



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.2660

(12/99)

SERIES Q: SWITCHING AND SIGNALLING

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

**Interworking between signalling system No. 7
broadband ISDN user part (B-ISUP) and
narrow-band ISDN user part (N-ISUP)**

ITU-T Recommendation Q.2660

(Previously CCITT Recommendation)

ITU-T Q-SERIES RECOMMENDATIONS
SWITCHING AND SIGNALLING

SIGNALLING IN THE INTERNATIONAL MANUAL SERVICE	Q.1–Q.3
INTERNATIONAL AUTOMATIC AND SEMI-AUTOMATIC WORKING	Q.4–Q.59
FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN	Q.60–Q.99
CLAUSES APPLICABLE TO ITU-T STANDARD SYSTEMS	Q.100–Q.119
SPECIFICATIONS OF SIGNALLING SYSTEMS No. 4 AND No. 5	Q.120–Q.249
SPECIFICATIONS OF SIGNALLING SYSTEM No. 6	Q.250–Q.309
SPECIFICATIONS OF SIGNALLING SYSTEM R1	Q.310–Q.399
SPECIFICATIONS OF SIGNALLING SYSTEM R2	Q.400–Q.499
DIGITAL EXCHANGES	Q.500–Q.599
INTERWORKING OF SIGNALLING SYSTEMS	Q.600–Q.699
SPECIFICATIONS OF SIGNALLING SYSTEM No. 7	Q.700–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
PUBLIC LAND MOBILE NETWORK	Q.1000–Q.1099
INTERWORKING WITH SATELLITE MOBILE SYSTEMS	Q.1100–Q.1199
INTELLIGENT NETWORK	Q.1200–Q.1699
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2000	Q.1700–Q.1799
BROADBAND ISDN	Q.2000–Q.2999
General aspects	Q.2000–Q.2099
Signalling ATM adaptation layer (SAAL)	Q.2100–Q.2199
Signalling network protocols	Q.2200–Q.2299
Common aspects of B-ISDN application protocols for access signalling and network signalling and interworking	Q.2600–Q.2699
B-ISDN application protocols for the network signalling	Q.2700–Q.2899
B-ISDN application protocols for access signalling	Q.2900–Q.2999

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

ITU-T RECOMMENDATION Q.2660

INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 – BROADBAND ISDN USER PART (B-ISUP) AND NARROW-BAND ISDN USER PART (N-ISUP)

Summary

This Recommendation shows the mapping/interworking between B-ISUP and N-ISUP for the basic call and supplementary services.

Source

ITU-T Recommendation Q.2660 was revised by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 3 December 1999.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization 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.

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

NOTE

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

INTELLECTUAL PROPERTY RIGHTS

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

As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 2000

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

CONTENTS

	Page
1 Scope.....	1
2 References.....	2
3 Abbreviations.....	4
4 General statements on interworking	6
5 Successful basic call	7
5.1 Mapping of the Initial Address Message	7
5.1.1 Mapping of the Initial Address Message when continuity check is applied in the incoming narrow-band network.....	7
5.2 Mapping of the Subsequent Address Message	10
5.3 Mapping of the Address Complete Message	10
5.4 Mapping of the Forward Transfer Message.....	12
5.5 Mapping of the Call Progress Message.....	12
5.6 Mapping of the Answer and Connect Messages.....	13
5.7 Mapping of the Network Resource Management Message	14
5.8 Mapping of the Release Message.....	14
5.9 Network initiated suspend	15
5.10 Network initiated resume.....	15
5.11 Mapping of Confusion message.....	15
5.12 Mapping of Pre-Release information message	16
6 Unsuccessful basic call	16
6.1 Mapping of the Initial Address Reject Message	16
6.2 Mapping of the Release Message.....	16
7 Supplementary services.....	17
7.1 Direct-Dialling-In (DDI).....	17
7.2 Multiple Subscriber Number (MSN)	17
7.3 Calling Line Identification Presentation (CLIP)	17
7.4 Calling Line Identification Restriction (CLIR).....	17
7.5 Connected Line Identification Presentation (COLP)	17
7.6 Connected Line Identification Restriction (COLR).....	18
7.7 Malicious Call Identification (MCID)	18
7.8 Sub-addressing (SUB)	19
7.9 Call Transfer (CT).....	19
7.10 Call Forwarding Busy (CFB).....	19
7.11 Call Forwarding No Reply (CFNR).....	21

	Page
7.12 Call Forwarding Unconditional (CFU).....	21
7.13 Call Deflection (CD).....	21
7.14 Line Hunting (LH)	21
7.15 Explicit Call Transfer (ECT)	21
7.16 Single Step Call Transfer (SCT).....	22
7.17 Call Waiting (CW).....	22
7.18 Call Hold (HOLD).....	23
7.19 Completion of Calls to Busy Subscriber (CCBS).....	23
7.20 Terminal Portability (TP).....	23
7.20.1 Suspend.....	23
7.20.2 Resume	24
7.21 Conference Calling (CONF).....	24
7.22 Three-Party Service (3PTY)	24
7.23 Closed User Group (CUG).....	24
7.24 Private Numbering Plan (PNP).....	25
7.25 Multi-Level Precedence and Preemption (MLPP).....	25
7.26 International Telecommunication Charge Card.....	25
7.27 Advice of Charge (AOC).....	25
7.28 Reverse Charging (REV)	26
7.29 User-to-User Signalling (UUS).....	26
7.29.1 Service 1	26
7.29.2 Service 2	28
7.29.3 Service 3	28
7.30 Global Virtual Network Service (GVNS).....	30
8 Application Transport Mechanism	30
8.1 Segmentation not required	31
8.2 Segmentation required	31

Recommendation Q.2660

**INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 –
BROADBAND ISDN USER PART (B-ISUP) AND
NARROW-BAND ISDN USER PART (N-ISUP)**

(revised in 1999)

1 Scope

This Recommendation specifies the interworking between Broadband ISDN User Part as used in the Broadband network and the Narrow-band ISDN User Part as defined in the 1997 Recommendations [10].

Interworking of the basic call and supplementary services applicable to the international interface are included.

Interworking is shown as arrow diagrams showing the message interworking, with tables being used to show the mapping of parameters. In some cases the message mapping is ambiguous. In those cases, the actual state of the involved ASEs has to be considered in addition to determining in which message the information is mapped. This is, however, outside the scope of this Recommendation.

When repeated information elements are contained in B-ISUP parameters, on ascending order of priority is assumed.

This Recommendation covers the following three interworking scenarios:

- Broadband transit network;
- Narrow-band/broadband interworking;
- Broadband/narrow-band interworking.

The interworking diagrams and tables show only the case of the broadband network being a transit network between two narrow-band networks. However, the information given is also relevant to the narrow-band/broadband and broadband/narrow-band interworking cases as indicated below. (See Figures 1 to 3.)

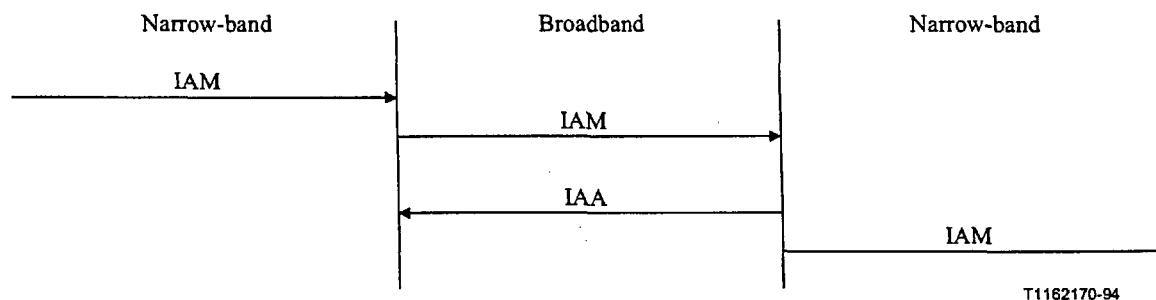


Figure 1/Q.2260 – Broadband transit network

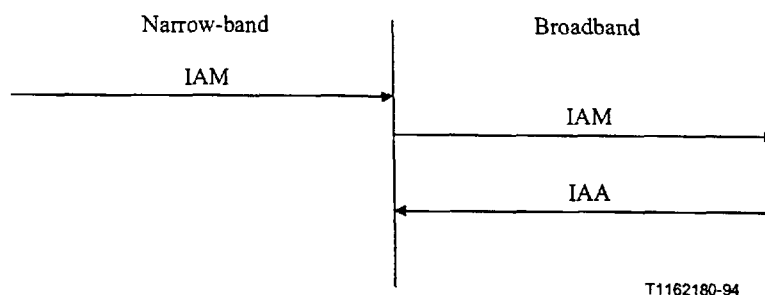


Figure 2/Q.2260 – Narrow-band/broadband interworking

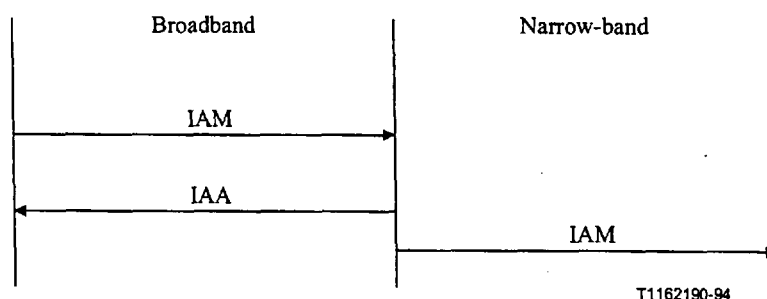


Figure 3/Q.2260 – Broadband/narrow-band interworking

2 References

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

- [1] ITU-T Recommendation Q.2761 (1999), *Functional description of the B-ISDN user part (B-ISUP) of signalling system No. 7.*
- [2] ITU-T Recommendation Q.2762 (1999), *General functions of messages and signals of the B-ISDN user part (B-ISUP) of signalling system No. 7.*
- [3] ITU-T Recommendation Q.2763 (1999), *Signalling system No. 7 B-ISDN user part (B-ISUP) – Formats and codes.*
- [4] ITU-T Recommendation Q.2764 (1999), *Signalling system No. 7 B-ISDN user part (B-ISUP) – Basic call procedures.*
- [5] ITU-T Recommendation Q.2765 (1999), *Signalling system No. 7 B-ISDN user part (B-ISUP) – Application transport mechanism (APM).*
- [6] ITU-T Recommendation Q.2730 (1999), *Signalling system No. 7 B-ISDN user part (B-ISUP) – Supplementary services.*
- [7] ITU-T Recommendation Q.2735.1 (1997), *Stage 3 description for community of interest supplementary services for B-ISDN using SS No. 7: Closed user group (CUG).*
- [8] CCITT Recommendation E.172 (1992), *ISDN routing plan.*

- [9] ITU-T Recommendation Q.2931 (1995), *Digital subscriber signalling system No. 2 – User-network interface (UNI) layer 3 specification for basic call/connection control.*
- [10] ITU-T Recommendation Q.761 (1997), *Signalling system No. 7 – ISDN user part functional description.*
- [11] ITU-T Recommendation Q.762 (1997), *Signalling system No. 7 – ISDN user part general functions of messages and signals.*
- [12] ITU-T Recommendation Q.763 (1997), *Signalling system No. 7 – ISDN user part formats and codes.*
- [13] ITU-T Recommendation Q.764 (1997), *Signalling system No. 7 – ISDN user part signalling procedures.*
- [14] ITU-T Recommendation Q.765 (1998), *Signalling system No. 7 – Application transport mechanism.*
- [15] ITU-T Recommendation Q.730 (1997), *ISDN user part supplementary services.*
- [16] ITU-T Recommendation Q.731.1 (1996), *Stage 3 description for number identification supplementary services using signalling system No. 7: Direct-dialling-in (DDI).*
- [17] ITU-T Recommendation Q.731.3 (1993), *Stage 3 description for number identification supplementary services using signalling system No. 7: Calling line identification presentation (CLIP).*
- [18] ITU-T Recommendation Q.731.4 (1993), *Stage 3 description for number identification supplementary services using signalling system No. 7: Calling line identification restriction (CLIR).*
- [19] ITU-T Recommendation Q.731.5 (1993), *Stage 3 description for number identification supplementary services using signalling system No. 7: Connected line identification presentation (COLP).*
- [20] ITU-T Recommendation Q.731.6 (1993), *Stage 3 description for number identification supplementary services using signalling system No. 7: Connected line identification restriction (COLR).*
- [21] ITU-T Recommendation Q.731.7 (1997), *Stage 3 description for number identification supplementary services using signalling system No. 7: Malicious call identification (MCID).*
- [22] CCITT Recommendation Q.731.8 (1992), *Stage 3 description for number identification supplementary services using signalling system No. 7: Sub-addressing (SUB).*
- [23] ITU-T Recommendation Q.732.2 (1996), *Stage 3 description for call offering supplementary services using signalling system No. 7: Call diversion services: call forwarding busy, call forwarding no reply, call forwarding unconditional, call deflection.*
- [24] ITU-T Recommendation Q.732.7 (1996), *Stage 3 description for call offering supplementary services using signalling system No. 7: Explicit call transfer.*
- [25] CCITT Recommendation Q.733.1 (1992), *Stage 3 description for call completion supplementary services using signalling system No. 7: Call waiting (CW).*
- [26] ITU-T Recommendation Q.733.2 (1993), *Stage 3 description for call completion supplementary services using signalling system No. 7: Call hold (HOLD).*
- [27] ITU-T Recommendation Q.733.3 (1997), *Stage 3 description for call completion supplementary services using signalling system No. 7: Completion of calls to busy subscriber (CCBS).*

- [28] ITU-T Recommendation Q.733.4 (1993), *Stage 3 description for call completion supplementary services using signalling system No. 7: Terminal portability (TP)*.
- [29] ITU-T Recommendation Q.734.1 (1993), *Stage 3 description for multiparty supplementary services using signalling system No. 7: Conference calling*.
- [30] ITU-T Recommendation Q.734.2 (1996), *Stage 3 description for multiparty supplementary services using signalling system No. 7: Three-party service*.
- [31] ITU-T Recommendation Q.735.1 (1993), *Stage 3 description for community of interest supplementary services using signalling system No. 7: Closed user group (CUG)*.
- [32] ITU-T Recommendation Q.735.3 (1993), *Stage 3 description for community of interest supplementary services using signalling system No. 7: Multi-level precedence and preemption*.
- [33] ITU-T Recommendation Q.735.6 (1996), *Stage 3 description for community of interest supplementary services using signalling system No. 7: Global virtual network service (GVNS)*.
- [34] ITU-T Recommendation Q.736.1 (1995), *Stage 3 description for charging supplementary services using signalling system No. 7: International telecommunication charge card (ITCC)*.
- [35] ITU-T Recommendation Q.736.3 (1995), *Stage 3 description for charging supplementary services using signalling system No. 7: Reverse charging (REV)*.
- [36] ITU-T Recommendation Q.737.1 (1997), *Stage 3 description for additional information transfer supplementary services using signalling system No. 7: User-to-user signalling (UUS)*.
- [37] ITU-T Recommendation Q.2931 Amendment 2 (1999), *Digital subscriber signalling system No. 2 – User-network interface (UNI) layer 3 specification for basic call/connection control – Amendment 2*.

3 Abbreviations

This Recommendation uses the following abbreviations:

3PTY	Three-Party Service
ACM	Address Complete Message
ANM	ANswer Message
AOC	Advice of Charge
APM	Application Transport Message
ASE	Application Service Element
CCBS	Completion of Calls to Busy Subscriber
CD	Call Deflection
CFB	Call Forwarding Busy
CFN	Confusion Message
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation

CLIR	Calling Line Identification Restriction
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CON	CONnect Message
CONF	CONFerence Calling
COT	Continuity message
CPG	Call Progress message
CT	Call Transfer
CTM	Call Transfer Message
CUG	Closed User Group
CW	Call Waiting
DDI	Direct-Dialling-In
ECT	Explicit Call Transfer
FAA	Facility Accept Message
FAC	Facility Message
FAR	Facility Request Message
FRJ	Facility Reject Message
FOT	Forward Transfer Message
GVNS	Global Virtual Network Service
HOLD	Call HOLD
IAA	Initial Address Acknowledgement Message
IAM	Initial Address Message
IAR	Initial Address Reject Message
IDR	Identification Request Message
IRS	Identification Response Message
LH	Line Hunting
LOP	Loop Prevention Message
MCID	Malicious Call IDentification
MLPP	Multi-Level Precedence and Preemption
MSN	Multiple Subscriber Number
NRM	Network Resource Management Message
PNP	Private Numbering Plan
PRI	Pre-Release Information Message
REL	Release Message
RES	Resume Message
REV	Reverse Charging

SAM	Subsequent Address Message
SCT	Single Step Call Transfer
SGM	Segmentation Message
SUB	Sub-addressing
SUS	Suspend Message
TP	Terminal Portability
UID	User Interactive Dialogue
USR	User-to-User Information Message
UUS	User-to-User Signalling

4 General statements on interworking

- No ATM specific parameters defined for B-ISUP will be carried in the N-ISUP.
- All B-ISUP messages carry message compatibility information.
- All B-ISUP parameters carry parameter compatibility information.
- Forward and backward narrow-band interworking indicators carry narrow-band information unchanged through the broadband network.
- When a call transfers from the N-ISDN to the B-ISDN and the broadband/narrow interworking indicator is not received, then the broadband/narrow-band interworking indicator shall be set to "pass on" by the interworking exchange.
- The Generic Notification indicator of N-ISUP is always mapped transparently to the Notification indicator of B-ISUP.
- If a Generic number parameter cannot be mapped, because there is no parameter defined in B-ISUP for the received type of number, then the Generic number parameter is treated according to the settings of the instruction indicators. In particular, it is transported transparently through the broadband backbone, if the Broadband/narrow-band interworking indicator is set to "pass on".
- Segmentation is not supported on the international interface for B-ISUP, when the B-ISDN receives a message indicating that segmentation has occurred in the N-ISDN, the B-ISUP message is not generated until the second segment has arrived (or timer has expired) in N-ISUP.
- Through connection will be symmetrical and occur:
 - 1) in the narrow-band outgoing exchange, immediately after the N-ISUP sends the Initial Address Message, or
 - 2) in the broadband outgoing exchange, immediately upon reception of the Initial Address Acknowledgement Message in B-ISUP.