2	localValue	–	INTEGER	o.1		
								1.1.2	specificProblems	{2 9 3 2 7 27}	SET OF CHOICE	o		
								1.1.2.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:o.2		
								1.1.2.2	INTEGER	–	INTEGER	c:o.2		
								1.1.3	perceivedSeverity	{2 9 3 2 7 17}	ENUMERATED	m		
								1.1.4	backedUpStatus	{2 9 3 2 7 11}	BOOLEAN	o		
								1.1.5	backUpObject	{2 9 3 2 7 40}	ObjectInstance	o		
								1.1.6	trendIndication	{2 9 3 2 7 30}	ENUMERATED	o		
								1.1.7	thresholdInfo	{2 9 3 2 7 29}	SEQUENCE	o		
								1.1.7.1	triggeredThreshold	–	AttributeId	c:m		
								1.1.7.2	observedValue	–	CHOICE	c:m		
								1.1.7.2.1	integer	–	INTEGER	c:o.3		
								1.1.7.2.2	real	–	REAL	c:o.3		
								1.1.7.3	thresholdLevel	–	CHOICE	c:o		
								1.1.7.3.1	up	–	SEQUENCE	c:o.4		
								1.1.7.3.1.1	high	–	CHOICE	c:m		
								1.1.7.3.1.1.1	integer	–	INTEGER	c:o.5		
								1.1.7.3.1.1.2	real	–	REAL	c:o.5		

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Table F.17 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								1.1.7.3.1.2	low	–	CHOICE	c:o		
								1.1.7.3.1.2.1	integer	–	INTEGER	c:o.6		
								1.1.7.3.1.2.2	real	–	REAL	c:o.6		
								1.1.7.3.2	down	–	SEQUENCE	c:o.4		
								1.1.7.3.2.1	high	–	CHOICE	c:m		
								1.1.7.3.2.1.1	integer	–	INTEGER	c:o.7		
								1.1.7.3.2.1.2	real	–	REAL	c:o.7		
								1.1.7.3.2.2	low	–	CHOICE	c:m		
								1.1.7.3.2.2.1	integer	–	INTEGER	c:o.8		
								1.1.7.3.2.2.2	real	–	REAL	c:o.8		
								1.1.7.4	armTime	–	GeneralizedTime	c:o		
								1.1.8	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								1.1.9	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								1.1.9.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								1.1.9.2	sourceObjectInst	–	ObjectInstance	c:o		
								1.1.10	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	o		
								1.1.10.1	attributeID	–	AttributeId	c:m		
								1.1.10.2	oldAttributeValue	–	ANY DEFINED BY attributeID	c:o		
								1.1.10.3	newAttributeValue	–	ANY DEFINED BY attributeID	c:m		
								1.1.11	monitoredAttributes	{2 9 3 2 7 15}	SET OF Attribute	o		
								1.1.12	proposedRepairActions	{2 9 3 2 7 19}	SET OF CHOICE	o		

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Table F.17 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								1.1.12.1	OBJECT IDENTIFIER	–	OBJECT IDENTIFIER	c:o.9		
								1.1.12.2	INTEGER	–	INTEGER	c:o.9		
								1.1.13	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								1.1.14	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								1.1.14.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.14.2	significance	–	BOOLEAN	c:o		
								1.1.14.3	information	–	ANY DEFINED BY identifier	c:m		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectCreation	{2 9 3 2 10 6}		m				2.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:o		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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Table F.17 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectDeletion	{2 9 3 2 10 7}		m				3.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								3.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								3.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								3.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								3.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								3.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								3.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								3.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								3.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								3.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								3.1.6.2	significance	–	BOOLEAN	c:o		
								3.1.6.3	information	–	ANY DEFINED BY identifier	c:m		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": stateChange	{2 9 3 2 10 14}		m				4.1	StateChangeInfo		**Information Syntax** SEQUENCE	m		
								4.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								4.1.2	attributeIdentifierList	{2 9 3 2 7 8}	SET OF AttributeId	o		
								4.1.3	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	m		

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Table F.17 *(concluded)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
					Con-firmed	Non-con-firmed								
								4.1.3.1	attributeID	–	AttributeId	m		
								4.1.3.2	oldAttributeValue	–	ANY DEFINED BY attributeID	o		
								4.1.3.3	newAttributeValue	–	ANY DEFINED BY attributeID	m		
								4.1.4	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								4.1.5	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								4.1.5.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								4.1.5.2	sourceObjectInst	–	ObjectInstance	c:o		
								4.1.6	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								4.1.7	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								4.1.7.1	identifier	–	OBJECT IDENTIFIER	c:m		
								4.1.7.2	significance	–	BOOLEAN	c:o		
								4.1.7.3	information	–	ANY DEFINED BY identifier	c:m		

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F.4.6 Actions

See Table F.18.

Table F.18 – clmodeTPM Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information	Subindex	Action field name label	Constraints and values	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": activate	{2 9 3 5 9 0}		m			1.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	m		
							1.1.1	identifier	OBJECT IDENTIFIER	m		
							1.1.2	significance	BOOLEAN	o		
							1.1.3	information	ANY DEFINED BY identifier	m		
							1.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	m		
							1.2.1	identifier	OBJECT IDENTIFIER	m		
							1.2.2	significance	BOOLEAN	o		
							1.2.3	information	ANY DEFINED BY identifier	m		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": deactivate	{2 9 3 5 9 1}		m			2.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	m		
							2.1.1	identifier	OBJECT IDENTIFIER	m		
							2.1.2	significance	BOOLEAN	o		
							2.1.3	information	ANY DEFINED BY identifier	m		
							2.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	m		
							2.2.1	identifier	OBJECT IDENTIFIER	m		
							2.2.2	significance	BOOLEAN	o		
							2.2.3	information	ANY DEFINED BY identifier	m		

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F.4.7 Parameters

See Table F.19.

Table F.19 – clmodeTPM Parameter support

Index	Package template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	clPMPDUHeader	{2 14 0 5 4}	EVENT-INFO communicationsAlarm	m		
2	clPMSourceAddress	{2 14 0 5 5}	EVENT-INFO communicationsAlarm	m		

F.5 The connection-oriented transport protocol machine managed object

F.5.1 Statement of conformance to the managed object class

See Table F.20.

Table F.20 – comodeTPM Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	comodeTPM	{2 14 0 3 4}		

If the answer to the actual class question in Table F.20 is No, the supplier of the implementation shall fill in the actual class support Table F.21.

Table F.21 – comodeTPM Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

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F.5.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.22.

Table F.22 – comodeTPM Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c31		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": coProtocolMachineP1		Mandatory	m		
3	comodeTPM-P		Mandatory	m		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c32		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
c31: if F.20/1b then – else m c32: if F.22/1a then m else –						

F.5.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.23. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.23 – comodeTPM Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState	{2 9 3 2 7 31}	ENUMERATED	c33		m		m		–		–		c34		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c35		c36		–		–		–		–		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": coProtocolMachineId	{2 9 3 5 7 3}	GraphicString	c37		m		x		–		–		x		
4	localErrorDisconnects	{2 14 0 7 18}	INTEGER	c38		m		c34		–		–		c34		
5	localSuccessfulConnections	{2 14 0 7 14}	INTEGER	c38		m		c34		–		–		c34		
6	localUnsuccessfulConnections	{2 14 0 7 16}	INTEGER	c38		m		c34		–		–		c34		
7	maxConnections	{2 14 0 7 13}	INTEGER	c33		m		m		–		–		m		
8	maxOpenConnections	{2 14 0 7 21}	INTEGER	c33		m		c34		–		–		m		
9	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c37		m		x		–		–		x		
10	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c33		m		x		–		–		x		
11	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	c38		m		c34		–		–		c34		
12	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	c38		m		c34		–		–		c34		
13	openConnections	{2 14 0 7 12}	INTEGER	c38		m		c34		–		–		c34		
14	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	{2 9 3 2 7 35}	ENUMERATED	x		m		x		–		–		x		

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Table F.23 *(concluded)*

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
15	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c39		c40		c41		c41		c41		c41		
16	remoteErrorDisconnects	{2 14 0 7 19}	INTEGER	c38		m		c34		–		–		c34		
17	remoteSuccessfulConnections	{2 14 0 7 15}	INTEGER	c38		m		c34		–		–		c34		
18	remoteUnsuccessfulConnections	{2 14 0 7 17}	INTEGER	c38		m		c34		–		–		c34		
19	unassociatedTPDUs	{2 14 0 7 20}	INTEGER	c38		m		c34		–		–		c34		

c33: if G.1/10a then m else x
c34: if F.20/1b then x else –
c35: if F.22/1a then (if G.1/10a then o else x) else –
c36: if F.22/1a then m else –
c37: if G.1/10a then o else x
c38: if F.20/1b or G.1/9a or G.1/11a then x else –
c39: if F.22/4a then (if G.1/10a then o else x) else –
c40: if F.22/4a then m else –
c41: if F.22/4a then x else –

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F.5.4 Attribute group

See Table F.24.

Table F.24 – comodeTPM Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	localErrorDisconnects localSuccessfulConnections localUnsuccessfulConnections maxOpenConnections "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter openConnections remoteErrorDisconnects remoteSuccessfulConnections remoteUnsuccessfulConnections unassociatedTPDUs	m		c34		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": state	{2 9 3 2 8 1}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": administrativeState "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": operationalState	m		c34		

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F.5.5 Notifications

See Table F.25.

Table F.25 – comodeTPM Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsInformation	{2 9 3 5 10 0}		m			calledNSAPAddress-PAR calledTSelector-PAR callingNSAPAddress-PAR callingTSelector-PAR networkConnectionIDs-PAR rejectionCause	1.1	CommunicationsInformation		**Information Syntax** SEQUENCE	m		
								1.1.1	informationType	{2 9 3 5 7 5}	OBJECT IDENTIFIER	m		
								1.1.2	informationData	{2 9 3 5 7 4}	SET OF SEQUENCE	o		
								1.1.2.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.2.2	significance	–	BOOLEAN	c:o		
								1.1.2.3	information	–	ANY DEFINED BY identifier	c:m		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectCreation	{2 9 3 2 10 6}		m				2.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		

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Table F.25 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:o		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectDeletion	{2 9 3 2 10 7}		m				3.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								3.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								3.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								3.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								3.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								3.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								3.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								3.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								3.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		

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Table F.25 *(concluded)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								3.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								3.1.6.2	significance	–	BOOLEAN	c:o		
								3.1.6.3	information	–	ANY DEFINED BY identifier	c:m		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": stateChange	{2 9 3 2 10 14}		m				4.1	StateChangeInfo		**Information Syntax** SEQUENCE	m		
								4.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								4.1.2	attributeIdentifierList	{2 9 3 2 7 8}	SET OF AttributeId	o		
								4.1.3	stateChangeDefinition	{2 9 3 2 7 28}	SET OF SEQUENCE	m		
								4.1.3.1	attributeID	–	AttributeId	m		
								4.1.3.2	oldAttributeValue	–	ANY DEFINED BY attributeID	o		
								4.1.3.3	newAttributeValue	–	ANY DEFINED BY attributeID	m		
								4.1.4	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								4.1.5	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								4.1.5.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								4.1.5.2	sourceObjectInst	–	ObjectInstance	c:o		
								4.1.6	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								4.1.7	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								4.1.7.1	identifier	–	OBJECT IDENTIFIER	c:m		
								4.1.7.2	significance	–	BOOLEAN	c:o		
								4.1.7.3	information	–	ANY DEFINED BY identifier	c:m		

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F.5.6 Actions

See Table F.26.

Table F.26 – comodeTPM Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information	Subindex	Action field name label	Constraints and values	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": activate	{2 9 3 5 9 0}		m			1.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	m		
							1.1.1	identifier	OBJECT IDENTIFIER	m		
							1.1.2	significance	BOOLEAN	o		
							1.1.3	information	ANY DEFINED BY identifier	m		
							1.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	m		
							1.2.1	identifier	OBJECT IDENTIFIER	m		
							1.2.2	significance	BOOLEAN	o		
							1.2.3	information	ANY DEFINED BY identifier	m		
2	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": deactivate	{2 9 3 5 9 1}		m			2.1	ActionInfo	**Information Syntax** SET OF SEQUENCE	m		
							2.1.1	identifier	OBJECT IDENTIFIER	m		
							2.1.2	significance	BOOLEAN	o		
							2.1.3	information	ANY DEFINED BY identifier	m		
							2.2	ActionReply	**Reply Syntax** SET OF SEQUENCE	m		
							2.2.1	identifier	OBJECT IDENTIFIER	m		
							2.2.2	significance	BOOLEAN	o		
							2.2.3	information	ANY DEFINED BY identifier	m		

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F.5.7 Parameters

See Table F.27.

Table F.27 – comodeTPM Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	calledNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	m		
2	calledTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	m		
3	callingNSAPAddress-PAR	(Not registered)	EVENT-INFO communicationsInformation	m		
4	callingTSelector-PAR	(Not registered)	EVENT-INFO communicationsInformation	m		
5	networkConnectionIDs-PAR	(Not registered)	EVENT-INFO communicationsInformation	m		
6	rejectionCause	{2 14 0 5 7}	EVENT-INFO communicationsInformation	m		

F.6 The TSAP managed object

F.6.1 Statement of conformance to the managed object class

See Table F.28.

Table F.28 – tSAP Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	tSAP	{2 14 0 3 5}		

If the answer to the actual class question in Table F.28 is No, the supplier of the implementation shall fill in the actual class support Table F.29.

Table F.29 – tSAP Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

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F.6.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.30.

Table F.30 – tSAP Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c42		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c43		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sap1P1		Mandatory	m		
4	tSAP-P		Mandatory	m		
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
c42: if F.28/1b then – else m c43: if F.30/1a then m else –						

F.6.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.31. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.31 – tSAP Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c44		c45		–		–		–		–		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	c46		m		x		–		–		x		
3	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	c47		m		x		–		–		x		
4	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c48		c49		c50		c50		c50		c50		
5	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sap1Address	{2 9 3 5 7 8}	INTEGER	c51		m		c52		–		–		c52		
6	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": sapId	{2 9 3 5 7 10}	GraphicString	c46		m		x		–		–		x		
7	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": userEntityNames	{2 9 3 5 7 15}	SET OF ObjectInstance	c51		m		c52		c52		c52		c52		

c44: if F.30/1a then (if G.1/13a then o else x) else –
c45: if F.30/1a then m else –
c46: if G.1/13a then o else x
c47: if G.1/13a then m else x
c48: if F.30/2a then (if G.1/13a then o else x) else –
c49: if F.30/2a then m else –
c50: if F.30/2a then x else –
c51: if F.28/1b or G.1/12a or G.1/14a then x else –
c52: if F.28/1b then x else –

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F.6.4 Notifications

See Table F.32.

Table F.32 – tSAP Notification support

					Support									
Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Con-firmed	Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectCreation	{2 9 3 2 10 6}		m				1.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								1.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								1.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								1.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								1.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								1.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								1.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								1.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								1.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								1.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.6.2	significance	–	BOOLEAN	c:o		
								1.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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Table F.32 *(concluded)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectDeletion	{2 9 3 2 10 7}		m				2.1	ObjectInfo		**Information Syntax** SEQUENCE	m		
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:o		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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F.7 The transport connection managed object

F.7.1 Statement of conformance to the managed object class

See Table F.33.

Table F.33 – transportConnection Managed object class support

Index	Managed object class template label	Value of object identifier for class	Support of all mandatory features? (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	transportConnection	{2 14 0 3 7}		

If the answer to the actual class question in Table F.33 is No, the supplier of the implementation shall fill in the actual class support Table F.34.

Table F.34 – transportConnection Actual class support

Index	Managed object class template for actual class	Value of object identifier for managed object class definition of actual class	Additional information

F.7.2 Packages

The supplier of the implementation shall state whether or not the packages specified by this managed object of this class are supported, in Table F.35.

Table F.35 – transportConnection Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphicPackage	{2 9 3 2 4 17}	"if an object supports allomorphism"	c53		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packagesPackage	{2 9 3 2 4 16}	"any registered package, other than this package has been instantiated"	c54		
3	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": singlePeerConnectionP1		Mandatory	m		
4	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": singlePeerConnectionP2	{2 9 3 5 4 2}	"The names of the connections supported by this connection can be provided"	o		

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Table F.35 *(concluded)*

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
5	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": topPackage		Mandatory	m		
6	transportConnection-P		Mandatory	m		
7	transportConnectionClass1-P	{2 14 0 4 5}	"At the initiating side, present if class 1 is requested or can be accepted following class negotiation procedures. At the responding side, present if class 1 is chosen."	o		
8	transportConnectionClass2-P	{2 14 0 4 6}	"At the initiating side, present if class 2 is requested or can be accepted following class negotiation procedures. At the responding side, present if class 2 is chosen."	o		
9	transportConnectionClass3-P	{2 14 0 4 7}	"At the initiating side, present if class 3 is requested or can be accepted following class negotiation procedures. At the responding side, present if class 3 is chosen."	o		
10	transportConnectionClass4-P	{2 14 0 4 8}	"At the initiating side, present if class 4 is requested or can be accepted following class negotiation procedures. At the responding side, present if class 4 is chosen."	o		
11	transportConnectionNCMS-P	{2 14 0 4 9}	"NCMS is implemented"	o		
c53: if F.33/1b then – else m c54: if F.35/1a or F.35/2a or F.35/4a or F.35/7a or F.35/8a or F.35/9a or F.35/10a or F.35/11a then m else –						

F.7.3 Attributes

The supplier of the implementation shall state whether or not the attributes specified by all of the packages instantiated in a managed object of this class are supported, in the Support and Additional information columns of Table F.36. The supplier of the implementation shall indicate support for each of the operations for each attribute supported.

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Table F.36 – transportConnection Attribute support

				Set by create		Get		Replace		Add		Remove		Set to default		
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Additional information
1	acknowledgeTime	{2 14 0 7 47}	SEQUENCE	c55		c56		c57		–		–		c57		
2	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": allomorphs	{2 9 3 2 7 50}	SET OF ObjectClass	c58		c59		–		–		–		–		
3	calledNSAPAddress	{2 14 0 7 58}	OCTET STRING	x		m		c60		–		–		c60		
4	calledTSelector	{2 14 0 7 56}	OCTET STRING	x		m		c60		–		–		c60		
5	callingNSAPAddress	{2 14 0 7 57}	OCTET STRING	x		m		c60		–		–		c60		
6	callingTSelector	{2 14 0 7 55}	OCTET STRING	x		m		c60		–		–		c60		
7	checksumNonuse	{2 14 0 7 43}	BOOLEAN	c55		c56		c57		–		–		c57		
8	connectionDirection	{2 14 0 7 60}	ENUMERATED	x		m		c60		–		–		c60		
9	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": connectionId	{2 9 3 5 7 1}	GraphicString	x		m		x		–		–		x		
10	explicitFlowControl	{2 14 0 7 45}	BOOLEAN	c61		c62		c63		–		–		c63		
11	extendedFormat	{2 14 0 7 41}	BOOLEAN	c55		c56		c57		–		–		c57		
12	inactivityTime	{2 14 0 7 46}	SEQUENCE	c55		c56		c57		–		–		c57		
13	localReference	{2 14 0 7 53}	INTEGER	x		m		c60		–		–		c60		
14	maxTPDUSize	{2 14 0 7 51}	INTEGER	x		m		c60		–		–		c60		
15	maxTransmissions	{2 14 0 7 52}	INTEGER	c55		c56		c57		–		–		c57		
16	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": nameBinding	{2 9 3 2 7 63}	OBJECT IDENTIFIER	x		m		x		–		–		x		
17	networkConnectionIDs	{2 14 0 7 61}	SET OF other	x		m		c60		c60		c60		c60		
18	networkExpeditedData	{2 14 0 7 42}	BOOLEAN	c64		c65		c66		–		–		c66		
19	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": objectClass	{2 9 3 2 7 65}	ObjectClass	x		m		x		–		–		x		

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Table F.36 *(continued)*

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace		Add		Remove		Set to default		Additional information
				Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	
20	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter	{2 9 3 2 7 78}	INTEGER	x		m		c60		–		–		c60		
21	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter	{2 9 3 2 7 80}	INTEGER	x		m		c60		–		–		c60		
22	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": packages	{2 9 3 2 7 66}	SET OF OBJECT IDENTIFIER	c67		c68		c67		c67		c67		c67		
23	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter	{2 9 3 2 7 86}	INTEGER	x		m		c60		–		–		c60		
24	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusRetransmittedErrorCounter	{2 9 3 2 7 87}	INTEGER	x		m		c60		–		–		c60		
25	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter	{2 9 3 2 7 88}	INTEGER	x		m		c60		–		–		c60		
26	protocolClass	{2 14 0 7 40}	ENUMERATED	x		m		c60		–		–		c60		
27	protocolErrors	{2 14 0 7 7}	INTEGER	x		m		c60		–		–		c60		
28	reassignmentTime	{2 14 0 7 48}	SEQUENCE	c69		c70		c71		–		–		c71		
29	reassignmentsAfterFailure	{2 14 0 7 62}	INTEGER	c69		c70		c71		–		–		c71		
30	receiptConfirmation	{2 14 0 7 44}	BOOLEAN	c64		c65		c66		–		–		c66		
31	relatingNCCMONames	{2 14 0 7 66}	SET OF other	c72		c73		c74		c74		c74		c74		
32	remoteReference	{2 14 0 7 54}	INTEGER	x		m		c60		–		–		c60		
33	respondingNSAPAddress	{2 14 0 7 59}	OCTET STRING	x		m		c60		–		–		c60		

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Table F.36 *(concluded)*

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace		Add		Remove		Set to default		Additional information
				Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	
34	retransmissionTime	{2 14 0 7 49}	SEQUENCE	c55		c56		c57		–		–		c57		
35	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": supportedConnectionNames	{2 9 3 5 7 12}	SET OF ObjectInstance	c75		c76		c77		c77		c77		c77		
36	transportExpeditedService	{2 14 0 7 65}	BOOLEAN	c55		c56		c57		–		–		c57		
37	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": underlyingConnectionNames	{2 9 3 5 7 14}	SET OF ObjectInstance	x		m		c60		c60		c60		c60		
38	windowTimer	{2 14 0 7 50}	SEQUENCE	c61		c62		c63		–		–		c63		

c55: if F.35/10a then x else –
c56: if F.35/10a then m else –
c57: if F.33/1b and F.35/10a then x else –
c58: if F.35/1a then x else –
c59: if F.35/1a then m else –
c60: if F.33/1b then x else –
c61: if F.35/8a then x else –
c62: if F.35/8a then m else –
c63: if F.33/1b and F.35/8a then x else –
c64: if F.35/7a then x else –
c65: if F.35/7a then m else –
c66: if F.33/1b and F.35/7a then x else –
c67: if F.35/2a then x else –
c68: if F.35/2a then m else –
c69: if F.35/9a then x else –
c70: if F.35/9a then m else –
c71: if F.33/1b and F.35/9a then x else –
c72: if F.35/11a then x else –
c73: if F.35/11a then m else –
c74: if F.33/1b and F.35/11a then x else –
c75: if F.35/4a then x else –
c76: if F.35/4a then m else –
c77: if F.33/1b and F.35/4a then x else –

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F.7.4 Attribute group

See Table F.37.

Table F.37 – transportConnection Attribute group support

				Get		Set to default		
Index	Attribute group template label	Value of object identifier for attribute group	Constraints and values	Status	Support	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": counters	{2 9 3 5 8 0}	"CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": octetsSentCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusReceivedCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusRetransmittedErrorCounter "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992": pdusSentCounter protocolErrors	m		c60		

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F.7.5 Notifications

See Table F.38.

Table F.38 – transportConnection Notification support

					Support									
Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Con-firmed	Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
1	"ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5:1994": communicationsInformation	{2 9 3 5 10 0}		m			calledNSAPAddress-PAR calledTSelector-PAR callingNSAPAddress-PAR callingTSelector-PAR connectionDirection-PAR maxTPDUSize-PAR networkConnectionIDs-PAR protocolClass-PAR respondingNSAPAddress-PAR transportConnectionName	1.1	Communications Information		**Information Syntax** SEQUENCE	m		

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Table F.38 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support: Con-firmed	Support: Non-con-firmed	Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
								1.1.1	informatio nType	{2 9 3 5 7 5}	OBJECT IDENTIFIER	m		
								1.1.2	informatio nData	{2 9 3 5 7 4}	SET OF SEQUENCE	o		
								1.1.2.1	identifier	–	OBJECT IDENTIFIER	c:m		
								1.1.2.2	significance	–	BOOLEAN	c:o		
								1.1.2.3	information	–	ANY DEFINED BY identifier	c:m		
2	“CCITT Rec. X.721 (1992) | ISO/IEC 10165-2:1992”: objectCreation	{2 9 3 2 10 6}		m			calledNSA PAddress-PAR calledTSele ctor-PAR callingNSA PAddress-PAR callingTSele ctor-PAR connectio nDirection-PAR maxTPDUS ize-PAR networkCon nectionIDs-PAR protocolCla ss-PAR respondin gNSAPAdd ress-PAR transportCo nnectionNa me	2.1	ObjectInfo		**Information Syntax** SEQUENCE	m		

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Table F.38 *(continued)*

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information	Subindex	Notification field name label	Value of object identifier of attribute type associated with field	Constraints and values	Status	Support	Additional information
					Con-firmed	Non-con-firmed								
								2.1.1	sourceIndicator	{2 9 3 2 7 26}	ENUMERATED	o		
								2.1.2	attributeList	{2 9 3 2 7 9}	SET OF Attribute	o		
								2.1.3	notificationIdentifier	{2 9 3 2 7 16}	INTEGER	o		
								2.1.4	correlatedNotifications	{2 9 3 2 7 12}	SET OF SEQUENCE	o		
								2.1.4.1	correlatedNotifications	{2 9 3 2 7 12}	SET OF INTEGER	c:m		
								2.1.4.2	sourceObjectInst	–	ObjectInstance	c:o		
								2.1.5	additionalText	{2 9 3 2 7 7}	GraphicString	o		
								2.1.6	additionalInformation	{2 9 3 2 7 6}	SET OF SEQUENCE	o		
								2.1.6.1	identifier	–	OBJECT IDENTIFIER	c:m		
								2.1.6.2	significance	–	BOOLEAN	c:o		
								2.1.6.3	information	–	ANY DEFINED BY identifier	c:m		

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