Cause Codes and Debug Values

This chapter contains the following information:

Additional cause code information can be found in the *Cisco IOS Debug Command Reference*.

Details of Cause Codes and Debug Values for VoIP

Use the following tables when reading debugs and the associated values within the debugs.

Q.931 Call Disconnection Causes

These are cause codes from the **debug voip ccapi inout** command.

Call Disconnection Cause Value (in Hex)	Meaning and Number (in Decimal)
CC_CAUSE_UANUM = 0x1	Unassigned number (1)
CC_CAUSE_NO_ROUTE = 0x3	No route to destination (3)
CC_CAUSE_NORM = 0x10	Normal call clearing (16)
CC_CAUSE_BUSY = 0x11	User busy (17)
CC_CAUSE_NORS = 0x12	No user response (18)
CC_CAUSE_NOAN = 0x13	No user answer (19)
CC_CAUSE_REJECT = 0x15	Call rejected (21)
CC_CAUSE_INVALID_NUMBER = 0x1C	Invalid number (28)
CC_CAUSE_UNSP = 0x1F	Normal, unspecified (31)
CC_CAUSE_NO_CIRCUIT = 0x22	No circuit (34)
CC_CAUSE_NO_REQ_CIRCUIT = 0x2C	No requested circuit (44)
CC_CAUSE_NO_RESOURCE = 0x2F	No resource (47)
CC_CAUSE_NOSV = 0x3F	Service or option not available, or unspecified (63)

Codec Negotiation Values

These codec negotiation values are from the **debug voip ccapi inout** command.

Negotiation Value	Meaning
codec=0x00000001	G711 ULAW 64K PCM
codec=0x00000002	G711 ALAW 64K PCM
codec=0x00000004	G729
codec=0x00000004	G729IETF
codec=0x00000008	G729a
codec=0x00000010	G726r16
codec=0x00000020	G726r24
codec=0x00000040	G726r32
codec=0x00000080	G728
codec=0x00000100	G723r63
codec=0x00000200	G723r53
codec=0x00000400	GSMFR
codec=0x00000800	G729b
codec=0x00001000	G729ab
codec=0x00002000	G723ar63
codec=0x00004000	G723ar53
codec=0x00008000	CLEAR_CHANNEL

Tone Types

Tone Types	Meaning
CC_TONE_RINGBACK 0x1	Ring tone
CC_TONE_FAX 0x2	Fax tone
CC_TONE_BUSY 0x4	Busy tone
CC_TONE_DIALTONE 0x8	Dial tone
CC_TONE_OOS 0x10	Out of service tone
CC_TONE_ADDR_ACK 0x20	Address acknowledgement tone
CC_TONE_DISCONNECT 0x40	Disconnect tone
CC_TONE_OFF_HOOK_NOTICE 0x80	Tone indicating that the phone is off-hook
CC_TONE_OFF_HOOK_ALERT 0x100	A more urgent version of CC_TONE_OFF_HOOK_NOTICE
CC_TONE_CUSTOM 0x200	Custom tone—used when you are specifying a custom tone
CC_TONE_NULL 0x0	Null tone

FAX-Rate and VAD Capabilities Values

Values	Meaning
CC_CAP_FAX_NONE 0x1	Fax disabled or not available
CC_CAP_FAX_VOICE 0x2	Voice call
CC_CAP_FAX_144 0x4	14,400 baud
CC_CAP_FAX_96 0x8	9,600 baud
CC_CAP_FAX_72 0x10	7,200 baud
CC_CAP_FAX_48 0x20	4,800 baud
CC_CAP_FAX_24 0x40	2,400 baud
CC_CAP_VAD_OFF 0x1	VAD disabled
CC_CAP_VAD_ON 0x2	VAD enabled

Internal Cause Codes for SIP and H.323

Each H.323 and SIP standard cause code accurately reflects the nature of the associated internal failure. This capability makes the H.323 and SIP call control protocols consistent with cause codes that are generated for common problems. For each internal failure, an ITU-T Q.850 release cause code is also assigned and maps the new standard categories with the Q.850 release cause code and description that is assigned to each category.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Unallocated (unassigned) number	Typical scenarios include: • The number is not in the routing table, or it has no path across the ISDN network.	1	Indicates that the destination requested by the calling user cannot be reached because the number is unassigned.
No route to specified transit network (national use)	Typical scenarios include: • The wrong transit network code was dialed. • The transit network does not serve this equipment. • The transit network does not exist.	2	Indicates that the gateway is asked to route the call through an unrecognized intermediate network.
Destination address resolution failure	Typical scenarios include: • Domain Name System (DNS) resolution failure • Invalid session target in configuration	3	CC_CAUSE_NO_ROUTE Indicates that the called party cannot be reached because the network that the call has been routed through does not serve the desired destination.
Send special information tone	Typical scenarios include: • The dialed number has a special condition applied to it.	4	Indicates that the called party cannot be reached for reasons that are of a long-term nature and that the special information tone should be returned to the calling party.
Misdialed trunk prefix (national use)	Typical scenarios include: • The wrong trunk prefix was dialed.	5	Indicates the erroneous inclusion of a trunk prefix in a called party number.
Channel unacceptable	Typical scenarios include: • Failed channel on the network.	6	Indicates that the channel most recently identified is not acceptable to the sending entity for use in this call.
Call awarded and being delivered in an established channel	Typical scenarios include: • Successful call.	7	Indicates that the user has been awarded the incoming call and that the incoming call is being connected to a channel already established to that user for similar calls.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Preemption	Typical scenarios include: • Emergency services	8	Indicates the call is being pre-empted.
Preemption. Circuit reserved for reuse	Typical scenarios include: • Emergency services	9	Indicates the call is being pre-empted and the circuit is reserved for reuse by pre-empting exchange.
Normal call clearing	Typical scenarios include: • A call participant hung up.	16	Indicates that the call is being cleared because one of the users involved with the call has requested that the call be cleared.
User busy	Typical scenarios include: • User is already using the telephone.	17	Indicates that the called party is unable to accept another call because the user busy condition has been encountered. This cause value can be generated by the called user or by the network. In the case of user determined user busy, it is noted that the user equipment is compatible with the call.
No user responding	Typical scenarios include: • The user is not answering the telephone.	18	Used when the called party does not respond to a call establishment message with either an alerting or connect indication within the time allotted. The number that is being dialed has an active D-channel, but the far end chooses not to answer.
No answer from the user (user alerted)	Typical scenarios include: • The user is not answering the telephone.	19	Used when the called party has been alerted but does not respond with a connect indication within the time allotted. This cause is not generated by Q.931 procedures but can be generated by internal network timers.
Subscriber absent	Typical scenarios include: • The user lost network connectivity or is out of range.	20	Used when a mobile station has logged off, radio contact is not obtained with a mobile station, or if a personal telecommunication user is temporarily not addressable at any user-network interface.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Call rejected	Typical scenarios include: • Subscriber has a service constraint that does not accept this call.	21	Indicates that the equipment sending this cause code does not wish to accept this call, although it could have accepted the call because the equipment sending the cause is neither busy nor incompatible. Might also be generated by the network indicating that the call was cleared because of a supplementary service constraint. The diagnostic field might contain additional information about the supplementary service and reason for rejection.
Number changed	Typical scenarios include: • A subscriber has changed their number.	22	Returned to a calling party when the called number indicated by the calling party is no longer assigned. The new called party number might be optionally included in this diagnostic field.
Redirection to a new destination	Typical scenarios include: • Call is forwarded	23	Used by a general ISUP protocol mechanism that decides that the call should be sent to a different called number.
Exchange routing error	Typical scenarios include: • Network is overloaded	25	Indicates that the destination indicated by the user cannot be reached because an intermediate exchange has released the call due to reaching a limit in executing the hop counter procedure.
Nonselected user clearing	Typical scenarios include: • Called number failure	26	Indicates that the user has not been awarded the incoming call.
Socket failure	Typical scenarios include: • Transmission Control Protocol (TCP) socket connection failure • Problem sending an H.323 SETUP • Problem sending a Session Initiation Protocol (SIP) INVITE • Send or receive error occurs on connected socket	27	CC_CAUSE_DESTINATION_OUT_OF_ORDER Indicates that the destination indicated by the user cannot be reached because the destination's interface is not functioning correctly. The signaling message cannot be delivered to the remote party.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Invalid number format	Typical scenarios include: • the caller is calling out using a network type number (enterprise) rather instead of Unknown or National.	28	Indicates that the called party cannot be reached because the called party number is not in a valid format or is not complete.
Facility rejected	Typical scenarios include: • A network service is not functioning.	29	Indicates that a supplementary service requested by the user cannot be provided by the network.
Response to STATUS ENQUIRY	Typical scenarios include: • A STATUS message is returned.	30	Included in the STATUS message when the reason for generating the STATUS message was the prior receipt of a STATUS ENQUIRY message.
Normal, unspecified	Typical scenarios include: • Normal operation	31	Reports a normal event only when no other cause in the normal class applies.
No circuit/channel available	Typical scenarios include: • No B-channels are available to make the selected call.	34	Indicates that there is no appropriate circuit or channel presently available to handle the call.
Network out of order	Typical scenarios include: • Network failure.	38	Indicates that the network is not functioning correctly and that the condition is likely to last for an extended period.
Permanent frame mode connection is out of service	Typical scenarios include: • Equipment or section failure.	39	Included in a STATUS message to indicate that a permanently established frame mode connection is out of service.
Permanent frame mode connection is operational	Typical scenarios include: • Normal operation.	40	Included in a STATUS message to indicate that a permanently established frame mode connection is operational and capable of carrying user information.
Temporary failure	Typical scenarios include: • Network failure.	41	Indicates that the network is not functioning correctly and that the condition is likely to be resolved quickly.
Switching equipment congestion	Typical scenarios include: • High traffic	42	Indicates that the switching equipment generating this cause is experiencing high traffic.
Access information discarded	Typical scenarios include: • Usually reported when the far-end ISDN switch removes some piece of information before tandem-switching a call.	43	Indicates that the network could not deliver access information to the remote user as requested.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Requested circuit/channel not available	Typical scenarios include: • Occurs during glare condition when both sides are selected top-down or bottom-up. Change the Allocation Direction so that one end is top-down and the other is bottom-up.	44	Returned when the circuit or channel indicated by the requested entity cannot be provided by the other side of the interface.
Precedence call blocked	Typical scenarios include: • Caller is busy and the priority level of active call is equal or higher than the incoming call.	46	Indicates that there are no pre-emptable circuits or that the called user is busy with a call of equal or higher pre-emptable level.
Internal resource allocation failure	Typical scenarios include: • Out of memory • Internal access to the TCP socket is unavailable	47	CC_CAUSE_NO_RESOURCE Indicates a "resource unavailable" event.
QoS error	Typical scenarios include: • Quality of service (QoS) error	49	CC_CAUSE_QOS_UNAVAILABLE Indicates that the requested QoS cannot be provided.
Requested facility not subscribed	Typical scenarios include: • The caller is trying to use a service that is not permitted.	50	Indicates that the user has requested a supplementary service that the user is not authorized to use.
Outgoing calls barred within Closed User Group (CUG)	Typical scenarios include: • Subscriber configuration contains this limitation.	53	Indicates that although the calling party is a member of a CUG for the outgoing CUG call, outgoing calls are not allowed for this member of the CUG.
Incoming calls barred within Closed User Group (CUG)	Typical scenarios include: • Subscriber configuration contains this limitation.	55	Indicates that although the called party is a member of a CUG for the incoming CUG call, incoming calls are not allowed for this member of the CUG.
Bearer capability not authorized	Typical scenarios include: • The caller is not authorized to use the bearer capability.	57	Indicates that the user has requested a bearer capability which is implemented on the equipment but the user is not authorized to use.
Bearer capability not presently available	Typical scenarios include: • A call is placed with a bearer capacity that the service provider does not have the capacity to supply.	58	Indicates that the user has requested a bearer capability which is implemented by the equipment and is currently unavailable.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Inconsistency in designated outgoing access information and subscriber class	Typical scenarios include: • Network error.	62	Indicates that there is an inconsistency in the designated outgoing access information and subscriber class.
Service or option not available, unspecified	Typical scenarios include: • Service not available.	63	Reports a service or option not available event only when no other cause in the service or option not available class applies.
Media negotiation failure	Typical scenarios include: • No codec match occurred. • H.323 or H.245 problem leading to failure in media negotiation	65	CC_CAUSE_BEARER_CAPABILITY_ NOT_IMPLEMENTED Indicates that the equipment sending this cause does not support the bearer capability requested.
Channel type not implemented	Typical scenarios include: • Channel type match not found.	66	Indicates that the equipment sending this cause does not support the channel type requested.
Requested facility not implemented	Typical scenarios include: • Service type match not found.	69	Indicates that the equipment sending this cause does not support the requested supplementary service.
Only restricted digital information bearer capability is available (National use)	Typical scenarios include: • Routing error.	70	Indicates that the calling party has requested an unrestricted bearer service but that the equipment sending this cause only supports the restricted version of the requested bearer capacity.
Service or option not implemented, unspecified	Typical scenarios include: • Service not implemented.	79	Reports a service or option not implemented event only when no other cause in the service or option not implemented class applies.
Invalid call reference value	Typical scenarios include: • The far-end switch did not recognize the call reference for a message sent by the gateway.	81	Indicates that the equipment sending the cause has received a message with a call reference which is not currently in use on the user-network interface.
Identified channel does not exist	Typical scenarios include: • Fractional PRI error.	82	Indicates a call attempt on a channel that is not configured.
A suspended call exists, but this call identity does not	Typical scenarios include: • Call ID mismatch	83	Indicates a call resume has been attempted with a call identity which differs from that in use for any presently suspended calls.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Call identity in use	Typical scenarios include: • Equipment error.	84	Indicates that the network has received a call suspended request containing a call identity which is already in use for a suspended call.
No call suspended	Typical scenarios include: • Equipment error.	85	Indicates that the network has received a call resume request containing a call identity information element which does not indicate any suspended call.
Call having the requested call identity has been cleared	Typical scenarios include: • Network timeout • Call cleared by remote user.	86	Indicates that the network has received a call identity information element indicating a suspended call that has in the meantime been cleared wile suspended.
User is not a member of Closed User Group (CUG)	Typical scenarios include: • Caller is not authorized.	87	Indicates that the called user for the incoming CUG call is not a member of the specified CUG.
Incompatible destination	Typical scenarios include: • Number dialed is not capable of this type of call. • Caller is calling a restricted line in unrestricted mode. • Caller is calling a POTS phone using unrestricted mode.	88	Indicates that the equipment sending this cause has received a request to establish a call which has compatibility attributes which cannot be accommodated.
Nonexistent Closed User Group (CUG)	Typical scenarios include: • Configuration or dialing error.	90	Indicates that the specified CUG does not exist.
Invalid transit network selection (National use)	Typical scenarios include: • Network error. • Identification mismatch	91	Indicates that a transit network identification was received which is of an incorrect format.
Invalid message received error	Typical scenarios include: • An invalid message was received	95	CC_CAUSE_INVALID_MESSAGE Indicates an invalid message event.
Mandatory IE missing error	Typical scenarios include: • Mandatory Contact field missing in SIP message. • Session Description Protocol (SDP) body is missing.	96	CC_CAUSE_MANDATORY_IE_ MISSING Indicates that the equipment sending this cause code has received a message that is missing an information element (IE). This IE must be present in the message before the message can be processed.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Message type nonexistent or not implemented	Typical scenarios include: • Message type information is missing.	97	Indicates that the equipment sending this cause has received a message which is missing an information element that must be present in the message before the message can be processed.
Message not compatible with call state or message type nonexistent or not implemented	Typical scenarios include: • ISDN protocol mismatch • ISDN state machine violation	98	Indicates that the equipment sending this cause has received a message such that the procedures do not indicate that this is a permissible message to receive while in this call state.
An information element or parameter does not exist or is not implemented	Typical scenarios include: • Element mismatch	99	Indicates that the equipment sending this cause has received a message which includes information elements or parameters not recognized because the information element or parameter names are not defined or are defined but not implemented by the equipment.
Invalid IE contents error	Typical scenarios include: • SIP Contact field is present, but format is bad	100	CC_CAUSE_INVALID_IE_CONTENTS Indicates that the equipment sending this cause code has received an IE that it has implemented. However, the equipment sending this cause code has not implemented one or more of the specific fields.
Message in invalid call state	Typical scenarios include: • An unexpected message was received that is incompatible with the call state	101	CC_CAUSE_MESSAGE_IN_INCOMP_CALL_STATE Indicates that a message has been received that is incompatible with the call state.
Call setup timeout failure	Typical scenarios include: • No H.323 call proceeding • No H.323 alerting or connect message received from the terminating gateway • Invite expires timer reached maximum number of retries allowed	102	CC_CAUSE_RECOVERY_ON_TIMER_EXPIRY Indicates that a procedure has been initiated by the expiration of a timer in association with error handling procedures.

Table 56   H.323 and SIP Standard Category With Corresponding Q.850 Cause Code Information

Standard Category	Standard Category Description	Q.850 Cause Code	Q.850 Release Cause Description
Parameter nonexistent or not implemented— passed on (National use)	Typical scenarios include: • Configuration mismatch.	103	Indicates that the equipment sending this cause has received a message which includes parameters not recognized because the parameters are not defined or are defined but not implemented on the equipment.
Message with unrecognized parameter discarded	Typical scenarios include: • Unrecognized parameter.	110	Indicates that the equipment sending this cause has discarded a received message which includes a parameter that is not recognized.
Protocol error, unspecified	Typical scenarios include: • Protocol error.	111	Reports a protocol error event only when no other cause in the protocol error class applies.
Internal error	Typical scenarios include: • Failed to send message to Public Switched Telephone Network (PSTN)	127	CC_CAUSE_INTERWORKING Indicates that there has been interworking with a network that does not provide causes for actions it takes. Precise cause cannot be ascertained.