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SERIES Q: SWITCHING AND SIGNALLING, AND
ASSOCIATED MEASUREMENTS AND TESTS

Digital subscriber Signalling System No. 1 – General

Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN user part

Recommendation ITU-T Q.850

ITU-T Q-SERIES RECOMMENDATIONS
SWITCHING AND SIGNALLING, AND ASSOCIATED MEASUREMENTS AND TESTS

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, 5, 6, R1 AND R2	Q.120–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.799
Q3 INTERFACE	Q.800–Q.849
DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1	Q.850–Q.999
General	Q.850–Q.919
Data link layer	Q.920–Q.929
Network layer	Q.930–Q.939
User-network management	Q.940–Q.949
Stage 3 description for supplementary services using DSS1	Q.950–Q.959
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
SPECIFICATIONS OF SIGNALLING RELATED TO BEARER INDEPENDENT CALL CONTROL (BICC)	Q.1900–Q.1999
BROADBAND ISDN	Q.2000–Q.2999
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR THE NGN	Q.3000–Q.3709
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR SDN	Q.3710–Q.3899
TESTING SPECIFICATIONS	Q.3900–Q.4099
SIGNALLING REQUIREMENTS AND PROTOCOLS FOR IMT-2020	Q.5000–Q.5049
COMBATING COUNTERFEITING AND STOLEN ICT DEVICES	Q.5050–Q.5069

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

Recommendation ITU-T Q.850

Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN user part

Summary

Recommendation ITU-T Q.850 defines the format, encoding and semantics of cause information elements/parameters and the usage of the location field, in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part. Many cause values are applicable to both DSS 1 and SS No. 7 ISUP and this Recommendation specifies the use of each cause value in other Recommendations.

History

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Table of Contents

	Page
1 Scope.....	1
2 References.....	1
3 Definitions	2
4 Abbreviations and acronyms	2
5 Conventions	3
6 Cause.....	3
6.1 Format.....	3
6.2 Codes used in the subfield of the "Cause".....	3
7 General rules for the handling of the location field	23
8 Handling of cause and location at the international interface.....	25
9 Procedures for the handling of location values reserved for national use (national option).....	26
Bibliography.....	28

Recommendation ITU-T Q.850

Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN user part

1 Scope

This Recommendation defines the format, encoding and semantics of cause information elements/parameters and the usage of the location field, in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part. Many cause values are applicable to both DSS 1 and SS No. 7 ISUP and this Recommendation specifies the use of each cause value in other Recommendations.

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; 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. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T E.180] Recommendation ITU-T E.180/Q.35 (1998), *Technical characteristics of tones for the telephone service.*
- [ITU-T Q.730] Recommendation ITU-T Q.730 (1999), *ISDN User Part supplementary services.*
- [ITU T Q.732.x] Recommendations ITU-T Q.732.2-5 (1999), *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.*
- [ITU-T Q.733.3] Recommendation ITU-T Q.733.3 (1997), *Stage 3 description for call completion supplementary services using Signalling System No. 7: Completion of calls to busy subscriber (CCBS).*
- [ITU-T Q.733.4] Recommendation ITU-T Q.733.4 (1993), *Stage 3 description for call completion supplementary services using Signalling System No. 7: Terminal portability (TP).*
- [ITU-T Q.735.1] Recommendation ITU-T Q.735.1 (1993), *Stage 3 description for community of interest supplementary services using Signalling System No. 7: Closed user group (CUG).*
- [ITU-T Q.735.3] Recommendation ITU-T Q.735.3 (1993), *Stage 3 description for community of interest supplementary services using Signalling System No. 7: Multi-level precedence and pre-emption.*
- [ITU-T Q.737.1] Recommendation ITU-T Q.737.1 (1997), *Stage 3 description for additional information transfer supplementary services using Signalling System No. 7: User-to-user signalling (UUS).*
- [ITU-T Q.763] Recommendation ITU-T Q.763 (1999), *Signalling System No. 7 – ISDN User Part formats and codes.*

- [ITU-T Q.764] Recommendation ITU-T Q.764 (1999), *Signalling System No. 7 – ISDN User Part signalling procedures.*
- [ITU-T Q.931] Recommendation ITU-T Q.931 (1998), *ISDN user-network interface layer 3 specification for basic call control.*
- [ITU-T Q.933] Recommendation ITU-T Q.933 (2003), *ISDN Digital Subscriber Signalling System No. 1 (DSS1) – Signalling specifications for frame mode switched and permanent virtual connection control and status monitoring.*
- [ITU-T Q.955.3] Recommendation ITU-T Q.955.3 (1993), *Stage 3 description for community of interest supplementary services using DSS 1: Multi-level precedence and preemption (MLPP).*
- [ITU-T X.21] Recommendation ITU-T X.21 (1992), *Interface between Data Terminal Equipment and Data Circuit-terminating Equipment for synchronous operation on public data networks.*
- [ITU-T X.25] Recommendation ITU-T X.25 (1996), *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit.*
- [ITU-T X.213] Recommendation ITU-T X.213 (2001), *Information technology – Open Systems Interconnection – Network service definition.*
- [ETSI TS 124 229] ETSI TS 124 229 V14.8.0 (2018-06), *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 14.8.0 Release 14).*
- [RFC 3326] IETF RFC 3326 (2002), *The Reason Header Field for the Session Initiation Protocol (SIP).*

3 Definitions

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ANM	Answer Message
BI	Beyond Interworking point
CCBSindicator	Completion of Calls to Busy Subscriber
CGC	Circuit-Group-Congestion signal
CUG	Closed User Group
DSS 1	Digital Subscriber Signalling System No. 1 (DSS 1)
INTL	International Network
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
LN	Public Network serving the Local user
LPN	Private Network serving the Local user

MLPP	Multilevel Precedence and Pre-emption
NNC	National-Network-Congestion signal
NU	National Use
RLN	Public Network serving the Remote user
RPN	Private Network serving the Remote user
S-CSCF	Serving-Call Session Control Function
SIP	Session Initiation Protocol
SS No. 7	Signalling System No. 7
TMR	Transmission Medium Requirement
TN	Transit Network
U	User
UUS	User-to-User Signalling

5 Conventions

None.

6 Cause

6.1 Format

The format of the ITU-T Q.931 Cause information element or ITU-T Q.763/Q.730 Cause indicators parameters' content is shown in Figure 1.

8	7	6	5	4	3	2	1	Octet (Note 3) Q.931 Q.763				
ext. 0/1	Coding standard		Spare 0	Location				3 1				
ext. 1	Recommendation (Notes 1 and 2)							3a*				
ext. 1	Cause value							4 2				
Diagnostic(s) (if any)								5* 3*				

NOTE 1 – If the default applies for the Recommendation field, octets including this field shall be omitted.

NOTE 2 – The Recommendation field is not supported by the ISUP. The default interpretation for ISUP is [ITU-T Q.763].

NOTE 3 – Optional octets are marked with asterisks (*).

Figure 1 – Format of "Cause"

6.2 Codes used in the subfield of the "Cause"

6.2.1 Extension indicator (ext.)

Bit

8

0 octet continues through to the next octet (e.g., octet 1 to 1a)

1 last octet

6.2.2 Coding standard

Bits

7 6

0 0	ITU-T standardized coding, as described below
0 1	ISO/IEC standard (See note.)
1 0	national standard (See note.)
1 1	standard specific to identified location (See note.)

NOTE – These other coding standards should be used only when the desired cause value cannot be represented with the ITU-T-standardized coding.

6.2.3 Location

Bits

4 3 2 1

0 0 0 0	user (U)
0 0 0 1	private network serving the local user (LPN)
0 0 1 0	public network serving the local user (LN)
0 0 1 1	transit network (TN)
0 1 0 0	public network serving the remote user (RLN)
0 1 0 1	private network serving the remote user (RPN)
0 1 1 1	international network (INTL)
1 0 1 0	network beyond interworking point (BI)
1 1 0 0	reserved for national use
1 1 0 1	reserved for national use
1 1 1 0	reserved for national use
1 1 1 1	reserved for national use

All other values are spare.

6.2.4 Recommendation

Bits

7 6 5 4 3 2 1

0 0 0 0 0 0 0	ITU-T Q.931
0 0 0 0 0 1 1	ITU-T X.21
0 0 0 0 1 0 0	ITU-T X.25
0 0 0 0 1 0 1	public land mobile networks, [b-ITU-T Q.1031]/[b-ITU-T Q.1051] (obsolete)

All other values are reserved.

NOTE – If AN octet including this field is omitted, [ITU-T Q.931] is assumed.

6.2.5 Cause value (only applicable in the context of [ITU-T Q.763], [ITU-T Q.931] and [ETSI TS 124 229])

The cause value is divided into two fields, a class (bits 5 to 7) and a value within the class (bits 1 to 4).

- 1) The class indicates the general nature of the event.
Class (000): normal event

Class (001): normal event
Class (010): resource unavailable
Class (011): service or option not available
Class (100): service or option not implemented
Class (101): invalid message (e.g., parameter out of range)
Class (110): protocol error (e.g., unknown message)
Class (111): interworking

2) The cause values are listed in Table 1.