Video Telephony Release Cause Usage Guidelines
Version 1.0
27 September 2012

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1 General

1.1 Executive Summary

Video Telephony calls made between 3G/UMTS subscribers use the circuit switched infrastructure in a similar manner as other ISDN circuit switched services. These calls use the common ISUP signaling protocol for call establishment/release. As part of this protocol, Release Cause values comply with ITU-T Q.850 [1] for providing the reason for releasing a call at either pre-answer stage or for when the call is completed.

This permanent reference document specifies the guidelines of how to use these Release Cause values for a particular Video Calling scenario. These values allow the caller and called party to have a consistent experience for Video Telephony, regardless of which 3G network is used.

1.1 Abbreviations

Term	Meaning
2G	Second Generation [GSM]
3G	Third Generation [UMTS]
CS	Circuit Switched
GSM	General System for Mobile communication
HLR	Home Location Register
HPLMN	Home Public Land Mobile Network
ISUP	ISDN User Part
ITU	International Telecommunications Union
MSC	Mobile Switching Centre
MSISDN	Mobile Subscriber ISDN number
PLMN	Public Land Mobile Network
PRD	Permanent Reference Document
QoS	Quality of Service
UMTS	Universal Mobile Telecommunications System
VPLMN	Visited Public Land Mobile Network
VT	Video Telephony
CFB	Call forwarding on Buys Subscriber
CFNRC	Call Forwarding on Not Reachable
CFNRY	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CW	Call Waiting
DASS	Digital Access Signalling System
ETSI	European Telecom Standards Institute
ISUP	ISDN User Part
POTS	Plain old telephony service

Term	Meaning
SS-CB	Supplementary Service Call Bar
PSD	Packet Switched Data

1.2   References

Ref	Doc Number	Title
[1]	RFC 2119	"Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997. Available at http://www.ietf.org/rfc/rfc2119.txt
[2]	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 (05/98)
[3]	GSM Association VTIOP: Objective 1.3	Implementation Guidelines for CS VT calling inter-network. (02/05)

1.2   Scope

This document specifies guidelines for having a consistent set of Release Cause values for Video Telephony. In addition, it specifies a set of recommended Release Cause values for scenarios commonly encountered.

Note: This document does not include other ISDN or Circuit Switched service scenarios for specifying release cause value usage

2   Background

Video Telephony is an increasingly used service by 3G/UMTS subscribers, and the volume of calls between 3G networks is increasing. MSISDNs from the same number ranges are shared by the same PLMN between their 2G and 3G networks. This results in cases when a video call will be made to a 2G handset (or 3G handset on a 2G network), and the call therefore cannot be completed.

The numbers of scenarios are increasing where a 3G subscriber attempts a VT call that cannot be successfully terminated. Consequently the use of a specific Release Cause value back to the caller becomes important. The important point is to be able to give the caller a consistent experience when making a VT call. If a VT call cannot be completed, then providing the caller with a specific release cause helps them to understand the reason why. The reasons can be such as the called number is not associated with a 3G device, or if it is, the 3G device may be roaming in a GSM/2G network.

When looking at the options available in Q.850 to select a release code value for one of these types of scenarios, it is apparent that more than one could be seen as 'valid'. The guidance in this document provides consistent Release Values for operators to use.   This will provide guidance allowing a network operator to configure their supporting CS infrastructure.

Note: This PRD is also linked with the VTIOP (Video Telephony Interoperability Project) – Objective 1.3 Implementation Guidelines for CS VT Calling Inter-network. [2]

3   Use of Release Cause values

Where a VT call cannot be completed, it is typically either the destination network (Public Network Serving the Remote User) that has to send the Release back, or the actual 'B' party handset (User) that sends the release cause value. The emphasis in this document is to look at the destination network's responsibility to provide the recommended release cause value (also the User equipment where applicable). An assumption for these guidelines is that any transit network is transparent, and thus able to provide an Unrestricted Digital Information ISDN bearer.

Figure 1 illustrates where the Release Cause values can be created or mapped from.
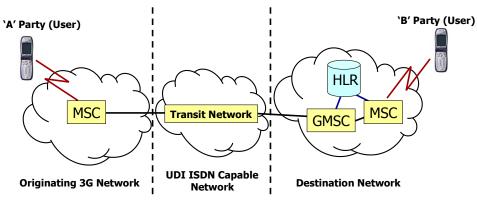

Figure 1: VT Call Path

4   Scenarios and Recommended Release Cause values

The Table below provides a complete list of scenarios, and the recommended Release Cause value and location as specified in Q.850.

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B answers VT-call	16	Normal call clearing	U
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy with another Video Call - B has CFB (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy (has a ongoing voice call) - B has CW de-activated - B has CFB (for Video call) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is not answering the VT-call - B has CFNRY (Video)* activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G VT-phone - B has CFU (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G non VT-phone - B is under UMTS radio coverage - B has CFU (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G non VT-phone - B is under GSM radio coverage - B has CFU (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 2G phone (3G subscriber) - B is under GSM radio coverage - B has CFU (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to another VT-Phone (under 3G)	16	Normal call clearing	U
Called User (B): - 3G VT-phones - under UMTS radio coverage - B party busy on VT call	17	User busy	RLN

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phones - under UMTS radio coverage - B party busy on voice call	17	User busy	RLN
Called User (B): - 3G VT-phones - under UMTS radio coverage - B party busy with 3G USIM busied	17	User busy	RLN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B has an active PSD session (e.g. WAP)	17	User busy	RLN
Called User (B) - 3G VT-phones - under UMTS radio coverage - no answer	19	No answer from user (user alerted)	RLN
Called User (B) - 3G VT-phones - under UMTS radio coverage - B is not able to receive the call (out of coverage / phone off) - No CFNRc set	20	Subscriber absent	
Called User (B): - 3G VT-phones - under UMTS radio coverage - B party rejects call	21	Call rejected	U
Called User (B): - 3G VT-phone - under UMTS radio coverage - B has SS-CB set for incoming calls (Subs controlled bar all incoming calls)	21	Call rejected	RLN
Called User (B) during call set up: - 3G VT-phone - under UMTS radio coverage - A or B moves out of UMTS coverage	31	Normal, unspecified	RLN
Called User (B) Video Call in progress - 3G VT-phone - under UMTS radio coverage - A or B moves out of UMTS	31	Normal, unspecified	RLN

Scenario:	Release Cause value	Release Cause Definition	Location
coverage			
Called User (B): - 2G phone - under GSM radio coverage - Static (not moving)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B rejects VT-call and has CFB (for Video call)* activated -to a non VT but 2G Phone -under GSM coverage	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy (has a ongoing voice call) - B has CW de-activated - B has CFB (for Video call) activated to 2G Phone (under 2G)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is not answering the VT-call - B has CFNRY (Video) activated to 2G Phone (under 2G)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - B has CFU (Video) activated to 2G Phone (under 2G)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - B has CFU (Video) activated to 2G Phone from other OpCo (under 2G)	57	Bearer capability not authorized	LN

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to 2G Phone (under 2G)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to 2G Phone from other OpCo (under 2G)	57	Bearer capability not authorized	LN
Called User (B): - 3G VT-phone - under GSM radio coverage - Static (not moving)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B rejects VT-call and has CFB (for Video call)* activated to another VT-Phone (but under GSM coverage)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B rejects VT-call -and has CFB (for Video call)* activated -to a 3G Phone (under GSM coverage)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy (has a ongoing voice call) - B has CW de-activated - B has CFB (for Video call) activated to another VT-Phone (under 2G)	58	Bearer capability not presently available	LN

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy (has a ongoing voice call) - B has CW de-activated - B has CFB (for Video call) activated to non VT but 3G Phone (under 3G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is already busy (has a ongoing voice call) - B has CW de-activated - B has CFB (for Video call) activated to non VT but 3G Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is not answering the VT-call - B has CFNRY (Video)* activated to another VT-Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is not answering the VT-call - B has CFNRY (Video)* activated to non VT but 3G Phone (under 3G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B is not answering the VT-call - B has CFNRY (Video) activated to non VT but 3G Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - B has CFU (Video) activated to another VT-Phone (under 2G)	58	Bearer capability not presently available	LN

Scenario:	Release Cause value	Release Cause Definition	Location
Called User (B): - 3G VT-phone - B has CFU (Video) activated to non VT but 3G Phone (under 3G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone - B has CFU (Video) activated to non VT but 3G Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to another VT-Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to non VT but 3G Phone (under 3G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phone that is switch off - B has CFNRC (Video) activated to non VT but 3G Phone (under 2G)	58	Bearer capability not presently available	LN
Called User (B): - 3G VT-phones - under 2G radio coverage	58	Bearer capability not presently available	LN
Called User (B): - Non VT 3G device - under 2G radio coverage	58	Bearer capability not presently available	LN
Called User (B): - 3G non VT-phone - under UMTS radio coverage - Static (not moving)	58 preferred but could be a 65 depending on the handset and network selection	Bearer capability not presently available or Bearer capability not implemented	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - Static (not moving) - B rejects VT-call and has CFB (for Video call)* activated to a non VT but 3G Phone (also under 3G coverage)	58 preferred but could be a 65 depending on the handset and network selection	Bearer capability not presently available or Bearer capability not implemented	LN
Called User (B): - 3G VT-phone - under UMTS radio coverage - B has ODB set for incoming calls (Network permanently	21	Call rejected	RLN

Scenario:	Release Cause value	Release Cause Definition	Location
barred incoming calls)			
Called User (B): - PSTN POTS phone (fixed line)	88	Incompatible destination	U
Called User (B): - (B) end fixed POTS - ISUP sig	88	Incompatible destination	U
Called User (B): - (B) end ISDN ETSI sig	88	Incompatible destination	U

Notes:

- The Calling Party (A) has always a VT-phone
- Calling and Called users are static

Annex A   Document Management

A.1   Document History

Version	Date	Brief Description of Change	Approval Authority	Editor / Company
1.0	Mar 18, 2005	guidelines of how to use these Release Cause values for a particular Video Calling scenario	PSMC	Javier Sendin GSMA
1.0	27 September 2012	Change of IC platform	Networks Group	Itsuma Tanaka (NTT Docomo, Inc.)

A.2   Other Information

Type	Description
Document Owner	Networks Group
Editor / Company	Itsuma Tanaka (NTT Docomo, Inc.)

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