APPENDIX B

ISDN Switch Types, Codes, and Values

This appendix contains a list of the supported switch types. It also contains the ISDN cause codes and ISDN bearer capability values, and progress description field values that are valid within the debug commands for ISDN.

Table B-1 lists the ISDN switch types supported by the ISDN interface.

Table B-1 Supported Switch Types

Identifier	Description
basic-net3	Basic rate switches
basic-5ess	AT&T basic rate switches
basic-dms100	NT DMS-100 basic rate switches
vn2	French VN2 ISDN switches
vn3	French VN3 ISDN switches
ntt	Japanese NTT ISDN switches
basic-1tr6	German 1TR6 ISDN switches

Table B-2 lists the ISDN cause code fields that display in the following format within the debug commands:

```
i=0xy1y2z1z2a1a2
```

Table B-2 ISDN Cause Code Fields

Field	Value—Description
0x	Indicates that the values that follow are in hexadecimal
y1	8—CCITT standard coding.
y2	0—User 1—Private network serving local user 2—Public network serving local user 3—Transit network 4—Public network serving remote user 5—Public network serving local user 7—International network A—Network beyond internetworking point
z1	Class of cause value.
z2	Value of cause value.
a1	(Optional.) Diagnostic field that is always 8.
a2	(Optional.) Diagnostic field that is one of the following values: 0—Unknown 1—Permanent 2—Transient

Table B-3 lists descriptions of the cause value field of the cause information element.

Table B-3 ISDN Cause Values

Cause Value		Cause Number	Cause	Diagnostics
Class	Value			
0 0 0	0 0 0 1	1	Unallocated (unassigned) number	Note 12
0 0 0	0 0 1 0	2	No route to specified transit network	Transit network identity (Note 11)
0 0 0 1	0 0 1 1	3	No route to destination	Note 12
0 0 0	0 1 1 0	6	Channel unacceptable	
0 0 0	0 1 1 1	7	Call awarded and being delivered in an established channel	
0 0 1	0 0 0 0	16	Normal call clearing	Note 12
0 0 1	0 0 0 1	17	User busy	
0 0 1	0 0 1 0	18	No user responding	
0 0 1	0 0 1 1	19	No answer from user (user alerted)	
0 0 1	0 1 0 1	21	Call rejected	Note 12. User supplied diagnostic (Note 4)
0 0 1	0 1 1 0	22	Number changed	

Cause Value		Cause Number	Cause	Diagnostics
Class	Value			
0 0 1	1 0 1 0	26	Non-selected user clearing	
0 0 1	1 0 1 1	27	Designation out of order	
0 0 1	1 1 0 0	28	Invalid number format	
0 0 1	1 1 0 1	29	Facility rejected	Facility identification (Note 1)
0 0 1	1 1 1 0	30	Response to STATUS ENQUIRY	
0 0 1	1 1 1 1	31	Normal unspecified	
0 1 0	0 0 1 0	34	No circuit/channel available	
0 1 0	0 1 1 0	38	Network out of order	
0 1 0	1 0 0 1	41	Temporary failure	
0 1 0	1 0 1 0	42	Switching equipment congestion	
0 1 0	1 0 1 1	43	Access information discarded	Discarded information element identifier(s) (Note 6)
0 1 0	1 1 0 0	44	Requested circuit/channel not available	
0 1 0	1 1 1 1	47	Resources unavailable, unspecified	
1 0 0	0 0 0 1	65	Bearer capability not implemented	Note 3
1 0 0	0 0 1 0	66	Channel type not implemented	Channel Type (Note 7)
1 0 0	0 1 0 1	69	Requested facility not implemented	Facility Identification (Note 1)
0 1 1	0 0 0 1	49	Quality of service unavailable	Note 12
0 1 1	0 0 1 0	50	Requested facility not subscribed	Facility identification (Note 1)
0 1 1	1 0 0 1	57	Bearer capability not authorized	Note 3
0 1 1	1 0 1 0	58	Bearer capability not presently available	Note 3
0 1 1	1 1 1 1	63	Service or option not available, unspecified	
1 0 0	0 1 1 0	70	Only restricted digital information bearer capability is available	
1 0 0	1 1 1 1	79	Service or option not implemented, unspecified	
1 0 1	0 0 0 1	81	Invalid call reference value	
1 0 1	0 0 1 0	82	Identified channel does not exist	Channel identity
1 0 1	0 0 1 1	83	A suspended call exists, but this call identity does not	
1 0 1	0 1 0 0	84	Call identity in use	
1 0 1	0 1 0 1	85	No call suspended	
1 0 1	0 1 1 0	86	Call having the requested call identity has been cleared	Clearing cause
1 0 1	1 0 0 0	88	Incompatible destination	Incompatible parameter (Note 2)
1 0 1	1 0 1 1	91	Invalid transit network selection	
1 0 1	1 1 1 1	95	Invalid message, unspecified	

Cause Value		Cause Number	Cause	Diagnostics
Class	Value			
1 1 0	0 0 0 0	96	Mandatory information element is missing	Information element identifier(s) (Note 6)
1 1 0	0 0 0 1	97	Message type non-existent or not implemented	Message type
1 1 0	0 0 1 0	98	Message not compatible with call state or message type non-existent or not implemented	Message type
1 1 0	0 0 1 1	99	Information element non-existent or not implemented	Information element identifier(s) Notes 6, 8)
1 1 0	0 1 0 0	100	Invalid information element contents	Information element identifier(s) (Note 6)
1 1 0	0 1 0 1	101	Message not compatible with call state	Message type
1 1 0	0 1 1 0	102	Recovery on timer expiry	Timer number (Note 9)
1 1 0	1 1 1 1	111	Protocol error, unspecified	
1 1 1	1 1 1 1	127	Internetworking, unspecified	

The following notes are referred to in Table B-3.

Note 1: The coding of facility identification is network dependent.

Note 2: Incompatible parameter is composed of incompatible information element identifier,

Note 3: The format of the diagnostic field for cause 57, 58, and 65 is shown in the CCITT specification.

Note 4: User supplied diagnostic field is encoded according to the user specification, subject to the maximum length of the cause information element. The coding of user supplied diagnostics should be made in such a way that it does not conflict with the coding described in Note 12 below.

Note 5: New destination is formatted as the called party number information element, including information element identifier. Transit network selection may also be included.

Note 6: Locking an non-locking shift procedures described in the CCITT specification apply. In principle, information element identifiers are in the same order as the information elements in the received message.

Note 7: The following coding is used:

- Bit 8—extension bit
- Bit 7 through 5—spare
- Bit 4 through 1—according to Table 4-15/Q.931 octet 3.2, channel type in CCITT specification

Note 8: When only locking shift information element is included and no variable length information element identifier follows, it means that the codeset in the locking shift itself is not implemented.

Note 9: The timer number is coded in IA5 characters. The following coding is used in each octet:

- Bit 8—Spare “0”
- Bit 7 through 1—IA5 character

Note 10: Examples of the cause values to be used for various busy/congestion condition appear in Annex J of the CCITT specification.

Note 11: The diagnostic field contains the entire transit network selection or network facilities information element, as applicable.

Note 12: See Table B-2 for the coding that is used.

Table B-4 lists the ISDN bearer capability values that display in the following format within the debug commands:

```
0x8890 for 64Kbps or 0x218F for 56 Kbps
```

Table B-4 ISDN Bearer Capability Values

Field	Value—Description
0x	Indicates that the values that follow are in hexadecimal.
88	CCITT coding standard; unrestricted digital information
90	Circuit mode, 64 Kb
21	Layer 1, V.110/X.30
8F	Synchronous, no in-band negotiation, 56Kb

Table B-5 lists the values of the Progress description field contained in the ISDN Progress indicator information element.

Table B-5 Progress Description Field Values

Bits	No.	Description
0000001	1	Call is not end-to-end ISDN, further call progress information may be available in -band
0000010	2	Destination address is non-ISDN
0000011	3	Origination address is non-ISDN
0000100	4	Call has returned to the ISDN
0001000	8	In-band information or appropriate pattern now available.

All other values for the progress description field are reserved.