INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.2650

(02/95)

COMMON ASPECTS OF B-ISDN APPLICATION PROTOCOLS FOR ACCESS SIGNALLING AND NETWORK SIGNALLING AND INTERWORKING

BROADBAND-ISDN, INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 BROADBAND ISDN USER PART (B-ISUP) AND DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 (DSS 2)

ITU-T Recommendation Q.2650

(Previously "CCITT Recommendation")

FOREWORD

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The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation Q.2650 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 7th of February 1995.

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NOTE

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

CONTENTS

SUMMARY

This Recommendation describes the interworking between the DSS 2 access interface protocol and the Broadband ISDN User Part protocol. It is part of a set of interlocking B-ISDN service and signalling Recommendations that comprise Broadband signalling Capability Set 1. This Recommendation describes the mapping tables and diagrams which support interworking between the two protocols for basic call set-up and clear down.

Recommendation Q.2650

BROADBAND-ISDN, INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 BROADBAND ISDN USER PART (B-ISUP) AND DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 2 (DSS 2)

(Geneva, 1995)

1 Scope

This Recommendation defines the interworking relationship between the layer 3 functions and protocol of the B-ISDN DSS 2 Access Interface and the B-ISDN User Part functions and protocol of Signalling System No. 7.

The interworking between the above two signalling protocols typically may occur in a B-ISDN local exchange and is specified in the context of a typical call in a pure B-ISDN environment. The scope of this Recommendation is limited to the interworking of the basic call and supplementary services applicable to the international interface, e.g. the mapping of information such as transit network selection that is not carried over the international interface is not included. Support of 64 kbit/s narrow-band emulation services is included.

The objective of this Recommendation is to specify the interworking between the Broadband ISDN User Part protocol and the DSS 2 protocol for B-ISDN Capability Set 1 (CS-1).

Interworking is shown as message arrow diagrams. Due to the multiplicity of optional possibilities in both the B-ISDN User Part and the DSS 2 protocol, not all possible cases are shown in arrow diagrams. The diagrams included represent a sample of typical situations. Mapping tables are provided to define the relationship between DSS 2 protocol messages and information elements, on the one hand, and B-ISDN User Part messages and parameters on the other hand.

Tables are provided for each DSS 2 protocol message that maps onto a B-ISDN User Part message. These tables also specify the mapping of elements of information which are carried by the concerned messages.

The elements of information that are of local significance only, i.e. are not mapped onto elements of information in the other signalling system, are not shown.

2 Abbreviations

For the purposes of this Recommendation, the following abbreviations are used:

B-ISUP Messages

ACM	Address Complete Message
ANM	Answer Message
CPG	Call Progress Message
IAA	Initial Address Acknowledgement Message
IAM	Initial Address Message
REL	Release Message
RES	Resume Message
SAM	Subsequent Address Message
SUS	Suspend Message
USR	User-to-User Information Message

DSS 2 Messages

ALERT	Alerting Message
CALL PROC	Call Proceeding Message
CONN	Connect Message
CONN ACK	Connect Acknowledgement
INFO	Information Message
NOT	Notify Message
PROG	Progress Message
REL	Release Message
RLC	Release Complete
SETUP	Set-up Message
SETUP ACK	Set-up Acknowledgement

General

IE	Information Element (of DSS 2)
U/N	User/Network

3 General statements on interworking

The arrow diagrams used in this Recommendation show the message movement for interworking the call control protocols of DSS 2 and B-ISUP. The working inside of the exchanges will not be shown, but rather the external stimulus to the exchange only.

4 Interworking specification for successful call set-up procedures

4.1 Mapping tables

This subclause contains the mapping tables of successful call set-up messages and associated parameters and information elements. All mapping tables show DSS 2 information elements and B-ISUP parameters for both pure B-ISDN service and N-ISDN emulation service. (See Tables 1 to 6.)

4.2 Arrow diagrams

This subclause contains the interworking arrow diagrams for the successful call set-up procedures. Also shown in each arrow diagram is the use of the Initial Address Acknowledgement (IAA) message in the network, which is of local significance in response to an Initial Address Message (IAM).

For those messages that are not mapped, for clarification, an "X" precedes the arrowhead.

Superseded by a more recent version

TABLE 1/Q.2650

Mapping of set-up procedure parameters for B-ISDN call

Orig. U/N SETUP ————————————→	Network IAM ————————————→	Term. U/N SETUP
SETUP	IAM	SETUP
AAL parameters	AAL parameters	AAL parameters
ATM traffic descriptor	ATM cell rate (Note 1)	ATM traffic descriptor
Broadband bearer capability	Broadband bearer capability	Broadband bearer capability
Broadband low layer information	Broadband low layer information (Note 2)	Broadband low layer information
Broadband high layer information	Broadband high layer information	Broadband high layer information
Broadband sending complete	ST (carried in Called party number)	
Called party number	Called party number	
End-to-end transit delay	Propagation delay counter and Maximum end-to-end transit delay (Note 3)	End-to-end transit delay
Narrow-band bearer capability	Narrow-band bearer capability (Note 4)	Narrow-band bearer capability
Narrow-band low layer compatibility	Narrow-band low layer compatibility (Note 5)	Narrow-band low layer compatibility
Narrow-band high layer compatibility	Narrow-band high layer compatibility (Note 6)	Narrow-band high layer compatibility
OAM traffic descriptor	OAM traffic descriptor (Note 7)	OAM traffic descriptor
Progress indicator	Progress indicator (Note 8)	Progress indicator
Quality of Service	Not carried (Note 9)	Quality of Service

NOTES

1   The ATM traffic descriptor from the SETUP message is mapped to the ATM Cell Rate parameter in the network, which carries the overall cell rate supported within the network.

2   The Broadband Lower Layer Information IE may be repeated up to four times. If it is repeated, all instances are mapped into the single Broadband Lower Layer Information parameter in the network. The Repeat Indicator IE is mapped to the Repeat Indicator subfield of the parameter.

3   The Cumulative End-to-End Transit Delay subfield of the End-to-End Transit Delay IE is mapped to the Propagation Delay Counter. The Maximum End-to-End Transit Delay subfield is mapped to the Maximum End-to-End Transit Delay parameter in the network. At the destination exchange, the Propagation Delay Counter value is mapped back to the Cumulative End-to-End Transit Delay subfield only if a Maximum End-to-End Transit Delay parameter is present.

4   The Narrow-band Bearer Capability IE may be repeated up to two times. Treatment as in Note 2 above applies. If no Broadband Repeat Indicator IE is present, the priority subfield in B-ISUP should be set to "prioritized list ... in ascending order".

5   The Narrow-band Lower Layer Compatibility IE may be repeated up to four times. Treatment as in Note 2 above applies.

6   The Narrow-band Higher Layer Compatibility IE may be repeated up to two times. Treatment as in Note 4 above applies. If no Broadband Repeat Indicator IE is present, the priority subfield in B-ISUP should be set to "prioritized list ... in ascending order".

7   The OAM Traffic Descriptor is carried transparently through the network.

8   When the Progress indicator IE is repeated in DSS 2, it is carried within a single Progress indicator parameter of B-ISUP, with the priority subfield marked "no priority".

9   The Quality of Service IE is not carried within the network, and is recreated at the destination exchange using the value "unspecified".

TABLE 2/Q.2650

Mapping of subsequent address information for overlap sending

Orig. U/N INFO ⟶	Network SAM ⟶	Term. U/N INFO
INFO	SAM	INFO
Called party number	Subsequent number	No mapping
Broadband sending complete	ST (Carried in the Subsequent number)	No mapping

TABLE 3/Q.2650

Mapping of alerting, independent of ACM

Orig. U/N ALERTing ⟵	Network CPG ⟵	Term. U/N ALERTing
ALERTing	CPG	ALERTing
	Called party's indicators: called party's status = alerting	
Narrow-band high layer compatibility	Narrow-band high layer compatibility	Narrow-band high layer compatibility
Narrow-band bearer capability	Narrow-band bearer capability	Narrow-band bearer capability
Progress indicator set to "in-band information...now available"	In-band information indicator = "in-band information...now available"	No mapping
Progress indicator	Progress indicator	Progress indicator

TABLE 4/Q.2650

Mapping of alerting

Orig. U/N ALERTing ⟵	Network ACM ⟵	Term. U/N ALERTing
ALERTing	ACM	ALERTing
	Called party's indicators: called party's status = alerting	
Narrow-band high layer compatibility	Narrow-band high layer compatibility	Narrow-band high layer compatibility
Narrow-band bearer capability	Narrow-band bearer capability	Narrow-band bearer capability
Progress indicator set to "in-band information...now available"	In-band information indicator = "in-band information...now available"	
Progress indicator	Progress indicator	Progress indicator

Superseded by a more recent version

TABLE 5/Q.2650

Mapping of answer indication, non-automatic answering terminal

Orig. U/N CONNect ←	Network ANM ←	Term. U/N CONNect
CONNect	ANM	CONNect
AAL parameters	AAL parameters	AAL parameters
Broadband low layer information	Broadband low layer information	Broadband low layer information
End-to-end transit delay	Call history information (Note)	End-to-end transit delay
Narrow-band bearer capability	Narrow-band bearer capability	Narrow-band bearer capability
Narrow-band high layer compatibility	Narrow-band high layer compatibility	Narrow-band high layer compatibility
Narrow-band low layer compatibility	Narrow-band low layer compatibility	Narrow-band low layer compatibility
Progress indicator	Progress indicator	Progress indicator
OAM traffic descriptor	OAM traffic descriptor	OAM traffic descriptor
NOTE – If applicable, the Cumulative End-to-End Transit Delay from the called party is mapped to the Call history information parameter at the destination exchange, and is mapped back to the Cumulative End-to-End Transit Delay at the originating exchange.		

TABLE 6A/Q.2650

Mapping of progress indication

Orig. U/N PROGress ←	Network CPG ←	Term. U/N PROGress
PROGress	CPG	PROGress
	Called party's indicators: called party's status = no indication	
Narrow-band bearer capability	Narrow-band bearer capability	Narrow-band bearer capability
Narrow-band high layer compatibility	Narrow-band high layer compatibility	Narrow-band high layer compatibility
Progress indicator set to "in-band information...now available"	In-band information indicator = "in-band information...now available"	No mapping
Progress indicator	Progress indicator	Progress indicator

TABLE 6B/Q.2650

Mapping of progress indication

Orig. U/N PROGress ←	Network ACM ←	Term. U/N PROGress
PROGress	ACM	PROGress
	Called party's indicators: called party's status = no indication	
Narrow-band bearer capability	Narrow-band bearer capability	Narrow-band bearer capability
Narrow-band high layer compatibility	Narrow-band high layer compatibility	Narrow-band high layer compatibility
Progress indicator set to "in-band information...now available"	In-band information indicator = "in-band information...now available"	No mapping
Progress indicator	Progress indicator	Progress indicator

4.2.1   *En bloc*, non-automatic answering terminal, sending of ACM independent of access

Figure 1 shows the sequence of messages for successful call set-up where *en bloc* address signalling is used, the Address Complete Message (ACM) is sent prior to receiving a message from the access, and the called party is not an automatic answering terminal.

4.2.2   *En bloc*, automatic answering terminal, sending of ACM independent of access

Figure 2 shows the sequence of messages for successful call set-up where *en bloc* address signalling is used, the Address Complete Message (ACM) is sent prior to receiving a message from the access, and the called party is an automatic answering terminal.

4.2.3   *En bloc*, non-automatic answering terminal

Figure 3 shows the sequence of messages for successful call set-up where *en bloc* address signalling is used, the Address Complete Message (ACM) is delayed until receipt of alerting indication from the access, and the called party is not an automatic answering terminal.

4.2.4   *En bloc*, automatic answering terminal

Figure 4 shows the sequence of messages for successful call set-up where *en bloc* address signalling is used, the Address Complete Message (ACM) is delayed until receipt of connect indication from an automatic answering terminal.

4.2.5   Overlap addressing, non-automatic answering terminal

Figure 5 shows the sequence of messages when overlap addressing is used between the calling party and the originating local exchange, and *en bloc* addressing is used within the network. An independent ACM and non-automatic answering terminal is assumed in this case. Variations are possible in Figures 1 to 4.

T1164600-94/d01

FIGURE 1/Q.2650

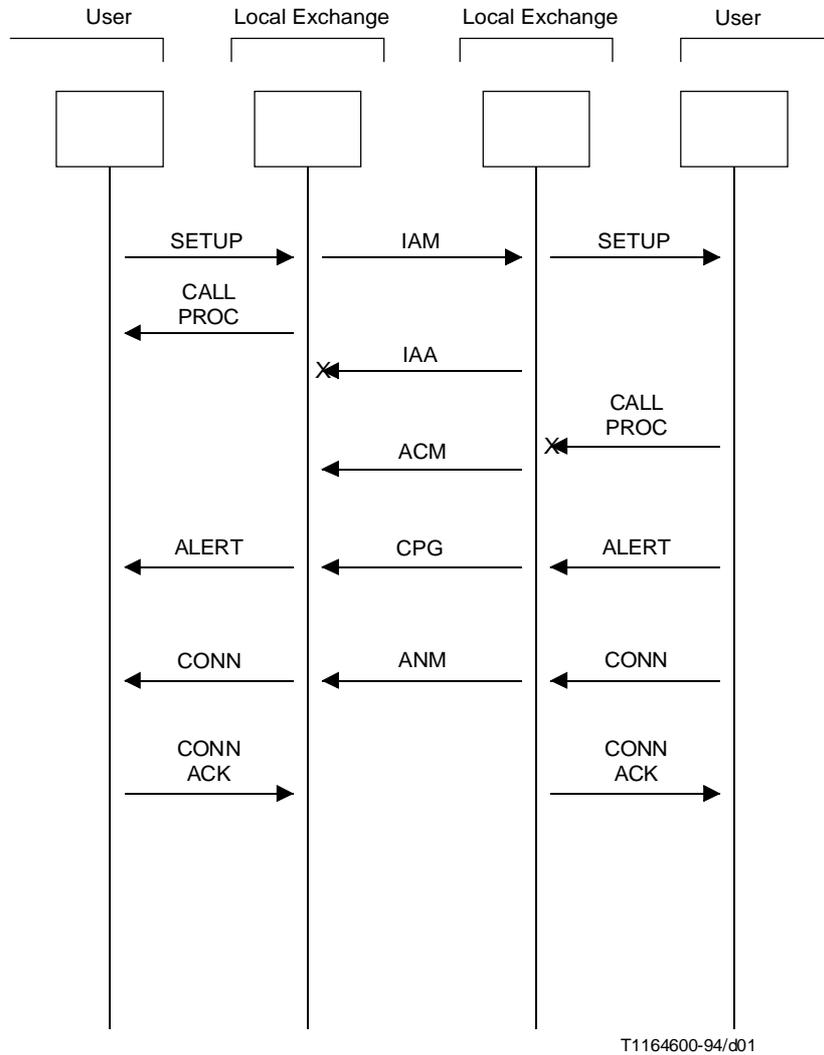*En bloc*, **non-automatic answering terminal,
sending of ACM independent of access**
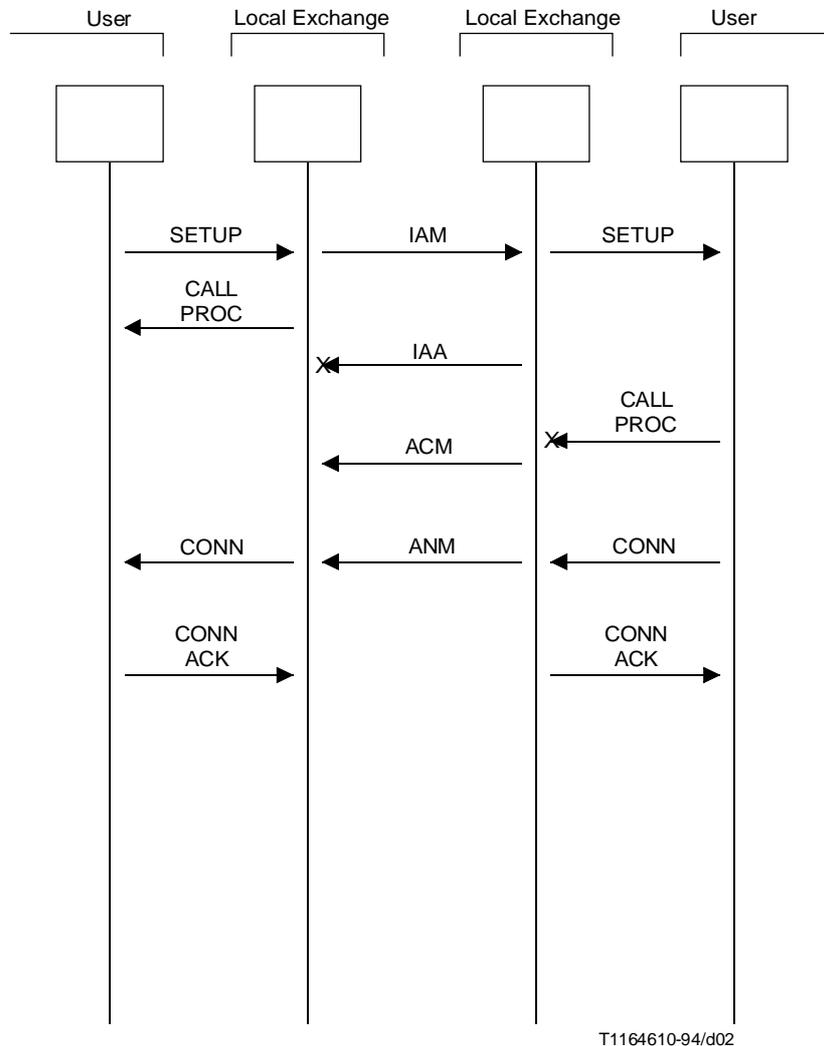
FIGURE 2/Q.2650

En bloc, automatic-answering terminal,
sending of ACM independent of access
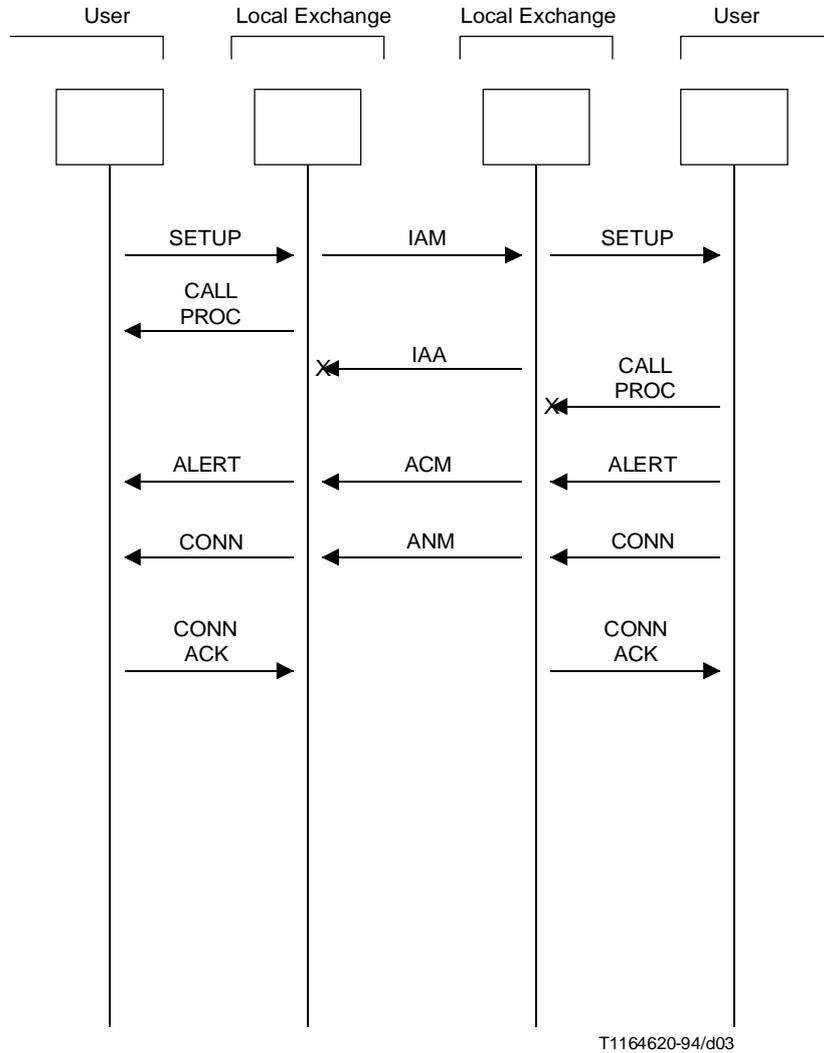
FIGURE 3/Q.2650

En bloc, **non-automatic answering terminal**
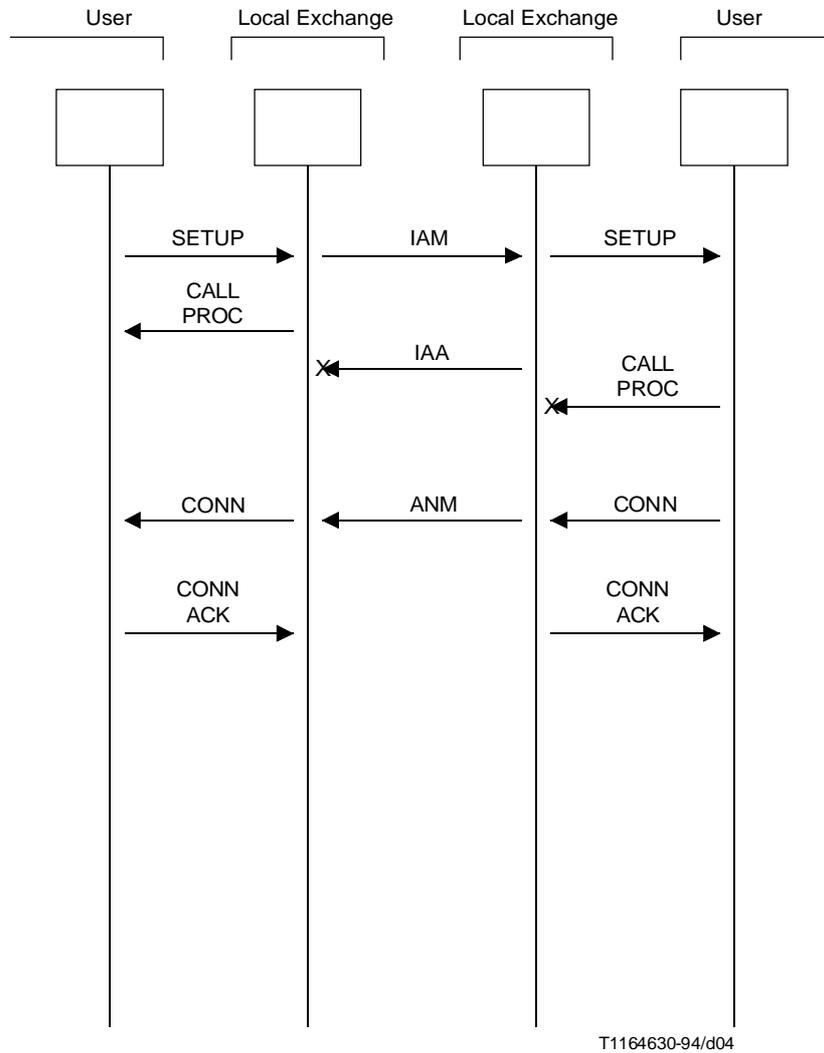
FIGURE 4/Q.2650

En bloc, **automatic-answering terminal**
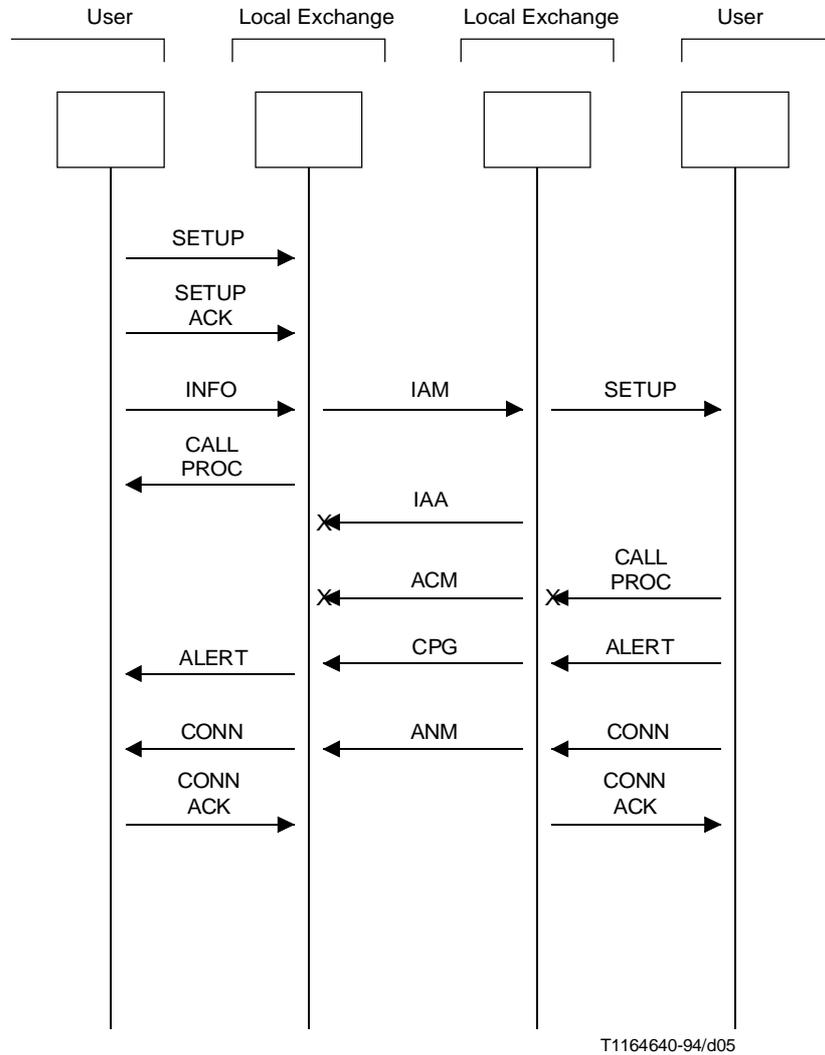
FIGURE 5/Q.2650

**Overlap in access only, ACM sent
independent of access**

4.2.6 **Overlap addressing, originating access and network, non-automatic answering terminal**

Figure 6 shows the sequence of messages when overlap addressing is used at the originating access and in the network. In the case shown, the ACM through the network informs the originating local exchange that enough address information has been received, and the exchange can therefore indicate CALL PROC to the calling party. Alternatively, the CALL PROC may be generated independently by the originating local exchange.
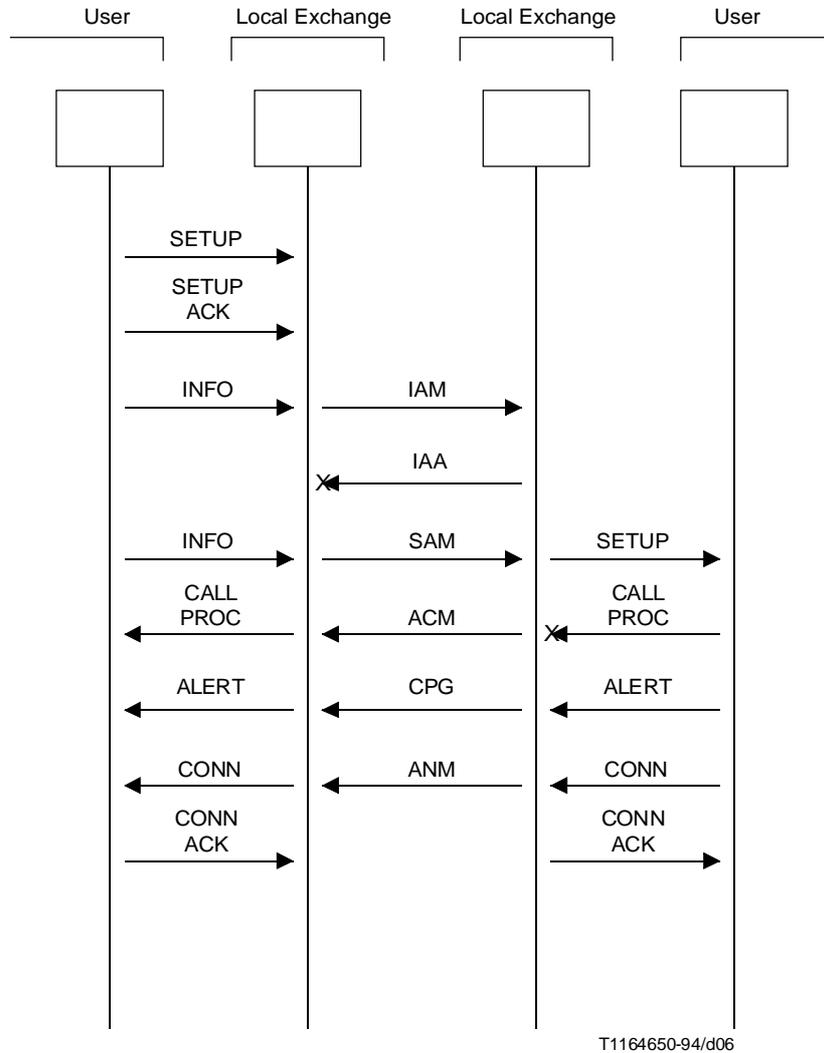
User	Local Exchange	Local Exchange	User

SETUP →

SETUP ACK →

INFO → IAM →

IAA →

INFO → SAM → SETUP →

← CALL PROC ← ACM CALL PROC

← ALERT ← CPG ← ALERT

← CONN ← ANM ← CONN

CONN ACK → CONN ACK →

T1164650-94/d06

FIGURE 6/Q.2650

**Overlap in access and within network,
ACM sent independent of access**

4.2.7   User-generated PROG message, sending of address complete independent of access

Figure 7 shows the case where the PROG message in DSS 2 is used to indicate interworking outside of the public network.
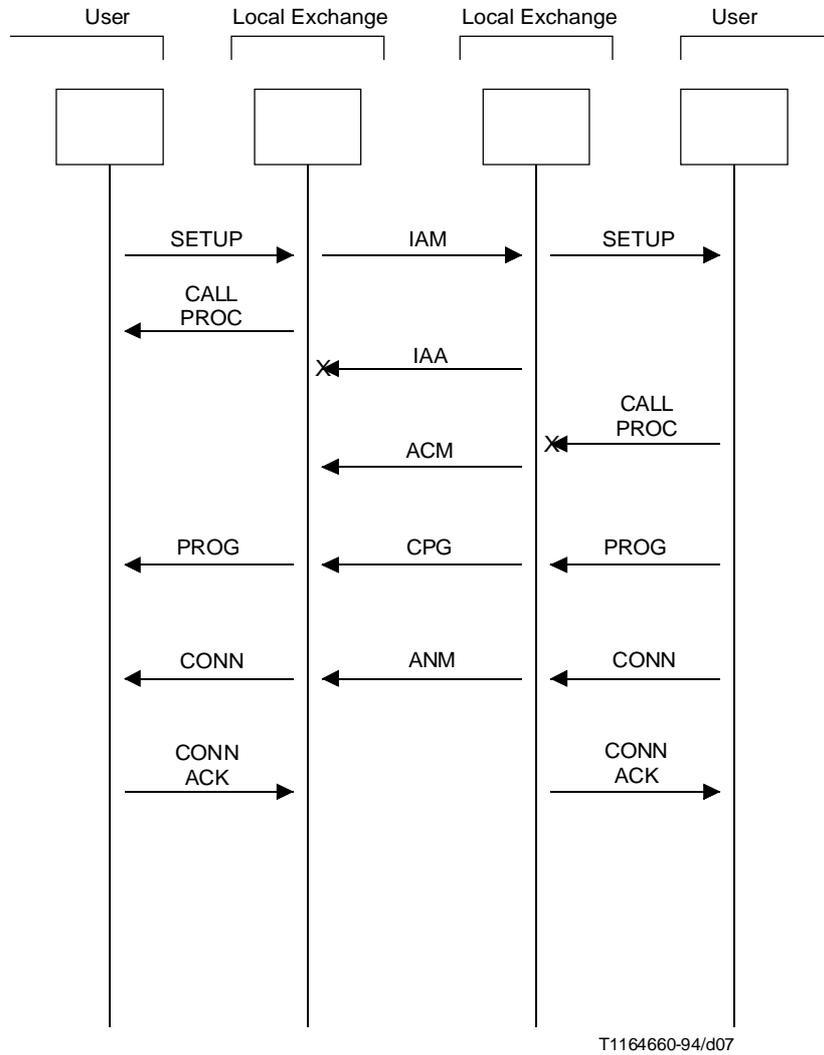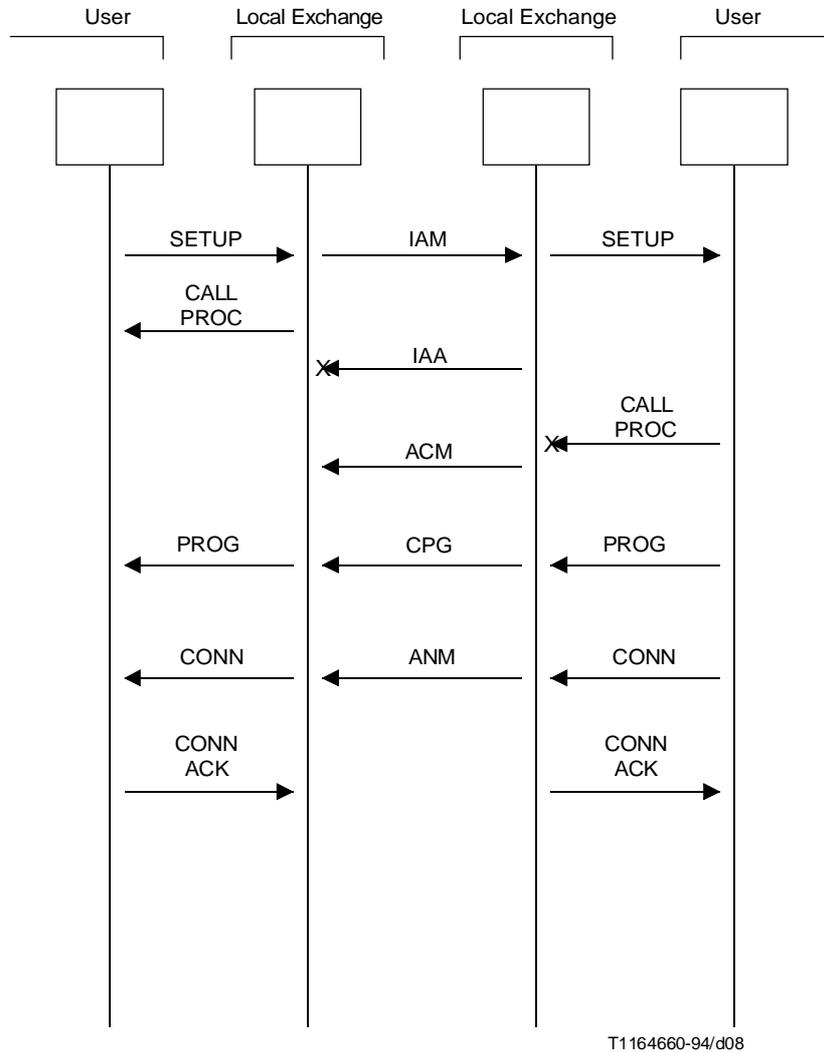

FIGURE 7/Q.2650

User-generated PROG message,
ACM sent independent of access

4.2.8   User-generated PROG message

Figure 8 shows the corresponding case when the address complete indication is delayed until an indication is received from the access, and the PROG message maps to an Address Complete Message.

FIGURE 8/Q.2650

**User-generated PROG message, ACM sent
dependent on access, *en bloc* sending**

5 Interworking specification for call release procedures

5.1 Mapping table

This subclause contains the mapping table and associated parameters and information elements for call release. (See Table 7.)

TABLE 7/Q.2650

Mapping of release procedure parameters for B-ISDN call

Orig. U/N	Network	Term. U/N
REL ──────────────→	REL ──────────────→	REL
REL	REL	REL
Cause	Cause indicators	Cause
Progress indicator	Progress indicator	Progress indicator

6 Interworking specification for unsuccessful call set-up procedures

6.1 Mapping tables

This subclause contains the mapping tables and associated parameters and information elements for unsuccessful call set-up. (See Table 8.)

TABLE 8/Q.2650

Mapping of DSS 2 REL COMP message information elements

Orig. U/N	Network	Term. U/N
REL ←──────────────	REL ←──────────────	REL COMP
REL	REL	REL COMP
Cause	Cause indicators	Cause

6.2 Arrow diagram

This subclause contains the interworking arrow diagram for unsuccessful call set-up procedures.

6.2.1 Unsuccessful call set-up

Figure 9 shows the unsuccessful call set-up procedure, where in-band tones/announcements are not provided (e.g. 64 kbit/s unrestricted bearer service). The REL COMP message at the destination exchange is mapped into the REL message. At the originating exchange the REL message is mapped into the REL message.
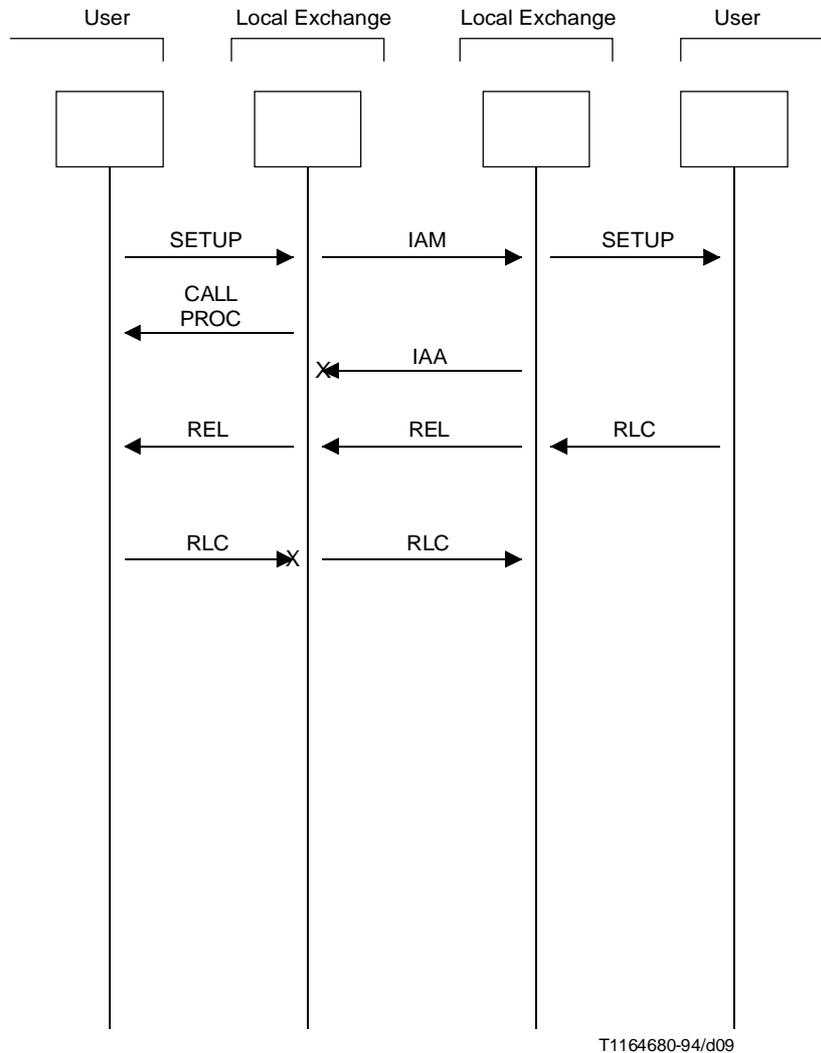
FIGURE 9/Q.2650

Unsuccessful call

7 Supplementary services for Release 1

7.1 Direct-Dialling-In supplementary service

This subclause contains the mapping tables for the Direct-Dialling-In supplementary service associated messages, parameters and information elements.

7.1.1 Mapping table

See Tables 9A and 9B.

TABLE 9A/Q.2650

Mapping the Initial Address Message with the SETUP message

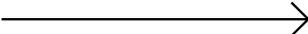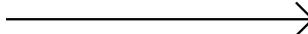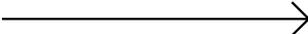| Orig. U/N SETUP	Network IAM	Term. U/N SETUP
SETUP	IAM	SETUP
	Called party number (as for basic call)	Called party number
	ST (carried in Called Party number)	Broadband sending complete

TABLE 9B/Q.2650

Mapping of subsequent address information for overlap sending

Orig. U/N INFO	Network SAM	Term. U/N INFO
INFO	SAM	INFO
	Called party number (as for basic call)	Called party number
	ST (carried in Called Party number)	Broadband sending complete

7.1.2   Arrow Diagram

Figure 10 shows the case where the indication that complete address information has been received is transferred by the terminating access in the CALL PROCEEDING message.
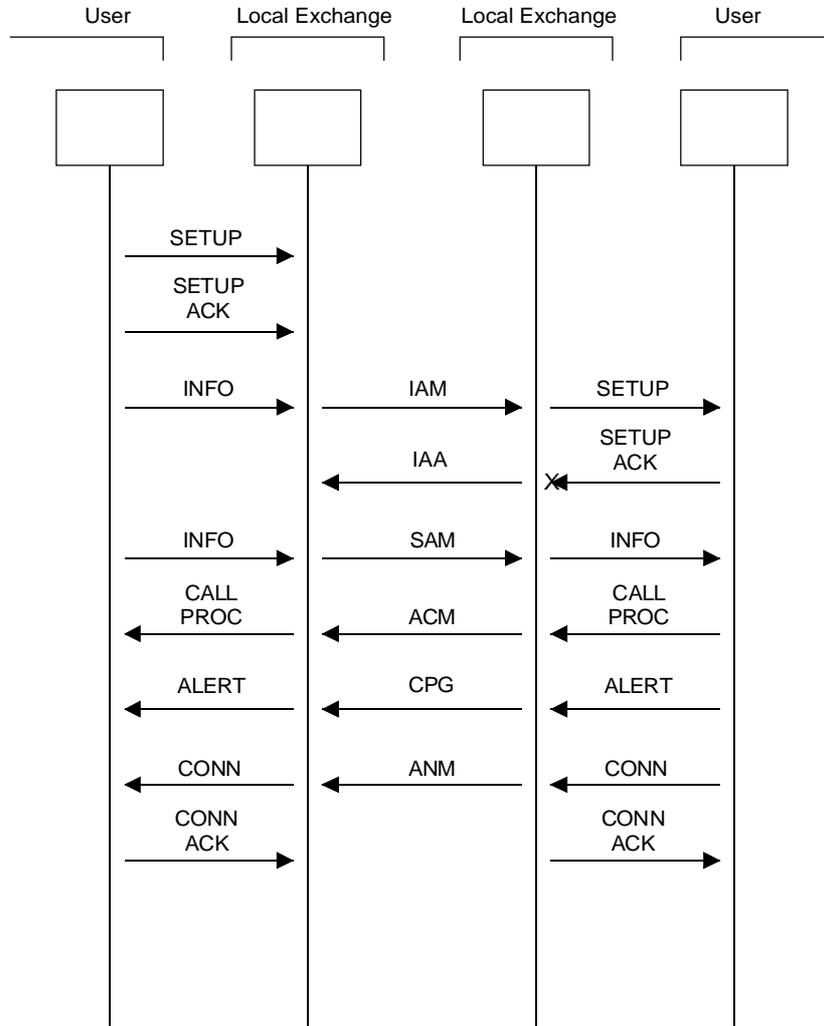
FIGURE 10/Q.2650

**Overlap in both accesses and within network,
CALL PROC mapped to ACM**

7.2 Multiple Subscriber Number supplementary service

This subclause contains the mapping tables for the Multiple Subscriber Number supplementary service associated messages, parameters and information elements.

7.2.1 Mapping table

See Table 10.

TABLE 10/Q.2650

Mapping the Initial Address Message with the SETUP Message

Orig. U/N SETUP	Network IAM	Term. U/N SETUP
SETUP	IAM	SETUP
Called party number (as for basic call)	Called party number (as for basic call)	Called party number (Note)
NOTE – The MSN number received in the called party number information element can be part of the ISDN number or as a network provider option a number which can be mapped from the ISDN number received from the network.		

7.3 CLIP/CLIR supplementary services

This subclause contains the mapping tables for the Calling Line Identification Presentation/Restriction supplementary services associated messages, parameters and information elements.

7.3.1 Mapping table

See Table 11.

7.4 COLP/COLR supplementary services

This subclause contains the mapping tables for the Connected Line Identification Presentation/Restriction supplementary services associated messages, parameters and information elements.

7.4.1 Mapping table

See Table 12.

TABLE 11/Q.2650

Mapping the initial Address Message with the SETUP message

Orig. U/N SETUP	Network IAM	Term. U/N SETUP
Orig. U/N	Network	Term. U/N
Network screening		
Calling party number – Number digits – Numbering plan – Type of number – Screening indicator – Presentation indicator	Calling party number parameter – Address signals (Note 1) – Numbering plan – Nature of address indicator – No mapping – Screening indicator – Addr. pres. restr. ind.	Calling party number – Number digits (Note 2) – Numbering plan (Note 3) – Type of number (Note 3) – Screening indicator (Note 3) – Presentation indicator
No network screening		
Calling party number – Number digits – Numbering plan – Screening indicator – Type of number – Presentation indicator	Additional calling party number parameter – Address signals – Numbering plan – No mapping – Screening indicator – Nature of address indicator – Addr. pres. restr. ind. Calling party number parameter – Address signals (default nbr.) – Numbering plan – Screening indicator – Nature of address indicator – Addr. pres. restr. ind.	Calling party number – Number digits – Numbering plan – Screening indicator – Type of number – Presentation indicator Calling party number (Note 4) – Number digits – Numbering plan – Screening indicator – Type of number – Presentation indicator
Calling party sub-address	Calling party sub-address parameter	Calling party sub-address

NOTES

1   If the user does not provide a calling party number or if the user provided calling party number fails at the screening, then the network will send the default calling party number in the address signals with the nature of address indicator set to "national significant number", the screening indicator set to "network provided" and the numbering plan indicator set to "E.164".

2   If presentation is restricted, there will be no mapping of the address signals to the number digits field.

3   If presentation is restricted, then, as a network option, these fields may be set by the destination local exchange as follows: numbering plan to "unknown", type of number to "unknown" and screening indicator to "network provided".

4   This requires the support of the two-number delivery option.

TABLE 12/Q.2650

Mapping the initial Address Message with the SETUP message

Orig. U/N SETUP	Network IAM	Term. U/N SETUP
⟶	⟶	⟶
Orig. U/N	Network	Term. U/N
	Connected line identity request parameter: generated by the network	

7.4.2 Mapping table

See Table 13.

7.5 Interworking specification for the Sub-address supplementary service

This subclause contains the mapping tables for the Sub-address supplementary service associated messages, parameters and information elements.

7.5.1 Mapping table

See Table 14.

7.6 UUS 1 supplementary services

This subclause contains the mapping tables for the User-to-user Signalling Service 1 (implicit) supplementary service associated messages, parameters and information elements.

7.6.1 Mapping table

See Table 15.

7.6.2 Mapping table

See Table 16.

7.6.3 Mapping table

See Table 17.

7.6.4 Mapping table

See Table 18.

Superseded by a more recent version

TABLE 13/Q.2650

Mapping the Answer Message with the CONNect message

Orig. U/N CONNECT ←	Network ANM ←	Term. U/N CONNECT ←
Orig. U/N	Network	Term. U/N
Network screening		
Connected number – Number digits (Note 2) – Numbering plan (Note 3) – Type of number (Note 3) – Screening indicator (Note 3) – Presentation indicator	Connected number parameter – Address signals (Note 1) – Numbering plan – Nature of address indicator – No mapping – Screening indicator – Addr. pres. res. ind.	Connected number – Number digits – Numbering plan – Type of number – Screening indicator – Presentation indicator
No network screening		
Connected number – Number digits – Numbering plan – Screening indicator – Type of number – Presentation indicator	Additional connected number parameter – Address signals – Numbering plan – No mapping – Screening indicator – Nature of address indicator – Addr. pres. restr. ind. Connected number parameter – Address signals (default number) – Numbering plan – Screening indicator – Nature of address indicator – Addr. pres. restr. ind.	Connected number – Number digits – Numbering plan – Screening indicator – Type of number – Presentation indicator
Connected sub-address	Connected sub-address parameter	Connected sub-address

NOTES

1   If the user does not provide a connected number or if the user provided connected number fails at the screening, then the network will send the default connected number in the address signals with the nature of address indicator set to "national significant number", the screening indicator set to "network provided" and the numbering plan indicator set to "E.164".

2   If presentation is restricted, there will be no mapping of the address signals to the number digits field.

3   If presentation is restricted, then, as a network option, these fields may be set by the destination local exchange as follows: numbering plan to "unknown", type of number to "unknown" and screening indicator to "network provided".

TABLE 14/Q.2650

Mapping the Initial Address Message with the SETUP Message

Orig. U/N SETUP	Network IAM	Term. U/N SETUP
SETUP	IAM	SETUP
Called party sub-address (as for basic call) (Note)	Called party sub-address (as for basic call) (Note)	Called party sub-address
NOTE – The called party subaddress is always transported by the network, but only sent to the called party when this party has subscribed to the sub-address supplementary service.		

TABLE 15/Q.2650

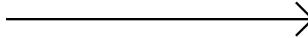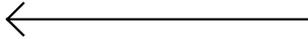**Mapping the Initial Address Message with the SETUP Message**

Orig. U/N SETUP	Network IAM	Term. U/N SETUP
Orig. U/N	Network	Term. U/N
User-to-user information	User-to-user information	User-to-user information

TABLE 16/Q.2650

Mapping the Address Complete message with the ALERT message

Orig. U/N ALERT	Network ACM	Term. U/N ALERT
Orig. U/N	Network	Term. U/N
User-to-user information	User-to-user information	User-to-user information
	User-to-user indicators parameter	

TABLE 17/Q.2650

Mapping the Answer message with the CONNECT message

Orig. U/N CONN	Network ANM	Term. U/N CONN
←	←	←
Orig. U/N	Network	Term. U/N
User-to-user information	User-to-user information	User-to-user information
	User-to-user indicators parameter	

TABLE 18/Q.2650

Mapping the Release Message with the REL or RLC message

Orig. U/N REL	Network REL	Term. U/N REL or RLC
←	←	←
Orig. U/N	Network	Term. U/N
User-to-user information	User-to-user information	User-to-user information

8   N-ISDN supplementary services not supported by B-ISDN Capability Set 1

This clause specifies the interworking for those supplementary services that are not part of B-ISDN Capability Set 1. This interworking occurs due to interworking with the N-ISDN (see Figure 11).
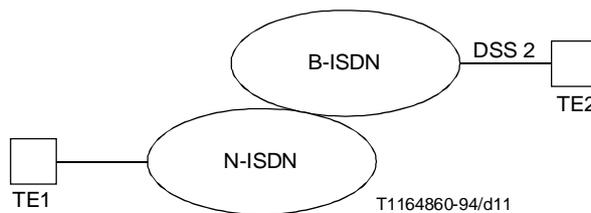

FIGURE 11/Q.2650

8.1 Call Forwarding Busy supplementary service

This subclause contains the mapping tables for the Call Forwarding Busy supplementary service associated messages, parameters and information elements.

8.1.1 Mapping table

See Table 19.

TABLE 19/Q.2650

Mapping CFB information

Narrow-band	Broadband	DSS 2
IAM →	IAM →	SETUP →
← ACM	← ACM	

IAM	IAM	SETUP
Redirecting number	Redirecting number	
Redirection information	Redirection information	
Original called number	Original called number	

8.2 Call Forwarding No Replay supplementary service

Refer to 8.1.

8.3 Call Forwarding Unconditional supplementary service

Refer to 8.1.

8.4 Call Deflection supplementary service

Refer to 8.1.

8.5 Call Waiting supplementary service

The notification is passed transparently through B-ISDN.

8.6 Call Hold

The notification is passed transparently through B-ISDN.

8.7 Conference Add-on Call

The notification is passed transparently through B-ISDN.

8.8 Three-Party Service

The notification is passed transparently through B-ISDN.

8.9 Terminal Portability

This subclause contains the mapping tables for the Terminal Portability supplementary service associated messages, parameters and information elements.

8.9.1 Mapping tables

See Tables 20 and 21.

TABLE 20/Q.2650

Mapping of suspend procedures

Narrow-band SUS ──────────▶	Broadband SUS ──────────▶	Term. U/N NOTIFY ──────────▶
SUS	SUS	NOTIFY
Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: User initiated	Notification description: User suspended

TABLE 21/Q.2650

Mapping of resume procedures

Narrow-band RES ──────────▶	Broadband RES ──────────▶	Term. U/N NOTIFY ──────────▶
RES	RES	NOTIFY
Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: User initiated	Notification description: User resumed

8.10 Closed User Group

This subclause contains the mapping tables for the Closed User Group supplementary service associated messages, parameters and information elements.

8.10.1 Mapping tables

See Tables 22 and 23.

TABLE 22/Q.2650

**Mapping CUG information
Successful call establishment**

Narrow-band IAM →	Broadband IAM →	DSS 2 SETUP →
IAM	IAM	SETUP
Optional forward call indicators: Closed user group call indicator, indicating "Outgoing Access"	Closed user group information: Closed user group call indicator, indicating "Outgoing Access"	
Closed user group interlock code	Closed user group information: Closed user group interlock code	

TABLE 23/Q.2650

**Mapping CUG information
Call released, due to absence of outgoing access**

Narrow-band IAM →	Broadband IAM → REL ←	DSS 2
IAM	IAM	
Optional forward call indicators: Closed user group call indicator, indicating "Call without outgoing access"	Closed user group information: Closed user group call indicator, indicating "Call without outgoing access"	
Closed user group interlock code	Closed user group information: Closed user group interlock code	
REL	REL	
Cause indicators: cause value #29	Cause indicators: cause value #29	

8.11 Multi-level Precedence and Preemption

The MLPP precedence parameter shall be discarded.

8.12 User-to-User Signalling 1 (explicit)

This subclause contains the mapping tables for the User-to-User Signalling Service 1 (explicit) supplementary service associated messages, parameters and information elements.

8.12.1 Mapping tables

See Tables 24 and 25.

TABLE 24/Q.2650

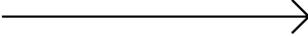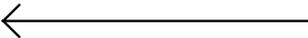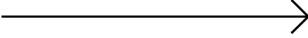**Mapping UUS1 information**
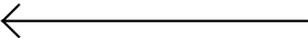**UUS1 is requested as not essential**

Narrow-band IAM ⟶	Broadband IAM ⟶	DSS 2 SETUP ⟶
ACM ⟵	ACM ⟵	
IAM	IAM	SETUP
User-to-user indicators: service 1 not essential for the call	User-to-user indicators: service 1 not essential for the call	
ACM	ACM	
User-to-user indicators: service 1 not provided	User-to-user indicators: service 1 not provided	

TABLE 25/Q.2650

Mapping UUS1 information
UUS1 is requested as essential for the call

Narrow-band IAM ⟶	Broadband IAM ⟶	DSS 2
REL ⟵	REL ⟵	
IAM	IAM	
User-to-user indicators: service 1 essential for the call	User-to-user indicators: service 1 essential for the call	
REL	REL	
Cause indicators: cause value #29 or #69	Cause indicators: cause value #29 or #69	

8.13 User-to-User Signalling 2

This subclause contains the mapping tables for the User-to-User Signalling Service 2 supplementary service associated messages, parameters and information elements.

8.13.1 Mapping tables

See Tables 26 and 27.

TABLE 26/Q.2650

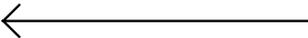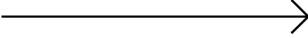**Mapping UUS2 information**
UUS2 is requested as essential

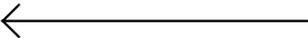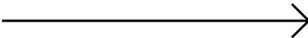| Narrow-band	Broadband	DSS 2
IAM ──────────▶	IAM ──────────▶	
REL ◀──────────	REL ◀──────────	
IAM	IAM	
User-to-user indicators: service 2 essential for the call	User-to-user indicators: service 2 essential for the call	
REL	REL	
Cause indicators: cause value #29 or #69	Cause indicators: cause value #29 or #69	

TABLE 27/Q.2650

Mapping UUS2 information
UUS2 is requested as essential

Narrow-band	Broadband	DSS 2
IAM ──────────▶	IAM ──────────▶	SETUP ──────────▶
ACM ◀──────────	ACM ◀──────────	
IAM	IAM	SETUP
User-to-user indicators: service 2 not essential for the call	User-to-user indicators: service 2 not essential for the call	
ACM	ACM	
User-to-user indicators: service 2 not provided	User-to-user indicators: service 2 not provided	

8.14   User-to-User Signalling 3

This subclause contains the mapping tables for the User-to-user Signalling Service 3 supplementary service associated messages, parameters and information elements.

8.14.1 Mapping tables

See Tables 28, 29 and 30.

TABLE 28/Q.2650

Mapping UUS3 information
UUS3 is requested as essential during call set-up

Narrow-band	Broadband	DSS 2
IAM →	IAM →	
	REL ←	
IAM	IAM	
User-to-user indicators: service 3 essential for the call	User-to-user indicators: service 3 essential for the call	
	REL	
	Cause indicators: cause value #29 or #69	

TABLE 29/Q.2650

Mapping UUS3 information
UUS3 is requested as not essential during call set-up

Narrow-band	Broadband	DSS 2
IAM →	IAM →	
ACM ←	ACM ←	
IAM	IAM	SETUP
User-to-user indicators: service 3 not essential for the call	User-to-user indicators: service 3 not essential for the call	
ACM	ACM	
User-to-user indicators: service 3 not provided	User-to-user indicators: service 3 not provided	

TABLE 30/Q.2650

Mapping UUS3 information
UUS3 is requested after call set-up
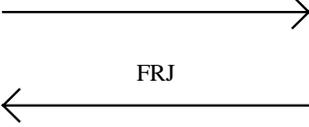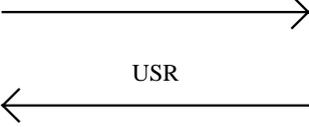
Narrow-band FAR ⟶	Broadband USR ⟶	DSS 2
FRJ ⟵	USR ⟵	
FAR	USR	
User-to-user indicators: service 3 not essential for the call	User-to-user indicators: service 3 not essential for the call	
FRJ	USR	
User-to-user indicators: service 3 not provided	User-to-user indicators: service 3 not provided	