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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – Common aspects of B-ISDN
application protocols for access signalling and network
signalling and interworking

AAL type 2 signalling protocol – Capability set 2

ITU-T Recommendation Q.2630.2

(Formerly CCITT Recommendation)

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ITU-T Recommendation Q.2630.2

AAL type 2 signalling protocol – Capability set 2

Summary

This Recommendation specifies the inter-node protocol and nodal functions that control AAL type 2 point-to-point connections.

The AAL type 2 signalling protocol specified in this Recommendation is usable in switched and non-switched environments and can operate in public or private networks over a range of signalling transport protocol stacks.

It also provides maintenance capabilities, carriage of user-plane protocol stack information and carriage of an identifier to link the connection control protocol with other higher layer control protocols.

This Recommendation specifies the extensions to the AAL type 2 signalling protocol (Capability set 1) to support the selection of AAL type 2 path, the indication of SSCS for audio extended, the indication of SSCS for multirate extended, the AAL type 2 path redirection request, and the modification of AAL type 2 connection resources during the established phase of the AAL type 2 connection.

Source

ITU-T Recommendation Q.2630.2 was prepared by ITU-T Study Group 11 (2001-2004) and approved under the WTSA Resolution 1 procedure on 6 December 2000.

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.

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ITU-T Recommendation Q.2630.2

AAL type 2 signalling protocol – Capability set 2

1 Scope

This Recommendation extends the AAL type 2 signalling protocol (capability set 1) specified in ITU-T Q.2630.1 [11] to support:

- the selection of AAL type 2 path according to the requested Path Type as a part of the routing function;
- the support of the revised ITU-T I.366.2 [13];
- the AAL type 2 path redirection request; and
- the modification of AAL type 2 connection resources (i.e. AAL type 2 Link Characteristics and Service Specific Convergence Sublayer information) during the established phase of the connection.

The scope specified in clause 1/Q.2630.1 [11] shall apply with the last paragraph revised as follows.

This Recommendation is based on the requirements defined in ITU-T Q-series Supplement 33 [28] "Technical Report TRQ.2401: *Transport control signalling requirements – Signalling requirements for AAL type 2 link control capability set 2*".

The functional architecture in Figure 1-1/Q.2630.1 [11] shall apply.

NOTE – The numbering of clauses, subclauses, tables, and figures in this Recommendation is the same as in ITU-T Q.2630.1, if they correspond directly.

2 References

2.1 Normative 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; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T I.363.2 (2000), *B-ISDN ATM Adaptation Layer specification: Type 2 AAL*.
- [2] ITU-T I.361 (1999), *B-ISDN ATM layer specification*.
- [3] ITU-T X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The basic model*.
- [4] ITU-T X.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: Conventions for the definition of OSI services*.
- [5] ITU-T X.213 (1995) | ISO/IEC 8348:1996, *Information technology – Open Systems Interconnection – Network service definition*.
- [6] ITU-T Q.850 (1998), *Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN user part*.
- [7] ITU-T Q.2610 (1999), *Usage of cause and location in B-ISDN user part and DSS2*.

- [8] ITU-T I.366.1 (1998), *Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2*.
- [9] ITU-T E.164 (1997), *The international public telecommunication numbering plan*.
- [10] IEEE 802-1990, *IEEE Standards for Local and Metropolitan Area Networks: Overview and Architecture*.
- [11] ITU-T Q.2630.1 (1999), *AAL type 2 signalling protocol – Capability set 1*.
- [12] ITU-T I.356 (2000), *B-ISDN ATM layer cell transfer performance*.
- [13] ITU-T I.366.2 (2000), *AAL type 2 service specific convergence sublayer for narrow-band services*.

2.2 Bibliography

The Bibliography specified in 2.2/Q.2630.1 [11] shall apply with the following addition:

- [28] ITU-T Q-series Supplement 33 (2000), Technical Report TRQ.2401: *Transport control signalling requirements – Signalling requirements for AAL type 2 link control capability set 2*.

3 Definitions

The definitions specified in clause 3/Q.2630.1 [11] shall apply with the following additions:

- 3.1 AAL type 2 requested path type:** Information that describes the AAL type 2 Path Type. These Path Types may be "stringent class", "tolerant class", or "stringent bi-level class" (see ITU-T I.356 [12]).
- 3.2 AAL type 2 connection resource:** Describe the attributes of the AAL type 2 links making up the connection, and the Service Specific Convergence Sublayer resources used at the AAL type 2 end points.
- 3.3 connection resource:** (See "AAL type 2 connection resource").
- 3.4 requested path type:** (See "AAL type 2 requested path type").
- 3.5 network default stringent QoS class:** A stringent QoS class as defined in ITU-T I.356 [12] and as deployed in a network operating with signalling defined in ITU-T Q.2630.1 [11].

4 Abbreviations

The abbreviations specified in clause 4/Q.2630.1 [11] shall apply with the following additions:

LB	Loopback
LC	Link Characteristics (Note)
MOA	Modification Acknowledge message
MOD	Modification Request message
MOR	Modification Reject message
MSLC	Modify Support for Link Characteristics
MSSSI	Modify Support for SSCS Information
PLC	Preferred Link Characteristics
PSSCS	Preferred SSCS Information
PSSIAE	Preferred Service Specific Information (Audio Extended)

PSSIME	Preferred Service Specific Information (Multirate Extended)
PT	Path Type
RC	Rate Control
SSIAE	Service Specific Information (Audio Extended)
SSIME	Service Specific Information (Multirate Extended)
SUCI	Served User Correlation ID
SYN	Synchronization of change in SSCS operation

NOTE – In ITU-T Q.2630.1 [11], the abbreviation "ALC" was used instead of "LC".

5 General framework of the AAL type 2 signalling protocol

The general framework of the AAL type 2 signalling protocol specified in clause 5/Q.2630.1 [11] shall apply.

5.1 Interface between the AAL type 2 signalling entity and the AAL type 2 served user

5.1.1 Service provided by the AAL type 2 signalling entity

Clause 5.1.1/Q.2630.1 [11] shall be replaced by the following paragraphs:

The AAL type 2 signalling entity provides the following services to the AAL type 2 served user across the A2SU-SAP:

- establishment of AAL type 2 connections;
- release of AAL type 2 connections; and
- modification of AAL type 2 connection resources.

Consistent with item f) of 5.1.3/Q.2630.1 [11], the same also applies to the modification procedures specified in this Recommendation.

The AAL type 2 signalling protocol entity is independent of the AAL type 2 served user.

5.1.2 Primitives between AAL type 2 signalling entities and the AAL type 2 served user

In addition to the cases specified in 5.1.2/Q.2630.1 [11], the A2SU-SAP primitives are used after successful modification capability negotiation during AAL type 2 connection establishment:

- 3) by the modification sending served user to originate, and the modification receiving served user to respond to, an AAL type 2 connection resource modification request; and
- 4) by the AAL type 2 signalling entities to indicate a modification of the AAL type 2 connection resource to the modification receiving served user and notify the modification originating served user of the successful or unsuccessful modification.

The services are provided through the transfer of primitives which are summarized in Table 5-1, and are defined after the table.

The AAL type 2 served user passes information in parameters in the primitives. Some of those parameters are mandatory and some are optional; the appropriate usage of the parameters is described in clause 8.

Table 5-1/Q.2630.2 – Primitives and parameters exchanged between the AAL type 2 signalling entities and the AAL type 2 served user

Primitive generic name	Type			
	Request	Indication	Response	Confirm
ESTABLISH	A2EA, SUGR, SUT, TCI, SSCS, LC, MSLC, PLC, MSSSI, PSSCS, PT	SUGR, SUT, TCI, SSCS, MSLC, LC, PLC, MSSSI, PSSCS, PT	Not defined	MSLC, MSSSI
RELEASE	Cause	Cause	Not defined	Cause
MODIFY	LC, SSCS, SUCI	LC, SSCS, SUCI	SUCI	SUCI
MODIFY-REJECT	Not defined	Not defined	Not defined	Cause

The definition of the primitives a) through to c) of 5.1.2/Q.2630.1 [11] shall be replaced by:

a) **ESTABLISH.request:**

This primitive is used by the AAL type 2 served user to initiate the establishment of a new AAL type 2 connection, and optionally request the capability for subsequent modification to be performed on the requested connection via MODIFY [g) through to k)], and MSLC, PLC, MSSSI, or PSSCS parameters.

b) **ESTABLISH.indication:**

This primitive is used by the AAL type 2 signalling entities to indicate that an incoming connection has been successfully established, and optionally indicate that the incoming connection is capable of subsequent modification via MODIFY [g) through to k)], and MSLC, PLC, MSSSI, or PSSCS parameters.

c) **ESTABLISH.confirm:**

This primitive is used by the AAL type 2 signalling entities to indicate that the connection (which was previously requested by the served user) has successfully been established, and optionally indicate that the established connection is capable of subsequent modification via MODIFY [g) through to k)], and MSLC, PLC, MSSSI, or PSSCS parameters.

The definition of the primitives d) through to f) of 5.1.2/Q.2630.1 [11] shall apply.

In addition, the following definitions are provided:

g) **MODIFY.request:**

This primitive is used by the AAL type 2 served user to originate the modification of the AAL type 2 connection resource.

h) **MODIFY.indication:**

This primitive is used by the AAL type 2 signalling entities to indicate that the modification of the AAL type 2 connection resource has been successfully performed.

i) **MODIFY.response:**

This primitive is used by the AAL type 2 served user to respond to the modification of the AAL type 2 connection resource.

j) **MODIFY.confirm:**

This primitive is used by the AAL type 2 signalling entities to indicate that the AAL type 2 connection resource modification (which was previously requested by the served user) has successfully been performed.

k) **MODIFY-REJECT.confirm:**

This primitive is used by the AAL type 2 signalling entities to indicate that the AAL type 2 connection resource modification (which was previously requested by the served user) has been rejected.

5.1.3 Parameters between AAL type 2 signalling entities and the AAL type 2 served user

Clause 5.1.3/Q.2630.1 [11] shall apply with the following modification:

e) **SSCS Information (SSCS)**

This parameter identifies the type and the capabilities of an AAL type 2 SSCS protocol. This parameter can have the form of either:

- Service Specific Information (Multirate) (see ITU-T I.366.2 [13]);
- Service Specific Information (Audio) (see ITU-T I.366.2 [13]);
- Service Specific Information (Multirate Extended) (see Note 1);
- Service Specific Information (Audio Extended) (see Note 1); or
- Service Specific Information (SAR) (see ITU-T I.366.1 [8]) with or without the additional parameters necessary for the assured data transfer.

NOTE 1 – Multirate Extended and Audio Extended are used in this Recommendation to support the services of the U-Plane definitions of the 2000 version of ITU-T I.366.2 [13]. The (non-extended) Multirate and Audio are retained for backward compatibility with ITU-T Q.2630.1 [11]. For example, the Audio Extended form of the SSCS Information parameter in this Recommendation (see 7.4.19) adds support for LB, RC, and SYN that were added as U-Plane functions in the 2000 version of ITU-T I.366.2 [13].

Add the following items:

h) **Modify Support for Link Characteristics (MSLC)**

This parameter gives an indication that the Link Characteristics of the AAL type 2 connection may need to be modified during the lifetime of the AAL type 2 connection (ESTABLISH.request) or are permitted to be modified (ESTABLISH.indication and ESTABLISH.confirm).

i) **Modify Support for SSCS Information (MSSSI)**

This parameter gives an indication that the SSCS Information of the AAL type 2 connection may need to be modified during the lifetime of the AAL type 2 connection (ESTABLISH.request) or are permitted to be modified (ESTABLISH.indication and ESTABLISH.confirm).

j) **Preferred Link Characteristics (PLC)**

This parameter gives an indication that the Link Characteristics shall be set as indicated in this parameter if the modification of the Link Characteristics is permitted.

k) **Preferred SSCS Information (PSSCS)**

This parameter gives an indication that the SSCS Information shall be set as indicated in this parameter if the modification of the SSCS Information is permitted. This parameter can have the form of either:

- Preferred Service Specific Information (Multirate Extended) (see Note 2); or
- Preferred Service Specific Information (Audio Extended) (see Note 2).

NOTE 2 – Multirate Extended and Audio Extended are used in this Recommendation to support the services of the U-Plane definitions of the 2000 version of ITU-T I.366.2 [13]. The (non-extended) Multirate and Audio are retained for backward compatibility with ITU-T Q.2630.1 [11]. For example, the Audio Extended form of the SSCS Information parameter in this Recommendation (see 7.4.19) adds support for LB, RC, and SYN that were added as U-Plane functions in the 2000 version of ITU-T I.366.2 [13].

Modification of Frame Mode Data as specified in ITU-T I.366.2 [13], or modification of SAR as specified in ITU-T I.366.1 [8] is outside the scope of this Recommendation.

l) **Path Type (PT)**

This parameter indicates a request for an AAL type 2 path with a specified Quality of Service.

m) **Served User Correlation ID (SUCI)**

This parameter carries the SSCS correlation ID (as specified in ITU-T I.366.2 [13]) during the modification of SSCS Information and is transported unmodified to the destination or origination served user.

5.2 Interface between the AAL type 2 signalling entity and the generic signalling transport

Clause 5.2/Q.2630.1 [11] shall apply.

5.3 Interface between the AAL type 2 signalling entity and layer management

Clause 5.3/Q.2630.1 [11] shall apply with the exception of Table 5-3/Q.2630.1 which shall be replaced by Table 5-3:

Table 5-3/Q.2630.2 – Primitives and parameters exchanged between the AAL type 2 signalling entities and layer management

Primitive generic name	Type			
	Request	Indication	Response	Confirm
BLOCK	ANI, A2P	Not defined	Not defined	Cause
UNBLOCK	ANI, A2P	Not defined	Not defined	Cause
RESET	ANI, CEID	ANI, CEID	Not defined	–
STOP-RESET	ANI, CEID	Not defined	Not defined	Not defined
ADD-PATH	Not defined	ANI, A2P, PT Ownership	Not defined	Not defined
REMOVE-PATH	Not defined	ANI, A2P	Not defined	Not defined
ERROR	Not defined	ANI, CEID, Cause	Not defined	Not defined
– This primitive has no parameters.				

In addition, the following item f) shall be added to the list in 5.3.3/Q.2630.1.

f) **Path Type (PT)**

This parameter indicates the Quality of Service class of the newly established AAL type 2 path.

6 Forward and backward compatibility

The forward and backward compatibility specified in clause 6/Q.2630.1 [11] shall apply.

The coding of message and parameter compatibility information is shown in Annex B; these codings shall be used to maintain backward compatibility with AAL type 2 nodes conforming only to ITU-T Q.2630.1 [11].

7 Format and coding of AAL type 2 signalling protocol

7.1 Coding conventions for the AAL type 2 signalling protocol

Clause 7.1/Q.2630.1 [11] shall apply.

7.2 Format and coding of the AAL type 2 signalling protocol messages

The following subclauses specify additional format and coding to 7.2/Q.2630.1 [11].

7.2.1 AAL type 2 signalling protocol messages

The AAL type 2 signalling protocol messages and their message identifiers are shown in Table 7-5.

Table 7-5/Q.2630.2 – AAL type 2 messages and the coding of the message identifiers

Message	Acronym	Message Identifier
Block Confirm	BLC	0 0 0 0 0 0 0 1
Block Request	BLO	0 0 0 0 0 0 1 0
Confusion	CFN	0 0 0 0 0 0 1 1
Establish Confirm	ECF	0 0 0 0 0 1 0 0
Establish Request	ERQ	0 0 0 0 0 1 0 1
Modify Acknowledge	MOA	0 0 0 0 1 1 0 0
Modify Reject	MOR	0 0 0 0 1 1 0 1
Modify Request	MOD	0 0 0 0 1 1 1 0
Release Confirm	RLC	0 0 0 0 0 1 1 0
Release Request	REL	0 0 0 0 0 1 1 1
Reset Confirm	RSC	0 0 0 0 1 0 0 0
Reset Request	RES	0 0 0 0 1 0 0 1
Unblock Confirm	UBC	0 0 0 0 1 0 1 0
Unblock Request	UBL	0 0 0 0 1 0 1 1

7.2.2 Parameters of the AAL type 2 signalling protocol messages

Clause 7.2.2/Q.2630.1 [11] shall apply with the exception of Table 7-6/Q.2630.1 (part 1 of 2) and Table 7-7/Q.2630.1, which are replaced by Tables 7-6 and 7-7:

**Table 7-6/Q.2630.2 – Parameters of the AAL type 2
Signalling Protocol messages (part 1 of 2)**

Parameter	Message						
	ERQ	ECF	REL	RLC	MOD	MOA	MOR
Cause	–	–	M	(Note 5)	–	–	M
Connection Element Identifier	M	–	–	O	–	–	–
Destination E.164 Service Endpoint Address	(Note 3)	–	–	–	–	–	–
Destination NSAP Service Endpoint Address	(Note 3)	–	–	–	–	–	–
Destination Signalling Association Identifier (Note 1)	(Note 2)	M	M	M	M	M	M
Link Characteristics	O (Note 10)	–	–	–	O	–	–
Modify Support for Link Characteristics	O	O	–	–	–	–	–
Modify Support for Service Specific Information	O	O	–	–	–	–	–
Originating Signalling Association Identifier	M	M	–	–	–	–	–
Path Type	O (Note 6)	–	–	–	–	–	–
Preferred Link Characteristics	O (Note 8)	–	–	–	–	–	–
Preferred Service Specific Information (Audio Extended)	(Note 9)	–	–	–	–	–	–
Preferred Service Specific Information (Multirate Extended)	(Note 9)	–	–	–	–	–	–
Served User Correlation ID	–	–	–	–	O	O	–
Served User Generated Reference	O	–	–	–	–	–	–
Served User Transport	O	–	–	–	–	–	–
Service Specific Information (Audio)	(Notes 4 and 11)	–	–	–	–	–	–
Service Specific Information (Audio Extended)	(Notes 4 and 11)	–	–	–	(Note 7)	–	–
Service Specific Information (Multirate Extended)	(Notes 4 and 11)	–	–	–	(Note 7)	–	–
Service Specific Information (Multirate)	(Notes 4 and 11)	–	–	–	–	–	–
Service Specific Information (SAR-assured)	(Note 4)	–	–	–	–	–	–
Service Specific Information (SAR-unassured)	(Note 4)	–	–	–	–	–	–
Test Connection Indicator	O	–	–	–	–	–	–
M Mandatory parameter O Optional parameter – Parameter not present NOTE 1 – This row designates the Destination Signalling Association Identifier field in the message header. NOTE 2 – The Destination Signalling Association Identifier field contains the value "unknown". NOTE 3 – Exactly one of these parameters must be present in an instance of the message. NOTE 4 – At most one of these parameters is present in an instance of the message.							

Table 7-6/Q.2630.2 – Parameters of the AAL type 2 Signalling Protocol messages (part 1 of 2) (concluded)

NOTE 5 – The "Cause" parameter is present in the Release Confirm message if:

- a) the RLC is used to reject a connection establishment; or
- b) the cause reports unrecognized information received in the REL message.

NOTE 6 – If the Path Type parameter is not included, the Path Type shall be considered to be the network default stringent QoS class.

NOTE 7 – At most one of these parameters is present in an instance of the message and only the same parameter that was present in the Establish Request message may be present.

NOTE 8 – This parameter may only be included if "Modify Support for Link Characteristics" is included.

NOTE 9 – This parameter may only be included if "Modify Support for Service Specific Information" is included; at most one of these parameters is present in an instance of the message.

NOTE 10 – If Modify Support for Link Characteristics parameter is included, this parameter shall be included also.

NOTE 11 – If the Modify Support for Service Specific Information parameter is included, one of these parameters shall be included also.

Table 7-7/Q.2630.2 – Identifiers of the AAL type 2 message parameters

AAL type 2 parameter	Ref.	Acronym	Identifier
Cause	7.3.1	CAU	0 0 0 0 0 0 0 1
Connection Element Identifier	7.3.2	CEID	0 0 0 0 0 0 1 0
Destination E.164 Service Endpoint Address	7.3.3	ESEA	0 0 0 0 0 0 1 1
Destination NSAP Service Endpoint Address	7.3.4	NSEA	0 0 0 0 0 1 0 0
Link Characteristics	7.3.5	LC	0 0 0 0 0 1 0 1
Modify Support for Link Characteristics	7.3.20	MSLC	0 0 0 0 1 1 1 0
Modify Support for Service Specific Information	7.3.21	MSSSI	0 0 0 0 1 1 1 1
Originating Signalling Association Identifier	7.3.6	OSAI	0 0 0 0 0 1 1 0
Path Type	7.3.14	PT	0 0 0 1 0 0 0 0
Preferred Link Characteristics	7.3.19	PLC	0 0 0 1 0 0 0 1
Preferred Service Specific Information (Audio Extended)	7.3.17	PSSIAE	0 0 0 1 0 0 1 0
Preferred Service Specific Information (Multirate Extended)	7.3.18	PSSIME	0 0 0 1 0 0 1 1
Served User Correlation ID	7.3.22	SUCI	0 0 0 1 0 1 0 0
Served User Generated Reference	7.3.7	SUGR	0 0 0 0 0 1 1 1
Served User Transport	7.3.8	SUT	0 0 0 0 1 0 0 0
Service Specific Information (Audio Extended)	7.3.15	SSIAE	0 0 0 1 0 1 1 0
Service Specific Information (Audio)	7.3.9	SSIA	0 0 0 0 1 0 0 1
Service Specific Information (Multirate Extended)	7.3.16	SSIME	0 0 0 1 0 1 1 1
Service Specific Information (Multirate)	7.3.10	SSIM	0 0 0 0 1 0 1 0
Service Specific Information (SAR-assured)	7.3.11	SSISA	0 0 0 0 1 0 1 1
Service Specific Information (SAR-unassured)	7.3.12	SSISU	0 0 0 0 1 1 0 0
Test Connection Indicator	7.3.13	TCI	0 0 0 0 1 1 0 1

7.3 Parameter specification of the AAL type 2 signalling protocol messages

Clause 7.3/Q.2630.1 [11] shall apply with following subclauses added.

7.3.14 Path Type

The sequence of fields in the Path Type parameter is shown in Table 7-20.

Table 7-20/Q.2630.2 – Sequence of fields in the path characteristics parameter

Field No.	Field	Ref.
1	AAL type 2 Path QoS Codepoint	7.4.21

If the Path Type parameter is not included, the Path Type shall be considered to be the network default stringent QoS class.

7.3.15 Service Specific Information (Audio Extended)

The sequence of field in the Service Specific Information (Audio Extended) parameter is shown in Table 7-21.

Table 7-21/Q.2630.2 – Sequence of field in the Service Specific Information (Audio Extended) parameter

Field No.	Field	Ref.
1	Audio extended service	7.4.19
2	Organizational unique identifier	7.4.5

7.3.16 Service Specific Information (Multirate Extended)

The sequence of field in the Service Specific Information (Multirate Extended) parameter is shown in Table 7-22.

Table 7-22/Q.2630.2 – Sequence of field in the Service Specific Information (Multirate Extended) parameter

Field No.	Field	Ref.
1	Multirate extended service	7.4.20

7.3.17 Preferred Service Specific Information (Audio Extended)

The sequence of field in the Preferred Service Specific Information (Audio Extended) parameter is shown in Table 7-23.

Table 7-23/Q.2630.2 – Sequence of field in the Preferred Service Specific Information (Audio Extended) parameter

Field No.	Field	Ref.
1	Audio extended service	7.4.19
2	Organizational unique identifier	7.4.5

7.3.18 Preferred Service Specific Information (Multirate Extended)

The sequence of field in the Preferred Service Specific Information (Multirate Extended) parameter is shown in Table 7-24.

Table 7-24/Q.2630.2 – Sequence of field in the Preferred Service Specific Information (Multirate Extended) parameter

Field No.	Field	Ref.
1	Multirate extended service	7.4.20

7.3.19 Preferred Link Characteristics

The sequence of fields in the Preferred Link Characteristics parameter is shown in Table 7-25.

Table 7-25/Q.2630.2 – Sequence of fields in the Preferred Link Characteristics parameter

Field No.	Field	Ref.
1	Maximum CPS-SDU Bit Rate	(Note 1)
2	Average CPS-SDU Bit Rate	(Note 1)
3	Maximum CPS-SDU Size	(Note 2)
4	Average CPS-SDU Size	(Note 2)
NOTE 1 – This field is coded as a CPS-SDU Bit Rate field (see 7.4.11/Q.2630.1 [11]).		
NOTE 2 – This field is coded as a CPS-SDU Size field (see 7.4.12/Q.2630.1 [11]).		

7.3.20 Modify Support for Link Characteristics

The Modify Support for Link Characteristics parameter has no fields, i.e. the parameter length is always zero.

7.3.21 Modify Support for Service Specific Information

The Modify Support for Service Specific Information parameter has no fields, i.e. the parameter length is always zero.

7.3.22 Served User Correlation ID

The sequence of field in the Served User Correlation ID parameter is shown in Table 7-26.

Table 7-26/Q.2630.2 – Sequence of field in the Served User Correlation ID parameter

Field No.	Field	Ref.
1	Served User Correlation ID value	7.4.22

7.4 Field specification of the AAL type 2 signalling protocol parameters

Clause 7.4/Q.2630.1 [11] shall apply with:

- the tables renumbered as follows:
Table 7-20/Q.2630.1 → Table 7-27/Q.2630.2
Table 7-21/Q.2630.1 → Table 7-28/Q.2630.2

- Table 7-22/Q.2630.1 → Table 7-29/Q.2630.2
- Table 7-23/Q.2630.1 → Table 7-30/Q.2630.2
- Table 7-24/Q.2630.1 → Table 7-31/Q.2630.2
- Table 7-25/Q.2630.1 → Table 7-32/Q.2630.2
- Table 7-26/Q.2630.1 → Table 7-33/Q.2630.2
- Table 7-27/Q.2630.1 → Table 7-34/Q.2630.2
- Table 7-28/Q.2630.1 → Table 7-35/Q.2630.2
- Table 7-29/Q.2630.1 → Table 7-36/Q.2630.2
- Table 7-30/Q.2630.1 → Table 7-37/Q.2630.2
- Table 7-31/Q.2630.1 → Table 7-38/Q.2630.2
- Table 7-32/Q.2630.1 → Table 7-39/Q.2630.2
- Table 7-33/Q.2630.1 → Table 7-40/Q.2630.2
- Table 7-34/Q.2630.1 → Table 7-41/Q.2630.2
- Table 7-35/Q.2630.1 → Table 7-42/Q.2630.2
- Table 7-36/Q.2630.1 → Table 7-43/Q.2630.2
- Table 7-37/Q.2630.1 → Table 7-44/Q.2630.2
- Table 7-38/Q.2630.1 → Table 7-45/Q.2630.2

- the following subclauses added:

7.4.19 Audio Extended service

The Audio Extended service for the AAL type 2 is defined as "audio service" in ITU-T I.366.2 [13]. The structure of the Audio Extended service field is shown in Table 7-46.

Table 7-46/Q.2630.2 – Structure of the Audio Extended service field

8	7	6	5	4	3	2	1	Octets
Profile Type		Reserved			LB	RC	SYN	1
Profile Identifier								2
FRM	CMD	MF-R2	MF-R1	DTMF	CAS	FAX	A/μ-law	3
Maximum length of frame mode data								4
								5

The following codes are used in the subfields of the audio service field:

- a) Profile Type:
- 00 The "Profile Identifier" designates a profile specified in ITU-T I.366.2 [13]; the organizational unique identifier field in the same parameter is ignored.
 - 01 The "Profile Identifier" designates a profile specified by an organization designated by the organizational unique identifier field in the same parameter.
 - 10 The "Profile Identifier" designates a custom profile; the organizational unique identifier field in the same parameter is ignored.
 - 11 Reserved.

b) Profile Identifier

The "Profile Identifier" designates a profile as specified either in ITU-T I.366.2 [13], by an organization designated by the organizational unique identifier field in the same parameter, or in a custom profile depending on the value of the "Profile Type".

c) LB	0	Loopback disabled
	1	Loopback enabled
RC	0	Transport of rate control commands disabled
	1	Transport of rate control commands enabled
SYN	0	Transport of synchronization of change in SSCS operation disabled
	1	Transport of synchronization of change in SSCS operation enabled
FRM	0	Transport of frame mode data disabled
	1	Transport of frame mode data enabled
CMD	0	Transport of circuit mode data (64 kbit/s) disabled
	1	Transport of circuit mode data (64 kbit/s) enabled
MF-R2	0	Transport of multi-frequency R2 dialled digits disabled
	1	Transport of multi-frequency R2 dialled digits enabled
MF-R1	0	Transport of multi-frequency R1 dialled digits disabled
	1	Transport of multi-frequency R1 dialled digits enabled
DTMF	0	Transport of dual tone multi-frequency dialled digits disabled
	1	Transport of dual tone multi-frequency dialled digits enabled
CAS	0	Transport of channel associated signalling disabled
	1	Transport of channel associated signalling enabled
FAX	0	Transport of demodulated facsimile data disabled
	1	Transport of demodulated facsimile data enabled
A/μ-Law	0	Interpretation of generic PCM coding: A-Law
	1	Interpretation of generic PCM coding: μ-Law

7.4.20 Multirate Extended service

The structure of the Multirate Extended service field is shown in Table 7-47.

Table 7-47/Q.2630.2 – Structure of the Multirate Extended service field

8	7	6	5	4	3	2	1	Octets	
FRM	LB	Reserved	Multiplier n for $n \times 64$ kbit/s						1
Maximum length of frame mode data								2	
								3	

FRM 0 Transport of frame mode data disabled

1 Transport of frame mode data enabled

LB0 Loopback disabled

1 Loopback enabled

n $1 \leq n \leq 31$ Multiplier for $n \times 64$ kbit/s

7.4.21 AAL type 2 Path QoS Codepoint

The structure of the AAL type 2 Path QoS Codepoint field is shown in Table 7-48; the field is a fixed size field of 1 octet.

Table 7-48/Q.2630.2 – Structure of the AAL type 2 Path QoS Codepoint field

8	7	6	5	4	3	2	1	Octet
AAL type 2 path QoS codepoint								1

The "AAL type 2 Path QoS Codepoint" has the following meaning:

- 0 Reserved for assignment by ITU-T
- 1 Stringent class
- 2 Tolerant class
- 3,4 Reserved for assignment by ITU-T
- 5 Stringent bi-level class
- 6 to 127 Reserved for assignment by ITU-T
- 128 to 255 Reserved for network specific assignment

The attributes of "stringent class", "tolerant class", and "stringent bi-level class" are those defined in ITU-T I.356 [12].

7.4.22 Served User Correlation ID value

The structure of the Served User Correlation ID value field is shown in Table 7-49; the field is a fixed size field of 1 octet.

Table 7-49/Q.2630.2 – Structure of the Served User Correlation ID value field

8	7	6	5	4	3	2	1	Octet
Served User Correlation ID value								1

The Served User Correlation ID value adheres to the specifications in ITU-T I.366.2 [13].

8 Procedure of the AAL type 2 signalling protocol

The procedure of the AAL type 2 signalling protocol specified in clause 8/Q.2630.1 [11] shall apply with the last paragraph replaced by:

The Service Endpoint Address, the Served User Generated Reference, the Served User Transport, the Link Characteristics, the Preferred Link Characteristics, the Modify Support for Link Characteristics, the SSCS Information, the Preferred SSCS Information, the Modify Support for SSCS Information, the Path Type, and the Test Connection Indicator shall not be modified by the nodal function. The Served User Generated Reference and the Served User Transport are parameters with significance to the served user only, therefore, they shall not be examined by the nodal function.

8.1 Compatibility

Clause 8.1/Q.2630.1 [11] shall apply.

8.2 Nodal functions

8.2.1 Nodal functions for AAL type 2 nodes with served user interaction

8.2.1.1 Connection control

8.2.1.1.1 Successful connection set-up

8.2.1.1.1.1 Actions at the originating AAL type 2 endpoint

Clause 8.2.1.1.1.1/Q.2630.1 [11] shall be replaced by the following paragraphs:

When the nodal function receives an ESTABLISH.request primitive from the AAL type 2 served user, the following restrictions on the optionality of the parameters of the primitive apply:

- The Preferred Link Characteristics parameter shall only be present if the Modify Support for Link Characteristics parameter is present also;
- The Preferred SSCS Information parameter shall only be present if the Modify Support for SSCS Information parameter is present also;
- The Link Characteristics parameter shall be present if the Modify Support for Link Characteristics parameter is present also; and
- The SSCS Information parameter shall be present if the Modify Support for SSCS Information parameter is present also.

The nodal function analyses the routing information and selects a route with sufficient AAL type 2 path resources on a path with the requested Path Type (or network default if the Path Type is not specified) to the succeeding AAL type 2 node. It then selects an AAL type 2 path from within that route which is able to accommodate the new connection.

NOTE 1 – Routing typically is based on:

- Addressing information;
- the Test Connection Indicator;
- Link Characteristics;
- Requested Path Type; and
- SSCS information (if Link Characteristics are not present).

AAL type 2 node internal resources are allocated to establish an AAL type 2 node internal path for the new connection from the originating AAL type 2 served user to the outgoing AAL type 2 path.

On the selected outgoing AAL type 2 path, the CID and other resources (e.g. indicated by Link Characteristics or SSCS Information) are allocated for the outgoing AAL type 2 link.

An outgoing protocol entity instance is invoked and the following parameters are passed to it: the AAL type 2 Service Endpoint Address, the AAL type 2 Path Identifier, and a CID value. The nodal function shall pass the following parameters to the outgoing protocol entity instance only if they were conveyed by the originating AAL type 2 served user: the Link Characteristics, the Preferred Link Characteristics, the Modify Support for Link Characteristics, the Path Type, the SSCS Information, the Preferred SSCS Information, the Modify Support for SSCS Information, the Served User Generated Reference, the Served User Transport, and the Test Connection Indicator. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

NOTE 2 – Through-connection of the transmission path at AAL type 2 endpoints is not specified by this Recommendation. It may be controlled by the AAL type 2 served user.

After receiving an indication of the successful AAL type 2 connection set-up from the outgoing protocol entity instance, an ESTABLISH.confirm primitive is sent to the AAL type 2 served user. If a Modify Support for Link Characteristics parameter was received from the outgoing protocol instance, a Modify Support for Link Characteristics parameter shall be included in the ESTABLISH.confirm primitive. If a Modify Support for SSCS Information parameter was received from the outgoing protocol instance a Modify Support for SSCS Information parameter shall be included in the ESTABLISH.confirm primitive. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

8.2.1.1.1.2 Actions at the destination AAL type 2 endpoint

Clause 8.2.1.1.1.2/Q.2630.1 [11] shall be replaced by the following paragraphs:

Upon receiving an indication from an incoming protocol entity instance requesting a new connection, the nodal function checks the availability of the CID value and other resources, e.g. indicated by Link Characteristics or SSCS Information, in the incoming AAL type 2 path. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

If the Test Connection Indicator parameter is present, a "locally blocked" or "remotely blocked" AAL type 2 path shall be acceptable for the incoming connection.

If the CID and the other resources are available for the new connection, they are allocated to the new connection and then the AAL type 2 Service Endpoint Address is examined. The nodal function determines that the destination AAL type 2 Service Endpoint has been reached.

AAL type 2 node internal resources are allocated to establish an AAL type 2 node internal path for the new connection from the incoming AAL type 2 path to the destination AAL type 2 served user.

The nodal function acknowledges the successful AAL type 2 connection establishment towards the incoming protocol entity instance. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

An ESTABLISH.indication primitive is sent to the AAL type 2 served user to inform it of the successfully established new connection. The nodal function shall pass the following parameters to the destination AAL type 2 served user only if they were conveyed by the incoming protocol entity instance: the Served User Transport, the Served User Generated Reference, the Path Type, and the Test Connection Indicator. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

NOTE 2 – Through-connection of the transmission path at AAL type 2 endpoints is not specified by this Recommendation. It may be controlled by the AAL type 2 served user.

8.2.1.1.2 Unsuccessful/abnormal connection set-up

8.2.1.1.2.1 Actions at the originating AAL type 2 endpoint

Clause 8.2.1.1.2.1/Q.2630.1 [11] shall apply with the following Note added after the bullet list:

NOTE – Path selection failure may be due to the unavailability of an AAL type 2 path with the requested Path Type.

The paragraph starting with "Upon receiving a negative acknowledgement for the connection setup request from the outgoing protocol entity instance" shall be replaced by the following three paragraphs:

Upon receiving a negative acknowledgement for the connection set-up request from the outgoing protocol entity instance, all the resources associated with this AAL type 2 link are released and made available for new traffic. The association to the outgoing protocol entity instance is released.

Features that enable a further connection attempt, involving the selection of a different AAL type 2 path within the same route or of an alternative route, may be implemented. Such reattempts may use the CEID parameter returned in the Release Confirm (RLC) message and may select a different AAL type 2 path within the same route only. If the CEID parameter specifies an AAL type 2 path with insufficient resources available for the connection attempt, no connection attempt is made on that path.

If no further connection attempt is made, the AAL type 2 node internal resources are released and a RELEASE.confirm primitive is sent to the AAL type 2 served user with the cause received from the outgoing protocol entity instance.

8.2.1.1.2.2 Actions at the destination AAL type 2 endpoint

Clause 8.2.1.1.2.2/Q.2630.1 [11] shall apply with a further paragraph added after the first paragraph with the two bullet items:

If the nodal function detects that the destination is not reachable, it may issue a redirection request by rejecting the AAL type 2 connection with the cause "No route to destination" and include an alternative AAL type 2 path identifier in a Connection Element Identifier parameter.

8.2.1.1.3 Normal connection release

Clause 8.2.1.1.3/Q.2630.1 [11] shall apply.

8.2.1.1.4 Abnormal connection release procedures

Clause 8.2.1.1.4/Q.2630.1 [11] shall apply.

8.2.1.1.5 Successful modification

This new subclause shall be added to 8.2.1.1/Q.2630.1 [11].

NOTE – In this subclause, the term "AAL type 2 connection resource information" does not distinguish between Link Characteristics or SSCS Information.

8.2.1.1.5.1 Actions at the AAL type 2 endpoint originating the modification request

When the nodal function receives a MODIFY.request primitive possibly containing a Served User Correlation ID parameter from the AAL type 2 served user, it checks the availability of resources indicated by the AAL type 2 connection resource in the AAL type 2 path. If the resources are available for the connection, they are reserved for the connection.

The protocol entity instance is informed of the modification request and the AAL type 2 connection resource information is passed to it. If a Served User Correlation ID parameter was contained in the primitive, this parameter is passed to the protocol entity as well.

After receiving an indication of the successful AAL type 2 connection resource modification from the protocol entity instance, the reserved additional resources are allocated to the connection or resources no longer required for this AAL type 2 connection are freed. A MODIFY.confirm primitive is then sent to the AAL type 2 served user. If a Served User Correlation ID parameter was received from the protocol entity instance, it shall be included in the primitive.

8.2.1.1.5.2 Actions at the AAL type 2 endpoint receiving the modification request

Upon receiving an indication from a protocol entity instance requesting modification of the AAL type 2 connection resource, the nodal function checks the availability of resources indicated by the AAL type 2 connection resource information in the incoming AAL type 2 path. If the resources are available for the connection, they are reserved for the connection.

A MODIFY.indication primitive is sent to the AAL type 2 served user to inform it of the modification of AAL type 2 connection resource. If a Served User Correlation ID parameter was received from the protocol entity instance, it shall be included in the primitive.

Upon receiving a MODIFY.response from the served user, the reserved additional resources are allocated to the connection or resources no longer required for this AAL type 2 connection are freed. The nodal function acknowledges the successful AAL type 2 connection resource modification towards the protocol entity instance. If a Served User Correlation ID parameter was contained in the primitive, this parameter is passed to the protocol entity as well.

8.2.1.1.6 Unsuccessful/abnormal modification

This new subclause shall be added to 8.2.1.1/Q.2630.1 [11].

8.2.1.1.6.1 Actions at the AAL type 2 endpoint originating the modification request

If resources on the AAL type 2 path are not available, a MODIFY-REJECT.confirm primitive is returned to the AAL type 2 served user with the cause "Resource unavailable, unspecified".

Upon receiving a negative acknowledgement for the modification request from the protocol entity instance, all additional resources reserved for the modification request are freed. A MODIFY-REJECT.confirm primitive is sent to the AAL type 2 served user with the cause received from the protocol entity instance.

Upon receiving an indication from the outgoing protocol entity instance that a timer has expired, the association to the outgoing protocol entity instance is released and a reset procedure is started (see 8.2.1.2.1.1/Q.2630.1 [11] case 3a with the modification in 8.2.1.2). The AAL type 2 node internal resources are released. A RELEASE.indication primitive is sent to the AAL type 2 served user with the cause received from the outgoing protocol entity instance, i.e. "Recovery on timer expiry".

8.2.1.1.6.2 Actions at the AAL type 2 endpoint receiving the modification request

If the resources on the AAL type 2 path are not available, the nodal function requests the protocol entity instance to reject the AAL type 2 modification request with the cause "Resource unavailable, unspecified".

8.2.1.1.7 Connection release during modification

This new subclause shall be added to 8.2.1.1/Q.2630.1 [11].

8.2.1.1.7.1 Actions at the AAL type 2 endpoint

When the nodal function receives a RELEASE.request primitive from the AAL type 2 served user or an indication of connection release from the protocol entity instance during the modification procedures, the nodal function will continue with normal connection release procedures.

8.2.1.2 Maintenance control

Clause 8.2.1.2/Q.2630.1 [11] shall apply with the following modification to 8.2.1.2.1/Q.2630.1 [11] list item "a)": Add the following third bullet item:

- Timer "Timer_MOD" expiry – Action: Reset the single AAL type 2 channel associated with the incoming or outgoing protocol entity instance.

In 8.2.1.2.1.1/Q.2630.1 [11], item a) shall be replaced by:

- a) After the expiry of Timer_ERQ, Timer_REL, or Timer_MOD, the nodal function invokes a maintenance protocol entity by passing a request for a reset together with the identity of the AAL type 2 path and the channel.

The reset procedures and the release procedures take precedence over the modification procedures.

The blocking and unblocking procedures do not affect the modification procedures.

8.2.1.3 Error handling

Clause 8.2.1.3/Q.2630.1 [11] shall apply.

8.2.1.4 Interworking with AAL type 2 nodes conforming only to ITU-T Q.2630.1

This new subclause shall be added to 8.2.1/Q.2630.1 [11].

Interworking with AAL type 2 nodes conforming only to ITU-T Q.2630.1 [11] is guaranteed by setting the compatibility information on new messages and parameters as specified in Annex B.

As the network default stringent QoS class is used for the specific AAL type 2 link in the AAL type 2 connection by the node not recognizing the Path Type parameter, the preceding node must be notified when this parameter is not recognized. Upon receiving this notification, the preceding node allows the connection to be established (QoS requirements are met by the network default stringent QoS class), or releases the connection with the cause "Resource unavailable, unspecified" (QoS requirements are not met by network default stringent QoS class).

8.2.2 Nodal functions for AAL type 2 nodes without served user interaction

8.2.2.1 Connection control

8.2.2.1.1 Successful connection set-up

Clause 8.2.2.1.1/Q.2630.1 [11] shall be replaced by the following paragraphs:

Upon receiving notification from an incoming protocol entity instance requesting a new connection, the nodal function checks the availability of the CID value and other resources, e.g. indicated by link characteristic or SSCS information, in the incoming AAL type 2 path. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

If the Test Connection Indicator parameter is present, "locally blocked" or "remotely blocked" AAL type 2 paths shall be acceptable for the incoming connection.

If the CID and the other resources are available for the incoming AAL type 2 link, the resources are allocated to the new connection.

The AAL type 2 Service endpoint address is then examined. The nodal function determines that the AAL type 2 connection needs to be routed further to reach the destination AAL type 2 service end point and analyses the routing information and selects a route with sufficient AAL type 2 path resources on a path with the requested Path Type (or network default if the Path Type is not specified) to the next AAL type 2 node. It then selects an AAL type 2 path from within the route which is able to accommodate the new connection.

NOTE – Routing typically is based on:

- Addressing information;
- the Test Connection Indicator;
- Link Characteristics;
- Requested Path Type; and
- SSCS Information (if Link Characteristics are not present).

AAL type 2 node internal resources are allocated to establish an AAL type 2 node internal path for the new connection from the incoming AAL type 2 path to the outgoing AAL type 2 path.

On the selected outgoing AAL type 2 path, the CID and other resources (e.g. indicated by Link Characteristics, or SSCS Information) are allocated for the outgoing AAL type 2 link.

An outgoing protocol entity instance is invoked and the following parameters are passed to it: The AAL type 2 Service Endpoint Address, the AAL type 2 Path Identifier, and a CID value. The nodal function shall pass the following parameters to the outgoing protocol entity instance only if they were conveyed by the incoming protocol entity instance: The Link Characteristics, the Preferred Link Characteristics, the Modify Support for Link Characteristics, the Path Type, the SSCS Information, the Preferred SSCS Information, the Modify Support for SSCS Information, the Served User Generated Reference, the Served User Transport, and the Test Connection Indicator. The handling of Link Characteristics, SSCS Information, and Modify Support parameters is specified in Annex C.

Through-connection of the transmission path in both directions will then be completed.

After receiving an indication of the successful AAL type 2 connection set-up from the outgoing protocol entity instance, the incoming protocol entity instance is informed of the successful AAL type 2 connection set-up. If one or more Modify Support parameters, i.e. Modify Support for Link Characteristics parameter or Modify Support for SSCS Information parameter, was received from the outgoing protocol instance they shall be conveyed to the incoming protocol entity instance. The handling of Modify Support parameters is specified in Annex C.

8.2.2.1.2 Unsuccessful/abnormal connection set-up

Clause 8.2.2.1.2/Q.2630.1 [11] shall apply with the following modifications:

After the bullet list following the paragraph starting with "If the AAL type 2 path selection or the allocation of a CID and other resources for the outgoing AAL type 2 link", add the following Note:

NOTE – Path selection failure may be due to the unavailability of an AAL type 2 path with the requested Path Type.

The paragraph starting with "Upon receiving a negative acknowledgement for the connection setup request from the outgoing protocol entity instance" shall be replaced by the following three paragraphs:

Upon receiving a negative acknowledgement from the outgoing protocol entity instance, all resources associated with the outgoing AAL type 2 link are released and made available for new traffic. The association to the outgoing protocol entity instance is released.

Features that enable a further connection attempt, involving the selection of a different AAL type 2 path within the same route or of an alternative route, may be implemented. Such reattempts may use the CEID parameter returned in the Release Confirm (RLC) message and may select a different AAL type 2 path within the same route only. If the CEID parameter specifies an AAL type 2 path with insufficient resources available for the connection attempt, no connection attempt is made on that path.

If no further connection attempt is made, the AAL type 2 node internal resources are released, the rejection of the connection establishment is forwarded to the incoming protocol entity instance with the cause received from the outgoing protocol entity instance; a Connection Element Identifier parameter possibly received in the Release Confirm (RLC) message is not forwarded to the incoming protocol entity instance. All the resources associated with the incoming AAL type 2 link are freed. The association to the incoming protocol entity instance is released.

8.2.2.1.3 Normal connection release

Clause 8.2.2.1.3/Q.2630.1 [11] shall apply.

8.2.2.1.4 Abnormal connection release procedures

Clause 8.2.2.1.4/Q.2630.1 [11] shall apply.

8.2.2.1.5 Successful modification

This new subclause shall be added to 8.2.2.1/Q.2630.1 [11].

NOTE – In this subclause, the term "AAL type 2 connection resource information" does not distinguish between Link Characteristics or SSCS Information. The term "modify receiving" refers to the AAL type 2 connection element identifier for which the Modify Request (MOD) message is received and the Modify Acknowledge (MOA) or Modify Reject (MOR) message is sent; conversely, the term "modify sending" refers to the AAL type 2 connection element identifier for which the Modify Request (MOD) message is sent and the Modify Acknowledge (MOA) or Modify Reject (MOR) message is received.

Upon receiving an indication from a protocol entity instance requesting modification of the AAL type 2 connection resource, the nodal function checks the availability of the requested internal resources on the indicated AAL type 2 path. If the modification is requesting additional internal resources and they are available, they are reserved for the connection.

The nodal function checks the availability of the requested resources on the modify sending AAL type 2 path. If the modification is requesting additional resources and they are available, they are reserved for the connection.

The companion (modify sending) protocol entity instance is informed of the modification request and the AAL type 2 connection resource information is passed to it. The nodal function shall pass the Served User Correlation ID parameter to the modify sending protocol entity instance only if it was conveyed by the modify receiving protocol entity instance.

After receiving an indication of the successful AAL type 2 connection resource modification from the modify sending protocol entity instance, the nodal function allocates the reserved additional resources to the modify receiving and modify sending connection or frees resources no longer required for this AAL type 2 connection. The modify receiving protocol entity instance is informed of the successful AAL type 2 connection resource modification. The nodal function shall pass the Served User Correlation ID parameter to the modify receiving protocol entity instance only if it was conveyed by the modify sending protocol entity instance.

8.2.2.1.6 Unsuccessful/abnormal modification

This new subclause shall be added to 8.2.2.1/Q.2630.1 [11].

If additional resources on the modify receiving AAL type 2 path are not available, the nodal function requests the modify receiving protocol entity instance to reject the AAL type 2 modification request with the cause "Resource unavailable, unspecified".

If the resources on the modify sending AAL type 2 path are not available, the nodal function requests the modify receiving protocol entity instance to reject the AAL type 2 modification request with the cause "Resource unavailable, unspecified". The additional resources reserved for the modify receiving AAL type 2 path are freed.

Upon receiving a negative acknowledgement for the modification request from the modify sending protocol entity instance, the nodal function frees all the additional resources reserved for the modification request. The rejection of the modification is forwarded to the modify receiving protocol entity instance with the cause received from the modify sending protocol entity instance.

Upon receiving an indication from the modify sending protocol entity instance that a timer has expired (in this case Timer_MOD), the association to the modify sending protocol entity instance is released and a reset procedure is started (see 8.2.2.2.1/Q.2630.1 [11] case 3a with the modification in 8.2.2.2). The AAL type 2 node internal resources for this AAL type 2 connection are released. The nodal function requests the modify receiving protocol entity instance to release the connection with the cause received from the modify sending protocol entity instance (i.e. "Recovery on timer expiry"). All resources associated with the modify receiving AAL type 2 link are freed. The association to the modify receiving protocol entity instance is released.

8.2.2.1.7 Connection release during modification

This new subclause shall be added to 8.2.2.1/Q.2630.1 [11].

When the nodal function receives an indication of connection release from the modify receiving or modify sending protocol entity instance during the modification procedures, the nodal function will continue with normal connection release procedures.

8.2.2.2 Maintenance control

Clause 8.2.2.2/Q.2630.1 [11] shall apply with the following modification to the referred to 8.2.1.2.1/Q.2630.1 list item "a)": Add the following third bullet item:

- Timer "Timer_MOD" expiry – Action: Reset the single AAL type 2 channel associated with the incoming or outgoing protocol entity instance.

In 8.2.2.2.1.1/Q.2630.1, item a) shall be replaced by:

- a) After the expiry of Timer_ERQ, Timer_REL, or Timer_MOD, the nodal function invokes a maintenance protocol entity by passing a request for a reset together with the identity of the AAL type 2 path and the channel.

The reset procedures and the release procedures take precedence over the modification procedures.

The blocking and unblocking procedures do not affect the modification procedures.

8.2.2.3 Error handling

Clause 8.2.2.3/Q.2630.1 [11] shall apply.

8.2.2.4 Interworking with AAL type 2 nodes conforming only to ITU-T Q.2630.1

This new subclause shall be added to 8.2.2/Q.2630.1 [11].

Interworking with AAL type 2 nodes conforming only to ITU-T Q.2630.1 [11] is guaranteed by setting the compatibility information on new messages and parameters as specified in Annex B.

As the network default stringent QoS class is used for the specific AAL type 2 link in the AAL type 2 connection by the node not recognizing the Path Type parameter, the preceding node must be notified when this parameter is not recognized. Upon receiving this notification, the preceding node allows the connection to be established (QoS requirements are met by the network default stringent QoS class), or releases the connection with the cause "Resource unavailable, unspecified" (QoS requirements are not met by network default stringent QoS class).

8.3 Protocol entity

The text before 8.3.1/Q.2630.1 [11] shall apply with the following paragraph added at the end:

In addition to the examples of Appendix I/Q.2630.1 [11], Appendix I provides examples for modification.

8.3.1 General protocol error handling

Clause 8.3.1/Q.2630.1 [11] shall apply.

8.3.2 Outgoing protocol procedures

8.3.2.1 Successful connection set-up

Clause 8.3.2.1/Q.2630.1 [11] shall apply.

8.3.2.2 Unsuccessful connection set-up

Clause 8.3.2.2/Q.2630.1 [11] shall apply.

8.3.2.3 Normal connection release

Clause 8.3.2.3/Q.2630.1 [11] shall apply.

8.3.2.4 Release request collision

Clause 8.3.2.4/Q.2630.1 [11] shall apply.

8.3.2.5 Abnormal connection release procedures

Clause 8.3.2.5/Q.2630.1 [11] shall apply.

8.3.2.6 Successful modification

This new subclause shall be added to 8.3.2/Q.2630.1 [11].

When an outgoing protocol entity instance in state "Established" receives a request for modification from the nodal function, an MOD message (Modify Request) is sent to the adjacent AAL type 2 node, entering state "Outgoing Modification Pending" and starting Timer_MOD. The MOD message contains the DSAID which was received during the connection establishment phase and the parameter given by the nodal function, i.e. the Link Characteristics and/or SSCS Information and the Served User Correlation ID if it was received from the nodal function.

If an MOA (Modify Acknowledge) message is received in state "Outgoing Modification Pending", Timer_MOD is stopped, the nodal function is informed of the successful modification, and the outgoing protocol entity instance returns to state "Established".

Upon receiving an MOD message (Modify Request) in state "Established" with the DSAID which was received during the connection establishment phase, the outgoing protocol entity instance informs the nodal function of the request for the modification and state "Incoming Modification Pending" is entered.

After receiving an acknowledgement from the nodal function that the connection modification is accepted, an MOA message (Modify Acknowledge) is sent to the preceding AAL type 2 node, and the outgoing protocol entity instance returns to state "Established".

8.3.2.7 Unsuccessful modification

This new subclause shall be added to 8.3.2/Q.2630.1 [11].

If Timer_MOD expires, the nodal function is informed by passing the cause "Recovery on timer expiry". The SAID allocated to this particular outgoing protocol entity instance is released and made available for new traffic and state "Idle" is entered.

If an MOR (Modify Reject) message is received in state "Outgoing Modification Pending", the nodal function is informed about the rejection of the modification request. Timer_MOD is stopped and the outgoing protocol entity instance returns to state "Established".

8.3.2.8 Connection release during modification

This new subclause shall be added to 8.3.2/Q.2630.1 [11].

In state "Outgoing Modification Pending" or "Incoming Modification Pending", an REL message (Release Request) containing a cause parameter can be received. The normal connection release procedures specified in 8.3.2.3/Q.2630.1 [11] shall apply.

In state "Outgoing Modification Pending" or "Incoming Modification Pending", the nodal function can request the release of the connection. The normal connection release procedures specified in 8.3.2.3/Q.2630.1 [11] shall apply.

8.3.2.9 Modification request collision

This new subclause shall be added to 8.3.2/Q.2630.1 [11].

8.3.2.11.2 SDL diagrams for the outgoing protocol procedures

The SDL diagram for the outgoing protocol procedure is shown in Figure 8-2 (sheets 1 to 6).

The SDL diagrams contained in Figure 8-2 (sheets 1 to 6) are an introduction to the procedures described in detail in 8.3.2.

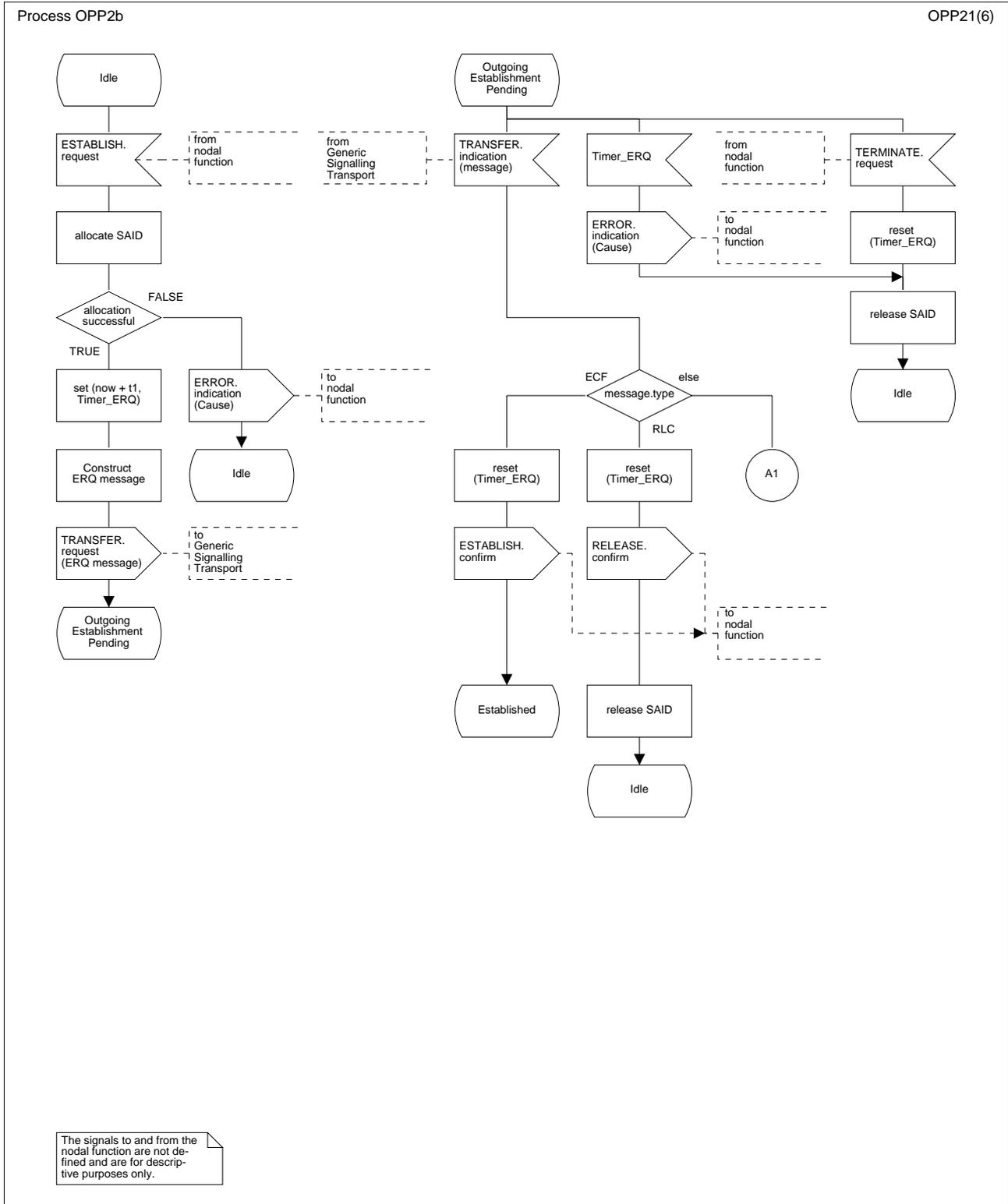


Figure 8-2/Q.2630.2 – SDL diagram for the outgoing protocol procedure (sheet 1 of 6)

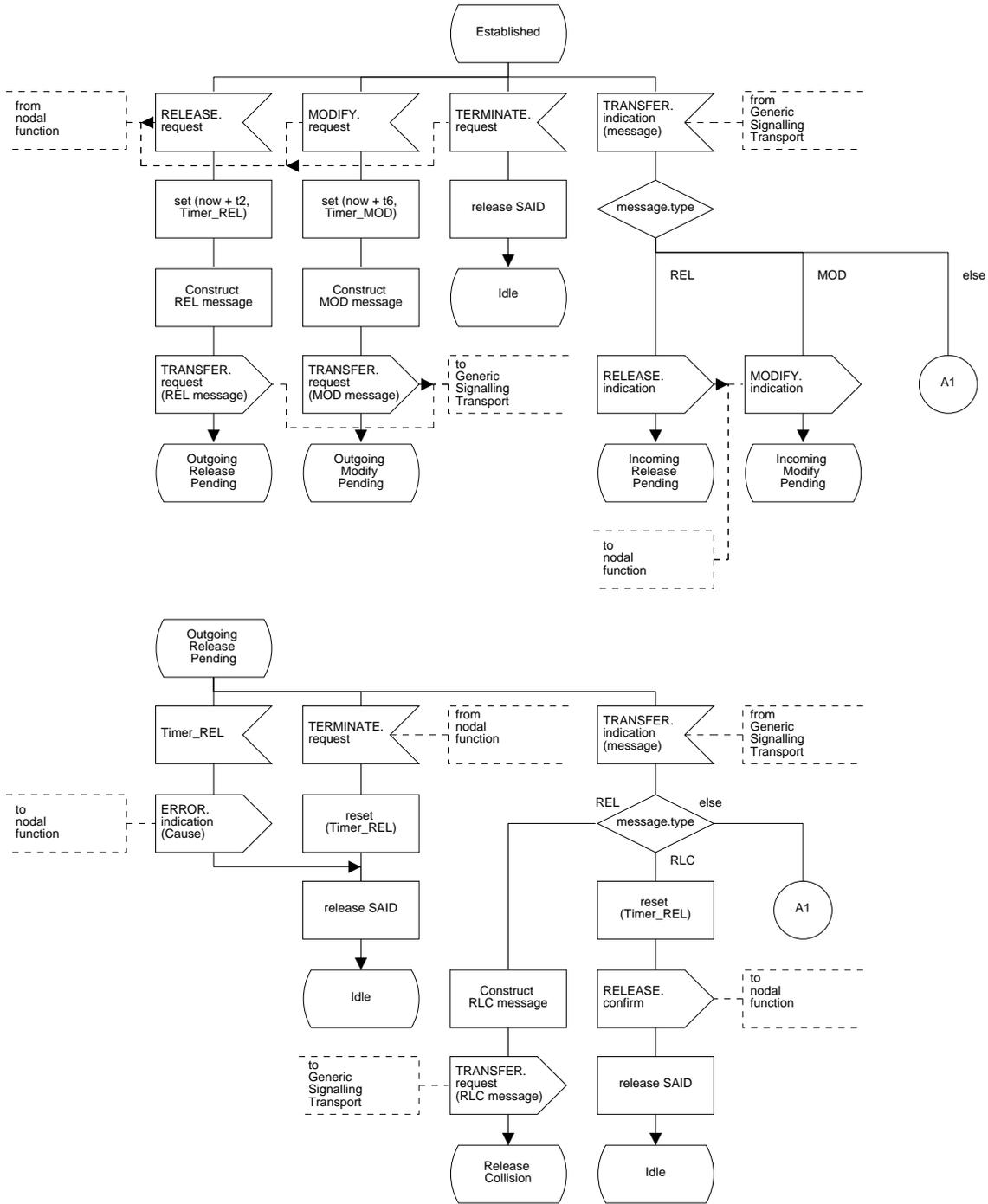


Figure 8-2/Q.2630.2– SDL diagram for the outgoing protocol procedure (sheet 2 of 6)

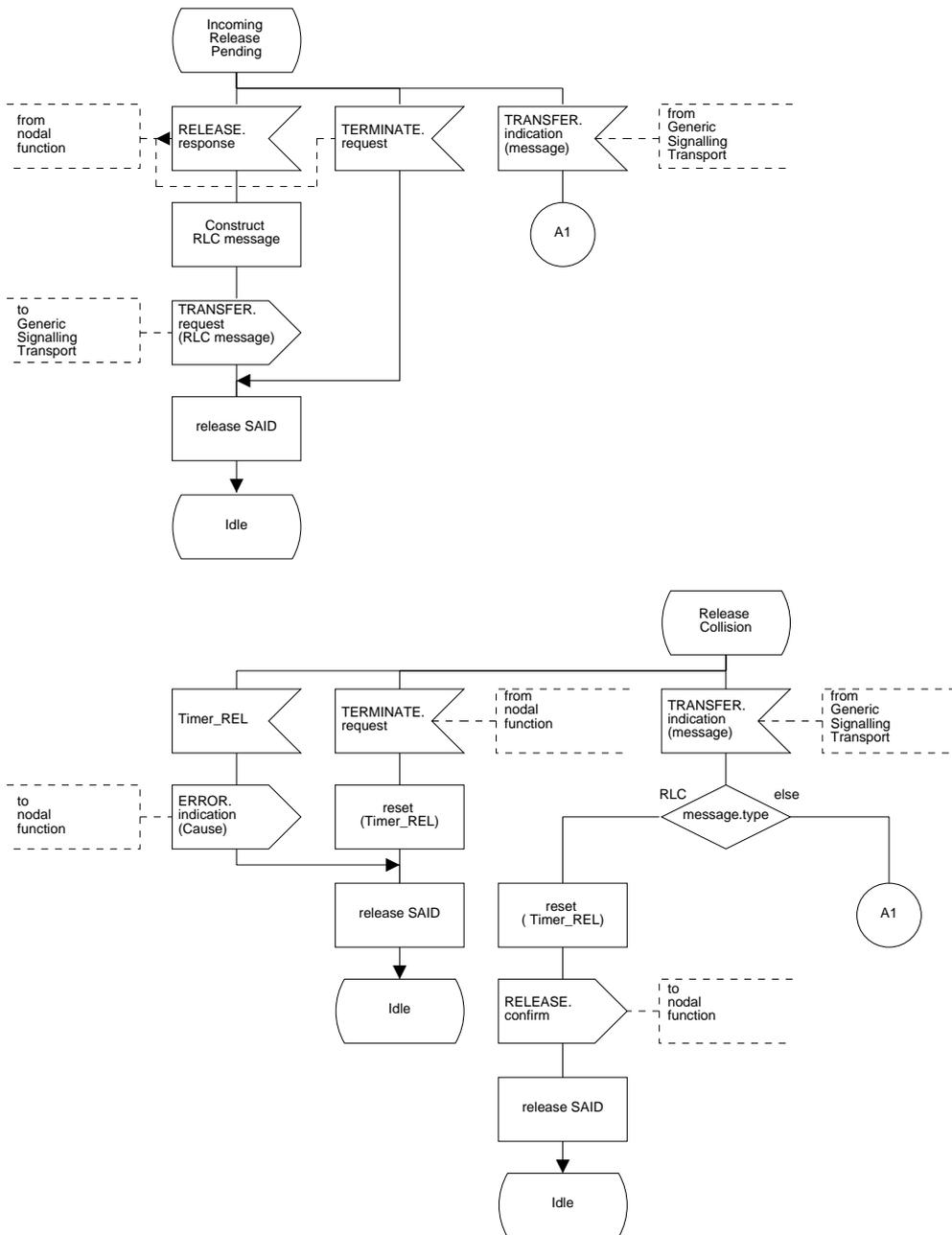


Figure 8-2/Q.2630.2 – SDL diagram for the outgoing protocol procedure (sheet 3 of 6)

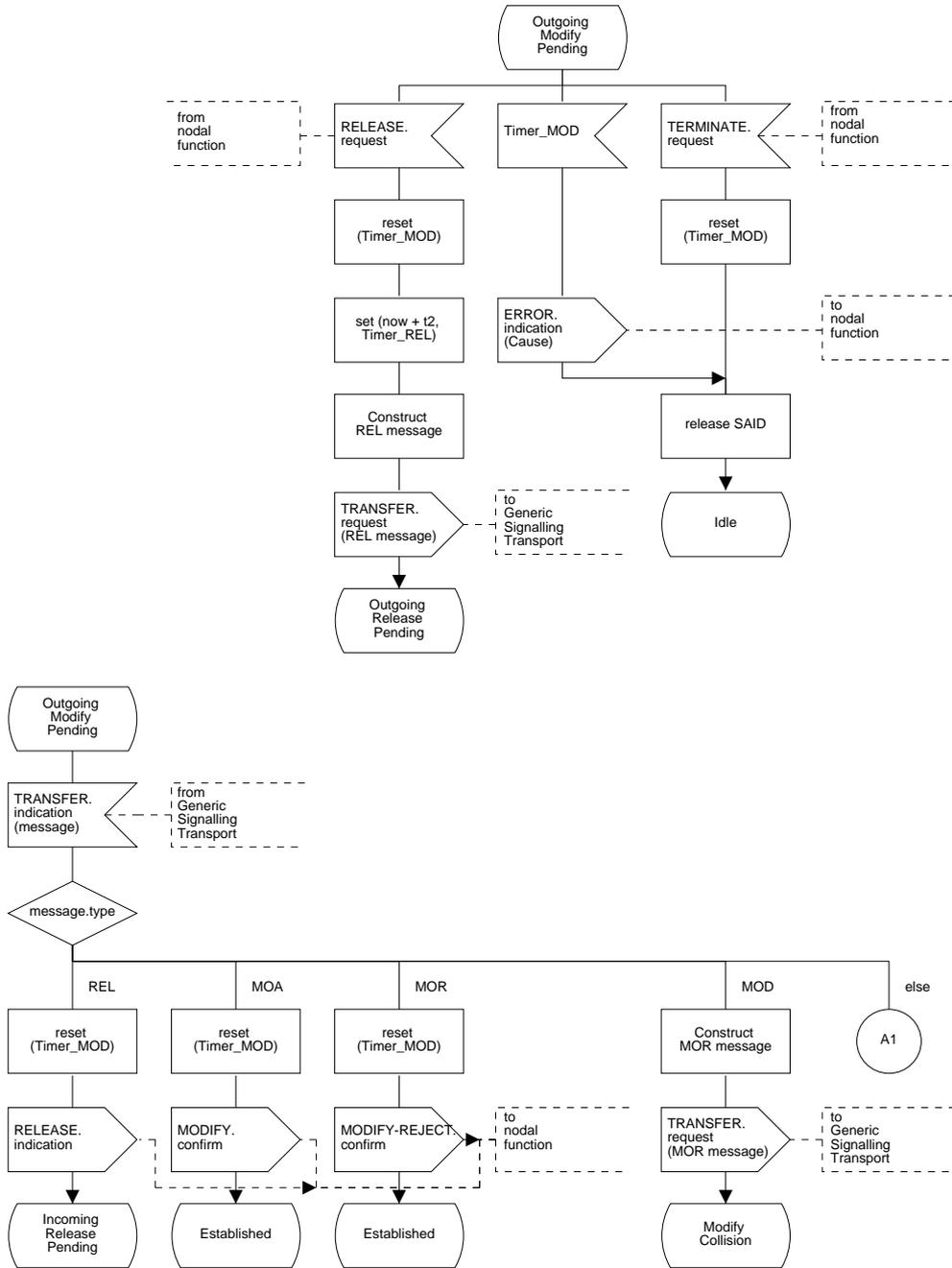


Figure 8-2/Q.2630.2 – SDL diagram for the outgoing protocol procedure (sheet 4 of 6)

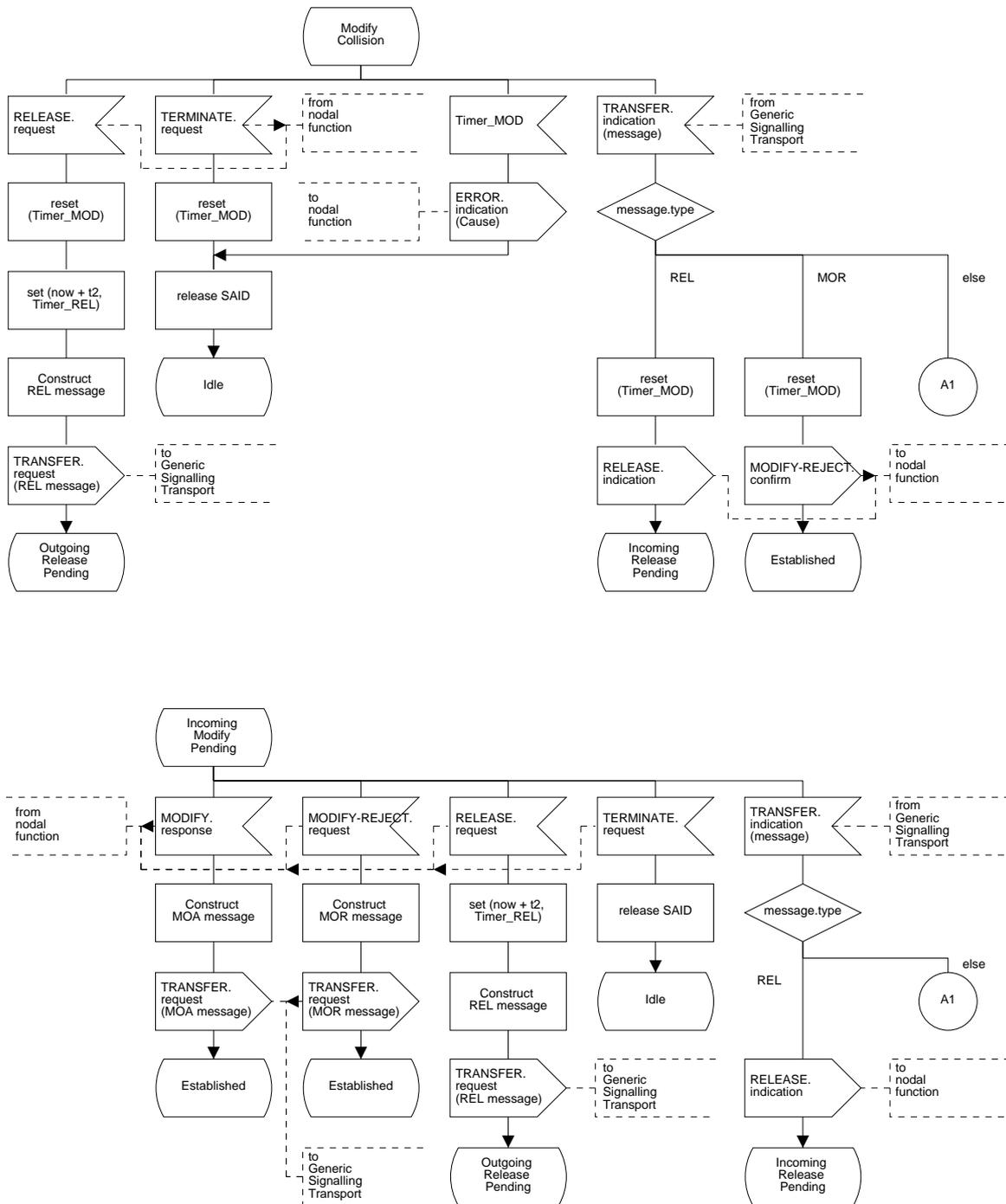


Figure 8-2/Q.2630.2 – SDL diagram for the outgoing protocol procedure (sheet 5 of 6)

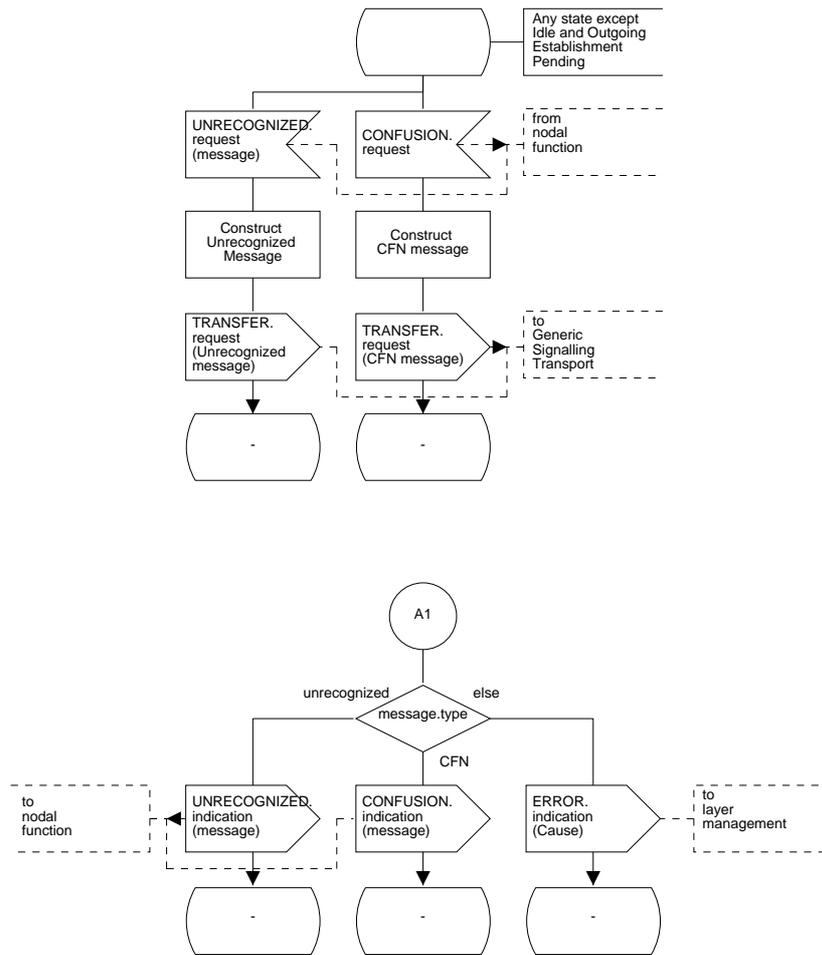


Figure 8-2/Q.2630.2 – SDL diagram for the outgoing protocol procedure (sheet 6 of 6)

8.3.3 Incoming protocol procedures

8.3.3.1 Successful connection set-up

Clause 8.3.3.1/Q.2630.1 [11] shall apply.

8.3.3.2 Unsuccessful connection set-up

Clause 8.3.3.2/Q.2630.1 [11] shall apply.

8.3.3.3 Normal connection release

Refer to 8.3.2.3.

8.3.3.4 Release request collision

Refer to 8.3.2.4.

8.3.3.5 Abnormal connection release procedures

Refer to 8.3.2.5.

8.3.3.6 Successful modification

This new subclause shall be added to 8.3.3/Q.2630.1 [11].

Refer to 8.3.2.6.

8.3.3.7 Unsuccessful modification

This new subclause shall be added to 8.3.3/Q.2630.1 [11].

Refer to 8.3.2.7.

8.3.3.8 Connection release during modification

This new subclause shall be added to 8.3.3/Q.2630.1 [11].

Refer to 8.3.2.8.

8.3.3.9 Modification request collision

This new subclause shall be added to 8.3.3/Q.2630.1 [11].

Refer to 8.3.2.9.

8.3.3.10 Unrecognized information procedures

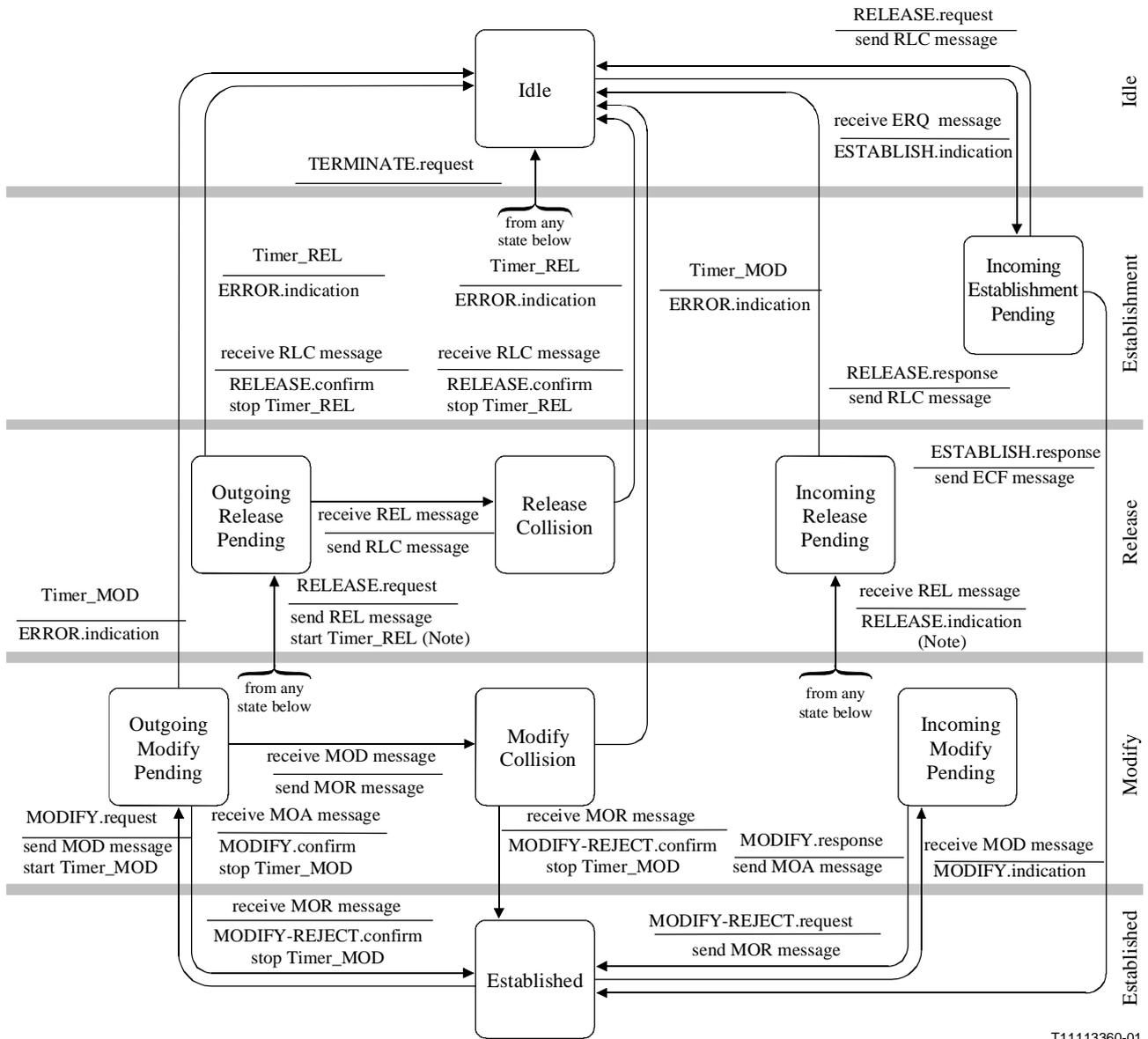
Clause 8.3.3.6/Q.2630.1 [11] shall be renumbered as 8.3.3.10 and shall apply.

8.3.3.11 State transition model

Clause 8.3.3.7/Q.2630.1 [11] shall be replaced by 8.3.3.11.

8.3.3.11.1 State transition

The state transition diagram for the incoming protocol procedure is shown in Figure 8-3.



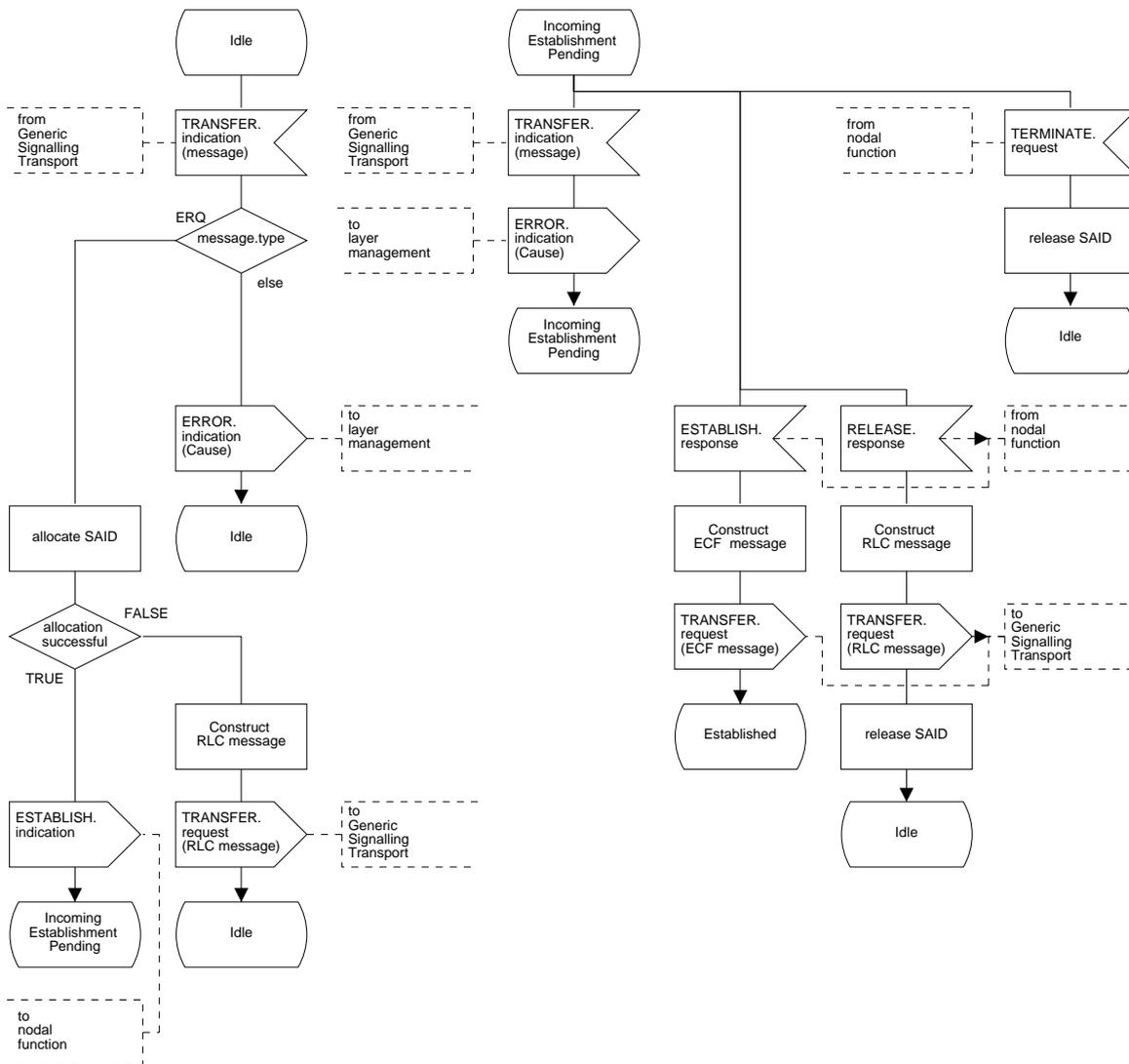
T11113360-01

Figure 8-3/Q.2630.2 – State transition diagram for the incoming protocol procedure

8.3.3.11.2 SDL diagrams for the incoming protocol procedures

The SDL diagram for the incoming protocol procedure is shown in Figure 8-4 (sheets 1 to 6).

The SDL diagrams contained in Figure 8-4 (sheets 1 to 6) are an introduction to the procedures described in detail in 8.3.3.



The signals to and from the nodal function are not defined and are for descriptive purposes only.

Figure 8-4/Q.2630.2 – SDL diagram for the incoming protocol procedure (sheet 1 of 6)

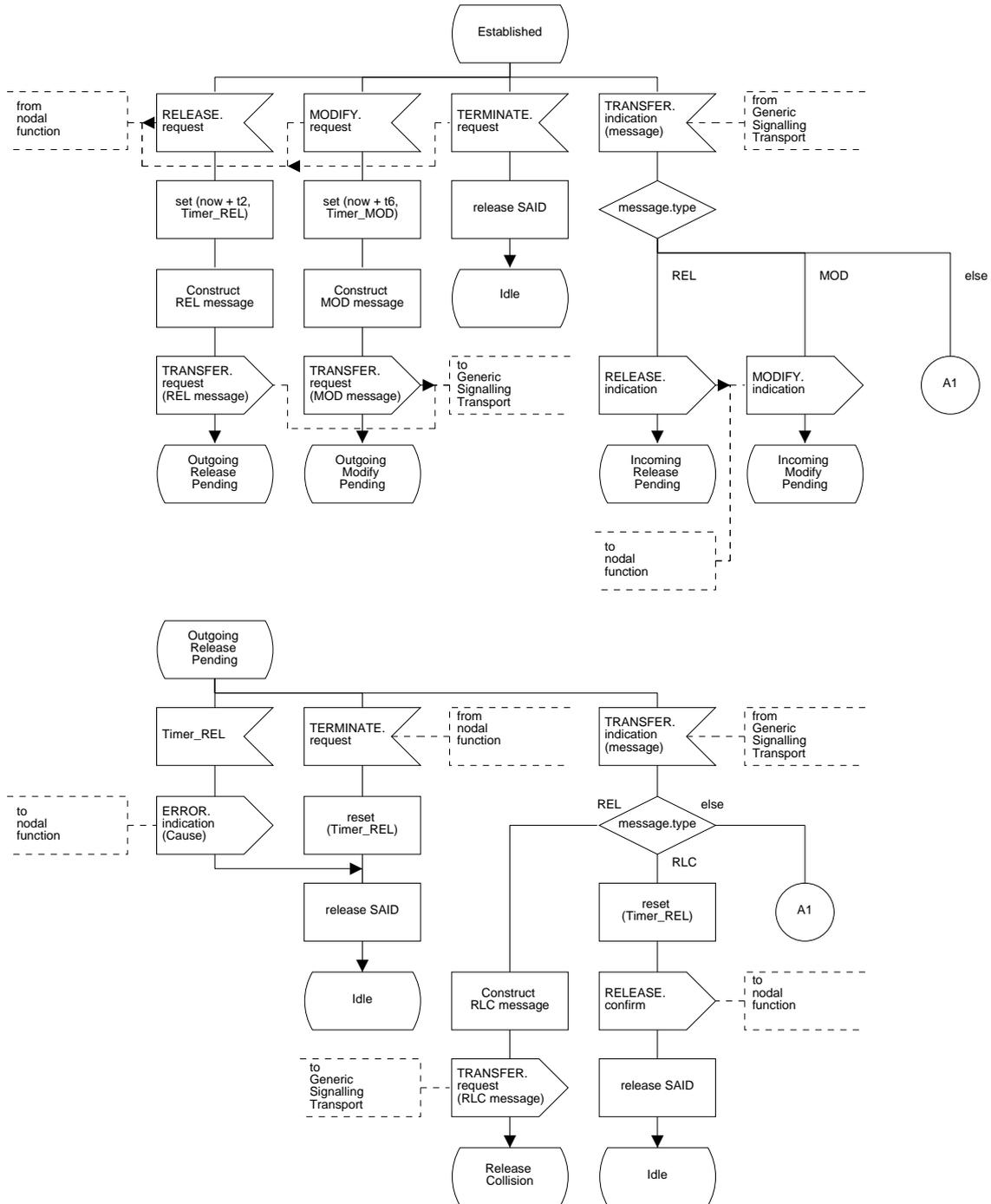


Figure 8-4/Q.2630.2 – SDL diagram for the incoming protocol procedure (sheet 2 of 6)

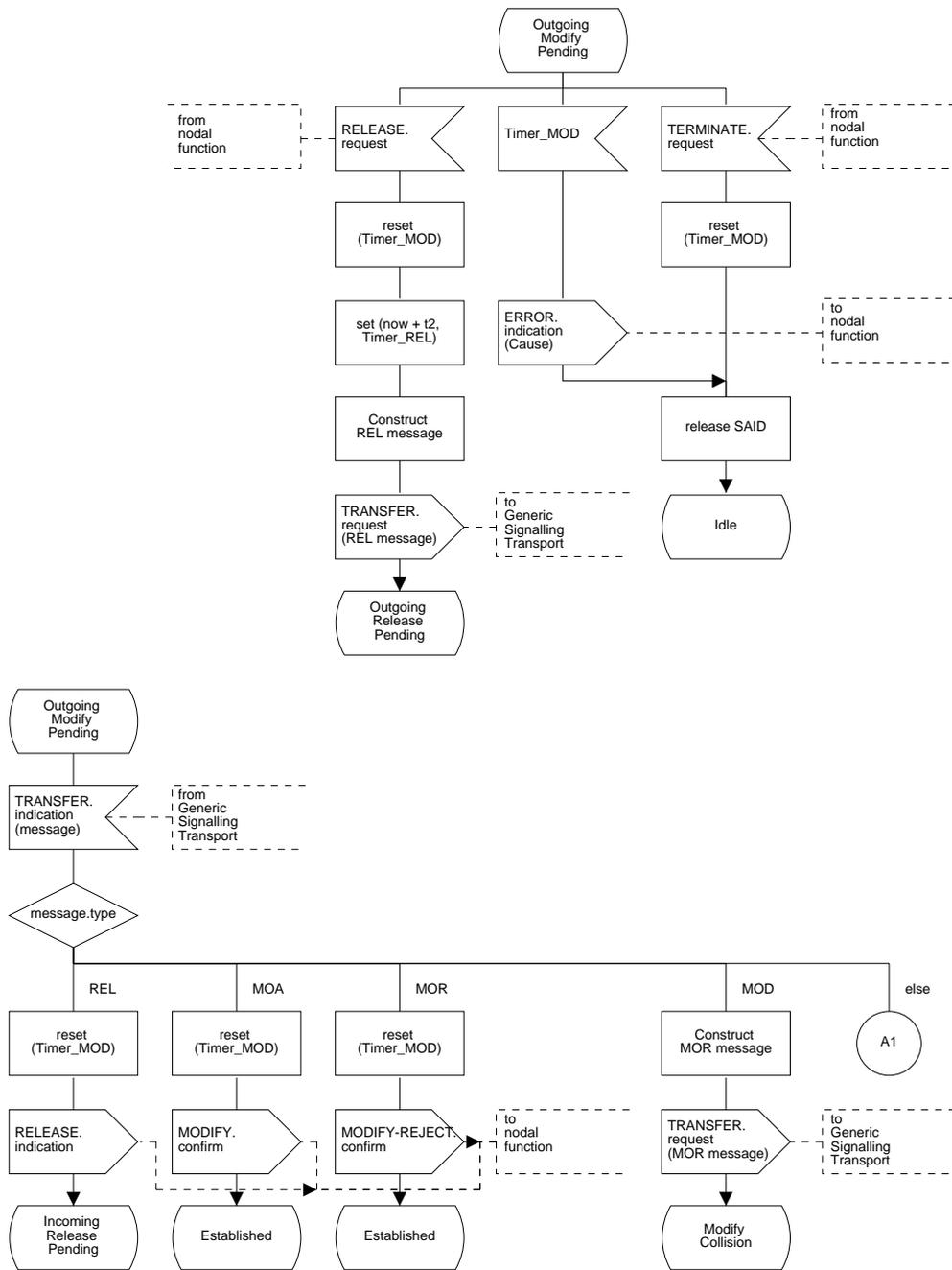


Figure 8-4/Q.2630.2 – SDL diagram for the incoming protocol procedure (sheet 4 of 6)

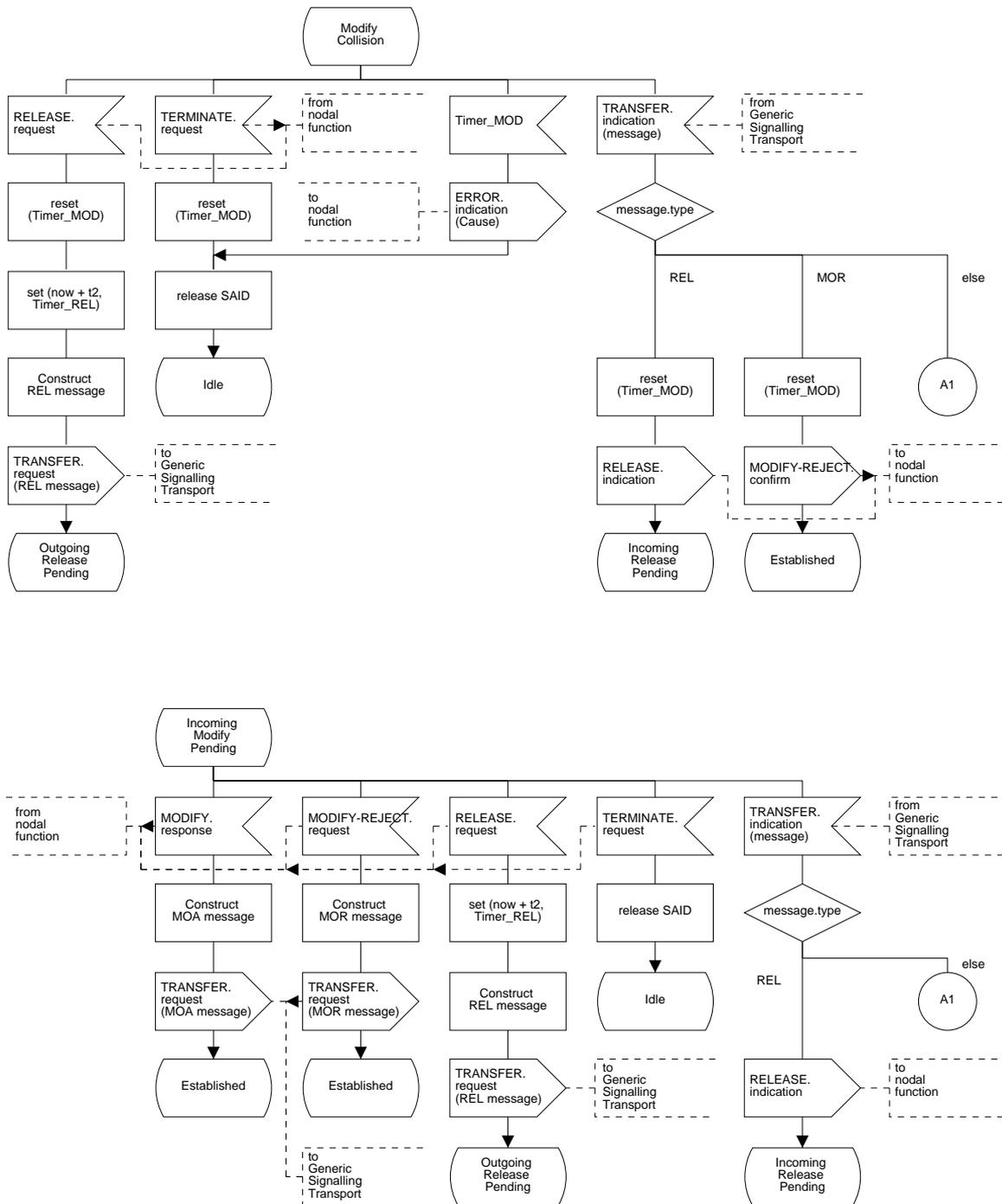


Figure 8-4/Q.2630.2 – SDL diagram for the incoming protocol procedure (sheet 5 of 6)

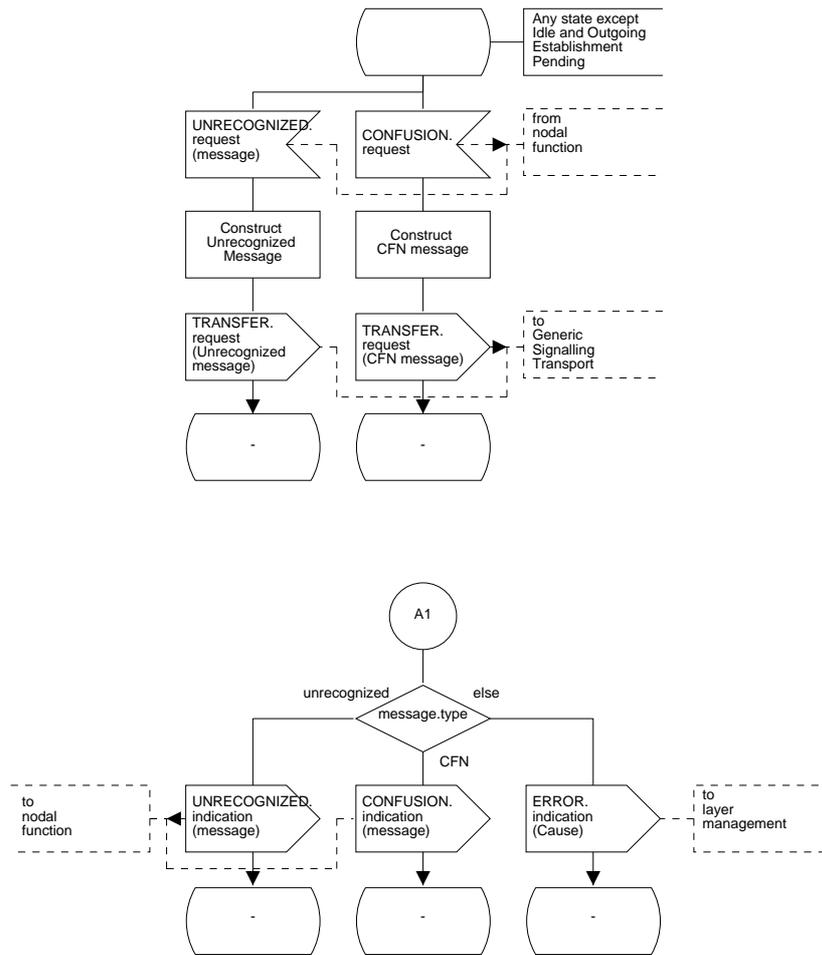


Figure 8-4/Q.2630.2 – SDL diagram for the incoming protocol procedure (sheet 6 of 6)

8.3.4 Maintenance protocol procedures

Clause 8.3.4/Q.2630.1 [11] shall apply.

8.4 List of timers

Clause 8.4/Q.2630.1 [11] shall be replaced by the following paragraph and table:

The timers used in the procedures described in 8.3 are listed in Table 8-1 together with a time-out value range, their cause for setting the timer, resetting the timer, and the action at expiry of the timer.

Table 8-1/Q.2630.2 – List of timers

Timer	Time-out value	Cause for initiation	Normal termination	At expiry
Timer_ERQ	5-30 s (t1)	When an ERQ message is sent	At the receipt of ECF message	Release all resources and the connection, send RES message.
Timer_REL	2-60 s (t2)	When an REL message is sent	At the receipt of RLC message	Release resources, send RES message.
Timer_RES	2-60 s (t3)	When an RES message is sent	At the receipt of RSC message	Repeat RES message, restart Timer_RES, at first expiry: inform the nodal function.
Timer_BLO	2-60 s (t4)	When a BLO message is sent	At the receipt of BLC message	Alert maintenance system, inform the nodal function.
Timer_UBL	2-60 s (t5)	When an UBL message is sent	At the receipt of UBC message	Alert maintenance system, inform the nodal function.
Timer_MOD	5-30 s (t6)	When a MOD message is sent	At the receipt of MOA message	Release all resources and the connection, send RES message.
NOTE – In the diagnostic field associated with a cause field indicating "Recovery on timer expiry", the timer number is included. Timer_ERQ is coded as the IA5 character "1"; Timer_MOD is coded as the IA5 character "6".				

ANNEX A

Support for non-switched scenario

The support for the non-switched scenario specified in Annex A/Q.2630.1 [11] shall apply unchanged, except with the following change made for clarification purposes:

The paragraph below Figure A.1/Q.2630.1 [11] shall be replaced by the following paragraph:

In this scenario, AAL type 2 paths are typically provisioned – with each originating AAL type 2 service endpoint having one signalling association with each neighbouring AAL type 2 endpoint. There is no AAL type 2 switch used in this scenario.

In Annex A/Q.2630.1 [11], all references to applicable sections refer to ITU-T Q.2630.1 [11] and shall be qualified with "/Q.2630.1 [11]". For example, in A.8.3/Q.2630.1, the specification "Subclause 8.3 applies" is modified to read "Subclause 8.3/Q.2630.1 [11] applies".

ANNEX B

Coding of the compatibility information

B.1 Coding of the compatibility information for networks using Link Characteristics

B.1.1 Message compatibility

To ensure backward compatibility with AAL type 2 nodes conforming only to ITU-T Q.2630.1, the message compatibility field of the Modify Request (MOD), Modify Acknowledge (MOA), and Modify Reject (MOR) messages shall be set as indicated in Table B.1.

Table B.1/Q.2630.2 – Coding of the message compatibility information

	8	7	6	5	4	3	2	1
Message	pass-on not possible			general action				
	res.	send notification indicator	instruction indicator	res.	send notification indicator	instruction indicator		
Modify Request (MOD) with Link Characteristics	0	0 do not send notification	10 discard message	0	0 do not send notification	10 discard message		
Modify Request (MOD) without Link Characteristics	0	0 do not send notification	10 discard message	0	0 do not send notification	00 pass on message		
Modify Acknowledge (MOA)	0	0 do not send notification	10 discard message	0	0 do not send notification	00 pass on message		
Modify Reject (MOR)	0	0 do not send notification	10 discard message	0	0 do not send notification	00 pass on message		

B.1.2 Parameter compatibility

To ensure backward compatibility with AAL type 2 nodes conforming only to ITU-T Q.2630.1, the parameter compatibility field of the new or differently used parameters shall be set as indicated in Table B.2.

Table B.2/Q.2630.2 – Coding of the parameter compatibility information

Parameter	8	7	6	5	4	3	2	1
	pass-on not possible			general action				
	res.	send notification indicator	instruction indicator	res.	send notification indicator	instruction indicator		
Connection Element Identifier (CEID) in RLC message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Modify Support for Link Characteristics (MSLC) in ERQ and ECF message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Modify Support for Service Specific Information (MSSSI) in ERQ and ECF message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 0 pass on parameter		
Preferred Link Characteristics (PLC) in ERQ message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Preferred Service Specific Information (Audio Extended) (PSSIAE) in ERQ message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 0 pass on parameter		
Preferred Service Specific Information (Multirate Extended) (PSSIME) in ERQ message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 0 pass on parameter		
Service Specific Information (Audio Extended) (SSIAE) in ERQ message	0	0 do not send notification	1 1 release connection	0	0 do not send notification	0 0 pass on parameter		
Service Specific Information (Multirate Extended) (SSIME) in ERQ message	0	0 do not send notification	1 1 release connection	0	0 do not send notification	0 0 pass on parameter		
Path Type (PT) in ERQ message	0	1 send notification	0 1 discard parameter	0	1 send notification	0 0 pass on parameter		
Served User Correlation ID (SUCI) in MOD & MOA message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 0 pass on parameter		

B.2 Coding of the compatibility information for networks not using link characteristics

B.2.1 Message compatibility

To ensure backward compatibility with AAL type 2 nodes conforming only to ITU-T Q.2630.1, the message compatibility field of the Modify Request (MOD), Modify Acknowledge (MOA), and Modify Reject (MOR) messages shall be set as indicated in Table B.3.

Table B.3/Q.2630.2 – Coding of the message compatibility information

Message	8	7	6	5	4	3	2	1
	pass-on not possible			general action				
	res.	send notification indicator	instruction indicator	res.	send notification indicator	instruction indicator		
Modify Request (MOD)	0	0 do not send notification	1 0 discard message	0	0 do not send notification	1 0 discard message		
Modify Acknowledge (MOA)	0	0 do not send notification	1 0 discard message	0	0 do not send notification	0 0 pass on message		
Modify Reject (MOR)	0	0 do not send notification	1 0 discard message	0	0 do not send notification	0 0 pass on message		

B.2.2 Parameter compatibility

To ensure backward compatibility with AAL type 2 nodes conforming only to ITU-T Q.2630.1, the parameter compatibility field of the new or differently used parameters shall be set as indicated in Table B.4.

Table B.4/Q.2630.2 – Coding of the parameter compatibility information

Parameter	8	7	6	5	4	3	2	1
	pass-on not possible			general action				
	res.	send notification indicator	instruction indicator	res.	send notification indicator	instruction indicator		
Connection Element Identifier (CEID) in RLC message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Modify Support for Service Specific Information in ERQ and ECF message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Preferred Service Specific Information (Audio Extended) (PSSIAE) in ERQ message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Preferred Service Specific Information (Multirate Extended) (PSSIME) in ERQ message	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 1 discard parameter		
Service Specific Information (Audio Extended) (SSIAE) in ERQ message	0	0 do not send notification	1 1 release connection	0	0 do not send notification	1 1 release connection		
Service Specific Information (Multirate Extended) (SSIME) in ERQ message	0	0 do not send notification	1 1 release connection	0	0 do not send notification	1 1 release connection		
Path Type (PT) in ERQ message	0	1 send notification	0 1 discard parameter	0	1 send notification	0 0 pass on parameter		
Served User Correlation ID (SUCI) in MOD & MOA messages	0	0 do not send notification	0 1 discard parameter	0	0 do not send notification	0 0 pass on parameter		

Handling of the Link Characteristics and SSCS Information in conjunction with the modification procedures

C.1 Preferred Link Characteristics parameter present

When an Establish Request (ERQ) message includes the following parameters:

- Preferred Link Characteristics (PLC);
- Link Characteristics (LC); and
- Modify Support for Link Characteristics (MSLC),

the Connection Admission Control at all AAL type 2 nodes shall initially be based on the most demanding of the Preferred Link Characteristics and the Link Characteristics. The concept of "demanding" depends on the Connection Admission Control algorithm in use which is outside the scope of this Recommendation.

At a destination AAL type 2 endpoint, the following applies:

- When an Establish Request (ERQ) message is received and modification is supported, the Preferred Link Characteristics are used for Connection Admission Control, and the served user is informed of the Preferred Link Characteristics, Link Characteristics, and Modify Support for Link Characteristics.

If resources supporting the Preferred Link Characteristics are available, an Establish Confirm message is then returned containing the Modify Support for Link Characteristics parameter. If resources are not available, 8.2.1.1.2.2 applies.

- When an Establish Request (ERQ) message is received and modification is not supported, the Link Characteristics are used for Connection Admission Control, and the served user is informed of the Preferred Link Characteristics and Link Characteristics.

If resources supporting the Link Characteristics are available, an Establish Confirm (ECF) message is then returned without the Modify Support for Link Characteristics parameter. If resources are not available, 8.2.1.1.2.2 applies.

At an AAL type 2 node without served user interaction, the following applies:

- When an Establish Confirm (ECF) message is received which contains a Modify Support for Link Characteristics parameter, the Connection Admission Control shall reflect the Preferred Link Characteristics of the corresponding Establish Request (ERQ) message.
- If, however, no Modify Support for Link Characteristics parameter is received, the Connection Admission Control shall reflect the Link Characteristics of the corresponding Establish Request (ERQ) message.

At an originating AAL type 2 endpoint, the following applies:

- When an Establish Confirm (ECF) message is received which contains a Modify Support for Link Characteristics parameter, the Connection Admission Control shall reflect the Preferred Link Characteristics, and the served user is informed of the Modify Support for Link Characteristics.
- If, however, no Modify Support for Link Characteristics parameter is received, the Connection Admission Control shall reflect the Link Characteristics, and the Modify Support for Link Characteristics parameter is not included in the ESTABLISH.confirm primitive (indicating to the served user modification of the Link Characteristics is not supported).

C.2 Preferred Link Characteristics parameter not present

When an Establish Request (ERQ) message includes the following parameters:

- Link Characteristics (LC); and
- Modify Support for Link Characteristics (MSLC),

the Connection Admission Control at all AAL type 2 nodes shall be based on the Link Characteristics.

At a destination AAL type 2 endpoint, the following applies:

- When an Establish Request (ERQ) message is received and modification is supported, the Link Characteristics are used for Connection Admission Control, and the served user is informed of the Link Characteristics and Modify Support for Link Characteristics.
If resources supporting the Link Characteristics are available, an Establish Confirm (ECF) message is then returned containing the Modify Support for Link Characteristics parameter. If resources are not available, 8.2.1.1.2.2 applies.
- When an Establish Request (ERQ) message is received and modification is not supported, the Link Characteristics are used for Connection Admission Control and the served user is informed of the Link Characteristics.
If resources supporting the Link Characteristics are available, an Establish Confirm (ECF) message is then returned without the Modify Support for Link Characteristics parameter. If resources are not available, 8.2.1.1.2.2 applies.

At an AAL type 2 node without served user interaction, the following applies:

- When an Establish Confirm (ECF) message is received which contains or does not contain a Modify Support for Link Characteristics parameter, the Connection Admission Control shall reflect the Link Characteristics of the corresponding Establish Request (ERQ) message.

At an originating AAL type 2 endpoint, the following applies:

- When an Establish Confirm (ECF) message is received which contains or does not contain a Modify Support for Link Characteristics parameter, the Connection Admission Control shall reflect the Link Characteristics of the corresponding Establish Request (ERQ) message.
- When an Establish Confirm (ECF) message is received which contains a Modify Support for Link Characteristics parameter, the served user is informed of the Modify Support for Link Characteristics.
- If, however, no Modify Support for Link Characteristics parameter is received, the Modify Support for Link Characteristics parameter is not included in the ESTABLISH.confirm primitive (indicating to the served user that modification of the Link Characteristics is not supported).

C.3 Handling of the Service Specific Information parameter

The modification from Audio service to Multirate service and vice versa is not allowed.

Modification with FRM enabled is not allowed with this Recommendation.

It is recommended that if the Link Characteristic parameter(s) are present in the Establish Request (ERQ) message or in the Modify Request (MOD) message, the AAL type 2 Link Characteristics shall be used and not the SSCS Information parameter(s) for the reservation, allocation, and freeing of resources in the establishment and modification procedures.

NOTE – Some applications (e.g. user state change for voiceband data) require SSCS information that is not available from the Link Characteristics used in Modification (MOD) signalling.

C.3.1 Handling SSCS Information parameters for Audio Service

C.3.1.1 Preferred Service Specific Information parameter present

When the following parameters are used for the SSCS Information:

- Preferred SSCS Information (Audio Extended) (PSSIAE) with FRM and CMD disabled;
- SSCS Information (Audio Extended) (SSIAE); and
- Modify Support for SSCS Information (MSSSI),

the procedures of C.1 are applicable to SSCS Information with the term "SSCS information" being used instead of the term "Link Characteristics". Connection Admission Control will depend on the Profile used, support of User state control options such as fax demodulation/remodulation, and rate control.

Modification of Audio Service with CMD enabled does not apply since this service is a constant rate of $n = 1$ (64 kbit/s).

C.3.1.2 Preferred Service Specific Information parameter not present

When the following parameters are used for the Service Specific Information:

- SSCS Information (Audio Extended) (SSIAE); and
- Modify Support for SSCS Information (MSSSI),

the procedures of C.2 are applicable to SSCS Information with the term "SSCS Information" being used instead of the term "Link Characteristics".

C.3.2 Handling SSCS Information parameters for Multirate Service

C.3.2.1 Preferred Service Specific Information parameter present

When the following parameters are used for the SSCS Information:

- Preferred SSCS Information (Multirate Extended) (PSSIME) with FRM disabled;
- SSCS Information (Multirate Extended) (SSIME) with FRM disabled; and
- Modify Support for SSCS Information (MSSSI),

the procedures of C.1 are applicable to SSCS Information with the term "SSCS Information (Multirate Extended)" being used instead of the term "Link Characteristics". Connection Admission Control will depend on the highest value of Multiplier n for $n \times 64$ kbit/s.

C.3.2.2 Preferred Service Specific Information parameter not present

When the following parameters are used for the SSCS Information:

- SSCS Information (Multirate Extended) (SSIME); and
- Modify Support for SSCS Information (MSSSI),

the procedures of C.2 are applicable with the term "SSCS Information (Multirate Extended)" being used instead of the term "Link Characteristics".

APPENDIX I

Example message sequences

The example message sequences specified in Appendix I/Q.2630.1 [11] shall apply and the following clauses containing more example message sequences added:

I.6 Successful modification

Figure I.6 illustrates the message sequences for a successful resource modification of an established AAL type 2 connection.

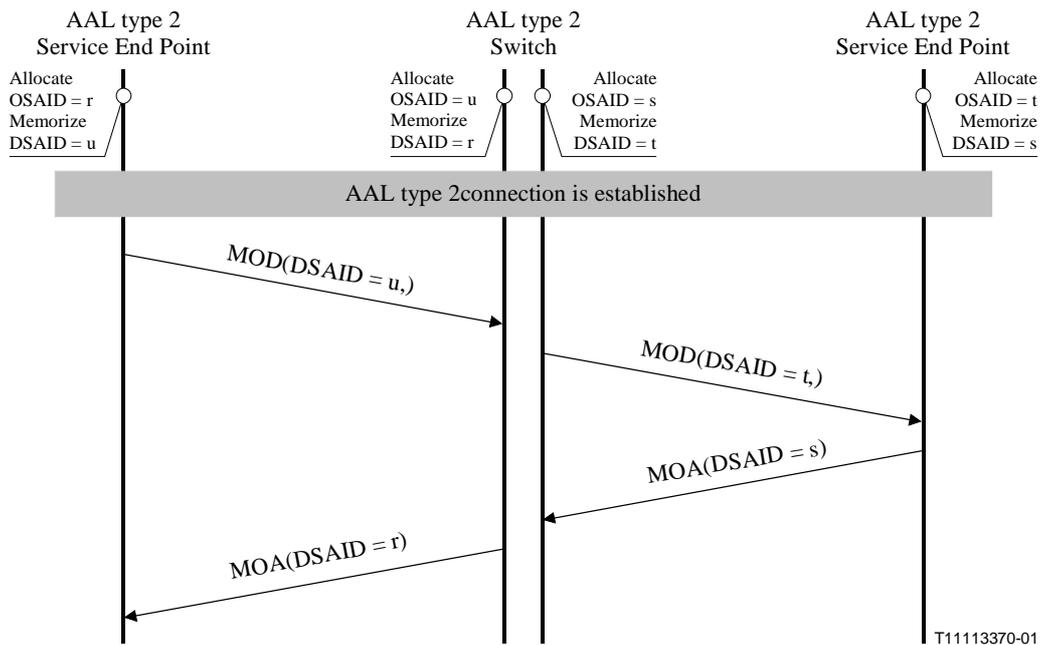


Figure I.6/Q.2630.2 – Example of a message sequence for a successful resource modification of an established AAL type 2 connection

I.7 Unsuccessful modification

Figure I.7 illustrates the message sequences for an unsuccessful resource modification of an established AAL type 2 connection.

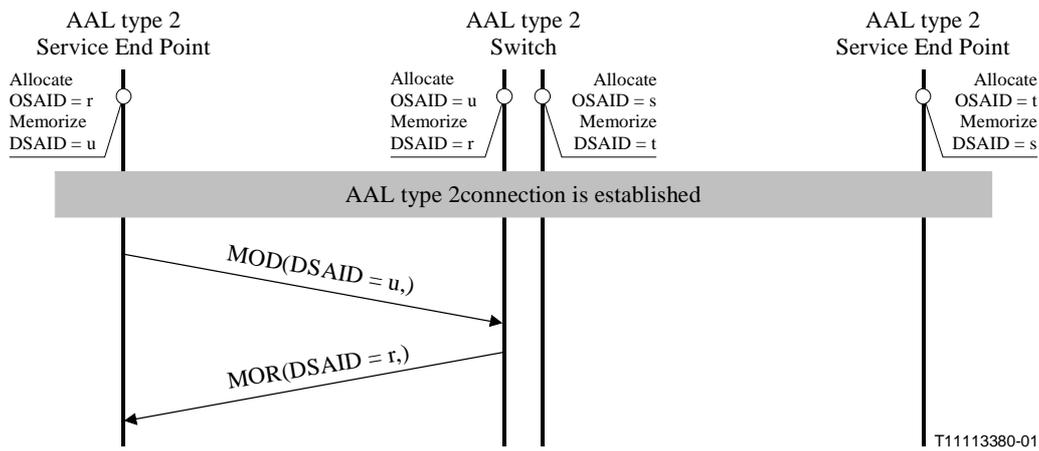


Figure I.7/Q.2630.2 – Example of a message sequence for an unsuccessful resource modification of an established AAL type 2 connection

I.8 Modification collision

Figure I.8 illustrates the message sequences for a resource modification collision of an established AAL type 2 connection.

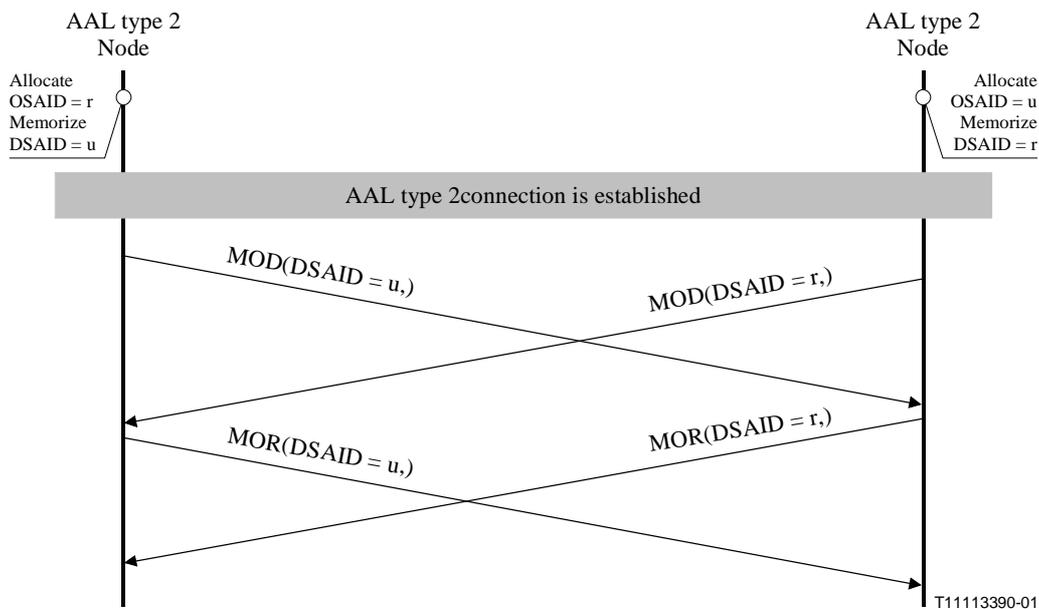


Figure I.8/Q.2630.2 – Example of a message sequence for a resource modification collision of an established AAL type 2 connection

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