

**Integrated Services Digital Network (ISDN);
Signalling System No.7;
Master list of codepoints**



Reference

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Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Services and Protocol for Advanced Networks (SPAN), and is now submitted for the ETSI standards Membership Approval Procedure.

Introduction

The tables are intended to record all known assigned addressing codes. Where a particular ETSI member is shown to have assigned a code or codes this should not be taken to mean that the codes are unavailable for standardization, but to allow a reasoned choice to be made before assigning codes for new services. In future all new codes will be recorded in the present document rather than the ETSI MTP and SCCP specifications. Thus if referenced by these specifications then the information shall be considered normative.

Some of the SCCP material in the present document is based on ITU-T Recommendation Q.715 [1] which is a very valuable source of additional information and should be considered as a complement to the present document.

1 Scope

The present document is intended for use by designers of MTP/SCCP applications as well as by network operators configuring those applications to help facilitate MTP/SCCP interconnect between ETSI member networks.

In addition to information of an advisory nature, all known standardized SCCP message address codes and MTP SI codes are also listed.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ITU-T Recommendation Q.715: "Signalling connection control part user guide".
- [2] ITU-T Recommendation Q.713: "Signalling Connection Control Part formats and codes".
- [3] ETSI GSM 03.03: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification (GSM 03.03)".
- [4] ETSI GSM 08.06: "Digital cellular telecommunications system (Phase 2+); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface (GSM 08.06 version 5.3.0 Release 1996)".
- [5] ETSI GSM 03.66: "Digital cellular telecommunications system (Phase 2+); Support of Mobile Number Portability (MNP); Stage 2 (GSM 03.66 version 7.1.0 Release 1998)".
- [6] ITU-T Recommendation Q.704: "Signalling network functions and messages".
- [7] ITU-T Recommendation Q.701: "Functional description of the message transfer part (MTP) of Signalling System No. 7".
- [8] ITU-T Recommendation Q.703: "Signalling link".
- [9] ITU-T Recommendation Q.2210: "Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".
- [10] ITU-T Recommendation E.210: "Ship station identification for VHF/UHF and maritime mobile-satellite services".
- [11] ITU-T Recommendation E.211: "Selection procedures for VHF/UHF maritime mobile services".
- [12] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".
- [13] ITU-T Recommendation E.214: "Structure of the land mobile global title for the signalling connection control part (SCCP)".
- [14] ITU-T Recommendation E.733: "Methods for dimensioning resources in Signalling System No. 7 networks".

- [15] ITU-T Recommendation F.69: "The international telex service – Service and operational provisions of telex destination codes and telex network identification codes".
- [16] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [17] ITU-T Recommendation X.121: "International numbering plan for public data networks".

3 Definitions and abbreviations

3.1 Definitions

The definitions of the MTP/SCCP recommendations referenced in clause 2 apply.

3.2 Abbreviations

MTP	Message Transfer Part
SCCP	Signalling Connection Control Part
UHF	Ultra-High Frequency
VHF	Very High Frequency

4 SCCP address code allocations

In general the rules of ITU-T Recommendation Q.713 [2] should apply to ensure ease of interworking SCCP between both ETSI and non-ETSI-member networks. Addressing codes not standardized within ITU-T may be exchanged subject to agreement of all concerned operators. Address codes for the support of services not standardized in ITU-T but agreed within ETSI are recorded in the present document in a similar way to ITU-T Recommendation Q.713 [2], Annex B, where appropriate.

4.1 SSN

Table 1

Decimal Value	Bits 8 7 6 5 4 3 2 1	Meaning	Assignment
0	0 0 0 0 0 0 0 0	SSN not known/not used	ITU-T
1	0 0 0 0 0 0 0 1	SCCP management	ITU-T
2	0 0 0 0 0 0 1 0	reserved for ITU-T-T allocation	ITU-T
3	0 0 0 0 0 0 1 1	ISDN user part	ITU-T
4	0 0 0 0 0 1 0 0	OMAP	ITU-T
5	0 0 0 0 0 1 0 1	MAP (mobile application part)	ITU-T
6	0 0 0 0 0 1 1 0	HLR (home location register)	ITU-T
7	0 0 0 0 0 1 1 1	VLR (visitor location register)	ITU-T
8	0 0 0 0 1 0 0 0	MSC (mobile switching centre)	ITU-T
9	0 0 0 0 1 0 0 1	EIC (equipment identifier centre)	ITU-T
10	0 0 0 0 1 0 1 0	AUC (authentication centre)	ITU-T
11	0 0 0 0 1 0 1 1	ISDN supplementary services	ITU-T
12	0 0 0 0 1 1 0 0	INAP	ETSI
13	0 0 0 0 1 1 0 1	broadband ISDN edge-to-edge	ITU-T
14	0 0 0 0 1 1 1 0	TC test responder	ITU-T
15	0 0 0 0 1 1 1 1	•	
	to	• Reserved for international use	ITU-T
31	0 0 0 1 1 1 1 1	•	
32	0 0 1 0 0 0 0 0	•	
	to		
147	1 0 0 1 0 0 1 1	•••• Reserved for ETSI allocation GSM	ETSI GSM 03.03 [3]
148	1 0 0 1 0 1 0 0	[---] GSM	ETSI GSM 03.03 [3]
149	1 0 0 1 0 1 0 1	[---] GSM	ETSI GSM 03.03 [3]
150	1 0 0 1 0 1 1 0	• ~	ETSI GSM 03.03 [3]
151	1 0 0 1 0 1 1 1	•	
	to	• Reserved for national network use	ETSI
252	1 1 1 1 1 1 0 0	•	
253	1 1 1 1 1 1 0 1	O&M(BSS)	ETSI GSM 08.06 [4]
254	1 1 1 1 1 1 1 0	BSSAP	ETSI GSM 08.06 [4]
255	1 1 1 1 1 1 1 1	Reserved for expansion	ITU-T

NOTE 1: Network specific subsystem numbers should be assigned in descending order starting with "11111110".

NOTE 2: Code values 32 to 254 inclusive are "reserved for national networks" by ITU-T.

4.2 Translation type

Table 2

Decimal value	Encoding Bits 8 7 6 5 4 3 2 1	Meaning	Assignment
0	0 0 0 0 0 0 0 0	Unknown	ITU-T
1	0 0 0 0 0 0 0 1	ITCC Service	ITU-T
2	0 0 0 0 0 0 1 0	"Generic" Numbering Plan	ITU-T
3	0 0 0 0 0 0 1 1	Broad-Band Edge-to-Edge	ITU-T
4	0 0 0 0 0 1 0 0	•	
to		• Reserved for international services	ITU-T
16	0 0 0 1 0 0 0 0	•	
17	0 0 0 1 0 0 0 1	CCBS Supplementary Service	ITU-T
18	0 0 0 1 0 0 1 0	•	
to	to	• Reserved for international services	ITU-T
63	0 0 1 1 1 1 1 1	•	
64	0 1 0 0 0 0 0 0	•	
to	to	• Spare	ITU-T
127	0 1 1 1 1 1 1 1	•	
128	1 0 0 0 0 0 0 0	•••• Mobile number portability "call related" message (tbc)	ETSI GSM 03.66 [5]
to	to	• Reserved for ETSI allocation	ETSI
150	1 0 0 1 0 1 1 0	•	
151	1 0 0 1 0 1 1 1	•	
to	to	••••••• Reserved for national network use	ETSI
254	1 1 1 1 1 1 1 0	•	
255	1 1 1 1 1 1 1 1	Reserved for expansion	ITU-T

NOTE: Code values 128 to 254 inclusive are "national network specific" - ITU-T.

4.3 Numbering Plan

Table 3

Decimal value	Encoding Bits 4 3 2 1	Meaning	Assignment
0	0 0 0 0	unknown	ITU-T
1	0 0 0 1	ISDN/telephony numbering plan (ITU-T Recommendation E.164 [16])	ITU-T
2	0 0 1 0	generic numbering plan	ITU-T
3	0 0 1 1	data numbering plan (ITU-T Recommendation X.121 [17])	ITU-T
4	0 1 0 0	telex numbering plan (ITU-T Recommendation F.69 [15])	ITU-T
5	0 1 0 1	maritime mobile numbering plan (ITU-T Recommendations E.210 [10] and E.211 [11])	ITU-T
6	0 1 1 0	land mobile numbering plan (ITU-T Recommendation E.212 [12])	ITU-T
7	0 1 1 1	ISDN/mobile numbering plan (ITU-T Recommendation E.214 [13])	ITU-T
8	1 0 0 0	spare	
9	1 0 0 1	spare	
10	1 0 1 0	in use	UK
11	1 0 1 1	in use	UK
12	1 1 0 0	spare	
13	1 1 0 1	spare	
14	1 1 1 0	private network or network-specific numbering plan	ITU-T
15	1 1 1 1	reserved	ITU-T

4.4 Encoding scheme

Table 4

Decimal value	Encoding Bits 4 3 2 1	Meaning	Assignment
0	0 0 0 0	unknown	ITU-T
1	0 0 0 1	BCD, odd number of digits	ITU-T
2	0 0 1 0	BCD, even number of digits	ITU-T
3	0 0 1 1	national specific	ITU-T
4	0 1 0 0	•	
	to	• spare	
14	1 1 1 0	•	
15	1 1 1 1	reserved	ITU-T

4.5 Nature of Address Indicator

Table 5

Decimal value	Encoding Bits 7 6 5 4 3 2 1	Meaning	Assignment
0	0 0 0 0 0 0 0	Unknown	ITU-T
1	0 0 0 0 0 0 1	Subscriber Number	ITU-T
2	0 0 0 0 0 1 0	Reserved for national use	ITU-T
3	0 0 0 0 0 1 1	National Significant Number	ITU-T
4	0 0 0 0 1 0 0	••••••• International Number	ITU-T
5	0 0 0 0 1 0 1	•	
		• spare	
111	1 1 0 1 1 1 1	•	
112	1 1 1 0 0 0 0	•	
		•••• Reserved for ETSI allocation	ETSI
120	1 1 1 1 0 0 0	•	
121	1 1 1 1 0 0 1	•	
125	1 1 1 1 1 0 1	•••• Reserved for national network use	ETSI
126	1 1 1 1 1 1 0	• UK Specific Address	UK (provisional)
127	1 1 1 1 1 1 1	reserved	ITU-T

NOTE: Code values 112 to 126 inclusive are "national network specific" - ITU-T.

5 MTP code allocations

5.1 MTP SI code allocations (for NI=00 (international network) only)

See ITU-T Recommendation Q.704 [6], subclause 14.2.1.

Table 6

NET IND	SERVICE IND	ALLOCATION
DC	DCBA	
00	0000	Sig Network Management
	0001	Sig Testing and Maintenance
	0010	Reserved
	0011	Signalling Connection Control Part
International	0100	Telephone User Part
Signalling Network	0101	Integrated Services User Part
	0110	Data User Part (Call Related)
	0111	Data User Part (Facility Related)
	1000	MTP Testing User Part
	1001	B-Band ISUP
	1010	Satellite ISUP
	1011	Speech Processing Network Element
	1100	AAL type 2 signalling bearer converter (for use by MTP according to ITU-T Recommendation Q.2210 [9])
	1101	Reserved
	1110	Reserved
	1111	Reserved

5.2 MTP User Part Identity code allocations

See ITU-T Recommendation Q.704 [6], subclause 15.17.4.

The User Part identity codes for the international signalling network are as follows:

Table 7

bit	D	C	B	A	
	0	0	0	0	Reserved
	0	0	0	1	Reserved
	0	0	1	0	Reserved
	0	0	1	1	SCCP
	0	1	0	0	TUP
	0	1	0	1	ISUP
	0	1	1	0	DUP
	0	1	1	1	Reserved
	1	0	0	0	MTP Testing User Part
	1	0	0	1	Broadband ISDN User Part
	1	0	1	0	Satellite ISDN User Part
	1	0	1	1	Signal Processing Network Element User Part
	1	1	0	0	Reserved for AAL type 2 Signalling Transport Converter (for use by MTP according to ITU-T Recommendation Q.2210 [9])
	1	1	0	1)
	1	1	1	0) Reserved
	1	1	1	1)

Annex A (informative): Network interconnections

This annex records information facilitating MTP/SCCP interconnection between ETSI member networks.

A.1 SCCP

A.1.1 Introduction of SCCP to post-Blue-Book

There are known difficulties in enhancement of networks to SCCP beyond the ITU-T Blue Book. Such development have to take account of:

- continuing international requirements for Blue Book compatibility;
- the inability of Blue Book networks to manage XUDT(S) messages;
- any inability of applications using SCCP to know what network capabilities are available towards destinations.

A.1.2 SCCP Return message on error procedure

The SCCP connectionless class of service provides the application using SCCP with the ability to transfer signalling messages via the signalling network without set-up of a signalling connection. Under certain conditions of network congestion, and unavailability of subsystems supporting the application and/or signalling points, SCCP connectionless messages could be discarded instead of being delivered. SCCP provides a Return on error procedure as a means for the application to be informed about messages that SCCP cannot route to the end destination. If the application using SCCP wishes to use the SCCP Return message on error procedure, the Return Option parameter needs to be provided to SCCP. If the Return Option parameter is not provided to SCCP by the application then no error information will be provided by SCCP to the application.

When routeing on Global Title, the Return message on error procedure is the only way for the application using SCCP to be informed of messages encountering routeing problems, and is a valuable means of receiving information quickly about routeing problems within the network.

It is recommended that applications provide the Return Option parameter to SCCP and, wherever possible, applications should be designed to take appropriate action on a Reason for Return parameter provided from SCCP. Specific action is for further study. Possible actions are shown in table A.1.

Table A.1

Reason for Return	Action taken by Application
no translation for address of such nature	stop requests and report problem
no translation for this specific address	stop requests and report problem
subsystem congestion	initially reduce requests, log problem, increase traffic in a controlled manner
subsystem failure	pause requests and report problem
unequipped user	stop requests and report problem
network congestion	initially reduce requests, log problem, increase traffic in a controlled manner
network failure	pause requests and report problem

Whilst SCCP is designed always to route correctly, it should be understood that the sent UDTS messages may themselves be mis-routed or discarded. Applications should have internal mechanisms that ensure control is not lost in the event of failure to receive responses to messages sent, or receiving calling addresses that cannot be recognized in messages that are returned (e.g. in the latter case applications could identify TC transaction id).

A.1.2.1 Use of the return option

The following subclauses describe how to avoid known potential problems.

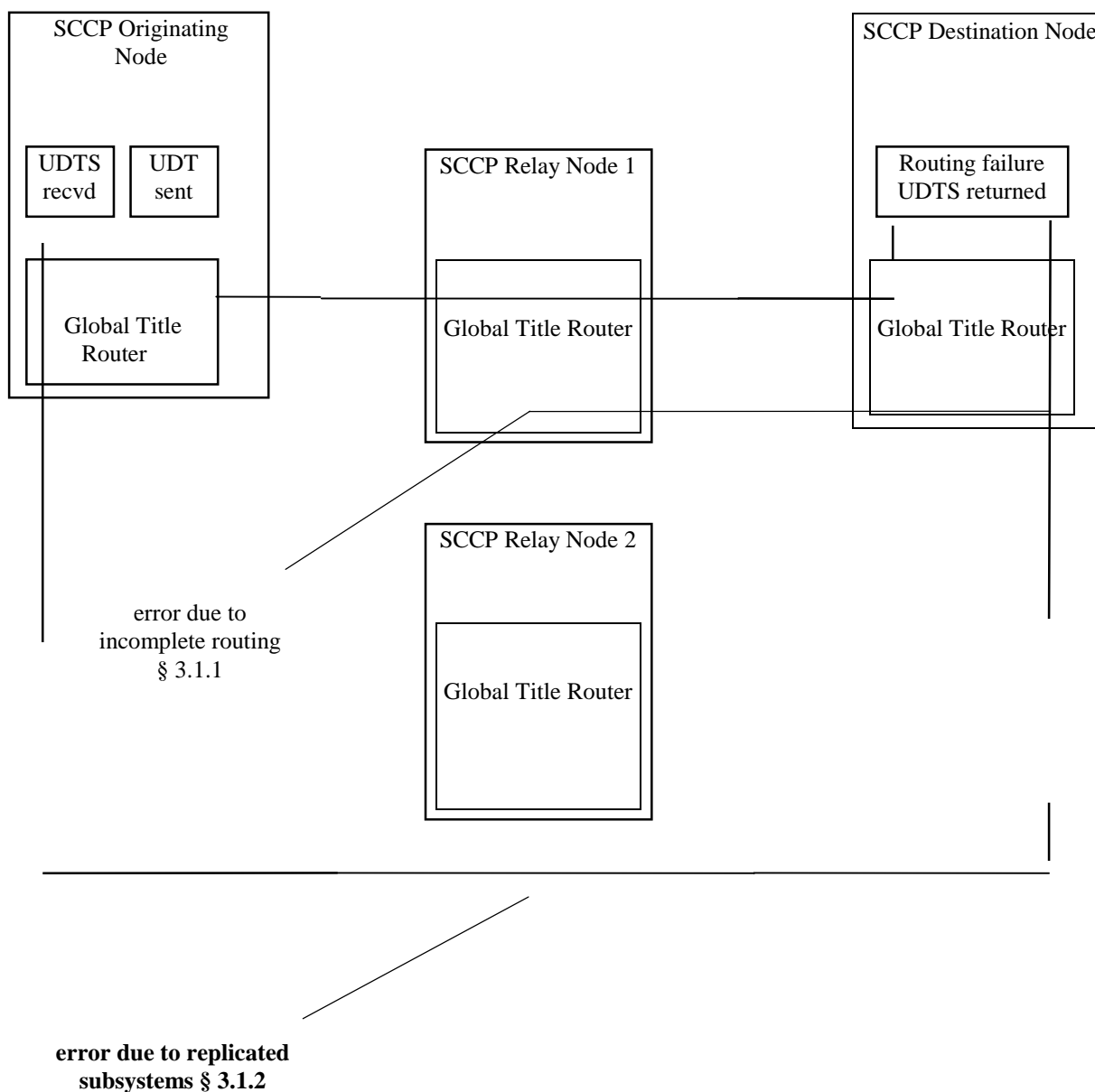


Figure A.1

A.1.2.1.1 Incomplete routing

Based on ITU-T Recommendation Q.715 [1] §8.3.1.1.

In order for the return on error option to function every node on an outward route needs to know a valid route on which to return the message. All nodes on the outward route need to be configured to be able to perform global title translation of the Global Title Address Information coming from the calling party address of the outward message.

A.1.2.1.2 Replicated subsystems

Based on ITU-T Recommendation Q.715 [1] §8.3.1.2.

The calling party address of UDT messages (forming the called party address of UDTS messages) have to unambiguously identify the node where the UDT message originating subsystem is located.

A.1.2.1.3 Changes to calling and called party addresses

In order to help minimize possible problems with the Return on error procedure described above, unless operationally unavoidable neither the calling nor called party addresses should be changed as they pass along a signalling route, including and up to end nodes.

A.1.2.1.4 Scope of calling party address

Based on ITU-T Recommendation Q.715 [1] §8.3.1.3.

The calling party address of the subsystem originating the message has to be valid in every network through which the message passes. This might require changes to the calling party address in Gateway nodes.

A.1.2.1.5 Calling party addresses in UDTS messages

Based on ITU-T Recommendation Q.715 [1] §8.3.1.4.

When the routing indicator in messages received at end nodes has been set to RI = 'route on SSN', the called party address will then include the SSN of the destination application and possibly the DPC of the end-node. Potentially, these address parameters could then form the calling party address in a returned UDTS message. However, if DPCs and perhaps national specific SSNs were derived from the final GT translation, these may be valid only in the destination network, and therefore should not be used for the calling party address in a returned UDTS message.

Problems of this nature are minimized by not permitting changes to the calling and called party addresses (see A.2.1.3).

A.1.2.1.6 Conversion of called party address

Based on ITU-T Recommendation Q.715 [1] §8.3.1.5.

The calling party address sent back in a UDTS message may contain any intermediate result of translation of the called party address in the UDT message, and have no apparent relation to it. It cannot therefore be used as a reliable indication for such purposes as accounting, measurements, or traffic management activity.

If screening of calling party address is applied to UDTS messages, many messages could be blocked because their calling party address is not valid. Also, many messages might be rejected or discarded, since the calling party address was originally the called party address in a UDT that could not be routed. Problems of this nature are minimized by not permitting changes to the calling and called party addresses (see A.2.1.3) Care should be taken that the screening of calling party address does not impair the normal operation of an SCCP network.

To achieve a meaningful calling party address, the international component of the Global Title Address Information should be included and retained whenever feasible.

A.1.2.1.7 SCCP corrective action for messages returned on error

At present there are no actions specified for SCCP to take other than to pass on the Reason for Return parameter to the application. The consequences of errors are anticipated to be at a level where the normal operation of the SCCP network is unimpaired. However, it should be a requirement of interconnect agreements that SCCP errors be recorded and action taken to find and rectify their cause.

A.1.3 Checking for called addresses in own node or network

Translation tables should be adequately populated to ensure that before an SCCP message is sent from one network to another, it is first checked whether the called party address resides in the network, or at least, the sending node (e.g. particularly where number portability is operational). If such a check reveals that this is the case the message should not be sent.

A.1.4 Checking for circular routing of messages

It should be noted that sending of messages across network boundaries increases the possibility of message loops.

A.2 MTP

A.2.1 Point Code Allocation

See ITU-T Recommendation Q.701 [7], §3.2.1.

Only point codes allocated from the appropriate interworking range should be used by a node at one end of the interface to identify the node at the other, and to identify itself to that other node.

A.2.2 Repetition of Signal Units

See ITU-T Recommendation Q.703 [8], §5.3.

A signal unit should not be repeated unless in response to a negative acknowledgement or as permitted by the preventative cyclic retransmission procedures of Q.703 [8], 6.1. Any repetition of signalling units should not cause an interworking problem.

A.2.3 Error Correction Procedure

See ITU-T Recommendation Q.703 [8], §5 and §6 and ITU-T Recommendation E.733 [14].

The error correction method to be used should be agreed by the corresponding operators. Guidance on the selection of error correction method can be found in ITU-T Recommendation E.733 [14].

A.2.4 Routing of Messages

See ITU-T Recommendation Q.704 [6], §2.3.

Interconnect configurations should be such that no circular routing of messages is possible even under multiple failure conditions.

A.2.5 Signalling Point Restart

See ITU-T Recommendation Q.704 [6], §9.

The Signalling Point Restart method to be used should be agreed by the corresponding operators. The only method recommended by ETSI is ITU-T Recommendation Q.704 [6], §9.

A.2.6 Management messages

The management messages to be exchanged between networks are to be agreed between corresponding operators, and are defined by the roles (signalling transfer point or end point) of the interconnecting nodes.

A.2.7 MTP Screening

Screening functions could be used to prevent non-agreed messages from being sent over the interface.

A.2.8 Transfer Prohibited Procedures

See ITU-T Recommendation Q.704 [6], §13.

If a Transfer Prohibited message from an STP sent in accordance with the procedure described in ITU-T Recommendation Q.704 [6], §13.2.2 (i) is lost, a loop of length 2 could be created.

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- ETS 300 008-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.701 (1993), Q.702 (1988), Q.703 to Q.706 (1993), modified]".
- EN 301 004-1: "Broadband Integrated Services Digital Network (B-ISDN); Signalling System No.7; Message Transfer Part (MTP) level 3 functions and messages to support international interconnection; Part 1: Protocol specification [ITU-T Recommendation Q.2210 (1996), modified]".

History

Document history		
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