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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for the
network signalling

Extension of Q.751.1 for SAAL signalling links

ITU-T Recommendation Q.2751.1

(Previously CCITT Recommendation)

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

ITU-T RECOMMENDATION Q.2751.1

EXTENSION OF Q.751.1 FOR SAAL SIGNALLING LINKS

Summary

This Recommendation contains a network element information model for managing MTP Level 2 and SAAL signalling links.

This Recommendation reuses Recommendation Q.751.1 and allows the usage of one object model for both SAAL (Recommendation Q.2140) – and MTP Level 2 (Recommendation Q.703; dealing with its high-speed link appendix is for further study) – signalling links.

Management of a mixed MTP network is for further study.

Source

ITU-T Recommendation Q.2751.1 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 12th of September 1997.

FOREWORD

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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Recommendation Q.2751.1

EXTENSION OF Q.751.1 FOR SAAL SIGNALLING LINKS

(Geneva, 1997)

1 Scope

This Recommendation contains the additions and changes to Recommendation Q.751.1 which are necessary to manage network elements of broadband MTP including its lower layers. As a consequence it is possible to use the resulting object model for the management of both SAAL (Recommendation Q.2140) – and MTP Level 2 (Recommendation Q.703; dealing with its high-speed link appendix is for further study) – signalling links.

Management of mixed MTP networks is for further study.

2 Intellectual Property Rights

No patent information from a patent holder concerning the content of this Recommendation was received by the ITU-T.

3 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- ITU-T Recommendation A.3 (1996), *Elaboration and presentation of texts and development of terminology and other means of expression for Recommendations of the ITU Telecommunication Standardization Sector*.
- ITU-T Recommendation I.751 (1996), *Asynchronous transfer mode management of the network element view*.
- CCITT Recommendation M.3100 (1992), *Generic network information model*.
- ITU-T Recommendation Q.703 (1996), *Signalling link*.
- ITU-T Recommendation Q.750 (1993), *Overview of Signalling System No. 7 management*.
- ITU-T Recommendation Q.751.1 (1995), *Network element information model for the message transfer part*.
- ITU-T Recommendation Q.2100 (1994), *B-ISDN signalling ATM adaptation layer (SAAL) – Overview description*.
- ITU-T Recommendation Q.2110 (1994), *B-ISDN ATM adaptation layer – Service Specific Connection Oriented Protocol (SSCOP)*.
- ITU-T Recommendation Q.2140 (1995), *B-ISDN ATM adaptation layer – Service specific coordination function for signalling at the network node interface (SSCF at NNI)*.

- ITU-T Recommendation Q.2210 (1996), *Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140.*
- CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1).*
- ITU-T Recommendation X.680 (1994) | ISO/IEC 8824-1:1995, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- CCITT Recommendation X.700 (1992), *Management framework for Open Systems Interconnection (OSI) for CCITT applications.*
- CCITT Recommendation X.701 (1992) | ISO/IEC 10040:1992, *Information technology – Open Systems Interconnection – Systems management overview.*
- CCITT Recommendation X.710 (1991), *Common management information service definition for CCITT applications.*
- CCITT Recommendation X.711 (1991), *Common management information protocol specification for CCITT applications.*
- 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 (1993) | ISO/IEC 10165-6:1994, *Information technology – Open Systems Interconnection – Structure of management information: Requirements and guidelines for Implementation Conformance Statement Proformas associated with OSI management.*
- CCITT Recommendation X.731 (1992) | ISO/IEC 10164-2:1992, *Information technology – Open Systems Interconnection – Systems management: State management function.*
- CCITT Recommendation X.733 (1992) | ISO/IEC 10164-4:1992, *Information technology – Open Systems Interconnection – Systems management: Alarm reporting function.*

4 Terms and definitions

For the purposes of this Recommendation, the following definitions apply.

This Recommendation makes use of the following terms defined in Recommendation M.3010:

- a) performance management;
- b) configuration management;
- c) fault management;
- d) Telecommunications Management Network (TMN).

This Recommendation makes use of the following term defined in Recommendation X.700:

- object instance.

This Recommendation makes use of the following terms defined in Recommendation X.701:

- a) managed object class;
- b) management information;
- c) notification.

This Recommendation makes use of the following term defined in Recommendation X.710:

- attribute.

This Recommendation makes use of the following terms defined in Recommendation X.720:

- a) inheritance;
- b) name binding;
- c) package;
- d) parameter;
- e) action;
- f) actual class;
- g) attribute group;
- h) behaviour;
- i) conditional package;
- j) instantiation;
- k) superclass.

This Recommendation makes use of the following terms defined in X.701:

- a) managed object class;
- b) managed object conformance statement;
- c) MOCS proformas;
- d) notification.

This Recommendation makes use of the following terms defined in Recommendation X.724:

- a) Managed Relationship Conformance Statement (MRCS);
- b) MRCS proforma.

5 Abbreviations

Abbreviations regarding the MTP are listed in Table 1/Q.704. Additionally, this Recommendation uses the following abbreviations:

ASN.1	Abstract Syntax Notation One
ATM	Asynchronous Transfer Mode
BGAK	Begin Acknowledge
BGN	Begin
BGREJ	Begin Rejected
B-ISUP	Broadband ISUP

CC	Connection Control
CIC	Circuit Identification Code
cong	congestion
CTP	Connection Termination Point
ER	Error Recovery
ERAK	Error Recovery Acknowledge
GDMO	Guidelines for the Definition of Managed Objects
ISDN	Integrated Services Digital Network
L	Level
max	Maximum
MD	Management Data
MO	Managed Object
MOC	Managed Object Class
MOCS	Managed Object Conformance Statement
MRCS	Managed Relationship Conformance Statement
MSU	Message Signal Unit
MTP	Message Transfer Part
MTP3b	Message Transfer Part Level 3 for Broadband signalling
NE	Network Element
NNI	Network Node Interface
NRP	Number Retransmission by Proving
OMAP	Operations, Maintenance and Administration Part
OS	Operation System
PD	Protocol Data
PDU	Protocol Data Unit
RS	Re-Synchronization
RS AK	Re-Synchronization Acknowledge
SAAL	Signalling ATM Adaptation Layer
sap	Service Access Point
sign	signalling
SL	Signalling Link
SP	Signalling Point
SPC	Signalling Point Code
Srec	SSCOP recovery
SS No. 7	Signalling System No. 7
SSCF	Service Specific Coordination Function

SSCOP	Service Specific Connection-Oriented Protocol
STAT	Solicited Status
STP	Signalling Transfer Point
term	Terminal
TFC	Transfer Controlled
TMN	Telecommunications Management Network
TP	Termination Point
trans	transmission
TTP	Trail Termination Point
UD	User Data
USTAT	Unsolicited Status
VC	Virtual Channel
VCi	Virtual Channel Identifier
VP	Virtual Path
VPI	Virtual Path Identifier
VR(MR)	Maximum Acceptable Receive State Variable
VT	Transmission State Variable

6 Conventions

Recommendation A.3 (Elaboration and presentation of texts for Recommendations of the ITU-T) is used.

The Guidelines for the Definition of Managed Objects (GDMO), defined in Recommendation X.722, are used. In case of differences between the formal part (clause 7) and the informal parts of this Recommendation, the formal part is to be regarded as leading.

In case there are inconsistencies between the informal description, the formal definitions or the conformance statements proformas, the formal definitions shall prevail.

Throughout this Recommendation the wording "The managed object class x" refers to a particular managed object class while the wording "An x" refers to an instance of the managed object class "x".

Modelling of redundancy is avoided (e.g. relationships between managed objects are described in one MOC only, information which is obtainable via referenced instances of other information models are not repeated here). However, for some implementations, it may be useful or necessary to add some additional information to some managed object classes. For all protocol timers that are modelled in this Recommendation, it is implementation dependent what value they take when they are not managed.

7 Informal description of managed object classes

This clause gives an informal description – in alphabetical order – of the managed object classes.

A table overview is given showing the reuse of Recommendation Q.751.1.

Diagrams are presented for inheritance, containment and pointer relationships.

For each object class a brief description is given, including the attributes, notifications and actions. Each MOC is (informally) described using tables.

A table overview is given showing the context specific errors possible in the management of these object classes.

7.1 Reuse of Recommendation Q.751.1

Table 1 gives an overview of all non-measurement object classes of Recommendation Q.751.1, whether they can be reused unchanged, have been changed or have an analogous object class in Q.2751.1 (i.e. are not relevant for this information model).

Measurement object classes are not included in this table because the measurements for broadband MTP are still open.

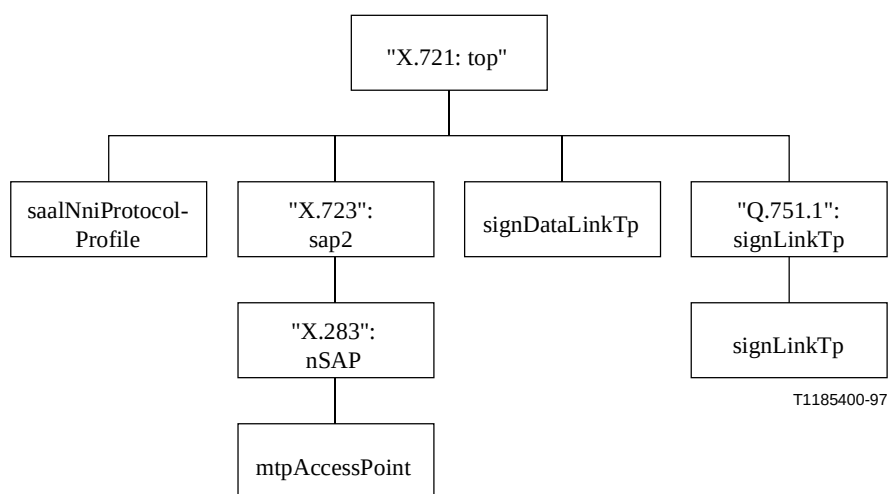
Table 1/Q.2751.1 – Reuse of Q.751.1

Q.751.1 object class	Reused unchanged	Inherited	Q.2751.1 analogy
(slTimersProfile)	+		
managedSwitchingElement	+		
mtpAccessPoint		+	
mtpL2ProtocolProfile	+		
mtpLevel3			– (Note 3)
mtpSignPoint	+		
signDataLinkTp		(+) (Note 2)	
signLinkSetTp	+		
signLinkTp		+	
(slTimersProfile)	+		
(spTimersProfile)	+		
signRouteNePart	+		
signRouteSetNePart	+		
signTerm	+		
stpScreeningTable	+		
stpScreeningTableLine	+		
NOTE 1 – Object classes in parentheses are not mandatory in Recommendation Q.751.1.			
NOTE 2 – Not object class as a whole but all attributes and packages inherited.			
NOTE 3 – The only use for object class mtpLevel3 in Recommendation Q.751.1 was having a superior object for some measurements. These measurements are now for further study. Therefore the introduction of an analogous object class in Q.2751.1 is not needed.			

7.2 Diagrams

7.2.1 Inheritance diagram

See Figure 1.

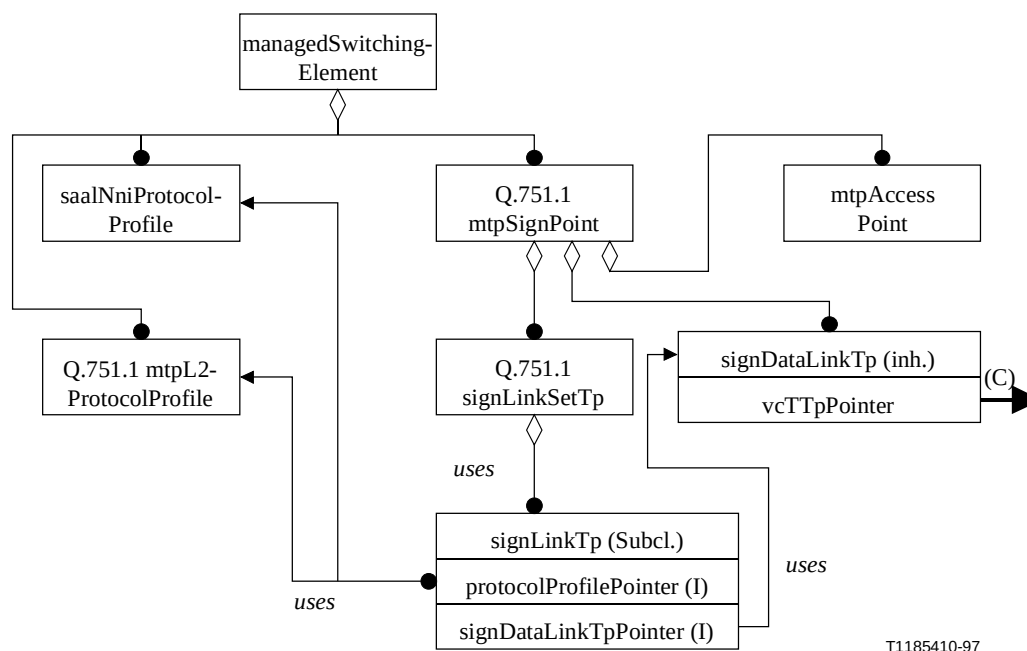


NOTE – This diagram does not show all object classes of the network element information model for MTP-3b. For simplicity it only displays the parts which are new or changed compared to Recommendation Q.751.1.

Figure 1/Q.2751.1 – Inheritance diagram

7.2.2 Entity-Relationship diagram

See Figure 2.



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Notation, see Annex A/Q.751.1

- only one of the reference relationships is possible for one instance of the referencing class
- points to object vcTTPBidirectional of Recommendation I.751
- (Subcl.) Subclass of the corresponding object class in Recommendation Q.751.1
- (I) Inherited by the corresponding object class in Recommendation Q.751.1
- (inh.) Inherits attributes and packages from Recommendation Q.751.1
- (C) Conditional

NOTE –This diagram does not show the complete network element information model for MTP-3b. For simplicity it only displays the parts which are new or changed compared to Recommendation Q.751.1. Only attributes are shown which are used for establishing relationships between object classes or which are additions in subclasses compared to the superclass of Recommendation Q.751.1.

Figure 2/Q.2751.1 – Entity-Relationship diagram

7.3 Tables and textual description

In these tables, (I), (M) and (C) are used with the following meaning:

- (I) This element is inherited from a superclass.
- (M) This element is mandatory.
- (Cn) Conditional, n specifies the number of the condition; its explanation is at the end of each table.
- (O) Optional (condition "if the instance supports it" or similar).

This signification is only done at the package level.

The possible operations on objects and attributes are specified by:

- (Cr) CREATE;
- (Del) DELETE;
- (G) GET;
- (SBC) SET BY CREATE;
- (R) REPLACE;
- (d) DEFAULT VALUE is defined for the attribute;
- (dr) DEFAULT VALUE DERIVATION RULE is defined for the attribute;
- (ir) INITIAL VALUE DERIVATION RULE is defined for the attribute.

7.3.1 Object classes

7.3.1.1 MTP Access Point

See Table 2.

Table 2/Q.2751.1 – Object class mtpAccessPoint

mtpAccessPoint (Cr, Del)		
attributes	notifications	actions
"ITU-T Rec. Q.751.1 (1995)": mtpAccessPointPkg (M, I)		
"ITU-T Rec. X.721 (1992)": operationalState (G)		
"ITU-T Rec. X.721 (1992)": availabilityStatus (G)		
longMessageSupportedPackage (M)		
longMessageSupported (G, R)		
"ITU-T Rec. X.283 (1993)": nSAP-P PACKAGE (M, I)		
sap2Address (G, IR)	objectDeletion	
	objectCreation	
"ITU-T Rec. X.723 (1992)": sap2P1 PACKAGE (M, I)		
sapId (G)	stateChange	
userEntityNames (G)		
providerEntityNames (G)		
"ITU-T Rec. M.3100 (1992)": alarmSeverityAssignmentPointerPackage (O, I)		
alarmSeverityAssignmentPointer (G, R)		
"ITU-T Rec. Q.751.1 (1995)": mtpAccessPointNamePackage (O, I)		
mtpAccessPointName (G, R)		
"ITU-T Rec. Q.751.1 (1995)": ss7OnOccEventPackage (O, I)		
	ss7OnOccEvent	

Table 2/Q.2751.1 – Object class mtpAccessPoint (concluded)

mtpAccessPoint (Cr, Del)		
attributes	notifications	actions
"ITU-T Rec. X.721 (1992)": topPackage (M, I)		
objectClass (G)		
nameBinding (G)		
"ITU-T Rec. X.721 (1992)": packagesPackage (C1, I)		
packages (G)		
"ITU-T Rec. X.721 (1992)": allomorphicPackage (C2, I)		
allomorphs (G)		
C1: Present if any registered package has been instantiated. C2: Present if allomorphism is supported.		

This managed object class is derived from the generic managed object class nSAP (network Service Access Point). The sap2Address attribute contains the address of the mtpAccessPoint. It contains the Signalling Point Code (SPC), Service Indicator (SI) and MTP Network Identity (NI). The sapId attribute is used in naming instances of the mtpAccessPoint managed object class.

The userEntityNames attribute contains the distinguished names of the managed objects that represent the user entities that are using the mtpAccessPoint. The providerEntityNames attribute contains the distinguished names of the managed objects that represent the provider entities that are supporting the mtpAccessPoint.

A mtpAccessPoint can have the MTP status:

- allowed, the mtpAccessPoint is accessible;
- congested, this means that the mtpAccessPoint is accessible but the path to it is heavily loaded;
- prohibited, this means that the mtpAccessPoint is not accessible.

The MTP status is mapped to the operationalState and availabilityStatus attributes as in Table 3:

Table 3/Q.2751.1 – State mapping for mtpAccessPoint

MTP Status	operationalState	availabilityStatus
allowed	enabled	{ }
congested	enabled	{degraded}
prohibited	disabled	{off line}

If the name package is supported: a create request with a value for the name attribute that is already used by another instance of the same managed object class will be rejected.

7.3.1.2 SAAL NNI Protocol Profile

See Table 4.

Table 4/Q.2751.1 – Object class saaNniProtocolProfile

saalNniProtocolProfile (Cr, Del)		
attributes	notifications	actions
saalNniProtocolProfilePackage (M)		
saalNniProtocolProfileId (G, SBC)		
bufferRelease (G, SBC, d)		
maxCc (G, SBC, d)		
maxNrp (G, SBC, d)		
maxPd (G, SBC, d)		
maxSscopCreditToPeer (G, SBC, d)		
maxStat (G, SBC, d)		
maxInformationFieldLength (G, SBC, d)		
maxLengthSscopUuField (G, SBC, d)		
n1 (G, SBC, d)		
nniLayerManagementProvingState (G, SBC, d)		
nniLayerManagementTimerNoCredit (G, SBC, d)		
nniLayerManagementTimerRepeatSrec (G, SBC, d)		
nniTimerT1 (G, SBC, d)		
nniTimerT2 (G, SBC, d)		
nniTimerT3 (G, SBC, dr)		
sscopTimerCc (G, SBC, d)		
sscopTimerIdle (G, SBC, d)		
sscopTimerKeepAlive (G, SBC, d)		
sscopTimerNoResponse (G, SBC, d)		
sscopTimerPoll (G, SBC, d)		
transmissionRateInterval (G, SBC, d)		
transSaalCongThresholdAbatementL (G, SBC, d)1		
transSaalCongThresholdOnsetL1 (G, SBC, d)		
"ITU-T Rec. X.721 (1992)": topPackage (M, I)		
objectClass (G)		
nameBinding (G)		
"ITU-T Rec. X.721 (1992)": packagesPackage (C1, I)		
packages (G)		
"ITU-T Rec. X.721 (1992)": allomorphicPackage (C2, I)		
allomorphs (G)		

Table 4/Q.2751.1 – Object class saalNniProtocolProfile (concluded)

saalNniProtocolProfile (Cr, Del)		
attributes	notifications	actions
"ITU-T Rec. M.3100 (1992)": createDeleteNotificationsPackage (O)		
	objectCreation	
	objectCreation	
"ITU-T Rec. Q.751.1 (1995)": bufferMechanismPackage (O)		
numberOfThresholdLevels (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": congestionHandlingPackage (O)		
congestionCounting (G, SBC)		
congestionReportingBaseObject (G, SBC)		
egressTransmissionRateIntervalPackage (O)		
egressTransmissionRateInterval (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": multipleTransmissionCongestionStatesPackage (O)		
timerTx (G, SBC)		
timerTy (G, SBC)		
numberOfCongestionStates (G, SBC)		
initialLevelOfCongestion (G, SBC)		
pollAfterRetransmissionPackage (O)		
pollAfterRetransmission (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": receiveCongestionLevelsPackage (O)		
receiveCongestionThresholdAbatement (G, SBC)		
receiveCongestionThresholdOnset (G, SBC)		
saalNniProtocolProfileNamePackage (O)		
saalNniProtocolProfileName (G, R)		
M.3100:attributeValueChangeNotificationPackage (O)		
	attributeValueChange	
thresholdsForMultCongLevelsPackage (O)		
transSaalCongThresholdAbatementL2 (G, SBC)		
transSaalCongThresholdOnsetL2 (G, SBC)		
transSaalCongThresholdAbatementL3 (G, SBC)		
transSaalCongThresholdOnsetL3 (G, SBC)		
thresholdsForMultCongLevelsWithPrioPackage (O)		
transSaalCongThresholdDiscardL1 (G, SBC)		
transSaalCongThresholdDiscardL2 (G, SBC)		
transSaalCongThresholdDiscardL3 (G, SBC)		

In this managed object class information which is the same for many links is held. Each broadband signLinkTp (i.e. a signLinkTp referencing a signDataLinkTp in which the attribute vcTTpPointer is present) is associated with one saalNniProtocolProfile via a pointer (attribute protocolProfilePointer). Several broadband signLinkTp managed objects can use the same instance of saalNniProtocolProfile. This allows the operator an easy way to assign parameters when creating new links and to modify many characteristic coherent values of a link at the same time by changing the pointer in signLinkTp to another profile.

Modifying attributes other than the saalNniProtocolProfileName is not allowed. Instead a new object instance with the corresponding attribute values has to be created and referenced by the signLinkTp instance.

The manufacturer can provide object instances of this class with pre-set values.

The operator can create specific object instances as required. The only constraint is that the contained values fit with the offered protocol capabilities in the switch and lie within the limits specified in the standards.

If the name package is supported a create or set request with a value for the name attribute that is already used by another instance of the same object class will be rejected.

If an attempt is made to delete an saalNniProtocolProfile which is still referenced by a signLinkTp the delete request will be rejected.

7.3.1.3 Attributes

The managed object class saalNniProtocolProfile contains the attributes as listed in Table 4. For their detailed meanings see the corresponding BEHAVIOUR descriptions in the formal specification.

NOTE – For congestion, in the international network only one threshold level is defined. This level is referred to in the attributes descriptions as congestionLevel 1. For national networks up to three threshold levels can be defined. Therefore the thresholds belonging to congestionLevels 2 and 3 are optional, as are all the discard levels since these imply use of congestion methods with priorities.

For all attributes apply the operation GET, and they are to be set at creation time.

Optional attribute saalNniProtocolProfileName is also writable.

7.3.1.4 Notifications

- 1) objectCreation: (optional) this notification is emitted if an instance is created.
- 2) objectDeletion: (optional) this notification is emitted if an instance is deleted.
- 3) attributeValueChange: (optional) this notification is emitted if the attribute saalNniProtocolProfileName is modified.

7.3.1.5 signDataLinkTp

See Table 5.

Table 5/Q.2751.1 – Object class signDataLinkTp

signDataLinkTp (Cr, Del)		
attributes	notifications	actions
signDataLinkTpPackage (M)		
"ITU-T Rec. Q.751.1 (1995)": signDataLinkTpId (G, SBC)	"ITU-T Rec. X.721 (1992)": stateChange	
operationalState (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": equipmentPointer (G, SBC)		
"ITU-T Rec. X.721 (1992)": topPackage (M, I)		
objectClass (G)		
nameBinding (G)		
"ITU-T Rec. X.721 (1992)": packagesPackage (C1, I)		
packages (G)		
"ITU-T Rec. X.721 (1992)": allomorphicPackage (C2, I)		
allomorphs (G)		
adjPcPackage (O)		
"ITU-T Rec. Q.751.1 (1995)": adjPc (G, SBC)		
narrowbandSpecificPackage (C1)		
"ITU-T Rec. Q.751.1 (1995)": transmissionRate (G, SBC)		
broadbandSpecificPackage (C2)		
vcTTpPointer (G, SBC)		
"ITU-T Rec. M.3100 (1992)": attributeValueChangeNotificationPackage (O)		
	attributeValueChange	
"ITU-T Rec. M.3100 (1992)": createDeleteNotificationsPackage (O)		
	objectCreation	
	objectDeletion	

Table 5/Q.2751.1 – Object class signDataLinkTp (concluded)

signDataLinkTp (Cr, Del)		
attributes	notifications	actions
"ITU-T Rec. Q.751.1 (1995)": cICPackage (O)		
cIC (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": signDataLinkTpNamePackage (O)		
signDataLinkTpName (G, R)		
"ITU-T Rec. Q.751.1 (1995)": stmChannelPackage (C3)		
stmChannel (G, SBC)		
I: Inherited from Recommendation Q.751.1 – signDataLinkTpId. C1: Mandatory if the bandwidth identifier has the value "narrow-band", excluded if its value is "broadband". C2: Mandatory if the bandwidth identifier has the value 'broadband', excluded if its value is "narrow-band". C3: Excluded if the bandwidth identifier has the value "broadband".		

Changes compared to Recommendation Q.751.1

Additional conditional **vcTTPPointer**Package containing the attributes vcTTPPointer. This attribute references an object class defined in Recommendation I.751. This attribute is set at creation time and not writable. This attribute must be present for a broadband signalling data link, it must not be present for a narrow-band datalink (the term "broadband signalling data link" signifies a data link using the SAAL NNI).

The referenced instance has a mandatory relation via its upstream- and downstreamConnectivityPointers to one instance of object class vcCTPBidirectional, whose Id represents the VCI of the virtual channel used by the data link.

This vcCTPBidirectional is contained in a superior object vpTTPBidirectional, which has a mandatory relation via its upstream- and downstreamConnectivityPointers to one instance of the object class vpTTPBidirectional, whose Id represents the VPI of the virtual path used by the data link.^{1, 2}

¹ Via these relationships and containment the VCI and VPI of the signDataLinkTp can be determined. It would therefore be redundant to have them as attributes at the signDataLinkTp.

² In the network management view it must be ensured that the signDataLinkTPs on both ends of a broadband data link use the same VCI/VPI.

7.3.1.6 signLinkTp

See Table 6.

Table 6/Q.2751.1 – Object class signLinkTp (Note)

signLinkTp (Cr, Del)		
attributes	notifications	actions
signLinkTpPackage (I, M)		
slCode (G, SBC)	stateChange	localInhibit
slsCodeCurrentList (G)		localUninhibit
maxCapacitySL (G, SBC)		
currentCapacitySL (G)		
linkTpStatus (G)		
administrativeState (G, R)		
operationalState (G)		
usageState (G)		
proceduralStatus (G)		
protocolProfilePointer (G, R)		
signTermPointer (G, SBC)		
signDataLinkTpPointer (G, R)		
"ITU-T Rec. X.721 (1992)": topPackage (M, I)		
objectClass (G)		
nameBinding (G)		
"ITU-T Rec. X.721 (1992)": packagesPackage (C1, I)		
packages (G)		
"ITU-T Rec. X.721 (1992)": allomorphicPackage (C2, I)		
allomorphs (G)		
"ITU-T Rec. M.3100 (1992)": alarmSeverityAssignmentPointerPackage (I, O)		
alarmSeverityAssignmentProfile-Pointer (G, R)		
"ITU-T Rec. M.3100 (1992)": attributeValueChangeNotificationPackage (I, O)		
	attributeValueChange	
"ITU-T Rec. M.3100 (1992)": createDeleteNotificationsPackage (I, O)		
	objectCreation	
	objectDeletion	
"ITU-T Rec. M.3100 (1992)": communicationsAlarmPackage (I, O)		
	communicationsAlarm	
"ITU-T Rec. Q.751.1 (1995)": linkCongestionLevelPackage (I, O)		
linkCongestionLevel (G)		

Table 6/Q.2751.1 – Object class signLinkTp (Note) (concluded)

signLinkTp (Cr, Del)		
attributes	notifications	actions
"ITU-T Rec. Q.751.1 (1995)": relatedLinkGroupNumberPackage (I, O)		
relatedLinkGroupNumber (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": signDataLinkTpListPackage (I, O)		
signDataLinkTpList (G)		
"ITU-T Rec. Q.751.1 (1995)": signLinkTestPackage (I, O)		
		signLinkTest
"ITU-T Rec. Q.751.1 (1995)": signLinkTpNamePackage (I, O)		
signLinkTpName (G, R)		
"ITU-T Rec. Q.751.1 (1995)": signTermListPackage (I, O)		
signTermList (G)		
"ITU-T Rec. Q.751.1 (1995)": slsCodeNormalListPackage (I, O)		
slsCodeNormalList (G, SBC)		
"ITU-T Rec. Q.751.1 (1995)": slTimersProfilePointerPackage (I, O)		
slTimersProfilePointer (G, R)		
"ITU-T Rec. Q.751.1 (1995)": s7OnOccEventPackage (I, O)		
	ss7OnOccEvent	
I Inherited from Recommendation Q.751.1 – signLinkTp. NOTE – Currently there is no additional attribute, notification or action compared to Recommendation Q.751.1.		

Changes compared to Recommendation Q.751.1

The attribute protocolProfilePointer³ references either a mtpL2ProtocolProfile instance or a saalNniProtocolProfile instance. This attribute is set at creation time and is writable only if the administrativeState of the signLinkTp equals "locked".

If it is tried to reference by one signLinkTp instance a combination of a saalNniProtocolProfile and a signDataLinkTp, in which the attribute vcTTPPointer is not present, then such a request is rejected.

If it is tried to reference by one signLinkTp instance a combination of a mtpL2ProtocolProfile and a signDataLinkTp, in which the attribute transmissionRate is not present, then such a request is rejected.

It is not precluded to have simultaneously SAAL and MTP L2 links within one linkset. But it is strongly advised to only have this situation during shortest possible time frames, e.g. while upgrading a section of a signalling network from narrow-band to broadband. Attention must be paid during such a mixture to avoid overload situations in case of changeover from a broadband to a

³ In Recommendation Q.751.1 (1995) the attribute has the label "mtpL2ProtocolProfilePointer". It was agreed to change this label to "protocolProfilePointer".

narrow-band link. Also broadband MSUs which are longer than 272 bytes should be discarded by narrow-band links⁴.

If it is tried to reference a combination of a `saalNniProtocolProfile` and a `signDataLinkTp`, where the peak cell rates of the ingress and egress traffic of virtual channel assigned to the `signDataLinkTp` does not fall in the corresponding `transmissionRateInterval` of the referenced `saalNniProtocolProfile`, then such a request is rejected.

7.3.2 Context specific errors

See Table 7.

Table 7/Q.2751.1 – context specific error

Operation	Error	Description
object class <code>signLinkTp</code>		
REPLACE <code>signLinkTpName</code> + CREATE	<code>nameAlreadyUsedInObjectClassError</code>	The given name is already used by another instance of the same object class.
REPLACE <code>signDataLinkTpPointer</code> + CREATE	<code>signDataLinkTpInconsistencyError</code>	At least one of the specified <code>signDataLinkTp</code> instances points to a <code>signDataLinkTp</code> which is not contained in the same <code>mtpSignPoint</code> .
	<code>signDataLinkTpInUseError</code>	At least one of the specified <code>signDataLinkTp</code> instance is already referenced by another <code>signLinkTp</code> instance.
	<code>adjPcInconsistencyError</code>	The attribute <code>adjPc</code> in the containing <code>signLinkSetTp</code> and in at least one of the specified <code>signDataLinkTp</code> instances are different.
REPLACE <code>signDataLinkTpPointer</code> + REPLACE <code>protocolProfilePointer</code> + CREATE	<code>transmissionRateInconsistencyError</code>	The attribute <code>transmissionRate</code> both of at least one of the specified <code>signDataLinkTp</code> instances and of the <code>mtpL2ProtocolProfile</code> instance referenced by one <code>signLinkTp</code> instance must be equal. This request would have resulted in a non-matching combination. In case of a broadband <code>signDataLinkTp</code> , the ingress- and egress traffic descriptors do not match the referenced <code>saalNniProtocolProfile</code> .

⁴ The same is true, if both narrow-band and broadband linksets are used as signalling routes towards the same destination.

Table 7/Q.2751.1 – context specific error (continued)

Operation	Error	Description
object class signLinkTp		
REPLACE signDataLinkTpPointer + REPLACE protocolProfilePointer + CREATE	invalidSignDataLinkTpAndProtocol ProfileError	It is tried to reference a combination of a mtpL2ProtocolProfile and a signDataLinkTp, in which attribute transmissionRate is not present or it is tried to reference a combination of a saalNniProtocolProfile and a signDataLinkTp in which the attribute vcTTpPointer is not present.
REPLACE signDataLinkTpPointer + REPLACE protocolProfilePointer	administrativeStateUnlockedError	The administrativeState of this object instance is not locked. This is a strict prerequisite in order to delete the object instance or to change one of the specified attributes.
REPLACE protocolProfilePointer + CREATE	congestionControlMethodInconsistency Error	The link would reference a ProtocolProfile where the appropriate packages for the congestionControlMethod of the superior signLinkSetTp are not present.
REPLACE protocolProfilePointer + CREATE	spTimersProfileInconsistencyError	The link would reference an mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the spTimersProfile referenced by the containing mtpSignPoint.
	timersInconsistencyError	The link would reference an mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the containing mtpSignPoint.
DELETE	linkNotDeactivatedError	The linkTpStatus does not contain the value deactivated.
object class mtpAccessPoint		
REPLACE mtpAccessPointName + CREATE	nameAlreadyUsedInObjectClassError	See above.

Table 7/Q.2751.1 – context specific error (concluded)

Operation	Error	Description
object class signDataLinkTp		
REPLACE signDataLinkTpName + CREATE	nameAlreadyUsedInObjectClassError	See above.
CREATE	adjPcNotUsedBySignRouteSetNePart Error	No signRouteSetNePart instance exists for the specified value of adjPc within the mtpSignPoint.
	invalidAttributeInVcTTpError	An attribute in the object instance referred by vcTTpPointer is not suitable for a signDataLinkTp.
	numberOfTimeslotsInvalidError	The number of timeslots in the object instance referred by interworkingPointPointer is not suitable for a signDataLinkTp.
DELETE	objectStillReferencedError	This object instance is still referenced by one or more instances of other objects and therefore must not be deleted.
object class saalNniProtocolProfile		
REPLACE saalNniProtocolProfile Name + CREATE	nameAlreadyUsedInObjectClassError	See above.
CREATE	thresholdLevelsInconsistencyError	A threshold belonging to a lower level of congestion is not lower than a threshold of a higher level or the threshold for onset/abatement/discard in one level do not fit together.
DELETE	objectStillReferencedError	See above.

8 Formal Specification

8.1 Managed object class definitions

mtpAccessPoint MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.751.1 (1995)": mtpAccessPoint;

CHARACTERIZED BY longMessageSupportedPackage

CONDITIONAL PACKAGES

"ITU-T Rec. M.3100 (1992)":alarmSeverityAssignmentPointerPackage PRESENT IF "An instance
supports it and ss7OnOccEventPackage is present",

"ITU-T Rec. Q.751.1 (1995)":mtpAccessPointNamePackage PRESENT IF "an instance supports it",
ss7OnOccEventPackage PRESENT IF "An instance supports it";

REGISTERED AS { mtpAccessPoint-OOi };

saalNniProtocolProfile MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992": top;

CHARACTERIZED BY saalNniProtocolProfilePackage

CONDITIONAL PACKAGES

"ITU-T Rec. M.3100 (1992)":createDeleteNotificationsPackage PRESENT IF "the objectCreation and objectDeletion notifications defined in 'ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992' are supported by an instance of this class",

"ITU-T Rec. M.3100 (1992)":attributeValueChangeNotificationPackage PRESENT IF "the attributeValueChangeNotification defined in 'ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992' is supported by an instance of this class",

"ITU-T Rec. Q.751.1 (1995)" bufferMechanismPackage PRESENT IF "an instance supports it",

"ITU-T Rec. Q.751.1 (1995)" congestionHandlingPackage PRESENT IF "an instance supports it",

egressTransmissionRateIntervalPackage PRESENT IF "an instance support it",

"ITU-T Rec. Q.751.1 (1995)" multipleTransmissionCongestionStatesPackage PRESENT IF "an instance supports it",

pollAfterRetransmissionPackage PRESENT IF "an instance supports this national option",

"ITU-T Rec. Q.751.1 (1995)" receiveCongestionLevelsPackage PRESENT IF "an instance supports it",

saalNniProtocolProfileNamePackage PRESENT IF "an instance supports it",

thresholdsForMultCongLevelsPackage PRESENT IF "an instance supports it",

thresholdsForMultCongLevelsWithPrioPackage PRESENT IF "an instance supports it";

REGISTERED AS { saalNniProtocolProfile-OOi };

signDataLinkTp MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992": top;⁵

CHARACTERIZED BY signDataLinkTpPackage

CONDITIONAL PACKAGES

adjPcPackage PRESENT IF "the instance supports it",

narrowbandSpecificPackage PRESENT IF " the signDataLink is not using SAAL NNI. The presence of this package excludes the presence of the broadbandSpecificPackage."

broadbandSpecificPackage PRESENT IF " the signDataLink is using SAAL NNI. The presence of this package excludes the presence of the narrowbandSpecificPackage."

"ITU-T Rec. M.3100 (1992)":attributeValueChangeNotificationPackage PRESENT IF "the instance supports it"

"ITU-T Rec. M.3100 (1992)":createDeleteNotificationsPackage PRESENT IF "the instance supports it",

"ITU-T Rec. Q.751.1 (1995)":cICPackage PRESENT IF "the instance supports it",

"ITU-T Rec. Q.751.1 (1995)":signDataLinkTpNamePackage PRESENT IF "the instance supports it",

"ITU-T Rec. Q.751.1 (1995)":stmChannelPackage PRESENT IF "the instance supports it or the signalling point supports the automatic allocation of signalling datalinks AND the broadbandSpecificPackage is not present.";

REGISTERED AS { signDataLinkTp-OOi };

signLinkTp MANAGED OBJECT CLASS

DERIVED FROM "ITU-T Rec. Q.751.1 (1995)": signLinkTp;

CHARACTERIZED BY signLinkTpPackage

REGISTERED AS { signLinkTp-OOi };

8.2 Name binding definitions

mtpAccessPoint-mtpSignPoint NAME BINDING

-- this name binding is mandatory --

SUBORDINATE OBJECT CLASS mtpAccessPoint AND SUBCLASSES

NAMED BY SUPERIOR OBJECT CLASS "ITU-T Rec. Q.751.1 (1995)":mtpSignPoint AND SUBCLASSES

WITH ATTRIBUTE "ITU-T Rec. X.723 (1993) | ISO/IEC 10165-5: 1993":sapId

⁵ Inheriting Q.751.1: signDataLinkTp is not possible because pure narrow-band attribute transmissionRate is mandatory there. For broadband data links, one would have to give a value for an irrelevant attribute at creation time then.

BEHAVIOUR mtpAccessPoint-mtpSignPointBehaviour BEHAVIOUR DEFINED AS
 "A create request is rejected, if
EITHER
 the system specific maximal number of instances of this object class per managed switching element
 have already been created
OR
 the system specific maximal number of instances of this object class per mtpSignPoint have already
 been created
OR
 the name package is supported: a value for the name attribute is already used by another instance
 of the same object.

A delete request is rejected, if the specified instance has not been created.";;

CREATE;
DELETE;
REGISTERED AS { mtpAccessPoint-mtpSignPoint-NBOi };

saalNniProtocolProfile-managedElement NAME BINDING
-- this name binding is optional --
SUBORDINATE OBJECT CLASS saalNniProtocolProfile AND SUBCLASSES
NAMED BY SUPERIOR OBJECT CLASS "ITU-T Rec. M.3100 (1992)":managedElement AND SUBCLASSES
WITH ATTRIBUTE saalNniProtocolProfileId
BEHAVIOUR saalNniProtocolProfile-managedElementBehaviour BEHAVIOUR DEFINED AS
 "A create request is rejected, if
EITHER
 the system specific maximal number of instances of this object class per managed switching element
 have already been created
OR
 the name package is supported: the value for the name attribute is already used by another
 instance of the same object class

A delete request is rejected, if either
 an attempt is made to delete an saalNniProtocolProfile which is still referenced by an instance of
 another class
OR
 the specified instance has not been created.";;

CREATE;
DELETE;
REGISTERED AS { saalNniProtocolProfile-managedElement-NBOi };;

saalNniProtocolProfile-managedSwitchingElement NAME BINDING
-- this name binding is optional --
SUBORDINATE OBJECT CLASS saalNniProtocolProfile AND SUBCLASSES
NAMED BY SUPERIOR OBJECT CLASS "ITU-T Rec. Q.751.1 (1995)":managedSwitchingElement
AND SUBCLASSES
WITH ATTRIBUTE saalNniProtocolProfileId
BEHAVIOUR saalNniProtocolProfile-managedSwitchingElementBehaviour BEHAVIOUR DEFINED
AS
 "A create request is rejected, if
EITHER
 the system specific maximal number of instances of this object class per managed switching element
 have already been created
OR
 the name package is supported: the value for the name attribute is already used by another
 instance of the same object class

A delete request is rejected, if either
 an attempt is made to delete an saalNniProtocolProfile which is still referenced by an instance of
 another class
OR
 the specified instance has not been created.";;

CREATE;
DELETE;
REGISTERED AS { saalNniProtocolProfile-managedSwitchingElement-NBOi };

signDataLinkTp-mtpSignPoint NAME BINDING

-- this name binding is mandatory --

SUBORDINATE OBJECT CLASS signDataLinkTp AND SUBCLASSES

NAMED BY SUPERIOR OBJECT CLASS "ITU-T Rec. Q.751.1 (1995)":mtpSignPoint AND SUBCLASSES

WITH ATTRIBUTE signDataLinkTpId

BEHAVIOUR signDataLinkTp-mtpSignPointBehaviour BEHAVIOUR DEFINED AS

"A create request is rejected, if

EITHER

the equipmentPointer would reference equipment that does not exist

OR

if the name package is supported: the value for the name attribute is already used by another instance of the same object class

OR

it is tried to create a broadband data link without the vcTTPPointer attribute being present

OR

it is tried to create a narrow-band data link with the vcTTPPointer attribute being present

OR

the system specific maximal number of instances of this object class per managed switching element have already been created

OR

the system specific maximal number of instances of this object class per instance of mtpSignPoint have already been created

OR

the system specific maximal number of references of an instance which would be referenced by equipmentPointer of the instance to be created has already been reached

OR

the system specific maximal number of references of an instance of vcTTPBidirectional which would be referenced by the instance to be created has already been reached.

A delete request is rejected, if

EITHER

an attempt is made to delete an signDataLinkTp which is still referenced by an instance of another class

OR

the specified instance has not been created.";;

CREATE;

DELETE;

REGISTERED AS { signDataLinkTp-mtpSignPoint-NBOi };

signLinkTp-signLinkSetTp NAME BINDING

-- this name binding is mandatory --

SUBORDINATE OBJECT CLASS signLinkTp AND SUBCLASSES

NAMED BY SUPERIOR OBJECT CLASS "ITU-T Rec. Q.751.1 (1995)":signLinkSetTp AND SUBCLASSES

WITH ATTRIBUTE slCode

BEHAVIOUR signLinkTp-signLinkSetTpBehaviour BEHAVIOUR DEFINED AS

"A create request is rejected, if

EITHER

if the name package is supported: the value for the name attribute is already used by another instance of the same object class

OR

the system specific maximal number of instances of this object class per managedSwitchingElement have already been created

OR

the system specific maximal number of instances of this object class per instance of mtpSignPoint have already been created

OR
the system specific maximal number of instances of this object class per instance of signLinkSetTp have already been created

OR
the system specific maximal number of references of an instance of signDataLinkTp which would be referenced by the instance to be created has already been reached

OR
the system specific maximal number of references of an instance of mtpL2ProtocolProfile which would be referenced by the instance to be created has already been reached

OR
the system specific maximal number of references of an instance of saalNniProtocolProfile which would be referenced by the instance to be created has already been reached

OR
a pointer would reference an instance, which does not belong to the appropriate object class

OR
a pointer would reference an instance which is not existing

OR
a signDataLinkTpPointer would reference a signDataLinkTp which is not in the same mtpSignPoint as the superior signLinkSetTp of the signLinkTp

OR
a signDataLinkTpPointer would reference a signDataLinkTp which is already referenced by another signLinkTp

OR
a signDataLinkTpPointer would reference a signDataLinkTp which has a different value of adjPc (if the adjPcPackage is present) than the superior signLinkSetTp of the signLinkTp

OR
the link would reference a datalink and a mtpL2ProtocolProfile whose transmissionRates are not the same

OR
the link would reference a mtpL2ProtocolProfile where the appropriate packages for the congestionControlMethod of the superior signLinkSetTp are not present (see B.1.2.9.2 in Annex B) in Q.751.1

OR
the spTimersProfilePackage is present in the superior mtpSignPoint AND the link would reference a mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the spTimersProfile referenced by the mtpSignPoint

OR
the spTimersPackage is present in the superior mtpSignPoint AND the link would reference a mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the mtpSignPoint

OR
it is tried to reference a combination of a saalNniProtocolProfile and a signDataLinkTp, in which attribute vcTTpPointer is not present

OR
it is tried to reference a combination of a mtpL2ProtocolProfile and a signDataLinkTp, in which attribute transmissionRate is not present

OR
it is tried to reference a combination of a saalNniProtocolProfile and a signDataLinkTp, where the peak cell rates of the ingress and egress traffic of virtual channel assigned to the signDataLinkTp does not fall in the corresponding transmissionRateInterval of the referenced saalNniProtocolProfile.

This rejection also takes place if only a single pointer within the signDataLinkTpList or the signTermList (if present) is wrong.

A delete request is rejected, if
the linkTpStatus does not contain the value deactivated.";;

CREATE;

DELETE;

REGISTERED AS { signLinkTp-signLinkSetTp-NBOi };

8.3 Package definitions

adjPcPackage PACKAGE

BEHAVIOUR adjPcPackageBehaviour DEFINED AS

"This package contains the adjacent point code representing the point code of the adjacent SP, to which the resource represented by the instance is connected. It might be used for automatic allocation of data links.";;

ATTRIBUTES

"ITU-T Rec. Q.751.1 (1995)":adjPc GET SET BY CREATE;

REGISTERED AS { adjPcPackage-POi };

broadbandSpecificPackage PACKAGE

BEHAVIOUR broadbandSpecificPackageBehaviour BEHAVIOUR DEFINED AS

"This package contains the SAAL NNI specific information for the signDataLinkTp.";;

ATTRIBUTES

vcTTPPointer GET SET BY CREATE;

REGISTERED AS { broadbandSpecificPackage-POi };

egressTransmissionRateIntervalPackage PACKAGE

BEHAVIOUR egressTransmissionRateIntervalPackageBehaviour BEHAVIOUR DEFINED AS

"This package should be used, if the attributes of the saalNniProtocolProfile are designed to fit to SAAL NNI signalling traffic, where ingress and egress traffic have significantly different cell rates.";;

ATTRIBUTES

egressTransmissionRateInterval GET SET BY CREATE;

REGISTERED AS { egressTransmissionRateIntervalPackage-POi };

longMessageSupportedPackage PACKAGE

BEHAVIOUR longMessageSupportedPackageBehaviour BEHAVIOUR DEFINED AS

"This package contains the possibility to specify whether messages longer than 272 octets are supported by the instance.";;

ATTRIBUTES

longMessageSupported GET REPLACE;

REGISTERED AS { longMessageSupportedPackage-POi };

narrowbandSpecificPackage PACKAGE

BEHAVIOUR narrowbandSpecificPackageBehaviour BEHAVIOUR DEFINED AS

"This package contains the narrow-band specific information for the signDataLinkTp.";;

ATTRIBUTES

"ITU-T Rec. Q.751.1 (1995)":transmissionRate GET SET BY CREATE;

REGISTERED AS { narrowbandSpecificPackage-POi };

pollAfterRetransmissionPackage PACKAGE

BEHAVIOUR pollAfterRetransmissionPackageBehaviour BEHAVIOUR DEFINED AS

"This package should be used, if the poll after retransmission can be selected at creation time of a saalNniProtocolProfile.";;

ATTRIBUTES

pollAfterRetransmission GET SET BY CREATE;

REGISTERED AS { pollAfterRetransmissionPackage-POi };

saalNniProtocolProfileNamePackage PACKAGE

BEHAVIOUR saalNniProtocolProfileNamePackageBehaviour BEHAVIOUR DEFINED AS

"A set request to a name, which is already used by another instance of this class, will be rejected.";;

ATTRIBUTES

saalNniProtocolProfileName GET-REPLACE;

REGISTERED AS { saalNniProtocolProfileNamePackage-POi };

```

saalNniProtocolProfilePackage PACKAGE
BEHAVIOUR saalNniProtocolProfileBehaviour BEHAVIOUR DEFINED AS
    "The saalNniProtocolProfile is a broadband-specific object class and corresponds to the object class
    mtpL2ProtocolProfile for narrow-band. The MOC comprises attributes required for SSCOP, SSCF-NNI
    and Layer Management for NNI.";;
ATTRIBUTES
    saalNniProtocolProfileId
        GET SET BY CREATE,
    bufferRelease
        GET SET BY CREATE,
    maxCc
        DEFAULT VALUE maxCcDefaultForNNI
        GET SET BY CREATE,
    maxNrp
        DEFAULT VALUE maxNrpDefault
        GET SET BY CREATE,
    maxInformationFieldLength
        DEFAULT VALUE maxInformationFieldLengthDefaultForNni
        GET SET BY CREATE,
    maxLengthSscopUuField
        DEFAULT VALUE maxLengthSscopUuFieldDefaultForNNI
        GET SET BY CREATE,
    maxPd
        DEFAULT VALUE maxPdDefaultForNNI
        GET SET BY CREATE,
    maxSscopCreditToPeer
        DEFAULT VALUE maxSscopCreditToPeerDefault
        GET SET BY CREATE,
    maxStat
        DEFAULT VALUE maxStatDefault
        GET SET BY CREATE,
    n1
        DEFAULT VALUE n1Default
        GET SET BY CREATE,
    nniLayerManagementProvingState
        DEFAULT VALUE nniLayerManagementProvingNniStateDefault
        GET SET BY CREATE,
    nniLayerManagementTimerNoCredit
        DEFAULT VALUE nniLayerManagementTimerNoCreditDefault
        GET SET BY CREATE,
    nniLayerManagementTimerRepeatSrec
        DEFAULT VALUE nniLayerManagementTimerRepeatSrecDefault
        GET SET BY CREATE,
    nniTimerT1
        DEFAULT VALUE nniTimerT1Default
        GET SET BY CREATE,
    nniTimerT2
        DEFAULT VALUE nniTimerT2Default
        GET SET BY CREATE,
    nniTimerT3
        DEFAULT VALUE DERIVATION RULE nniTimerT3DerivationRule
        BEHAVIOUR DEFINED AS "Such that loading of the signalling link is approximately 50%
        of its nominal cell rate (Table 5/Q.2140).";
        GET SET BY CREATE,
    sscopTimerCc
        DEFAULT VALUE sscopTimerCcDefaultForNNI
        GET SET BY CREATE,
    sscopTimerIdle
        DEFAULT VALUE sscopTimerIdleDefaultForNNI
        GET SET BY CREATE,

```



```

sscopTimerKeepAlive
    DEFAULT VALUE sscopTimerKeepAliveDefaultForNNI
    GET SET BY CREATE,
sscopTimerNoResponse
    DEFAULT VALUE sscopTimerNoResponseDefaultForNNI
    GET SET BY CREATE,
sscopTimerPoll
    DEFAULT VALUE sscopTimerPollDefaultForNNI
    GET SET BY CREATE,
transmissionRateInterval
    DEFAULT VALUE transmissionRateIntervalDefault
    GET SET BY CREATE,
transSaalCongThresholdAbatementL1
    DEFAULT VALUE transSaalCongThresholdAbatementL1Default
    GET SET BY CREATE,
transSaalCongThresholdOnsetL1
    DEFAULT VALUE transSaalCongThresholdOnsetLDefault
    GET SET BY CREATE;
REGISTERED AS { saalNniProtocolProfilePackage-POi };

```

signDataLinkTpPackage PACKAGE

BEHAVIOUR signDataLinkTpBehaviour DEFINED AS

"This managed object represents the termination of the signalling data link within the SP as defined in Q.702.

The operational state is 'enabled' in normal operation. In case of failure of the part of the signalling data link that is within control of the managed switching element, this state will be 'disabled'.";

If the vcTTPPointer attribute is present, then the transmission rate is determined by the cell rate fixed in the trafficDescriptorPackages of the vcTTPBidirectional instance referenced by the signDataLinkTp.>";

ATTRIBUTES

```

"ITU-T Rec. Q.751.1 (1995)":signDataLinkTpId    GET SET BY CREATE,
"ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992":operationalState    GET,
"ITU-T Rec. Q.751.1 (1995)":equipmentPointer    GET SET BY CREATE;

```

NOTIFICATIONS

```

"ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992":stateChange;;

```

```

REGISTERED AS { signDataLinkTpPackage-POi };

```

signLinkTpPackage PACKAGE

BEHAVIOUR signLinkTpBehaviour DEFINED AS

"This managed object represents the termination of the signalling link within the signalling point as defined in Q.703. The signLinkTp object class represents that part of a signalling link which is located in one NE.

The following state and status attributes are supported:

administrative state:

locked: it is administratively not permitted to transport traffic on the link termination point.

unlocked: it is administratively permitted to transport user part traffic or test traffic on the link termination point.

operational state:

enabled: the link termination point is operationally able to transport user part traffic or test traffic.

disabled: the link termination point is operationally unable to transport user part traffic or test traffic.

The operational state is disabled whenever the link termination point status contains Failed, Deactivated, Local Blocked, Remote Blocked, or the procedural status is Initializing.

usage state:

idle: the link termination point carries no user part traffic (test traffic may be present).

'active': The link termination point is not congested. Currently the link termination point carries user part traffic.

busy: the link termination point is congested due to user part traffic.

The usage state is idle whenever the link termination point status is not empty i.e. the usage state immediately reflects the availability of the signLinkTp for user traffic. For national MTP options applying several congestion levels an additional attribute indicating these levels may be added.

procedural status:

The procedural status initializing is valid during initial alignment procedure.

The procedural status not initialized applies when the link termination point is not aligned and the initial alignment procedure has not been started.

Link termination point status. This is a set-valued attribute. The following statuses can exist alone or in combinations with each other. The exact definition for each of the following SS7-functional states is to be gained from Q.704.

- local blocked
- remote blocked
- local inhibited
- remote inhibited
- failed
- deactivated

The attribute protocolProfilePointer references either a mtpL2ProtocolProfile instance or a saalNniProtocolProfile instance.

The attributes protocolProfilePointer and signDataLinkTpPointer are writable only if the administrativeState of the signLinkTp equals 'locked'.

If the 'ITU-T Rec. X.721 (1992) | ISO/IEC 10165-2: 1992':communicationsAlarm notification is used, the following probable causes can apply:

Probable Cause = 102 (slFailure) which represents measurement Q.752/1.2 - measurement Q.752/1.6 (SpecificProblems=003 abnormalFIBRorBSNR, 004 excessiveAckDelay, 005 excessiveErrorRate, 006 excessiveCongDuration) and Q.752/1.12.(PerceivedSeverity=cleared)

If the ss7OnOccEventPackage is present, the event notifications with the following probable causes can apply:

Probable Cause = 110 (localChangeOver) which represents measurement Q.752/1.10 (PerceivedSeverity=Maj/Min/War) and measurement Q.752/1.11 (PerceivedSeverity=Cleared).

Probable Cause = 210 (remoteProcOutage) which represents measurements Q.752/2.10 (PerceivedSeverity=Maj/Min/War) and Q.752/2.11 (PerceivedSeverity=Cleared).

Probable Cause = 216 (start of local inhibition) which represents measurement Q.752/2.16 (PerceivedSeverity=Maj/Min/War) and Q.752/2.17 (PerceivedSeverity=Cleared)

Probable Cause = 218 (start of remote inhibition) which represents measurement Q.752/2.18 (PerceivedSeverity=Maj/Min/War) and Q.752/2.19 (PerceivedSeverity=Cleared).

A set request is rejected, if

EITHER

if the name package is supported: the value for the name attribute is already used by another instance of the same object class

OR

a pointer would reference an instance, which does not belong to the appropriate object class

OR

a pointer would reference an instance which is not existing

OR

a signDataLinkTpPointer would reference a signDataLinkTp which is not in the same mtpSignPoint as the superior signLinkSetTp of the signLinkTp

OR

a signDataLinkTpPointer would reference a signDataLinkTp which has a different value of adjPc (if the adjPcPackage is present) than the superior signLinkSetTp of the signLinkTp

OR

the link would reference a datalink and a mtpL2ProtocolProfile whose transmissionRates are not the same

OR

the link would reference a mtpL2ProtocolProfile where the appropriate packages for the congestionControlMethod of the superior signLinkSetTp are not present (see B.1.2.9.2 in Annex B) of Q.751.1

- OR
 - the spTimersProfilePackage is present in the superior mtpSignPoint AND the link would reference a mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the spTimersProfile referenced by the mtpSignPoint
- OR
 - the spTimersPackage is present in the superior mtpSignPoint AND the link would reference a mtpL2ProtocolProfile whose l2TimerT2 is not bigger than the q704-t17 of the mtpSignPoint
- OR
 - it is tried to replace the signDataLinkTp- or protocolProfilePointer while the administrativeState does not equal 'locked'
- OR
 - it is tried to reference a combination of a saalNniProtocolProfile and a signDataLinkTp, of which the attribute vcTTpPointer is not present
- OR
 - it is tried to reference a combination of a mtpL2ProtocolProfile and a signDataLinkTp, of which the attribute transmissionRate is not present
- OR
 - it is tried to reference a combination of a saalNniProtocolProfile and a signDataLinkTp, where the peak cell rates of the ingress and egress traffic of virtual channel assigned to the signDataLinkTp does not fall in the corresponding transmissionRateInterval of the referenced saalNniProtocolProfile.

This rejection also takes place if only a single pointer within the signDataLinkTpList or the signTermList (if present) is wrong.";;

REGISTERED AS { signLinkTpPackage-POi };

thresholdsForMultCongLevelsPackage PACKAGE

BEHAVIOUR thresholdsForMultCongLevelsWithPrioPackageBehaviour BEHAVIOUR DEFINED AS

"This package contains the thresholds for the national congestion control methods with multiple levels without priorities.";;

ATTRIBUTES

transSaalCongThresholdAbatementL2	GET SET BY CREATE,
transSaalCongThresholdOnsetL2	GET SET BY CREATE,
transSaalCongThresholdAbatementL3	GET SET BY CREATE,
transSaalCongThresholdOnsetL3	GET SET BY CREATE;

REGISTERED AS { thresholdsForMultCongLevelsPackage-POi };

thresholdsForMultCongLevelsWithPrioPackage PACKAGE

BEHAVIOUR thresholdsForMultCongLevelsWithPrioPackageBehaviour BEHAVIOUR DEFINED AS

"This package contains the thresholds for the national congestion control method with multiple levels and priorities.";;

ATTRIBUTES

transSaalCongThresholdDiscardL1	GET SET BY CREATE,
transSaalCongThresholdDiscardL2	GET SET BY CREATE,
transSaalCongThresholdDiscardL3	GET SET BY CREATE;

REGISTERED AS { thresholdsForMultCongLevelsWithPrioPackage-POi };

8.4 Attribute definitions

bufferRelease ATTRIBUTE

WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.BufferRelease;

BEHAVIOUR bufferReleaseBehaviour BEHAVIOUR DEFINED AS

"This attribute determines whether SSCOP can release its transmission buffer and transmission queue on connection release and can selectively release messages from the transmission buffer when older messages are still outstanding.";;

REGISTERED AS { bufferRelease-AOi };

egressTransmissionRateInterval ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.EgressTransmissionRateInterval;
BEHAVIOUR egressTransmissionRateIntervalBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the lower and upper boundaries for the transmission rate to which the other attributes regarding egress traffic are set to fit to.
 The unit of the INTEGER values is kbits per second. The whole NNI bandwidth range should be covered by several saalNniProtocolProfile instances."
REGISTERED AS { egressTransmissionRateInterval-AOi };

longMessageSupported ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.LongMessageSupported;
BEHAVIOUR longMessageSupportedBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines whether messages longer than 272 octets are supported.";;
REGISTERED AS { longMessageSupported-AOi }

maxCc ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxCc;
BEHAVIOUR maxCcBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum value [PDUs] of the state variable VT(CC), corresponding to the maximum number of transmissions of BGN, END, ER or RS PDUs.";;
REGISTERED AS { maxCc-AOi };

maxNrp ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxNrp;
BEHAVIOUR maxNrpBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum number of retransmissions allowed during proving.";;
REGISTERED AS { maxNrp-AOi };

maxPd ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxPd;
BEHAVIOUR maxPdBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum acceptable value [PDUs] of the state variable VT(PD) before sending a POLL PDU and resetting VT(PD) to zero. The VT(PD) is incremented each time an SD PDU is transmitted.";;
REGISTERED AS { maxPd-AOi };

maxSscopCreditToPeer ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxSscopCreditToPeer;
BEHAVIOUR maxSscopCreditToPeerBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the absolute value [PDUs] of the size of the receive window given to the peer. This value is added to VR(R) to generate VR(MR). VR(MR) is mapped to N(MR) by transmission of STAT, USTAT, RS RSAK, ER, ERAK, BGN or BGAK PDUs.";;
REGISTERED AS { maxSscopCreditToPeer-AOi };

maxStat ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxStat;
BEHAVIOUR maxStatBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum number of list elements placed in a STAT PDU.";;
REGISTERED AS { maxStat-AOi };

maxInformationFieldLength ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxInformationFieldLength;
BEHAVIOUR maxInformationFieldLengthBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum length of the information field in SD PDUs, UD PDUs and MD PDUs 'k'. The unit of the INTEGER value is octets.";;
REGISTERED AS { maxInformationFieldLength-AOi };

maxLengthSscopUuField ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.MaxLengthSscopUuField;
BEHAVIOUR maxLengthSscopUuFieldBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum length of a variable length SSCOP UU field 'j'. The SSCOP UU is an optional field of BGN PDUs, BGAK PDUs, BGREJ PDUs, END PDUs and RS PDUs. The unit of the INTEGER value is octets";;
REGISTERED AS { maxLengthSscopUuField-AOi };

n1 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.N1;
BEHAVIOUR n1Behaviour BEHAVIOUR DEFINED AS
 "This attribute defines the number of PDUs sent during normal proving.";;
REGISTERED AS { n1-AOi };

nniLayerManagementProvingState ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniLayerManagementProvingState;
BEHAVIOUR nniLayerManagementProvingStateBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the type of proving required by management. The value of the management proving state overrides the value of proving required by MTP L3. It can take the values: Normal, emergency neutral.";;
REGISTERED AS { nniLayerManagementProvingState-AOi };

nniLayerManagementTimerNoCredit ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniLayerManagementTimerNoCredit;
BEHAVIOUR nniLayerManagementTimerNoCreditBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the maximum time interval that the value of VT(MS) may remain less than or equal VT(S) before the link is taken out of service. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { nniLayerManagementTimerNoCredit-AOi };

nniLayerManagementTimerRepeatSrec ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniLayerManagementTimerRepeatSrec;
BEHAVIOUR nniLayerManagementTimerRepeatSrecBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the minimum time between SSCOP recoveries which does not result in a release of the connection. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { nniLayerManagementTimerRepeatSrec-AOi };

nniTimerT1 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniTimerT1;
BEHAVIOUR nniTimerT1Behaviour BEHAVIOUR DEFINED AS
 "This attribute defines the time between the link release action and the next link establish action during alignment. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { nniTimerT1-AOi };

nniTimerT2 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniTimerT2;
BEHAVIOUR nniTimerT3Behaviour BEHAVIOUR DEFINED AS
 "This attribute defines the total time that SSCF NNI will attempt alignment. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { nniTimerT2-AOi };

nniTimerT3 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NniTimerT3;
BEHAVIOUR nniTimerT3Behaviour BEHAVIOUR DEFINED AS
 "The time between proving PDUs such that proving PDUs are transmitted with half of the channel bandwidth. The unit for the INTEGER value is microseconds.";;
REGISTERED AS { nniTimerT3-AOi };

pollAfterRetransmission ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.PollAfterRetransmission;
BEHAVIOUR pollAfterRetransmissionBehaviour BEHAVIOUR DEFINED AS
 "This attribute specifies if a POLL is transmitted each time the retransmission queue is emptied.";;
REGISTERED AS { pollAfterRetransmission-AOi };

saalNniProtocolProfileId ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.NameType;
MATCHES FOR EQUALITY;
BEHAVIOUR saalNniProtocolProfileIdBehaviour BEHAVIOUR DEFINED AS
 "This attribute is used for naming instances of the object class saalNniProtocolProfile.";;
REGISTERED AS { saalNniProtocolProfileId-AOi };

saalNniProtocolProfileName ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.AdditionalName;
BEHAVIOUR saalNniProtocolProfileNameBehaviour BEHAVIOUR DEFINED AS
 "A set request to a name, which is already used by another instance of this class, will be rejected.";;
REGISTERED AS { saalNniProtocolProfileName-AOi };

sscopTimerCc ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.SscopTimerCc;
BEHAVIOUR sscopTimerCcBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the time interval between transmissions of BGN, END, RS and ER PDUs when an acknowledge to these PDUs has not been received. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { sscopTimerCc-AOi };

sscopTimerIdle ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.SscopTimerIdle;
BEHAVIOUR sscopTimerIdleBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the SSCOP timer IDLE. The SSCOP connection is partitioned into phases. The SSCOP timer IDLE supervises the idle phase. In this phase the timer NO_RESPONSE is not running and no POLL PDUs are transmitted. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { sscopTimerIdle-AOi };

sscopTimerKeepAlive ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.SscopTimerKeepAlive;
BEHAVIOUR sscopTimerKeepAliveBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the SSCOP timer KEEP_ALIVE. The SSCOP connection is partitioned into phases. The SSCOP timer IDLE supervises the transient phase. In this phase there are no outstanding acknowledgements or new data pending transmission. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { sscopTimerKeepAlive-AOi };

sscopTimerNoResponse ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.SscopTimerNoResponse;
BEHAVIOUR sscopTimerNoResponseBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the SSCOP timer NO_RESPONSE. This timer is used to detect a faulty connection. The timer runs with either the timer POLL or KEEP_ALIVE simultaneously. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { sscopTimerNoResponse-AOi };

sscopTimerPoll ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.SscopTimerPoll;
BEHAVIOUR sscopTimerPollBehaviour BEHAVIOUR DEFINED AS
 "This attribute defines the SSCOP timer POLL. The SSCOP connection is partitioned into phases. The SSCOP timer POLL supervises the active phase. In this new data is pending, transmission or acknowledgements are outstanding. The unit for the INTEGER value is milliseconds.";;
REGISTERED AS { sscopTimerPoll-AOi };

transmissionRateInterval ATTRIBUTE

WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransmissionRateInterval;

BEHAVIOUR transmissionRateIntervalBehaviour **BEHAVIOUR DEFINED AS**

"This attribute defines the lower and upper boundaries for the transmission rate to which the other attributes are set to fit to.

If the conditional egressTransmissionRateInterval attribute is not present, the value of this attribute refers to both egress and ingress traffic. If the egressTransmissionRateInterval attribute is present, the value of this attribute refers to ingress traffic only.

The unit of the INTEGER values is kbits per second. The whole NNI bandwidth range from 64 to 4096 kbit/s should be covered by several saalNniProtocolProfile instances."

REGISTERED AS { transmissionRateInterval-AOi };

transSaalCongThresholdAbatementL1 ATTRIBUTE

WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;

BEHAVIOUR transSaalCongThresholdAbatementL1Behaviour **BEHAVIOUR DEFINED AS**

"If the number of messages AND the number of octets in the transmission buffer/transmission queue fall below the values of the corresponding components of this attribute, the corresponding link is no longer in congestion level 1. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. If the congestion control method used supports multiple congestion levels with congestion priorities, then the new congestion level is given to MTP L3 and messages with the corresponding priority are now accepted by MTP L3. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. If the international congestion control method is used, then 'no congestion' is announced to MTP L3. (for more details see Q.704)"

REGISTERED AS { transSaalCongThresholdAbatementL1-AOi };

transSaalCongThresholdAbatementL2 ATTRIBUTE

WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;

BEHAVIOUR transSaalCongThresholdAbatementL2Behaviour **BEHAVIOUR DEFINED AS**

"If the number of messages AND the number of octets in the transmission buffer/transmission queue fall below the values of the corresponding components of this attribute, the corresponding link is no longer in congestion level 2. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. If the congestion control method used supports multiple congestion levels with congestion priorities, then the new congestion level is given to MTP L3 and messages with the corresponding priority are now accepted by MTP L3. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. This attribute is not used for the international congestion control method."

REGISTERED AS { transSaalCongThresholdAbatementL2-AOi };

transSaalCongThresholdAbatementL3 ATTRIBUTE

WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;

BEHAVIOUR transSaalCongThresholdAbatementL3Behaviour **BEHAVIOUR DEFINED AS**

"If the number of messages AND the number of octets in the transmission buffer/transmission queue fall below the values of the corresponding components of this attribute, the corresponding link is no longer in congestion level 3. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. If the congestion control method used supports multiple congestion levels with congestion priorities, then the new congestion level is given to MTP L3 and messages with the corresponding priority are now accepted by MTP L3. If the congestion control method used supports multiple congestion levels without congestion priorities, then the new congestion level is given to MTP L3. This attribute is not used for the international congestion control method."

REGISTERED AS { transSaalCongThresholdAbatementL3-AOi };

transSaalCongThresholdDiscardL1 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdDiscardL1Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, then all messages with a congestion priority equal to this level 1 or lower are discarded. This attribute is not used for the international congestion control method nor the method with multiple congestion levels without priorities."
REGISTERED AS { transSaalCongThresholdDiscardL1-AOi };

transSaalCongThresholdDiscardL2 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdDiscardL2Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, then all messages with a congestion priority equal to this level 2 or lower are discarded. This attribute is not used for the international congestion control method nor the method with multiple congestion levels without priorities."
REGISTERED AS { transSaalCongThresholdDiscardL2-AOi };

transSaalCongThresholdDiscardL3 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdDiscardL3Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, then all messages with a congestion priority equal to this level 3 or lower are discarded. This attribute is not used for the international congestion control method nor the method with multiple congestion levels without priorities."
REGISTERED AS { transSaalCongThresholdDiscardL3-AOi };

transSaalCongThresholdOnsetL1 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdOnsetL1Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, the corresponding link is in congestion level 1. If the congestion control method used supports multiple congestion levels with or without congestion priorities, then the new congestion level is given to MTP L3 for transfer to users and transmission in the TFC messages.
 If the international congestion control method is used, an indication 'congestion is given' to MTP L3 without congestion level in order to inform the users and cause the generation of TFC messages."
REGISTERED AS { transSaalCongThresholdOnsetL1-AOi };

transSaalCongThresholdOnsetL2 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdOnsetL2Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, the corresponding link is in congestion level 2. If the congestion control method used supports multiple congestion levels with or without congestion priorities, then the new congestion level is given to MTP L3 for transfer to users and transmission in the TFC messages. Not used for the international congestion control method."
REGISTERED AS { transSaalCongThresholdOnsetL2-AOi };

transSaalCongThresholdOnsetL3 ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.TransSaalCongThreshold;
BEHAVIOUR transSaalCongThresholdOnsetL3Behaviour BEHAVIOUR DEFINED AS
 "If the number of messages OR the number of octets in the transmission buffer/transmission queue exceeds the value of the corresponding component of this attribute, the corresponding link is in congestion level 3. If the congestion control method used supports multiple congestion levels with or without congestion priorities, then the new congestion level is given to MTP L3 for transfer to users and transmission in the TFC messages. Not used for the international congestion control method."
REGISTERED AS { transSaalCongThresholdOnsetL3 };

vcTTPPointer ATTRIBUTE
WITH ATTRIBUTE SYNTAX Q2751DefinedTypesModule.VcTTPPointer;
MATCHES FOR EQUALITY;
BEHAVIOUR vcTTPPointerBehaviour BEHAVIOUR DEFINED AS
 "This attribute references an object class defined in I.751. It must be present for a broadband signalling data link, it must not be present for a narrowband datalink (the term 'broadband signalling data link' signifies a data link using the SAAL NNI). The referenced instance has a mandatory relation via its upstream- and downstreamConnectivityPointers to one instance of object class vcCTPBidirectional, whose Id represents the VCI of the virtual channel used by the data link. This vcCTPBidirectional is contained in a superior object vpTTPBidirectional, which has a mandatory relation via its upstream- and downstreamConnectivityPointers to one instance of the object class vpTTPBidirectional, whose Id represents the VPI of the virtual path used by the data link.";;
REGISTERED AS { vcTTPPointer-AOi };

8.5 Attribute group definitions

Currently no definitions of attribute groups.

8.6 Action definitions

Currently no definitions of actions.

8.7 Parameter definitions

ss7SpecificError PARAMETER
CONTEXT SPECIFIC-ERROR;
WITH SYNTAX Ss7SpecificErrorInformation;
BEHAVIOUR ss7SpecificError BEHAVIOUR DEFINED AS
 "This parameter defines errors which are specific for the administration, operation and maintenance of SS7 managed items.";
REGISTERED AS ss7SpecificError-OID;

8.8 Notification definitions

Currently no definitions of notifications.

8.9 Definitions of behaviours

The behaviour definitions are contained in 8.1 to 8.8.

Restrictions for CREATE and DELETE requests can be found in the corresponding name binding behaviour.

Restrictions for SET requests can be found in the corresponding object class behaviour.

8.10 Abstract syntax productions

The syntax of this ASN.1 is based on Recommendation X.208.

The default values have been taken from Table 5/Q.2140.

```

Q2751DefinedTypesModule
{itu(0) recommendation(0) q(17) omap2(2751) part1(1) informationModel(0) asn1Modules(2)
q2751DefinedTypesModule(0)}
DEFINITIONS IMPLICIT TAGS ::= BEGIN

EXPORTS EVERYTHING;
IMPORTS
NameType, Pointer
    FROM ASN1DefinedTypesModule {ccitt(0) recommendation(0) m(13) gnm(3100) informationModel(0)
asn1Modules(2) asn1DefinedTypesModule(0)}

AdditionalName,
    FROM MTPDefinedTypesModule {ccitt(0) recommendation(0) q(17) omap(751) mtp(1)
informationModel(0) asn1Modules(2) mtpDefinedTypesModule(0)};

-- ASN.1 type definitions

BufferRelease ::= BOOLEAN

EgressTransmissionRateInterval ::= TransmissionRateInterval

LongMessageSupported ::= BOOLEAN

MaxCc ::= INTEGER
maxCcDefaultForNNI MaxCc ::= 4

MaxInformationFieldLength ::= INTEGER
maxInformationFieldLengthDefaultForNni MaxInformationFieldLength ::= 4096

MaxLengthSscopUuField ::= INTEGER
maxLengthSscopUuFieldDefaultForNNI MaxLengthSscopUuField ::= 4

MaxNrp ::= INTEGER

MaxPd ::= INTEGER
maxPdDefaultForNNI MaxPd ::= 500

MaxSscopCreditToPeer ::= INTEGER

MaxStat ::= INTEGER
maxStatDefault MaxStat ::= 67

N1 ::= INTEGER
n1Default N1 ::= 1000

NniLayerManagementProvingState ::= ENUMERATED {
    normal    ( 0 ),
    emergency ( 1 ),
    neutral    ( 2 ) }

NniLayerManagementTimerNoCredit ::= INTEGER

NniLayerManagementTimerRepeatSrec ::= INTEGER

NniTimerT1 ::= INTEGER
nniTimerT1Default NniTimerT1 ::= 5000

NniTimerT2 ::= INTEGER
nniTimerT2Default NniTimerT2 ::= 30000

```

NniTimerT3 ::= INTEGER
-- there is a derivation rule for the default value

PollAfterRetransmission ::= BOOLEAN

Ss7SpecificErrorInformation ::= INTEGER
{
-- reserved for implementation dependent values: Range 0..999
-- alternatively different specific error parameters could be defined for implementation dependent needs
-- reserved for errors common to Q.751.x and Q.2751.x: Range 1000..1999
adjPcInconsistencyError (1000),
-- The attribute adjPc in the containing signLinkSetTp and in at least
-- one of the specified signDataLinkTp instances are different.
adjPcNotUsedBySignRouteSetNePartError (1001),
-- No signRouteSetNePart instance exists for the specified value of adjPc
-- within the mtpSignPoint.
administrativeStateUnlockedError (1002),
-- The administrativeState of this object instance is not locked. This is a
-- strict prerequisite in order to delete the object instance or to change
-- one of the specified attributes.
congestionControlMethodInconsistencyError (1003),
-- The link would reference a ProtocolProfile where the appropriate
-- packages for the congestionControlMethod of the superior
-- signLinkSetTp are not present.
containedObjectsExistError (1004),
-- This object instance still contains one or more instances of other objects.
-- These instances must be deleted first.
invalidSignDataLinkTpAndProtocolProfileError (1005),
-- It is tried to reference a combination of a mtpL2ProtocolProfile and a
-- signDataLinkTp, in which attribute transmissionRate is not present or
-- it is tried to reference a combination of a saalNniProtocolProfile and a
-- signDataLinkTp in which the attribute vcTTPPointer is not present.
signLinkTpNotDeactivatedError (1006),
-- The linkTpStatus does not contain the value deactivated.
nameAlreadyUsedInObjectClassError (1007),
-- The given name is already used by another instance of the same object class.
numberOfTimeslotsInvalidError (1008),
-- The number of timeslots in the object instance referred by
-- interworkingPointPointer is not suitable for a signDataLinkTp
objectStillReferencedError (1009),
-- This object instance is still referenced by one or more instances of other
-- objects and therefore must not be deleted.
signDataLinkTpInconsistencyError (1010),
-- At least one of the specified signDataLinkTp instances points to a
-- signDataLinkTp which is not contained in the same mtpSignPoint.
signDataLinkTpInUseError (1011),
-- At least one of the specified signDataLinkTp instance is already referenced
-- by another signLinkTp instance.
spTimersProfileInconsistencyError (1012),
-- The link would reference an mtpL2ProtocolProfile whose l2TimerT2
-- is not bigger than the q704-t17 of the spTimersProfile referenced by the
-- containing mtpSignPoint.
thresholdLevelsInconsistencyError (1013),
-- A threshold belonging to a lower level of congestion is not lower than a
-- threshold of a higher level or the threshold for onset/abatement/discard in
-- one level do not fit together.
timersInconsistencyError (1014),
-- The link would reference an mtpL2ProtocolProfile whose l2TimerT2 is
-- not bigger than the q704-t17 of the containing mtpSignPoint.

```

    transmissionRateInconsistencyError (1015),
        -- The attribute transmissionRate both of at least one of the specified
        -- signDataLinkTp instances and of the mtpL2ProtocolProfile instance
        -- referenced by one signLinkTp instance must be equal. This request
        -- would have resulted in a non-matching combination.
        -- In case of a broadband signDataLinkTp, the ingress- and egress traffic
        -- descriptors do not match the referenced saalNniProtocolProfile.
-- reserved for additional errors for Q.751.3: Range 3000..3999

-- reserved for additional errors for Q.751.4: Range 4000..4999

-- reserved for additional errors for Q.2751.1: Range 21000..21999
    invalidAttributeInVcTTpError (21000),
        -- An attribute in the object instance referred by vcTTpPointer is not
        -- suitable for a signDataLinkTp.
} (0..65535)

SscopTimerCc ::= INTEGER
sscopTimerCcDefaultForNNI SscopTimerCc ::= 200

SscopTimerIdle ::= INTEGER
sscopTimerIdleDefaultForNNI SscopTimerIdle ::= 100

SscopTimerKeepAlive ::= INTEGER
sscopTimerKeepAliveDefaultForNNI SscopTimerKeepAlive ::= 100

SscopTimerNoResponse ::= INTEGER
sscopTimerNoResponseDefaultForNNI SscopTimerNoResponse ::= 1500

SscopTimerPoll ::= INTEGER
sscopTimerPollDefaultForNNI SscopTimerPoll ::= 100

TransmissionRateInterval = SEQUENCE {
    lowerTxRateLimit TXRateLimit,
    upperTxRateLimit TXRateLimit }
transmissionRateIntervalDefault TransmissionRateInterval ::= {129, 256 }

TransSaalCongThreshold ::= SEQUENCE {
    messages INTEGER,
    octets INTEGER }

TXRateLimit ::= INTEGER (minTxRate..maxTxRate) }
    minTxRate INTEGER ::= 64
    maxTxRate INTEGER ::= 4096

VcTTpPointer ::= Pointer

-- ASN.1 OBJECT IDENTIFIER definitions

q2751InformationModel OBJECT IDENTIFIER ::= {itu-t recommendation(0) q(17) omap2(2751) part1(1)
informationModel(0)}
q2751ObjectClass OBJECT IDENTIFIER ::= {q2751InformationModel managedObjectClass(3)}
q2751Package OBJECT IDENTIFIER ::= {q2751InformationModel package(4)}
q2751Parameter OBJECT IDENTIFIER ::= {q2751InformationModel parameter(5)}
q2751Attribute OBJECT IDENTIFIER ::= {q2751InformationModel attribute(7)}
q2751NameBinding OBJECT IDENTIFIER ::= {q2751InformationModel nameBinding(6)}
q2751Action OBJECT IDENTIFIER ::= {q2751InformationModel action(9)}
q2751Notification OBJECT IDENTIFIER ::= {q2751InformationModel notification(10)}
q2751SpecificExtensions OBJECT IDENTIFIER ::= { q2751InformationModel specificExtensions(0) }

adjPcPackage-POi OBJECT IDENTIFIER ::= {q2751Package adjPcPackage(13)}

```

broadbandSpecificPackage-POi OBJECT IDENTIFIER ::= {q2751Package broadbandSpecificPackage(1)}
bufferRelease-AOi OBJECT IDENTIFIER ::= {q2751Attribute bufferRelease(1)}

egressTransmissionRateInterval-AOi OBJECT IDENTIFIER ::= {q2751Attribute egressTransmissionRateInterval(2)}

egressTransmissionRateIntervalPackage-POi OBJECT IDENTIFIER ::= {q2751Package egressTransmissionRateIntervalPackage(2)}

longMessageSupported-AOi OBJECT IDENTIFIER ::= {q2751Attribute longMessageSupported(36)}

longMessageSupportedPackage-POi OBJECT IDENTIFIER ::= {q2751Package longMessageSupportedPackage(14)}

maxCc-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxCc(3)}

maxNrp-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxNrp(4)}

maxPd-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxPd(5)}

maxSscopCreditToPeer-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxSscopCreditToPeer(6)}

maxStat-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxStat(7)}

maxInformationFieldLength-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxInformationFieldLength(8)}

maxLengthSscopUuField-AOi OBJECT IDENTIFIER ::= {q2751Attribute maxLengthSscopUuField(9)}

mtpAccessPoint-mtpSignPoint-NBOi OBJECT IDENTIFIER ::= {q2751NameBinding mtpAccessPoint-mtpSignPoint(3)}

mtpAccessPoint-OOi OBJECT IDENTIFIER ::= {q2751ObjectClass mtpAccessPoint(1)}

n1-AOi OBJECT IDENTIFIER ::= {q2751Attribute n1(11)}

narrowbandSpecificPackage-POi OBJECT IDENTIFIER ::= {q2751Package narrowbandSpecificPackage(5)}

nniLayerManagementProvingState-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniLayerManagementProvingState(12)}

nniLayerManagementTimerNoCredit-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniLayerManagementTimerNoCredit(13)}

nniLayerManagementTimerRepeatSrec-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniLayerManagementTimerRepeatSrec(14)}

nniTimerT1-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniTimerT1(15)}

nniTimerT2-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniTimerT2(16)}

nniTimerT3-AOi OBJECT IDENTIFIER ::= {q2751Attribute nniTimerT3(17)}

pollAfterRetransmission-AOi OBJECT IDENTIFIER ::= {q2751Attribute pollAfterRetransmission(18)}

pollAfterRetransmissionPackage-POi OBJECT IDENTIFIER ::= {q2751Package pollAfterRetransmissionPackage(6)}

saalNniProtocolProfile-managedElement-NBOi OBJECT IDENTIFIER ::= {q2751NameBinding (1)}

saalNniProtocolProfile-managedSwitchingElement-NBOi OBJECT IDENTIFIER ::= {q2751NameBinding (2)}
saalNniProtocolProfile-OOi OBJECT IDENTIFIER ::= {q2751ObjectClass saalNniProtocolProfile(2)}
saalNniProtocolProfileId-AOi OBJECT IDENTIFIER ::= {q2751Attribute saalNniProtocolProfileId(19)}
saalNniProtocolProfileName-AOi OBJECT IDENTIFIER ::= {q2751Attribute saalNniProtocolProfileName(20)}
**saalNniProtocolProfileNamePackage-POi OBJECT IDENTIFIER ::= {q2751Package
saalNniProtocolProfileNamePackage(7)}**
**saalNniProtocolProfilePackage-POi OBJECT IDENTIFIER ::= {q2751Package
saalNniProtocolProfilePackage(8)}**
signDataLinkTp-mtpSignPoint-NBOi OBJECT IDENTIFIER ::= {q2751NameBinding (4)}
signDataLinkTp-OOi OBJECT IDENTIFIER ::= {q2751ObjectClass signDataLinkTp(3)}
signDataLinkTpPackage-POi OBJECT IDENTIFIER ::= {q2751Package signDataLinkTpPackage(9)}
signLinkTp-OOi OBJECT IDENTIFIER ::= {q2751ObjectClass signLinkTp(4)}
signLinkTp-signLinkSetTp-NBOi OBJECT IDENTIFIER ::= {q2751NameBinding (5)}
signLinkTpPackage-POi OBJECT IDENTIFIER ::= {q2751Package signLinkTpPackage(10)}
sscopTimerCc-AOi OBJECT IDENTIFIER ::= {q2751Attribute sscopTimerCc(21)}
sscopTimerIdle-AOi OBJECT IDENTIFIER ::= {q2751Attribute sscopTimerIdle(22)}
sscopTimerKeepAlive-AOi OBJECT IDENTIFIER ::= {q2751Attribute sscopTimerKeepAlive(23)}
sscopTimerNoResponse-AOi OBJECT IDENTIFIER ::= {q2751Attribute sscopTimerNoResponse(24)}
sscopTimerPoll-AOi OBJECT IDENTIFIER ::= {q2751Attribute sscopTimerPoll(25)}
**thresholdsForMultCongLevelsPackage-POi OBJECT IDENTIFIER ::= {q2751Package
thresholdsForMultCongLevelsPackage(11)}**
**thresholdsForMultCongLevelsWithPrioPackage-POi OBJECT IDENTIFIER ::= {q2751Package
thresholdsForMultCongLevelsWithPrioPackage(12)}**
transmissionRateInterval-AOi OBJECT IDENTIFIER ::= {q2751Attribute transmissionRateInterval(26)}
**transSaalCongThresholdAbatementL1-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdAbatementL1(27)}**
**transSaalCongThresholdAbatementL2-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdAbatementL2(28)}**
**transSaalCongThresholdAbatementL3-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdAbatementL3(29)}**
**transSaalCongThresholdDiscardL1-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdDiscardL1(30)}**
**transSaalCongThresholdDiscardL2-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdDiscardL2(31)}**

```

transSaalCongThresholdDiscardL3-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdDiscardL3(32)}

transSaalCongThresholdOnsetL1-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdOnsetL1(33)}

transSaalCongThresholdOnsetL2-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdOnsetL2(34)}

transSaalCongThresholdOnsetL3-AOi OBJECT IDENTIFIER ::= {q2751Attribute
transSaalCongThresholdOnsetL3(35)}

vcTTPPointer-AOi OBJECT IDENTIFIER ::= {q2751Attribute vcTTPPointer(36)}

-- ASN.1 OBJECT IDENTIFIER definitions for context specific errors

ss7SpecificError-OID OBJECT IDENTIFIER ::= {q2751Parameter ss7SpecificError(0)}

END -- end of Q2751DefinedTypesModule

```

APPENDIX I⁶

Conformance Statements Proforma

Because of the problems identified with the amount of pages resulting from automatically generated MOCS proforma, – compared to Recommendation X.724 – a reduced set of MOCS are only represented in this subclause. This reduction is the reason why this subclause does not form an integral part of the Recommendation.

The reduction consists in omission of MOCS proforma for supporting definitions which are not specific for the object model defined in this Recommendation. Example, if a M.3100 notification is reused, there is only a MOCS proforma for the notification itself as a whole, but not for all its substructures.

The following definitions apply in this subclause:

```

q2751Attribute: itu-t recommendation(0) q(17) omap2(2751) part1(1) informationModel(0) attribute(7)
q2751ObjectClass: itu-t recommendation(0) q(17) omap2(2751) part1(1) informationModel(0)
    managedObjectClass(3)
q2751NameBinding: itu-t recommendation(0) q(17) omap2(2751) part1(1) informationModel(0)
    nameBinding(6)
q2751Package: itu-t recommendation(0) q(17) omap2(2751) part1(1) informationModel(0) package(4)
q2751Parameter: itu-t recommendation(0) q(17) omap2(2751) part1(1) informationModel(0)
    parameter(5)

mtpAction: itu-t recommendation q(17) omap(751) mtp(1) informationModel(0) action(9)
mtpAttribute: itu-t recommendation q(17) omap(751) mtp(1) informationModel(0) attribute(7)
mtpNotification: itu-t recommendation q(17) omap(751) mtp(1) informationModel(0) notification(10)
mtpPackage: itu-t recommendation q(17) omap(751) mtp(1) informationModel(0) package(4)

x721Attribute: joint-iso-ccitt ms (9) smi(3) part2(2) attribute(7)
x721Notification: joint-iso-ccitt ms (9) smi(3) part2(2) package(4)
x721Package: joint-iso-ccitt ms (9) smi(3) part2(2) notification(10)

```

⁶ Users of this Recommendation may freely reproduce the MOCS and MRCS proformas in this Appendix so that they can be used for their intended purposes, and may further publish the completed MOCS and MRCS.

x723Attribute : joint-iso-ccitt ms(9) smi(3) part5(5) attribute(7)
m3100Attribute: ccitt recommendation m gnm(3100) informationModel(0) attribute(7)
m3100Package: ccitt recommendation m gnm(3100) informationModel(0) package(4)

I.1 MOCS Proforma

Additionally to the notations of Recommendation X.724 the following notations are used:

- mc: mandatory if the (optional or conditional) package is supported of which the item is part of.

In the column for SET BY CREATE status:

- m, d: SET BY CREATE and DEFAULT VALUE defined.
- m, dr: SET BY CREATE and DEFAULT DERIVATION RULE defined.

I.1.1 Managed Object Class Support Proforma

See Table I.1.

Table I.1/Q.2751.1 – Managed Object Class Support Proforma

Index	Managed object class template label	Value of object identifier for managed object 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	mtpAccessPoint	q2751ObjectClass 1		
2	saalNniProtocolProfile	q2751ObjectClass 2		
3	signDataLinkTp	q2751ObjectClass 3		
4	signLinkTp	q2751ObjectClass 4		

If the answer to the actual class question is no, there must be a respective entry in the table actual class support.

I.1.2 Actual Object Class Support Proforma

See Table I.2.

Table I.2/Q.2751.1 – Actual Object Class Support Proforma

Index	Managed object class template label for actual object class	Value of object identifier for managed object class definition of actual class	Additional information
1	mtpAccessPoint		
2	saalNniProtocolProfile		
3	signDataLinkTp		
4	signLinkTp		

I.1.3 Package Support Proforma

I.1.3.1 Package Support Proforma for mtpAccessPoint

See Table I.3.

Table I.3/Q.2751.1 – Package Support Proforma for mtpAccessPoint

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
1	mtpAccessPoint Pkg	(Defined in Rec. Q.751.1)		m		
2	longMessage SupportedPackage	q2751Package 14		m		
2	nSAP-P	(Defined in Rec. X.283)		m		
3	sap2P	(Defined in Rec. X.723)		m		
4	alarmSeverity AssignmentPointerPackage	m3100Package 3		o		
5	mtpAccessPoint NamePackage	q751Package 20		o		
6	ss7OnOccEvent Package	q751Package 49		o		
7	packages Package	x721Package 16		c1		
8	allomorphic Package	x721Package 17		c2		
9	topPackage	(Defined in Rec. X.721)		m		
c1: Present if any registered package has been instantiated. c2: Present if allomorphy is supported.						

I.1.3.2 Package Support Proforma for saalNniProtocolProfile

See Table I.4.

Table I.4/Q.2751.1 – Package Support Proforma for saalNniProtocolProfile

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
1	saalNniProtocol ProfilePackage	q2751Package 8		m		
2	createDelete Notifications Package	m3100Package 10		o		
3	bufferMechanism Package	mtpPackage 2		o		
4	congestion HandlingPackage	mtpPackage 7		o		
5	egressTransmissionRate IntervalPackage	q2751Package 2		o		

Table I.4/Q.2751.1 – Package Support Proforma for saaNniProtocolProfile (concluded)

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
6	multipleTransmissionCongestionStatesPackage	mtpPackage 26		o		
7	pollAfterRetransmissionPackage	q2751Package 6		o		
8	receiveCongestionLevelsPackage	mtpPackage 30		o		
9	saalNniProtocolProfileNamePackage	q2751Package 7		o		
10	attributeValueChangeNotificationPackage	m3100Package 4		o		
11	thresholdsForMultCongLevelsPackage	q2751Package 11		o		
12	thresholdsForMultCongLevelsWithPrioPackage	q2751Package 12		o		
13	packagesPackage	x721Package 16		c1		
14	allomorphicPackage	x721Package 17		c2		
15	topPackage	(Defined in Rec. X.721)		m		
c1: Present if any registered package has been instantiated.						
c2: Present if allomorphy is supported.						

I.1.3.3 Package Support Proforma for signDataLinkTp

See Table I.5.

Table I.5/Q.2751.1 – Package Support Proforma for signDataLinkTp

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
1	signDataLinkTpPackage	q2751Package 9		m		
2	adjPcPackage	q2751Package 13		o		
3	narrowbandSpecificPackage	q2751Package 5		c1		
4	broadbandSpecificPackage	q2751Package 1		c2		
5	attributeValueChangeNotificationPackage	m3100Package 4		o		

Table I.5/Q.2751.1 – Package Support Proforma for signDataLinkTp (concluded)

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
6	createDeleteNotificationsPackage	m3100Package 10		o		
7	clCPackage	mtpPackage 3		o		
8	signDataLinkTpNamePackage	mtpPackage 34		o		
9	stmChannelPackage	mtpPackage 50		c3		
10	packagesPackage	x721Package 16		c4		
11	allomorphicPackage	x721Package 17		c5		
12	topPackage	(Defined in Rec. X.721)		m		
c1: If the signDataLink is not using SAAL NNI. The presence of this package excludes the presence of the broadbandSpecificPackage. c2: If the signDataLink is using SAAL NNI. The presence of this package excludes the presence of the narrowSpecificPackage. c3: Excluded if the broadbandSpecificPackage is present. c4: Present if any registered package has been instantiated. c5: Present if allomorphy is supported.						

I.1.3.4 Package Support Proforma for signLinkTp

See Table I.6.

Table I.6/Q.2751.1 – Package Support Proforma for signLinkTp

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
1	signLinkTpPackage	q2751Package 10		m		
2	alarmSeverityAssignmentPointerPackage	m3100Package 3		o		
3	attributeValueChangeNotificationPackage	m3100Package 4		o		
4	createDeleteNotificationsPackage	m3100Package 10		o		
5	communicationsAlarmPackage	mtpPackage 5		o		
6	linkCongestionLevelPackage	mtpPackage 13		o		
7	relatedLinkGroupNumberPackage	mtpPackage 31		o		
8	signDataLinkTpListPackage	mtpPackage 33		o		

Table I.6/Q.2751.1 – Package Support Proforma for signLinkTp (concluded)

Index	Attribute template label	Value of object identifier for package	Constraints Y/N	Status	Support	Additional information
9	signLinkTest Package	mtpPackage 36		o		
10	signLinkTpNamePackage	mtpPackage 37		o		
11	signTermList Package	mtpPackage 40		o		
12	slsCodeNormal ListPackage	mtpPackage 42		o		
13	slTimersProfile PointerPackage	mtpPackage 44		c1		
14	ss7OnOccEventPackage	mtpPackage 49		o		
15	packages Package	x721Package 16		c2		
16	allomorphic Package	x721Package 17		c3		
17	topPackage	(Defined in Rec. X.721)		m		
c1: This package must not be present if the superior mtpSignPoint supports the spTimersPackage. It must be present if the superior mtpSignPoint does not support the spTimersPackage. c2: Present if any registered package has been instantiated. c3: Present if allomorphy is supported.						

I.1.4 Attribute Support Proforma

I.1.4.1 Attribute Support Proforma for mtpAccessPoint

See Table I.7.

Table I.7/Q.2751.1 – Attribute Support Proforma for mtpAccessPoint

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	operational State	x721Attribute 35		–		m		–	
2	availability Status	x721Attribute 33		–		m		–	
3	longMessage Supported	q2751Attribute 36							
4	sap2Address	x723Attribute 9		m		m		–	
5	sapId	x723Attribute 10		m		m		–	
6	userEntity Names	x723Attribute 15		m		m		–	
7	providerEntity Names	x723Attribute 7		m		m			

Table I.7/Q.2751.1 – Attribute Support Proforma for mtpAccessPoint (continued)

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
8	alarmSeverityAssignmentPointer	m3100Attribute 5		mc		mc		mc	
9	mtpAccessPointName	q751Attribute 39		mc		mc		mc	
10	objectClass	x721Attribute 65		–		m		–	
11	nameBinding	x721Attribute 63		–		m		–	
12	packages	x721Attribute 66		–		mc		–	
13	allomorphs	x721Attribute 50		–		mc		–	

Table I.7/Q.2751.1 – Attribute Support Proforma for mtpAccessPoint (concluded)

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
1	–		–		–		
2	–		–		–		
3							
4	–		–		–		
5	–		–		–		
6	–		–		–		
7	–		–		–		
8	–		–		–		
9	–		–		–		
10	–		–		–		
11	–		–		–		
12	–		–		–		
13	–		–		–		

I.1.4.2 Attribute Support Proforma for saalNniProtocolProfile

See Table I.8.

Table I.8/Q.2751.1 – Attribute Support Proforma for saalNniProtocolProfile

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	saalNniProtocolProfileId	q2751Attribute 19		m		m		–	
2	bufferRelease	q2751Attribute 1		m		m		–	
3	maxCc	q2751Attribute 3		m, d		m		–	
4	maxNrp	q2751Attribute 4		m, d		m		–	
5	maxPd	q2751Attribute 5		m, d		m		–	
6	maxSscopCreditToPeer	q2751Attribute 6		m, d		m		–	
7	maxStat	q2751Attribute 7		m, d		m		–	
8	maxInformationFieldLength	q2751Attribute 8		m, d		m		–	
9	maxLengthSscopUuField	q2751Attribute 9		m, d		m		–	
10	n1	q2751Attribute 11		m, d		m		–	
11	nniLayerManagementProvingState	q2751Attribute 12		m, d		m		–	
12	nniLayerManagementTimerNoCredit	q2751Attribute 13		m, d		m		–	
13	nniLayerManagementTimerRepeatSrec	q2751Attribute 14		m, d		m		–	
14	nniTimerT1	q2751Attribute 15		m, d		m		–	
15	nniTimerT2	q2751Attribute 16		m, d		m		–	
16	nniTimerT3	q2751Attribute 17		m, dr		m		–	
17	sscopTimerCc	q2751Attribute 21		m, d		m		–	
18	sscopTimerIdle	q2751Attribute 22		m, d		m		–	
19	sscopTimerKeepAlive	q2751Attribute 23		m, d		m		0	
20	sscopTimerNoResponse	q2751Attribute 24		m, d		m		–	
21	sscopTimerPoll	q2751Attribute 25		m, d		m		–	
22	transmissionRateInterval	q2751Attribute 26		m, d		m		–	

Table I.8/Q.2751.1 – Attribute Support Proforma for saalNniProtocolProfile (continued)

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
23	transSaal Cong Threshold AbatementL1	q2751Attribute 27		m, d		m		–	
24	transSaal Cong Threshold OnsetL1	q2751Attribute 33		m		m		–	
25	numberOf Threshold Levels	mtpAttribute 52		mc		mc		–	
26	congestion Counting	mtpAttribute 5		mc		mc		–	
27	congestion Reporting BaseObject	mtpAttribute 7		mc		mc		–	
28	egress Transmission RateInterval	q2751Attribute 2		mc		mc		–	
29	timerTx	mtpAttribute 122		mc		mc		–	
30	timerTy	mtpAttribute 123		mc		mc		–	
31	numberOf Congestion States	mtpAttribute 50		mc		mc		–	
32	initialLevelOf Congestion	mtpAttribute 16		mc		mc		–	
33	pollAfter Retrans mission	q2751Attribute 18		mc		mc		–	
34	saalNni Protocol ProfileName	q2751Attribute 20		mc		mc		mc	
35	transSaal Cong Threshold AbatementL2	q2751Attribute 28		mc		mc		–	
36	transSaal Cong Threshold OnsetL2	q2751Attribute 34		mc		mc		–	
37	transSaal Cong Threshold AbatementL3	q2751Attribute 29		mc		mc		–	
38	transSaal Cong Threshold OnsetL3	q2751Attribute 35		mc		mc		–	

Table I.8/Q.2751.1 – Attribute Support Proforma for saalNniProtocolProfile (continued)

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
39	transSaalCongThresholdDiscardL1	q2751Attribute 30		mc		mc		–	
40	transSaalCongThresholdDiscardL2	q2751Attribute 31		mc		mc		–	
41	transSaalCongThresholdDiscardL3	q2751Attribute 32		mc		mc		–	
42	objectClass	x721Attribute 65		–		m		–	
43	nameBinding	x721Attribute 63		–		m		–	
44	packages	x721Attribute 66		–		mc		–	
45	allomorphs	x721Attribute 50		–		mc		–	

Table I.8/Q.2751.1 – Attribute Support Proforma for saalNniProtocolProfile (continued)

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
1	–		–		–		
2	–		–		–		
3	–		–		–		
4	–		–		–		
5	–		–		–		
6	–		–		–		
7	–		–		–		
8	–		–		–		
9	–		–		–		
10	–		–		–		
11	–		–		–		
12	–		–		–		
13	–		–		–		
14	–		–		–		
15	–		–		–		
16	–		–		–		
17	–		–		–		
18	–		–		–		
19	–		–		–		
20	–		–		–		
21	–		–		–		
22	–		–		–		
23	–		–		–		

Table I.8/Q.2751.1 – Attribute Support Proforma for saalNniProtocolProfile (concluded)

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
24	–		–		–		
25	–		–		–		
26	–		–		–		
27	–		–		–		
28	–		–		–		
29	–		–		–		
30	–		–		–		
31	–		–		–		
32	–		–		–		
33	–		–		–		
34	–		–		–		
35	–		–		–		
36	–		–		–		
37	–		–		–		
38	–		–		–		
39	–		–		–		
40	–		–		–		
41	–		–		–		
42	–		–		–		
43	–		–		–		
44	–		–		–		
45	–		–		–		

I.1.4.3 Attribute Support Proforma for signDataLinkTp

See Table I.9.

Table I.9/Q.2751.1 – Attribute Support Proforma for signDataLinkTp

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	signDataLinkTpId	mtpAttribute 87		m		m		–	
2	adjPc	mtpAttribute 105		mc		mc		–	
3	transmissionRate	mtpAttribute 133		mc		mc		–	
4	operationalState	x721Attribute 35		–		m		–	
5	equipmentPointer	mtpAttribute 11		m		m		–	
6	cIC	mtpAttribute 2		mc		mc		–	

Table I.9/Q.2751.1 – Attribute Support Proforma for signDataLinkTp (continued)

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
7	signDataLinkTpName	mtpAttribute 89		mc		mc		mc	
8	stmChannel	mtpAttribute 115		–		mc		–	
9	vcTTPPointer	q2751Attribute 37		m		m		–	
10	objectClass	x721Attribute 65		–		m		–	
11	nameBinding	x721Attribute 63		–		m		–	
12	packages	x721Attribute 66		–		mc		–	
13	allomorphs	x721Attribute 50		–		mc		–	

Table I.9/Q.2751.1 – Attribute Support Proforma for signDataLinkTp (concluded)

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
1	–		–		–		
2	–		–		–		
3	–		–		–		
4	–		–		–		
5	–		–		–		
6	–		–		–		
7	–		–		–		
8	–		–		–		
9	–		–		–		
10	–		–		–		
11	–		–		–		
12	–		–		–		
13	–		–		–		

I.1.4.4 Attribute Support Proforma for signLinkTp

See Table I.10.

Table I.10/Q.2751.1 – Attribute Support Proforma for signLinkTp

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	slCode	mtpAttribute 104		m		m		–	
2	slsCode CurrentList	mtpAttribute 105		–		m		–	
3	maxCapacity SL	mtpAttribute 36		m		m		–	
4	current CapacitySL	mtpAttribute 8		–		m		–	
5	linkTpStatus	mtpAttribute 27		–		m		–	
6	administrative State	x721Attribute 31		m		m		m	
7	operational State	x721Attribute 35		–		m		–	
8	usageState	x721Attribute 39		–		m		–	
9	procedural Status	x721Attribute 36		–		m		–	
10	protocol Profile Pointer	mtpAttribute 42		m		m		m	
11	signTerm Pointer	mtpAttribute 103		m		m		–	
12	signDataLink TpPointer	mtpAttribute 90		m		m		m	
13	alarmSeverityAssignment Profile Pointer	m3100Attribute 5		mc		mc		mc	
14	link Congestion Level	mtpAttribute 26		mc		mc		–	
15	relatedLink Group Number	mtpAttribute 84		mc		mc		mc	
16	signDataLink TpList	mtpAttribute 87		mc		mc		–	
17	signLinkTp Name	mtpAttribute 94		mc		mc		mc	
18	signTermList	mtpAttribute 101		mc		mc		–	
19	slsCode NormalList	mtpAttribute 106		mc		mc		–	
20	slTimers ProfilePointer	mtpAttribute 110		mc		mc		mc	
21	objectClass	x721Attribute 65		–		m		–	
22	nameBinding	x721Attribute 63		–		m		–	
23	packages	x721Attribute 66		–		mc		–	
24	allomorphs	x721Attribute 50		–		mc		–	

Table I.10/Q.2751.1 – Attribute Support Proforma for signLinkTp (concluded)

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
1	–		–		–		
2	–		–		–		
3	–		–		–		
4	–		–		–		
5	–		–		–		
6	–		–		–		
7	–		–		–		
8	–		–		–		
9	–		–		–		
10	–		–		–		
11	–		–		–		
12	–		–		–		
13	–		–		–		
14	–		–		–		
15	–		–		–		
16	mc		mc		–		
17	–		–		–		
18	mc		mc		–		
19	–		–		–		
20	–		–		–		
21	–		–		–		
22	–		–		–		
23	–		–		–		
24	–		–		–		

I.1.5 Attribute Group Support Proforma

Currently no definitions of attribute groups.

I.1.6 Actions Support Proforma

See Table I.11.

Table I.11/Q.2751.1 – Action Support Proforma for signLinkTp

Index	Attribute template label	Value of object identifier for action type	Constraints Y/N	Status	Support	Additional information
1	localInhibit	mtpAction 2		m		
2	localUninhibit	mtpAction 3		m		
3	signLinkTest	mtpAction 5		o		

For the other object classes defined within this Recommendation, no actions are defined.

I.1.7 Parameter Support Proforma

See Table I.12.

Table I.12/Q.2751.1 – Parameter Support Proforma

Index	Parameter template label	Value of object identifier for parameter	Constraints Y/N	Status	Support	Additional information
1	ss7SpecificError	q2751Parameter 0				

I.1.8 Notification Support Proforma

I.1.8.1 Notification Support Proforma for mtpAccessPoint

See Table I.13.

Table I.13/Q.2751.1 – Notification Support Proforma for mtpAccessPoint

Index	Attribute template label	Value of object identifier for notification	Constraints Y/N	Status	Support		Additional information
					confirmed	Non-confirmed	
1	stateChange	x721Notification 14		m			
2	object Creation	x721Notification 6		m			
3	object Deletion	x721Notification 7		m			
4	ss7OnOcc Event	q751Notification 2		o			

I.1.8.2 Notification Support Proforma for saalNniProtocolProfile

See Table I.14.

Table I.14/Q.2751.1 – Notification Support Proforma for saalNniProtocolProfile

Index	Attribute template label	Value of object identifier for notification	Constraints Y/N	Status	Support		Additional information
					confirmed	Non-confirmed	
1	attribute ValueChange	x721Notification 1		o			
2	object Creation	x721Notification 6		o			
3	object Deletion	x721Notification 7		o			

I.1.8.3 Notification Support Proforma for signDataLinkTp

See Table I.15.

Table I.15/Q.2751.1 – Notification Support Proforma for signDataLinkTp

Index	Attribute template label	Value of object identifier for notification	Constraints Y/N	Status	Support		Additional information
					confirmed	Non-confirmed	
1	stateChange	x721Notification 14		m			
2	attribute ValueChange	x721Notification 1		o			
3	object Creation	x721Notification 6		o			
4	object Deletion	x721Notification 7		o			

I.1.8.4 Notification Support Proforma for signLinkTp

See Table I.16.

Table I.16/Q.2751.1 – Notification Support Proforma for signLinkTp

Index	Attribute template label	Value of object identifier for notification	Constraints Y/N	Status	Support		Additional information
					confirmed	Non-confirmed	
1	stateChange	x721Notification 14		m			
2	attribute ValueChange	x721Notification 1		o			
3	object Creation	x721Notification 6		o			
4	object Deletion	x721Notification 7		o			
5	communicationsAlarm	x721Notification 2		o			
6	ss7OnOcc Event	mtpNotification 2		o			

Index	Subindex	Notification field name label	Value of object identifier of attribute type associated field	Constraints Y/N	Status	Support	Additional information
6	6.1	SS7OnOcc EventInfo	—		m ^{a)}		

^{a)} The corresponding entry is only valid, if the optional notification is supported.

I.1.9 Specific Extensions Support Proforma

Currently no definitions of specific extensions.

I.2 MRCS Proforma

See Table I.17.

Table I.17/Q.2751.1 – Name binding support proforma

Index	Name binding template tabel	Value of object identifier for name binding	Constraints Y/N	Status	Support	Additional information
1	saalNniProtocolProfile-managedElement	q2751NameBinding 2		o		
2	saalNniProtocolProfile-managedSwitching Element	q2751NameBinding 2		o		
3	mtpAccessPoint-mtpSignPoint	q2751NameBinding 3		m		
4	signDataLinkTp-mtpSignPoint	q2751NameBinding 4		m		
5	signLinkTp-signLinkSetTp	q2751NameBinding 5		m		

Index	Subindex	Operation	Constraints Y/N	Status	Support	Additional information
1	1.1	Create support		m ^{a)}		
1	1.1.1	Create with reference object		–		
1	1.1.2	Create with automatic instance naming		–		
1	1.2	Delete support		m ^{a)}		
1	1.2.1	Delete only if no contained objects		–		
1	1.2.2	Delete contained objects		–		
2	2.1	Create support		m ^{a)}		
2	2.1.1	Create with reference object		–		
2	2.1.2	Create with automatic instance naming		–		
2	2.2	Delete support		m ^{a)}		
2	2.2.1	Delete only if no contained objects		–		
2	2.2.2	Delete contained objects		–		
3	3.1	Create support		m ^{a)}		
3	3.1.1	Create with reference object		–		
3	3.1.2	Create with automatic instance naming		–		
3	3.2	Delete support		m ^{a)}		
3	3.2.1	Delete only if no contained objects		–		
3	3.2.2	Delete contained objects		–		
4	4.1	Create support		m ^{a)}		

Index	Subindex	Operation	Constraints Y/N	Status	Support	Additional information
4	4.1.1	Create with reference object		–		
4	4.1.2	Create with automatic instance naming		–		
4	4.2	Delete support		m		
4	4.2.1	Delete only if no contained objects		–		
4	4.2.2	Delete contained objects		–		
5	5.1	Create support		m		
5	5.1.1	Create with reference object		–		
5	5.1.2	Create with automatic instance naming		–		
5	5.2	Delete support		m		
5	5.2.1	Delete only if no contained objects		–		
5	5.2.2	Delete contained objects		–		
^{a)} The corresponding entry is only valid, if the optional name binding is supported.						

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