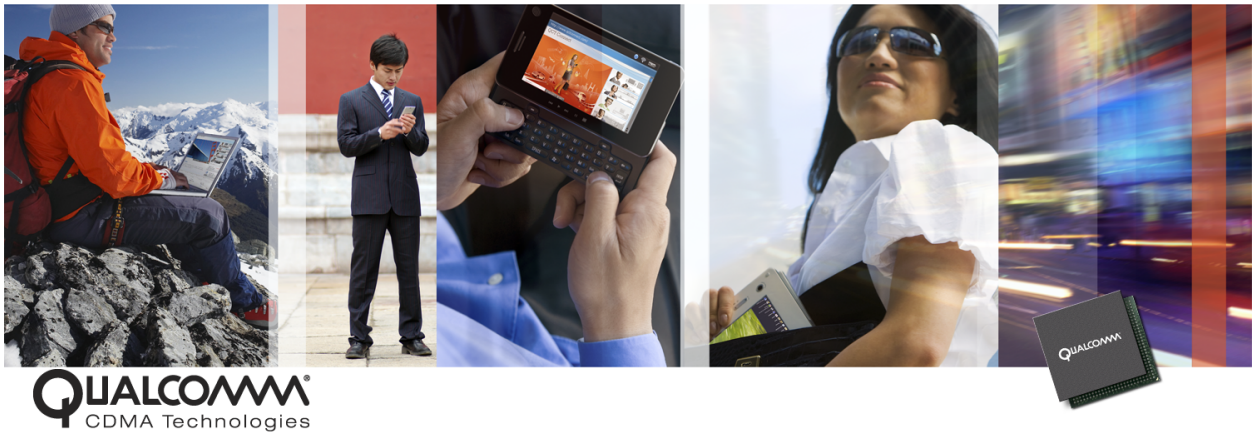

QMI Voice Service (QMI_VOICE)

Major Version 2, Minor Version 9

Specification

80-VB816-10 J

November 21, 2011

Submit technical questions at:

https://support.cdmatech.com

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Contents

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Revision History

Revision	Date	Description
A	Jan 2010	Initial release
B	Jan 2010	Updated Optional TLV table in Section 3.5; updated Mandatory TLV table in Section 3.6.2
C	Apr 2010	Added/modified TLVs marked as new version (2.0); added new QMI messages with major version 2; updated Table 3-1 with new messages; added Tables A-1 to A-4; added Sections A.1 to A.5
D	Jun 2010	Numerous changes were made to this document. It should be read in its entirety.
E	Jun 2010	Added new QMI messages with major version 2 minor version 1; added new messages to set and retrieve the voice-based modem configuration items
F	Jun 2010	Added a new QMI message to indicate modem-originated supplementary service requests; modified mandatory TLV in Section 3.17.1; added alpha identifiers in Sections 3.5.2, 3.15, and 3.16.2
G	Jun 2011	Updates for this revision include minor version 3 through minor version 7. Numerous changes were made to this document. It should be read in its entirety.
H	Aug 2011	Updated: • Chapter 2 • Table 3-1 QMI_VOICE messages • Mandatory TLV in Sections 3.6.1 and 3.15.1 • Optional TLVs in Sections 3.2.1, 3.5.2, 3.15.1, 3.16.2, 3.18.1, 3.24.2, and 3.34.1 • Sections 3.2.3 and 3.19.3 Added new TLVs: • Array of called party number • Array of redirecting party number • Call forwarding number type and plan • Get call forwarding extended info Added QMI_VOICE message QMI_VOICE_BIND_SUBSCRIPTION.
J	Nov 2011	Updated: • Table 3-1 QMI_VOICE messages • Mandatory TLVs in Sections 3.15.1 and 3.16.2 • Optional TLV in Section 3.5.2 • Table A-6 Mapping of MMI service code to service information classes Added new TLVs: • Preferred voice domain • Voice domain preference status • Voice domain preference • Current voice domain preference Added QMI_VOICE message QMI_VOICE_MANAGE_IP_CALLS.

Note: There is no Rev. I, O, Q, S, X, or Z per Mil. standards.

1 Introduction

1.1 Purpose

This specification documents Major Version 2 of the Qualcomm Messaging Interface (QMI) for Voice Service (QMI_VOICE).

QMI_VOICE provides applications running on a host PC with commands related to voice service:

- Call origination
- Call end
- Call answer
- Flash
- Dual-Tone Multifrequency (DTMF)
- Supplementary services

It is expected that user-level applications, e.g., connection managers and/or device drivers on the Terminal Equipment (TE), will use QMI_VOICE to access this functionality on the MSM® devices.

1.2 Scope

This document is intended for software developers who are developing code to interact with the QMI Voice Service inside the Qualcomm MSM device from a host processor.

This document provides the following details about QMI_VOICE:

- Theory of operation – Chapter 2 provides the theory of operation of QMI_VOICE. The chapter includes messaging conventions, assigned QMI service types, fundamental service concepts, and state variables related to the service.
- Message formats, syntax, and semantics – Chapter 3 provides the specific syntax and semantics of messages included in this version of the QMI_VOICE specification.

1.3 Conventions

Function declarations, function names, type declarations, and code samples appear in a different font. For example, `#include`.

An asterisk (*) in a Message/TLV/Parameter indicates that it is applicable only for 3GPP2.

A double asterisk (**) in a Message/TLV/Parameter indicates that it is applicable only for 3GPP.

Parameter types are indicated by arrows:

- → Designates an input parameter
- ← Designates an output parameter
- ↔ Designates a parameter used for both input and output

1.4 References

Table 1-1 lists reference documents, which may include Qualcomm documents and non-Qualcomm standards and resources. Reference documents that are no longer applicable are deleted from this table; therefore, reference numbers might not be sequential.

Table 1-1 Reference documents and standards

Ref.	Document	
Qualcomm		
Q1	*Qualcomm MSM® Interface (QMI) Architecture*	80-VB816-1
Q2	*Application Note: Software Glossary for Customers*	CL93-V3077-1
Standards		
S1	*Upper Layer (Layer 3) Signaling Standard for cdma2000® Spread Spectrum Systems*	3GPP2 C.S0005-D (Feb 2004)
S2	*Administration of Parameter Value Assignments for cdma2000® Spread Spectrum Standards Version 1.0*	3GPP2 C.R1001-F (Dec 8, 2006)
S3	*3GPP Mobile Radio Interface Layer 3 Specification; Core Network Protocols; Stage 3 (Release 5)*	3GPP TS 24.008 V7.0.0 (2005-06)
S4	*3GPP Name Identification supplementary services; Stage 3 (Release 6)*	3GPP TS 24.096 V6.0.0 (2004-12)
S5	*3GPP User-to-User Signalling (UUS) Supplementary Service; Stage 3 (Release 6)*	3GPP TS 24.087 V6.0.0 (2004-12)
S7	*3GPP Call Deflection (CD) Supplementary Service; Stage 3 (Release 6)*	3GPP TS 24.072 V6.0.0 (2004-12)
S8	*3GPP Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3 (Release 6)*	3GPP TS 24.083 V6.0.0 (2004-12)
S9	*3GPP Explicit Call Transfer (ECT) Supplementary Service; Stage 3 (Release 6)*	3GPP TS 24.091 V6.0.0 (2004-12)
S10	*3GPP Multi Party (MPTY) Supplementary Service; Stage 3 (Release 6)*	3GPP TS 24.084 V6.0.0 (2004-12)
S11	*3GPP General on supplementary services (Release 6)*	3GPP TS 22.004 V6.0.0 (2005-01)

Table 1-1 Reference documents and standards (cont.)

Ref.	Document	
S12	*3GPP Call Forwarding (CF) supplementary services; Stage 3 (Release 6)*	3GPP TS 24.082 V6.0.0 (2004-12)
S13	*3GPP Line Identification supplementary services; Stage 3 (Release 6)*	3GPP TS 24.081 V6.0.0 (2004-12)
S14	*3GPP Call Barring (CB) Supplementary Service; Stage 3 (Release 6)*	3GPP TS 24.088 V6.0.0 (2003-03)
S16	*3GPP Alphabets and language-specific information*	3GPP TS 23.038 V7.0.0 (2006-03)
S17	*3GPP Mobile radio interface layer 3 supplementary services specification; Formats and coding (Release 1999)*	3GPP TS 24.080 V3.4.1 (2000-11)
S18	*3GPP Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (Release 1999)*	3GPP TS 11.14 V8.18.0 (2007-06)
S19	*3GPP Technical Specification Group Services and System Aspects; Unstructured Supplementary Service Data (USSD) - Stage 1*	3GPP TS 22.090 V7.0.0 (2006-06)
S20	*3GPP Technical Specification Group Core Network; Unstructured Supplementary Service Data (USSD) - Stage 2*	3GPP TS 23.090 V7.0.0 (2007-06)
S21	*3GPP Man-Machine Interface (MMI) of the User Equipment (UE) (Release 9)*	3GPP TS 22.030 V9.0.0 (2009-12)
S22	*Common PCN Handset Specification (CPHS) Phase 2 (Rel 4.2)*	CPHS4_2.WW6 (Feb 27, 1997)
S23	*3GPP Description of Charge Advice Information (CAI) (Rel 8)*	3GPP TS 22.024 V8.0.0 (2008-12)
S24	*1X Air Interface Specification (JCDMA)*	KDDI 1X Air Interface Specification V2.3.0
S25	*3GPP Name identification supplementary services; Stage 1 (Rel 7)*	3GPP TS 22.096 V7.0.0 (2007-06)

1.5 Technical Assistance

For assistance or clarification on information in this guide, submit a case to Qualcomm CDMA Technologies at https://support.cdmatech.com.

If you do not have access to the CDMATech Support Services website, register for access or send email to support.cdmatech@qualcomm.com.

1.6 Acronyms

For definitions of terms and abbreviations, refer to [Q2]. Table 1-2 lists terms that are specific to this document.

Table 1-2 Acronyms

Acronym	Definition
ACM	accumulated call meter
ALS	alternate line service
AMR	adaptive multirate codec
CCBS	completion of calls to busy subscriber
CCM	current call meter
CLIP	calling line identification presentation
CLIR	calling line identification restriction
CNAP	calling name presentation
COLP	connected line identification presentation
COLR	connected line identification restriction
CS	circuit-switched
CUG	closed user group
DTMF	dual-tone multifrequency
ECT	explicit call transfer
FDN	fixed dialing number
HLOS	High Level Operating System
IMSI	international mobile subscriber identity
ISDN	integrated services digital network
MO	mobile-originated
MS	mobile station
MT	mobile-terminated
NAM	number assignment module
MDN	mobile directory number
OTAPA	over-the-air parameter administration
OTASP	over-the-air service provisioning
PRL	preferred roaming list
PS	packet-switched
QMI	Qualcomm messaging interface
R-UIM	removable user identity module
SIM	subscriber identity module
SMS	short message service
SO	service option
SPC	service programming code
SPL	service programming lock
SSD	shared secret data
TE	terminal equipment
TLV	type-length-value
UCS2	2-byte universal character set
UIM	user identity module
USS	unstructured supplementary service
USSD	unstructured supplementary service data

Table 1-2 Acronyms (cont.)

Acronym	Definition
UUS	user-to-user signaling
VOIP	voice over IP

2 Theory of Operation

2.1 Generalized QMI Service Compliance

The QMI_VOICE service complies with the generalized QMI service specification, including the rules for messages, indications and responses, byte ordering, arbitration, constants, result, and error code values described in [Q1]. Extensions to the generalized QMI service theory of operation are noted in subsequent sections of this chapter.

2.2 VOICE Service Type

VOICE is assigned QMI service type 0x09.

2.3 Message Definition Template

2.3.1 Response Message Result TLV

This TLV is present in all Response messages defined in this document. It is not present in the Indication messages.

Name	Version last modified
Result Code	Corresponding messages Version Introduced

Field	Field value	Parameter	Size (byte)	Description
Type	0x02		1	Result Code
Length	4		2	
Value	→	qmi_result	2	Result code • QMI_RESULT_SUCCESS • QMI_RESULT_FAILURE
		qmi_error	2	Error code – Possible error code values are described in the error codes section of each message definition

2.4 QMI_VOICE Fundamental Concepts

QMI_VOICE provides VOICE service to its control points. These services include interfaces to control voice call origination, tear down, answer, send Flash, DTMF, and Supplementary Service requests to the network, and to receive indications to report the call state, DTMF events, and other asynchronous indications from the network to convey caller ID, display, signal information and supplementary service notifications, etc.

A dial string must always be provided to originate a voice call. A unique call ID is assigned to the call by the service. This call ID must be used as a key to identify the call in order to perform operations such as Answer, End, etc. Any asynchronous indications associated with a call are sent with its corresponding call ID parameter.

Certain QMI_VOICE indications may be of interest to some QMI control points only. A mechanism that lets the control point register/deregister for certain indications is provided in which these registration settings for a control point are stored in the service state variables of the control point.

2.5 Dual SIM

The Dual SIM feature requires explicit support of the High Level Operating System (HLOS). One possible implementation is for the HLOS to create two instances of the modem interface, one for each subscription. In this design there could be two instances of the QMI_VOICE client, with one instance bound to the primary subscription and the other instance bound to the secondary subscription.

2.6 Service State Variables

2.6.1 Shared State Variables

No QMI_VOICE state variables are shared across control points.

2.6.2 State Variables Per Control Point

Name	Description	Possible values	Default values
reg_dtmf_events	Whether DTMF events are reported to a control point	• FALSE • TRUE	FALSE
reg_voice_privacy_events	Whether Voice Privacy events are reported to a control point	• FALSE • TRUE	FALSE
supps_notification_events	Whether Supplementary Service Notifications are reported to a control point	• FALSE • TRUE	TRUE

3 QMI_VOICE Messages

Table 3-1 QMI_VOICE messages

Command	ID	Description
QMI_VOICE_INDICATION_REGISTER	0x0003	Sets the registration state for different QMI_VOICE indications for the requesting control point.
QMI_VOICE_DIAL_CALL	0x0020	Originates a voice call (MO call).
QMI_VOICE_END_CALL	0x0021	Ends a voice call.
QMI_VOICE_ANSWER_CALL	0x0022	Answers an incoming voice call.
QMI_VOICE_GET_CALL_INFO	0x0024	Queries the information associated with a call.
QMI_VOICE_OTASP_STATUS_IND	0x0025	Indicates the occurrence of an OTASP or OTAPA event (applicable only for 3GPP2).
QMI_VOICE_INFO_REC_IND	0x0026	Indicates that a new information record is available from the network (applicable only for 3GPP2).
QMI_VOICE_SEND_FLASH	0x0027	Sends a simple Flash (applicable only for 3GPP2).
QMI_VOICE_BURST_DTMF	0x0028	Sends a burst Dual-Tone Multifrequency (DTMF) (applicable only for 3GPP2).
QMI_VOICE_START_CONT_DTMF	0x0029	Starts a continuous DTMF.
QMI_VOICE_STOP_CONT_DTMF	0x002A	Stops a continuous DTMF.
QMI_VOICE_DTMF_IND	0x002B	Indicates that a DTMF event has been received (applicable only for 3GPP2).
QMI_VOICE_SET_PREFERRED_PRIVACY	0x002C	Sets the voice privacy preference (applicable only for 3GPP2).
QMI_VOICE_PRIVACY_IND	0x002D	Indicates a change in the voice privacy of a call (applicable only for 3GPP2).
QMI_VOICE_ALL_CALL_STATUS_IND	0x002E	Indicates a change in the call information.
QMI_VOICE_GET_ALL_CALL_INFO	0x002F	Queries the information of all the calls.

Table 3-1 QMI_VOICE messages (cont.)

Command	ID	Description
QMI_VOICE_MANAGE_CALLS	0x0031	Manages the calls by using the supplementary service applicable during the call (applicable only for 3GPP).
QMI_VOICE_SUPS_NOTIFICATION_IND	0x0032	Used for supplementary service notifications to the control points (applicable only for 3GPP).
QMI_VOICE_SET_SUPS_SERVICE	0x0033	Manages all call-independent supplementary services, such as activation, deactivation, registration, and erasure (applicable only for 3GPP).
QMI_VOICE_GET_CALL_WAITING	0x0034	Queries the status of call waiting supplementary service (applicable only for 3GPP).
QMI_VOICE_GET_CALL_BARRING	0x0035	Queries the status of call barring supplementary service (applicable only for 3GPP).
QMI_VOICE_GET_CLIP	0x0036	Queries the status of the Calling Line Identification Presentation (CLIP) supplementary service (applicable only for 3GPP).
QMI_VOICE_GET_CLIR	0x0037	Queries the status of the Calling Line Identification Restriction (CLIR) supplementary service (applicable only for 3GPP).
QMI_VOICE_GET_CALL_FORWARDING	0x0038	Queries the status of call forwarding supplementary service (applicable only for 3GPP).
QMI_VOICE_SET_CALL_BARRING_ PASSWORD	0x0039	Sets a call barring password (applicable only for 3GPP).
QMI_VOICE_ORIG_USSD	0x003A	Initiates an Unstructured Supplementary Service Data (USSD) operation (applicable only for 3GPP).
QMI_VOICE_ANSWER_USSD	0x003B	Responds to the USSD request from the network (applicable only for 3GPP).
QMI_VOICE_CANCEL_USSD	0x003C	Aborts an ongoing USSD operation (applicable only for 3GPP).
QMI_VOICE_USSD_RELEASE_IND	0x003D	Notifies clients that the USSD session is terminated by the network (applicable only for 3GPP).
QMI_VOICE_USSD_IND	0x003E	Notifies clients about any USSD requests or notifications from the network (applicable only for 3GPP).
QMI_VOICE_UUS_IND	0x003F	Indicates a notification of User-to-User Signaling (UUS) information from the network (applicable only for 3GPP).

Table 3-1 QMI_VOICE messages (cont.)

Command	ID	Description
QMI_VOICE_SET_CONFIG	0x0040	Sets various configuration parameters that control the modem behavior related to circuit-switched services.
QMI_VOICE_GET_CONFIG	0x0041	Retrieves various configuration parameters that control the modem behavior related to circuit switched services.
QMI_VOICE_SUPS_IND	0x0042	Notifies clients about the modem-originated supplementary service requests and the responses received from the network (applicable only for 3GPP).
QMI_VOICE_ORIG_USSD_NO_WAIT	0x0043	Initiates a USSD operation such that the response for this request is returned immediately and the data is returned via an indication (applicable only for 3GPP).
QMI_VOICE_ORIG_USSD_NO_WAIT_IND	0x0043 indication	Notifies clients about the USSD responses received from the QMI_ VOICE_ORIG_USSD_NO_WAIT_REQ request (applicable only for 3GPP).
QMI_VOICE_BIND_SUBSCRIPTION	0x0044	Binds a subscription type to a specific voice client ID.
QMI_VOICE_ALS_SET_LINE_SWITCHING	0x0045	Sets the line switch setting on the card (applicable only for 3GPP).
QMI_VOICE_ALS_SELECT_LINE	0x0046	Allows the user to select the preferred line (applicable only for 3GPP).
QMI_VOICE_AOC_RESET_ACM	0x0047	Resets the Accumulated Call Meter (ACM) value to 0 (applicable only for 3GPP).
QMI_VOICE_AOC_SET_ACMMAX	0x0048	Sets a maximum value for ACM (applicable only for 3GPP).
QMI_VOICE_AOC_GET_CALL_METER_ INFO	0x0049	Retrieves the ACMMAX, Current Call Meter (CCM), and ACM values (applicable only for 3GPP).
QMI_VOICE_AOC_LOW_FUNDS_IND	0x004A	Indicates that the phone is out of funds.
QMI_VOICE_GET_COLP	0x004B	Queries the status of the Connected Line identification Presentation (COLP) supplementary service (applicable only for 3GPP).
QMI_VOICE_GET_COLR	0x004C	Queries the status of the Connected Line identification Restriction (COLR) supplementary service (applicable only for 3GPP).

Table 3-1 QMI_VOICE messages (cont.)

Command	ID	Description
QMI_VOICE_GET_CNAP	0x004D	Queries the status of the Calling Name Presentation (CNAP) supplementary service (applicable only for 3GPP).
QMI_VOICE_MANAGE_IP_CALLS	0x004E	Manages Voice over IP (VoIP) calls by using the supplementary service applicable during the call.

3.1 QMI_VOICE_INDICATION_REGISTER

Sets the registration state for different QMI_VOICE indications for the requesting control point.

VOICE message ID

0x0003

Version introduced

Major - 1, Minor - 0

3.1.1 Request - QMI_VOICE_INDICATION_REGISTER_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version last modified
DTMF Events	1.0
Voice Privacy Events	1.0
Supplementary Service Notification Events**	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	DTMF Events
Length	1		2	
Value	→	reg_dtmf_events	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x11		1	Voice Privacy Events
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	reg_voice_privacy_events	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x12		1	Supplementary Service Notification Events**
Length	1		2	
Value	→	supps_notification_events	1	Values: • 0x00 – Disable • 0x01 – Enable

3.1.2 Response - QMI_VOICE_INDICATION_REGISTER_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response

3.1.3 Description of QMI_VOICE_INDICATION_REGISTER REQ/RESP

This command is used by a control point to register/deregister for different QMI VOICE indications. The control point‘s registration state variables that control registration for indications will be modified to reflect the settings indicated in the TLVs present in the request message. At least one optional TLV must be present in the request.

The reg_dtmf_events field in the DTMF Events TLV must be set to Enable to register a control point for the DTMF events or set to Disable to deregister. When this registration is enabled, the control point learns of DTMF events via the QMI_VOICE_DTMF_IND indication.

The reg_voice_privacy_events field in the Voice Privacy Events TLV must be set to Enable to register a control point for the voice privacy events or set to Disable to deregister. When this registration is enabled, the control point learns of voice privacy events via the QMI_VOICE_PRIVACY_IND indication.

The supps_notification_events field in the Supplementary Service Notification Events TLV must be set to Enable to register a control point for receiving the supplementary service notification events or set to Disable to deregister. When this registration is enabled, the control point learns of supplementary service events via the QMI_VOICE_SUPS_NOTIFICATION_IND indication.

3.2 QMI_VOICE_DIAL_CALL

Originates a voice call (MO call).

VOICE message ID

0x0020

Version introduced

Major - 1, Minor - 0

3.2.1 Request - QMI_VOICE_DIAL_CALL_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Calling Number	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Calling Number
Length	Var		2	
Value	→	calling_number	Var	Number to be dialed in ASCII string. Length range: [1 to 81].

Optional TLVs

Name	Version last modified
Call Type	2.8
CLIR in Temporary Mode**	2.0
UUS**	2.0
CUG**	2.0
Emergency Category	2.6

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call Type
Length	1		2	
Value	→	call_type	1	Call type. Values: • 0x00 – CALL_TYPE_VOICE – Voice (automatic selection) • 0x01 – CALL_TYPE_VOICE_FORCED – Avoid modem call classification • 0x08 – CALL_TYPE_NON_STD_OTASP – Nonstandard OTASP* • 0x09 – CALL_TYPE_EMERGENCY – Emergency
Type	0x11		1	CLIR in Temporary Mode**
Length	1		2	
Value	→	clir_type	1	CLIR type. Values: • 0x01 – CLIR_SUPPRESSION – Suppression • 0x02 – CLIR_INVOCATION – Invocation
Type	0x12		1	UUS**
Length	Var		2	
Value	→	uus_type	1	UUS type. Values: • 0x00 – UUS_TYPE_DATA – Data • 0x01 – UUS_TYPE1_IMPLICIT – Type 1 implicit • 0x02 – UUS_TYPE1_REQUIRED – Type 1 required • 0x03 – UUS_TYPE1_NOT_REQUIRED – Type 1 not required • 0x04 – UUS_TYPE2_REQUIRED – Type 2 required • 0x05 – UUS_TYPE2_NOT_REQUIRED – Type 2 not required • 0x06 – UUS_TYPE3_REQUIRED – Type 3 required • 0x07 – UUS_TYPE3_NOT_REQUIRED – Type 3 not required
		uus_dcs	1	UUS data coding scheme. Values: • 0x01 – UUS_DCS_USP – USP • 0x02 – UUS_DCS_OHLP – OHLP • 0x03 – UUS_DCS_X244 – X244 • 0x04 – UUS_DCS_SMCF – SMCF • 0x05 – UUS_DCS_IA5 – IA5 • 0x06 – UUS_DCS_RV12RD – RV12RD • 0x07 – UUS_DCS_Q931UNCCM – Q931UNCCM
		uus_data_len	1	Number of sets of the following elements: • uus_data
		uus_data	Var	UUS data encoded per the coding scheme.
Type	0x13		1	CUG**
Length	4		2	
Value	→	cug_index	2	CUG index. Range: 0x00 to 0x7FFF.
		suppress_pref_cug	1	Suppress preferential CUG. Values: • 0x00 – False • 0x01 – True

Field	Field value	Parameter	Size (byte)	Description
		suppress_oa	1	Suppress OA subscription option. Values: • 0x00 – False • 0x01 – True
Type	0x14		1	Emergency Category
Length	1		2	
Value	→	emer_cat	1	Bitmask of emergency number categories. Values: • Bit 0 – VOICE_EMER_CAT_POLICE_BIT – Police • Bit 1 – VOICE_EMER_CAT_AMBULANCE_BIT – Ambulance • Bit 2 – VOICE_EMER_CAT_FIRE_BRIGADE_BIT – Fire brigade • Bit 3 – VOICE_EMER_CAT_MARINE_GUARD_BIT – Marine guard • Bit 4 – VOICE_EMER_CAT_MOUNTAIN_RESCUE_BIT – Mountain rescue • Bit 5 – VOICE_EMER_CAT_MANUAL_ECALL_BIT – Manual emergency call • Bit 6 – VOICE_EMER_CAT_AUTO_ECALL_BIT – Automatic emergency call • Bit 7 – VOICE_EMER_CAT_SPARE_BIT – Spare bit

3.2.2 Response - QMI_VOICE_DIAL_CALL_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
Call ID	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Unique call identifier for the dialed call
Type	0x11		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x12		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x13		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed
QMI_ERR_NO_SUBSCRIPTION	Device does not have a subscription

3.2.3 Description of QMI_VOICE_DIAL_CALL REQ/RESP

This command originates a voice call (MO).

The optional Call Type TLV allows the client to specify the type of call to be dialed. If this TLV is not present in the request, the service defaults the call type to Voice (automatic selection).

The modem decides the call type if the optional Call Type TLV does not exist or if “0x00 – Voice” is selected. Depending on the dialed digits, the modem fills in the proper type (voice, standard OTASP, or emergency) for the call origination request. When the Call Type TLV is set to “0x08 – Nonstandard OTASP”, the call is sent as a nonstandard OTASP call regardless of the digit string. When the Call Type TLV is set to “0x09 – Emergency”, the call origination is made as an emergency call. Emergency Catagory (emer_cat) is a bitmask of emergency number categories and is only applicable when the call type is set to Emergency.

If the Result Code TLV indicates success with a call_id, the device has started the requested operation. It does not mean that the call has been connected.

QMI_VOICE_CALL_STATUS_IND is deprecated in version 2.0 or greater. A new indication, QMI_VOICE_ALL_CALL_STATUS_IND, is introduced. The control point must always process a QMI_VOICE_ALL_CALL_STATUS_IND indication to learn if the call was originated, connected, or ended.

When CLIR Presentation mode is temporary, the clir_type field is used to indicate CLIR on a per-call basis.

The UUS TLV is used to transport the UUS supplementary service information. UUS sends the user-specified information transparently from the calling user to the called user. Refer to [S5] for information related to UUS.

The optional CLIR in Temporary Mode and UUS TLVs are valid only for 3GPP.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

When the client sets the call_type as CALL_TYPE_VOICE_FORCED, the modem will not do further call classification, e.g., the modem will not check if the number is an emergency. This call_type value also results in bypassing call control validations, e.g., FDN check. Refer to [S18, Section 9] for details on call control.

3.3 QMI_VOICE_END_CALL

Ends a voice call.

VOICE message ID

0x0021

Version introduced

Major - 1, Minor - 0

3.3.1 Request - QMI_VOICE_END_CALL_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Unique call identifier for the call that must be ended.

Optional TLVs

None

3.3.2 Response - QMI_VOICE_END_CALL_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Unique call identifier for the call that must be ended.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.3.3 Description of QMI_VOICE_END_CALL REQ/RESP

This command ends a voice call.

If the Result Code TLV indicates success, the device has started the requested operation. It does not mean that the call has been ended.

QMI_VOICE_CALL_STATUS_IND is deprecated in version 2.0 or greater. A new indication, QMI_VOICE_ALL_CALL_STATUS_IND, is introduced. The control point must always process a QMI_VOICE_ALL_CALL_STATUS_IND indication to learn if the call was ended.

3.4 QMI_VOICE_ANSWER_CALL

Answers an incoming voice call.

VOICE message ID

0x0022

Version introduced

Major - 1, Minor - 0

3.4.1 Request - QMI_VOICE_ANSWER_CALL_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Unique call identifier for the call that must be answered.

Optional TLVs

None

3.4.2 Response - QMI_VOICE_ANSWER_CALL_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Unique call identifier for the call that must be answered

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.4.3 Description of QMI_VOICE_ANSWER_CALL REQ/RESP

This command answers an incoming voice call when the incoming voice call is the only call present at that time. If there are other calls while an incoming voice call (waiting call) is received, QMI_VOICE_SEND_FLASH must be used in cases of 3GPP2 (CDMA) and QMI_VOICE_MANAGE_CALLS in cases of 3GPP (UMTS).

If the Result Code TLV indicates success, the device has started the requested operation. It does not mean that the call has been answered.

QMI_VOICE_CALL_STATUS_IND is deprecated in version 2.0 or greater. A new indication, QMI_VOICE_ALL_CALL_STATUS_IND, is introduced. The control point must always process a QMI_VOICE_ALL_CALL_STATUS_IND indication to learn if the call was answered.

3.5 QMI_VOICE_GET_CALL_INFO

Queries the information associated with a call.

VOICE message ID

0x0024

Version introduced

Major - 1, Minor - 0

3.5.1 Request - QMI_VOICE_GET_CALL_INFO_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Call identifier for the call to be queried for information.

Optional TLVs

None

3.5.2 Response - QMI_VOICE_GET_CALL_INFO_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call Information is present when the result code is QMI_RESULT_SUCCESS.

The remaining optional TLVs can be present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call Information	2.9
Remote Party Number	2.0
Service Option*	2.0
Voice Privacy*	2.0
OTASP Status*	2.8
Remote Party Name**	2.0
UUS Information**	2.0
Alerting Type**	2.0
Alpha Identifier**	2.1
Connected Number Information	2.3
Diagnostic Information	2.3

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call Information
Length	5		2	
Value	→	call_id	1	Call identifier for the call queried for information.

Field	Field value	Parameter	Size (byte)	Description
		call_state	1	Call state. Values: • 0x01 – CALL_STATE_ORIGINATION – Origination • 0x02 – CALL_STATE_INCOMING – Incoming • 0x03 – CALL_STATE_CONVERSATION – Conversation • 0x04 – CALL_STATE_CC_IN_PROGRESS – Call is originating but waiting for call control to complete • 0x05 – CALL_STATE_ALERTING – Alerting • 0x06 – CALL_STATE_HOLD – Hold • 0x07 – CALL_STATE_WAITING – Waiting • 0x08 – CALL_STATE_DISCONNECTING – Disconnecting • 0x09 – CALL_STATE_END – End • 0x0A – CALL_STATE_SETUP – MT call is in Setup state in 3GPP
		call_type	1	Call type. Values: • 0x00 – CALL_TYPE_VOICE – Voice • 0x02 – CALL_TYPE_VOICE_IP – Voice over IP • 0x06 – CALL_TYPE_OTAPA – OTAPA • 0x07 – CALL_TYPE_STD_OTASP – Standard OTASP • 0x08 – CALL_TYPE_NON_STD_OTASP – Nonstandard OTASP • 0x09 – CALL_TYPE_EMERGENCY – Emergency
		direction	1	Direction. Values: • 0x01 – CALL_DIRECTION_MO – MO call • 0x02 – CALL_DIRECTION_MT – MT call
		mode	1	Mode. Values: • 0x01 – CALL_MODE_CDMA – CDMA • 0x02 – CALL_MODE_GSM – GSM • 0x03 – CALL_MODE_UMTS – UMTS • 0x04 – CALL_MODE_LTE – LTE
Type	0x11		1	Remote Party Number
Length	Var		2	
Value	→	pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		number_len	1	Number of sets of the following elements: • number

Field	Field value	Parameter	Size (byte)	Description
		number	Var	Number in ASCII characters.
Type	0x12		1	Service Option*
Length	2		2	
Value	→	srv_opt	2	Service option per [S2, Table 3.1-1]; see Table A-2 for standard service option number assignments.
Type	0x13		1	Voice Privacy*
Length	1		2	
Value	→	voice_privacy	1	Values: • 0x00 – VOICE_PRIVACY_STANDARD – Standard privacy • 0x01 – VOICE_PRIVACY_ENHANCED – Enhanced privacy
Type	0x14		1	OTASP Status*
Length	1		2	
Value	→	otasp_status	1	OTASP status for the OTASP call. Values: • 0x00 – OTASP_STATUS_SPL_UNLOCKED – SPL unlocked; only for user-initiated OTASP • 0x01 – OTASP_STATUS_SPRC_RETRIES_EXCEEDED – SPC retries exceeded; only for user-initiated OTASP • 0x02 – OTASP_STATUS_AKEY_EXCHANGED – A-key exchanged; only for user-initiated OTASP • 0x03 – OTASP_STATUS_SSD_UPDATED – SSD updated; for both user-initiated OTASP and network-initiated OTASP (OTAPA) • 0x04 – OTASP_STATUS_NAM_DOWNLOADED – NAM downloaded; only for user-initiated OTASP • 0x05 – OTASP_STATUS_MDN_DOWNLOADED – MDN downloaded; only for user-initiated OTASP • 0x06 – OTASP_STATUS_IMSI_DOWNLOADED – IMSI downloaded; only for user-initiated OTASP • 0x07 – OTASP_STATUS_PRL_DOWNLOADED – PRL downloaded; only for user-initiated OTASP • 0x08 – OTASP_STATUS_COMMITTED – Commit successful; only for user-initiated OTASP • 0x09 – OTASP_STATUS_OTAPA_STARTED – OTAPA started; only for network-initiated OTASP (OTAPA) • 0x0A – OTASP_STATUS_OTAPA_STOPPED – OTAPA stopped; only for network-initiated OTASP (OTAPA) • 0x0B – OTASP_STATUS_OTAPA_ABORTED – OTAPA aborted; only for network-initiated OTASP (OTAPA) • 0x0C – OTASP_STATUS_OTAPA_COMMITTED – OTAPA committed; only for network-initiated OTASP (OTAPA)

Field	Field value	Parameter	Size (byte)	Description
Type	0x15		1	Remote Party Name**
Length	Var		2	
Value	→	name_pi	1	Name presentation indicator. Values: • 0x00 – PRESENTATION_NAME_ PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_NAME_ PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NAME_UNAVAILABLE – Unavailable presentation • 0x03 – PRESENTATION_NAME_NAME_ PRESENTATION_RESTRICTED – Restricted name presentation
		coding_scheme	1	Refer to [S16, Section 5] for coding schemes.
		caller_name_len	1	Number of sets of the following elements: • caller_name
		caller_name	Var	Caller name per the coding scheme.
Type	0x16		1	UUS Information**
Length	Var		2	
Value	→	uus_type	1	UUS type. Values: • 0x00 – UUS_TYPE_DATA – Data • 0x01 – UUS_TYPE1_IMPLICIT – Type 1 implicit • 0x02 – UUS_TYPE1_REQUIRED – Type 1 required • 0x03 – UUS_TYPE1_NOT_REQUIRED – Type 1 not required • 0x04 – UUS_TYPE2_REQUIRED – Type 2 required • 0x05 – UUS_TYPE2_NOT_REQUIRED – Type 2 not required • 0x06 – UUS_TYPE3_REQUIRED – Type 3 required • 0x07 – UUS_TYPE3_NOT_REQUIRED – Type 3 not required
		uus_dcs	1	UUS data coding scheme. Values: • 0x01 – UUS_DCS_USP – USP • 0x02 – UUS_DCS_OHLP – OHLP • 0x03 – UUS_DCS_X244 – X244 • 0x04 – UUS_DCS_SMCF – SMCF • 0x05 – UUS_DCS_IA5 – IA5 • 0x06 – UUS_DCS_RV12RD – RV12RD • 0x07 – UUS_DCS_Q931UNCCM – Q931UNCCM
		uus_data_len	1	Number of sets of the following elements: • uus_data
		uus_data	Var	UUS data encoded per the coding scheme.
Type	0x17		1	Alerting Type**
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	alerting_type	1	Alerting type. Values: • 0x00 – ALERTING_LOCAL – Local • 0x01 – ALERTING_REMOTE – Remote
Type	0x18		1	Alpha Identifier**
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x19		1	Connected Number Information
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Caller ID in ASCII string.
Type	0x1A		1	Diagnostic Information
Length	Var		2	
Value	→	diagnostic_info_len	1	Number of sets of the following elements: • diagnostic_info
		diagnostic_info	Var	Diagnostic information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.5.3 Description of QMI_VOICE_GET_CALL_INFO REQ/RESP

This command queries information associated with a call.

When there is no voice call up or if an invalid call_id is sent in the request, a QMI_ERR_INVALID_ID error is returned in the response.

If the mode field of the Call Information TLV is “0x01 – CDMA”, the optional Service Option, Voice Privacy, and OTASP Status (only for OTASP calls) TLVs are included in the response.

For an outgoing call, a tone must be played at the originating user when the call starts ringing at the destination user (called number). If the network does not play any tone, a local tone must be generated at the originating user. The type of tone, whether it is played by the network or is user-generated, is indicated to the control point using the optional Alerting Type TLV. For a network-played tone, alerting_type is set to “0x01 – Remote”. For a user-generated tone, alerting_type is set to “0x00 – Local”.

The optional Remote Party Name, UUS Information, Alerting Type, and Alpha Identifier TLVs are applicable only in 3GPP devices.

The optional Service Option, Voice Privacy, and OTASP Status TLVs are applicable only in 3GPP2 devices.

The optional Alpha Identifier TLV is applicable only if the card gives the alpha and the call state is ORIGINATION.

Call state SETUP is applicable only for MT calls in 3GPP devices.

3.6 QMI_VOICE_OTASP_STATUS_IND

Indicates the occurrence of an OTASP or OTAPA event (applicable only for 3GPP2).

VOICE message ID

0x0025

Version introduced

Major - 1, Minor - 0

3.6.1 Indication - QMI_VOICE_OTASP_STATUS_IND

Message type

Indication

Sender

Service

Indication scope

Broadcast

Mandatory TLVs

Name	Version last modified
OTASP Status Information	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	OTASP Status Information
Length	2		2	
Value	→	call_id	1	Call identifier for the call.

Field	Field value	Parameter	Size (byte)	Description
		otasp_status	1	OTASP status for the OTASP call. Values: • 0x00 - OTASP_STATUS_SPL_UNLOCKED – SPL unlocked; only for user-initiated OTASP • 0x01 - OTASP_STATUS_SPRC_RETRIES_EXCEEDED – SPC retries exceeded; only for user-initiated OTASP • 0x02 - OTASP_STATUS_AKEY_EXCHANGED – A-key exchanged; only for user-initiated OTASP • 0x03 - OTASP_STATUS_SSD_UPDATED – SSD updated; for both user-initiated OTASP and network-initiated OTASP (OTAPA) • 0x04 - OTASP_STATUS_NAM_DOWNLOADED – NAM downloaded; only for user-initiated OTASP • 0x05 - OTASP_STATUS_MDN_DOWNLOADED – MDN downloaded; only for user-initiated OTASP • 0x06 - OTASP_STATUS_IMSI_DOWNLOADED – IMSI downloaded; only for user-initiated OTASP • 0x07 - OTASP_STATUS_PRL_DOWNLOADED – PRL downloaded; only for user-initiated OTASP • 0x08 - OTASP_STATUS_COMMITTED – Commit successful; only for user-initiated OTASP • 0x09 - OTASP_STATUS_OTAPA_STARTED – OTAPA started; only for network-initiated OTASP (OTAPA) • 0x0A - OTASP_STATUS_OTAPA_STOPPED – OTAPA stopped; only for network-initiated OTASP (OTAPA) • 0x0B - OTASP_STATUS_OTAPA_ABORTED – OTAPA aborted; only for network-initiated OTASP (OTAPA) • 0x0C - OTASP_STATUS_OTAPA_COMMITTED – OTAPA committed; only for network-initiated OTASP (OTAPA)

Optional TLVs

None

3.6.2 Description of QMI_VOICE_OTASP_STATUS_IND

This indication communicates the occurrence of an OTASP or OTAPA event. This indication is only applicable for 3GPP2 devices.

3.7 QMI_VOICE_INFO_REC_IND

Indicates that a new information record is available from the network (applicable only for 3GPP2).

VOICE message ID

0x0026

Version introduced

Major - 1, Minor - 0

3.7.1 Indication - QMI_VOICE_INFO_REC_IND

Message type

Indication

Sender

Service

Indication scope

Broadcast

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Call identifier for the call.

Optional TLVs

Name	Version last modified
Signal Information	1.0
Caller ID Information	1.0

Name	Version last modified
Display Information	1.0
Extended Display Information	1.0
Caller Name Information	1.0
Call Waiting Indicator	1.0
Connected Number Information	2.3
Calling Party Number Information	2.3
Called Party Number Information	2.3
Redirecting Number Information	2.3
National Supplementary Services - CLIR	2.3
National Supplementary Services - Audio Control	2.3
National Supplementary Services - Release	2.3
Line Control Information	2.3

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Signal Information
Length	3		2	
Value	→	signal_type	1	Signal type; refer to [S1, Table 3.7.5.5-1] for valid signal type values.
		alert_pitch	1	Alert pitch; refer [S1, Table 3.7.5.5-2] for valid alert pitch values.
		signal	1	Signal tone; refer to [S1, Tables 3.7.5.5-3, 3.7.5.5-4, and 3.7.5.5-5] for valid signal tones.
Type	0x11		1	Caller ID Information
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		caller_id_len	1	Number of sets of the following elements: • caller_id
		caller_id	Var	Caller ID in ASCII string.
Type	0x12		1	Display Information
Length	Var		2	
Value	→	display_buffer	Var	Display buffer containing the display ASCII string.
Type	0x13		1	Extended Display Information
Length	Var		2	
Value	→	ext_display_buffer	Var	Extended display buffer containing the display text; refer to [S1, Section 3.7.5.16] for the format information of the buffer contents.
Type	0x14		1	Caller Name Information
Length	Var		2	
Value	→	caller_name	Var	Caller name in ASCII string.
Type	0x15		1	Call Waiting Indicator
Length	1		2	
Value	→	call_waiting	1	Value: • 0x01 – CALL_WAITING_NEW_CALL – New call waiting
Type	0x16		1	Connected Number Information

Field	Field value	Parameter	Size (byte)	Description
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num

Field	Field value	Parameter	Size (byte)	Description
		num	Var	Caller ID in ASCII string.
Type	0x17		1	Calling Party Number Information
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_len	1	Number of sets of the following elements: • num
		num	Var	Caller ID in ASCII string.
Type	0x18		1	Called Party Number Information
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Caller ID in ASCII string.
Type	0x19		1	Redirecting Number Information
Length	Var		2	
Value	→	pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network

Field	Field value	Parameter	Size (byte)	Description
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_ INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_ SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_ EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_ CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_ EXTENSION – Reserved extension
		reason	1	Redirecting reason; refer to [S1, Table 3.7.5.11-1] for valid values.
		num_len	1	Number of sets of the following elements: • num
		num	Var	Caller ID in ASCII string.
Type	0x1A		1	National Supplementary Services - CLIR
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	clir_cause	1	CLIR cause. Values: • 0x00 – QMI_VOICE_CLIR_CAUSE_NO_CAUSE – None • 0x01 – QMI_VOICE_CLIR_CAUSE_REJECTED_BY_USER – Rejected by user • 0x02 – QMI_VOICE_CLIR_CAUSE_INTERACTION_WITH_OTHER_SERVICES – Interaction with other services • 0x03 – QMI_VOICE_CLIR_CAUSE_COIN_LINE – Coin line • 0x04 – QMI_VOICE_CLIR_CAUSE_SERVICE_NOT_AVAILABLE – Service is not available • 0x05 – QMI_VOICE_CLIR_CAUSE_RESERVED – Reserved
Type	0x1B		1	National Supplementary Services - Audio Control
Length	2		2	
Value	→	up_link	1	Values are per [S24, 4.10 Reservation response].
		down_link	1	Values are per [S24, 4.10 Reservation response].
Type	0x1C		1	National Supplementary Services - Release
Length	1		2	
Value	→	nss_release	1	NSS release. Values: • 0x01 – QMI_VOICE_NSS_RELEASE_FINISHED – Finished
Type	0x1D		1	Line Control Information
Length	4		2	
Value	→	polarity_included	1	Included polarity; boolean value.
		toggle_mode	1	Toggle mode; boolean value.
		reverse_polarity	1	Reverse polarity; boolean value.
		power_denial_time	1	Power denial time; refer to [S1, Section 3.7.5.15 Line Control] for valid values.

3.7.2 Description of QMI_VOICE_INFO_REC_IND

This indication communicates that a new information record is received from the base station or the network. This indication is applicable only for 3GPP2 devices.

When this indication is received with the mandatory Call ID TLV of value 0xFE, it means that the indication is not associated with a specific call.

Any caller name information from the Extended Display Information TLV (0x13) is used to populate the Caller Name Information TLV (0x14). The original caller name information will be removed from the Extended Display Information TLV while doing so.

If the current QMI_VOICE_INFO_REC_IND also indicates call waiting, the optional Call Waiting Indicator TLV (0x15) is present in the indication; otherwise, TLV 0x15 is not present in the indication.

3.8 QMI_VOICE_SEND_FLASH

Sends a simple Flash (applicable only for 3GPP2).

VOICE message ID

0x0027

Version introduced

Major - 1, Minor - 0

3.8.1 Request - QMI_VOICE_SEND_FLASH_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Optional TLVs

Name	Version last modified
Flash Payload	1.0
Flash Type	2.6

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Flash Payload

Field	Field value	Parameter	Size (byte)	Description
Length	Var		2	
Value	→	flash_payload	Var	Payload in ASCII to be sent in the Flash.
Type	0x11		1	Flash Type
Length	1		2	
Value	→	flash_type	1	Flash type. Values: • 0 – QMI_VOICE_FLASH_TYPE_SIMPLE_FLASH – Simple Flash • 1 – QMI_VOICE_FLASH_TYPE_ACT_ANSWER_HOLD – Activate answer hold • 2 – QMI_VOICE_FLASH_TYPE_DEACT_ANSWER_HOLD – Deactivate answer hold

3.8.2 Response - QMI_VOICE_SEND_FLASH_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.8.3 Description of QMI_VOICE_SEND_FLASH REQ/RESP

This command sends a simple Flash. This is applicable only for 3GPP2 devices.

If the Result Code TLV indicates success, this means the device has started the requested operation. It does not mean that the Flash has been sent.

If the optional Flash Type TLV is not set, the default flash type is assumed to be a simple flash.

If the flash_type is QMI_VOICE_FLASH_TYPE_ACT_ANSWER_HOLD, the call ID corresponding to it is either an incoming or waiting call‘s call ID. If the flash_type is QMI_VOICE_FLASH_TYPE_DEACT_ANSWER_HOLD, the call ID corresponding to it is a held call‘s call ID.

A Flash request is sent to the appropriate call when call_id is set to 0xFF.

3.9 QMI_VOICE_BURST_DTMF

Sends a burst Dual-Tone Multifrequency (DTMF) (applicable only for 3GPP2).

VOICE message ID

0x0028

Version introduced

Major - 1, Minor - 0

3.9.1 Request - QMI_VOICE_BURST_DTMF_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Burst DTMF Information	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Burst DTMF Information
Length	Var		2	
Value	→	call_id	1	Call ID associated with the current call.
		digit_cnt	1	Number of sets of the following elements: • digit_buffer
		digit_buffer	Var	DTMF digit buffer in ASCII string.

Optional TLVs

Name	Version last modified
DTMF Lengths	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	DTMF Lengths
Length	2		2	
Value	→	dtmf_onlength	1	DTMF pulse width. Values: • 0x00 – DTMF_ONLENGTH_95MS – 95 ms • 0x01 – DTMF_ONLENGTH_150MS – 150 ms • 0x02 – DTMF_ONLENGTH_200MS – 200 ms • 0x03 – DTMF_ONLENGTH_250MS – 250 ms • 0x04 – DTMF_ONLENGTH_300MS – 300 ms • 0x05 – DTMF_ONLENGTH_350MS – 350 ms • 0x06 – DTMF_ONLENGTH_SMS – SMS Tx special pulse width
		dtmf_offlength	1	DTMF interdigit interval. Values: • 0x00 – DTMF_OFFLENGTH_60MS – 60 ms • 0x01 – DTMF_OFFLENGTH_100MS – 100 ms • 0x02 – DTMF_OFFLENGTH_150MS – 150 ms • 0x03 – DTMF_OFFLENGTH_200MS – 200 ms

3.9.2 Response - QMI_VOICE_BURST_DTMF_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified

3.9.3 Description of QMI_VOICE_BURST_DTMF REQ/RESP

This command sends a burst DTMF. This is applicable only in 3GPP2 devices.

If the Result Code TLV indicates success, this means the device has started the requested operation. It does not mean that the burst DTMF request has been sent to the network.

A burst DTMF request is sent to the current active/alerting call when call_id is set to 0xFF.

3.10 QMI_VOICE_START_CONT_DTMF

Starts a continuous DTMF.

VOICE message ID

0x0029

Version introduced

Major - 1, Minor - 0

3.10.1 Request - QMI_VOICE_START_CONT_DTMF_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Continuous DTMF Information	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Continuous DTMF Information
Length	2		2	
Value	→	call_id	1	Call ID associated with the current call.
		digit	1	DTMF digit in ASCII.

Optional TLVs

None

3.10.2 Response - QMI_VOICE_START_CONT_DTMF_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.10.3 Description of QMI_VOICE_START_CONT_DTMF REQ/RESP

This command starts a continuous DTMF.

If the Result Code TLV indicates success, it means that the device has started the requested operation. It does not mean that the start continuous DTMF request has been sent to the network.

A start continuous DTMF request is sent to the current active/alerting call when call_id is set to 0xFF.

3.11 QMI_VOICE_STOP_CONT_DTMF

Stops a continuous DTMF.

VOICE message ID

0x002A

Version introduced

Major - 1, Minor - 0

3.11.1 Request - QMI_VOICE_STOP_CONT_DTMF_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call ID	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Optional TLVs

None

3.11.2 Response - QMI_VOICE_STOP_CONT_DTMF_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Call ID is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID associated with the current call.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.11.3 Description of QMI_VOICE_STOP_CONT_DTMF REQ/RESP

This command stops a continuous DTMF.

If the Result Code TLV indicates success, it means that the device has started the requested operation. It does not mean that the stop continuous DTMF request has been sent to the network.

A stop continuous DTMF request is sent to the current active/alerting call when call_id is set to 0xFF.

3.12 QMI_VOICE_DTMF_IND

Indicates that a DTMF event has been received (applicable only for 3GPP2).

VOICE message ID

0x002B

Version introduced

Major - 1, Minor - 0

3.12.1 Indication - QMI_VOICE_DTMF_IND

Message type

Indication

Sender

Service

Indication scope

Unicast (per control point)

Mandatory TLVs

Name	Version last modified
DTMF Information	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	DTMF Information
Length	Var		2	
Value	→	call_id	1	Call identifier for the current call.

Field	Field value	Parameter	Size (byte)	Description
		dtmf_event	1	DTMF event. Values: • 0x00 – DTMF_EVENT_REV_BURST – Sends a CDMA-burst DTMF • 0x01 – DTMF_EVENT_REV_START_CONT – Starts a continuous DTMF tone • 0x03 – DTMF_EVENT_REV_STOP_CONT – Stops a continuous DTMF tone • 0x05 – DTMF_EVENT_FWD_BURST – Received a CDMA-burst DTMF message • 0x06 – DTMF_EVENT_FWD_START_CONT – Received a start-continuous DTMF tone order • 0x07 – DTMF_EVENT_FWD_STOP_CONT – Received a stop-continuous DTMF tone order
		digit_cnt	1	Number of sets of the following elements: • digit_buffer
		digit_buffer	Var	DTMF digit buffer in ASCII string.

Optional TLVs

Name	Version last modified
DTMF Pulse Width	1.0
DTMF Interdigit Interval	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	DTMF Pulse Width
Length	1		2	
Value	→	on_length	1	Values: • 0x00 – DTMF_ONLENGTH_95MS – 95 ms • 0x01 – DTMF_ONLENGTH_150MS – 150 ms • 0x02 – DTMF_ONLENGTH_200MS – 200 ms • 0x03 – DTMF_ONLENGTH_250MS – 250 ms • 0x04 – DTMF_ONLENGTH_300MS – 300 ms • 0x05 – DTMF_ONLENGTH_350MS – 350 ms • 0x06 – DTMF_ONLENGTH_SMS – SMS Tx special pulse width
Type	0x11		1	DTMF Interdigit Interval
Length	1		2	
Value	→	off_length	1	Values: • 0x00 – DTMF_OFFLENGTH_60MS – 60 ms • 0x01 – DTMF_OFFLENGTH_100MS – 100 ms • 0x02 – DTMF_OFFLENGTH_150MS – 150 ms • 0x03 – DTMF_OFFLENGTH_200MS – 200 ms

3.12.2 Description of QMI_VOICE_DTMF_IND

This indication communicates that a DTMF event has been received. It is sent to all the control points that have registered (using the QMI_VOICE_INDICATION_REGISTER command) to receive DTMF events.

The event is conveyed in the dtmf_event field in the mandatory DTMF Information TLV.

The optional DTMF Pulse Width and DTMF Interdigit Interval TLVs are sent if the dtmf_event is DTMF_EVENT_FWD_BURST.

This indication is applicable only in 3GPP2 devices.

3.13 QMI_VOICE_SET_PREFERRED_PRIVACY

Sets the voice privacy preference (applicable only for 3GPP2).

VOICE message ID

0x002C

Version introduced

Major - 1, Minor - 0

3.13.1 Request - QMI_VOICE_SET_PREFERRED_PRIVACY_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Voice Privacy Preference	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Voice Privacy Preference
Length	1		2	
Value	→	privacy_pref	1	Values: • 0x00 – VOICE_PRIVACY_STANDARD – Standard privacy • 0x01 – VOICE_PRIVACY_ENHANCED – Enhanced privacy

Optional TLVs

None

3.13.2 Response - QMI_VOICE_SET_PREFERRED_PRIVACY_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request

3.13.3 Description of QMI_VOICE_SET_PREFERRED_PRIVACY REQ/RESP

This command sets the preferred voice privacy. This is applicable only in 3GPP2 devices.

3.14 QMI_VOICE_PRIVACY_IND

Indicates a change in the voice privacy of a call (applicable only for 3GPP2).

VOICE message ID

0x002D

Version introduced

Major - 1, Minor - 0

3.14.1 Indication - QMI_VOICE_PRIVACY_IND

Message type

Indication

Sender

Service

Indication scope

Unicast (per control point)

Mandatory TLVs

Name	Version last modified
Voice Privacy Information	1.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Voice Privacy Information
Length	2		2	
Value	→	call_id	1	Call identifier for the call.
		voice_privacy	1	Voice privacy. Values: • 0x00 – VOICE_PRIVACY_STANDARD – Standard privacy • 0x01 – VOICE_PRIVACY_ENHANCED – Enhanced privacy

Optional TLVs

None

3.14.2 Description of QMI_VOICE_PRIVACY_IND

This indication communicates a change in the voice privacy of a call. This is applicable only in 3GPP2 devices.

3.15 QMI_VOICE_ALL_CALL_STATUS_IND

Indicates a change in the call information.

VOICE message ID

0x002E

Version introduced

Major - 2, Minor - 0

3.15.1 Indication - QMI_VOICE_ALL_CALL_STATUS_IND

Message type

Indication

Sender

Service

Indication scope

Unicast (per control point)

Mandatory TLVs

Name	Version last modified
Array of Call Information	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Array of Call Information
Length	Var		2	
Value	→	num_of_instances	1	Number of sets of the following elements: • call_id • call_state • call_type • direction • mode • is_mpty • als
		call_id	1	Unique call identifier for the call.

Field	Field value	Parameter	Size (byte)	Description
		call_state	1	Call state. Values: • 0x01 – CALL_STATE_ORIGINATION – Origination • 0x02 – CALL_STATE_INCOMING – Incoming • 0x03 – CALL_STATE_CONVERSATION – Conversation • 0x04 – CALL_STATE_CC_IN_PROGRESS – Call is originating but waiting for call control to complete • 0x05 – CALL_STATE_ALERTING – Alerting • 0x06 – CALL_STATE_HOLD – Hold • 0x07 – CALL_STATE_WAITING – Waiting • 0x08 – CALL_STATE_DISCONNECTING – Disconnecting • 0x09 – CALL_STATE_END – End • 0x0A – CALL_STATE_SETUP – MT call is in Setup state in 3GPP
		call_type	1	Call type. Values: • 0x00 – CALL_TYPE_VOICE – Voice • 0x02 – CALL_TYPE_VOICE_IP – Voice over IP • 0x06 – CALL_TYPE_OTAPA – OTAPA • 0x07 – CALL_TYPE_STD_OTASP – Standard OTASP • 0x08 – CALL_TYPE_NON_STD_OTASP – Nonstandard OTASP • 0x09 – CALL_TYPE_EMERGENCY – Emergency • 0x0A – CALL_TYPE_SUPS – Supplementary service
		direction	1	Direction. Values: • 0x01 – CALL_DIRECTION_MO – MO call • 0x02 – CALL_DIRECTION_MT – MT call
		mode	1	Mode. Values: • 0x01 – CALL_MODE_CDMA – CDMA • 0x02 – CALL_MODE_GSM – GSM • 0x03 – CALL_MODE_UMTS – UMTS • 0x04 – CALL_MODE_LTE – LTE
		is_mpty	1	Multiparty indicator. Values: • 0x00 – False • 0x01 – True
		als	1	ALS line indicator. Values: • 0x00 – ALS_LINE1 – Line 1 (default) • 0x01 – ALS_LINE2 – Line 2

Optional TLVs

Name	Version last modified
Array of Remote Party Number	2.0
Array of Remote Party Name**	2.0
Array of Alerting Type**	2.0
Array of Service Option**	2.0
Array of Call End Reason**	2.0
Array of Alpha Identifier**	2.1
Array of Connected Party Number	2.3
Array of Diagnostic Information**	2.3
Array of Called Party Number**	2.8
Array of Redirecting Party Number**	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Array of Remote Party Number
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • number_pi • number_len • number
		call_id	1	Unique call identifier for the call.
		number_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		number_len	1	Number of sets of the following elements: • number
		number	Var	Remote party number in ASCII characters.
Type	0x11		1	Array of Remote Party Name**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • name_pi • coding_scheme • name_len • name
		call_id	1	Unique call identifier for the call.

Field	Field value	Parameter	Size (byte)	Description
		name_pi	1	Name presentation indicator. Values: • 0x00 – PRESENTATION_NAME_PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_NAME_PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NAME_UNAVAILABLE – Unavailable presentation • 0x03 – PRESENTATION_NAME_NAME_PRESENTATION_RESTRICTED – Restricted name presentation
		coding_scheme	1	Refer to [S16, Section 5] for coding schemes.
		name_len	1	Number of sets of the following elements: • name
		name	Var	Caller name per the coding scheme.
Type	0x12		1	Array of Alerting Type**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • alerting_type
		call_id	1	Unique call identifier for the call.
		alerting_type	1	Alerting type. Values: • 0x00 – ALERTING_LOCAL – Local • 0x01 – ALERTING_REMOTE – Remote
Type	0x13		1	Array of Service Option**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • srv_opt
		call_id	1	Unique call identifier for the call.
		srv_opt	2	Service option per [S2, Table 3.1-1]; see Table A-2 for standard service option number assignments.
Type	0x14		1	Array of Call End Reason**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • call_end_reason
		call_id	1	Unique call identifier for the call.
		call_end_reason	2	Call end reason; see Table A-3 for a list of valid voice-related call end reasons.
Type	0x15		1	Array of Alpha Identifier**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • alpha_dcs • alpha_len • alpha_text

Field	Field value	Parameter	Size (byte)	Description
		call_id	1	Unique call identifier for the call.
		alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x16		1	Array of Connected Party Number
Length	Var		2	
Value	→	conn_party_num_len	1	Number of sets of the following elements: • call_id • conn_num_pi • conn_num_si • conn_num_type • conn_num_plan • conn_num_len • conn_num
		call_id	1	Unique call identifier for the call.
		conn_num_pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		conn_num_si	1	Connected number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		conn_num_type	1	Connected number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		conn_num_plan	1	Connected number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		conn_num_len	1	Number of sets of the following elements: • conn_num
		conn_num	Var	Connected number in ASCII characters.
Type	0x17		1	Array of Diagnostic Information**
Length	Var		2	
Value	→	diagnostic_info_len	1	Number of sets of the following elements: • call_id • diagnostic_info_len • diagnostic_info
		call_id	1	Unique call identifier for the call.
		diagnostic_info_len	1	Number of sets of the following elements: • diagnostic_info
		diagnostic_info	Var	Diagnostic information.
Type	0x18		1	Array of Called Party Number**
Length	Var		2	
Value	→	called_party_num_len	1	Number of sets of the following elements: • call_id • num_pi • num_si • num_type • num_plan • num_len • num
		call_id	1	Unique call identifier for the call.
		num_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)

Field	Field value	Parameter	Size (byte)	Description
		num_si	1	Number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Number in ASCII characters.
Type	0x19		1	Array of Redirecting Party Number**
Length	Var		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	redirecting_party_num_len	1	Number of sets of the following elements: • call_id • num_pi • num_si • num_type • num_plan • num_len • num
		call_id	1	Unique call identifier for the call.
		num_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		num_si	1	Number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Number in ASCII characters.

3.15.2 Description of QMI_VOICE_ALL_CALL_STATUS_IND

Whenever there is a change in the call information, this indication is sent to the control point and updated with the latest information.

If multiple calls information is modified, the indication has information on multiple calls.

Information is obtained in two ways. For a specific call, a single field can be updated, e.g., call_state, or there is an indication of an incoming call with information such as caller number, caller name, and UUS information. In both cases, the indication contains information for all the fields applicable in that call_state, although they might have already been communicated in a previous indication.

For example, when an incoming call is received, the service point sends an indication to the control point to indicate the incoming call whose information might have call_id, call_state, call_type, direction, mode, is_mpty, caller_number, caller_name, or UUS information.

When this incoming call is answered, the call status changes from INCOMING to CONVERSATION, which means a change in the call information. The service point sends an indication to the control point to indicate a change in information. The indication has call_id, call_state, call_type, direction, mode, or is_mpty information (and optionally, caller_number, caller_name, or UUS information), even though there is a change in only call_state, because the fields are applicable even in CONVERSATION state.

The QMI_VOICE_ALL_CALL_STATUS_IND information contains all the fields valid in that call state.

It is up to the control point to implement the logic if the control point wants to determine which fields have changed in the information.

SIM/R-UIM call control can change the call type from voice to supplementary service/USSD and vice-versa (refer to [S18, Section 9]). When a voice call is modified to supplementary service/USSD, this indication shows the type as CALL_TYPE_SUPS. Subsequent to the change, clients must process QMI_VOICE_SUPS_IND for information about the modified operation (supplementary service/USSD).

The alpha identifier is applicable only if the card gives the alpha and the call state is ORIGINATION.

Call state SETUP is applicable for MT calls only in 3GPP devices.

3.16 QMI_VOICE_GET_ALL_CALL_INFO

Queries the information of all the calls.

VOICE message ID

0x002F

Version introduced

Major - 2, Minor - 0

3.16.1 Request - QMI_VOICE_GET_ALL_CALL_INFO_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.16.2 Response - QMI_VOICE_GET_ALL_CALL_INFO_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Array of Call Information is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Array of Call Information	2.9
Array of Remote Party Number	2.0
Array of Remote Party Name**	2.0
Array of Alerting Type**	2.0
Array of UUS Information**	2.0
Array of Service Option*	2.0
OTASP Status*	2.8
Voice Privacy*	2.0
Array of Call End Reason**	2.0
Array of Alpha Identifier**	2.1
Array of Connected Party Number	2.3
Array of Diagnostic Information	2.3
Array of Called Party Number**	2.8
Array of Redirecting Party Number**	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Array of Call Information
Length	Var		2	
Value	→	num_of_instances	1	Number of sets of the following elements: • call_id • call_state • call_type • direction • mode • is_mpty • als
		call_id	1	Unique call identifier for the call.

Field	Field value	Parameter	Size (byte)	Description
		call_state	1	Call state. Values: • 0x01 – CALL_STATE_ORIGINATION – Origination • 0x02 – CALL_STATE_INCOMING – Incoming • 0x03 – CALL_STATE_CONVERSATION – Conversation • 0x04 – CALL_STATE_CC_IN_PROGRESS – Call is originating but waiting for call control to complete • 0x05 – CALL_STATE_ALERTING – Alerting • 0x06 – CALL_STATE_HOLD – Hold • 0x07 – CALL_STATE_WAITING – Waiting • 0x08 – CALL_STATE_DISCONNECTING – Disconnecting • 0x09 – CALL_STATE_END – End • 0x0A – CALL_STATE_SETUP – MT call is in Setup state in 3GPP
		call_type	1	Call type. Values: • 0x00 – CALL_TYPE_VOICE – Voice • 0x02 – CALL_TYPE_VOICE_IP – Voice over IP • 0x06 – CALL_TYPE_OTAPA – OTAPA • 0x07 – CALL_TYPE_STD_OTASP – Standard OTASP • 0x08 – CALL_TYPE_NON_STD_OTASP – Nonstandard OTASP • 0x09 – CALL_TYPE_EMERGENCY – Emergency • 0x0A – CALL_TYPE_SUPS – Supplementary service
		direction	1	Direction. Values: • 0x01 – CALL_DIRECTION_MO – MO call • 0x02 – CALL_DIRECTION_MT – MT call
		mode	1	Mode. Values: • 0x01 – CALL_MODE_CDMA – CDMA • 0x02 – CALL_MODE_GSM – GSM • 0x03 – CALL_MODE_UMTS – UMTS • 0x04 – CALL_MODE_LTE – LTE
		is_mpty	1	Multiparty indicator. Values: • 0x00 – False • 0x01 – True
		als	1	ALS line indicator. Values: • 0x00 – ALS_LINE1 – Line 1 (default) • 0x01 – ALS_LINE2 – Line 2
Type	0x11		1	Array of Remote Party Number
Length	Var		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	num_instances	1	Number of sets of the following elements: • call_id • number_pi • number_len • number
		call_id	1	Unique call identifier for the call.
		number_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		number_len	1	Number of sets of the following elements: • number
		number	Var	Remote party number in ASCII characters.
Type	0x12		1	Array of Remote Party Name**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • name_pi • coding_scheme • name_len • name
		call_id	1	Unique call identifier for the call.
		name_pi	1	Name presentation indicator. Values: • 0x00 – PRESENTATION_NAME_ PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_NAME_ PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NAME_UNAVAILABLE – Unavailable presentation • 0x03 – PRESENTATION_NAME_NAME_ PRESENTATION_RESTRICTED – Restricted name presentation
		coding_scheme	1	Refer to [S16, Section 5] for coding schemes.
		name_len	1	Number of sets of the following elements: • name
		name	Var	Caller name per the coding scheme.
Type	0x13		1	Array of Alerting Type**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • alerting_type

Field	Field value	Parameter	Size (byte)	Description
		call_id	1	Unique call identifier for the call.
		alerting_type	1	Alerting type. Values: • 0x00 – ALERTING_LOCAL – Local • 0x01 – ALERTING_REMOTE – Remote
Type	0x14		1	Array of UUS Information**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • uus_type • uus_dcs • uus_data_len • uus_data
		call_id	1	Unique call identifier for the call.
		uus_type	1	UUS type. Values: • 0x00 – UUS_TYPE_DATA – Data • 0x01 – UUS_TYPE1_IMPLICIT – Type 1 implicit • 0x02 – UUS_TYPE1_REQUIRED – Type 1 required • 0x03 – UUS_TYPE1_NOT_REQUIRED – Type 1 not required • 0x04 – UUS_TYPE2_REQUIRED – Type 2 required • 0x05 – UUS_TYPE2_NOT_REQUIRED – Type 2 not required • 0x06 – UUS_TYPE3_REQUIRED – Type 3 required • 0x07 – UUS_TYPE3_NOT_REQUIRED – Type 3 not required
		uus_dcs	1	UUS data coding scheme. Values: • 0x01 – UUS_DCS_USP – USP • 0x02 – UUS_DCS_OHLP – OHLP • 0x03 – UUS_DCS_X244 – X244 • 0x04 – UUS_DCS_SMCF – SMCF • 0x05 – UUS_DCS_IA5 – IA5 • 0x06 – UUS_DCS_RV12RD – RV12RD • 0x07 – UUS_DCS_Q931UNCCM – Q931UNCCM
		uus_data_len	1	Number of sets of the following elements: • uus_data
		uus_data	Var	UUS data encoded as per coding scheme.
Type	0x15		1	Array of Service Option*
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • srv_opt
		call_id	1	Unique call identifier for the call.
		srv_opt	2	Service option per [S2, Table 3.1-1]; see Table A-2 for standard service option number assignments.
Type	0x16		1	OTASP Status*
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	otasp_status	1	OTASP status for the OTASP call. Values: • 0x00 – OTASP_STATUS_SPL_UNLOCKED – SPL unlocked; only for user-initiated OTASP • 0x01 – OTASP_STATUS_SPRC_RETRIES_EXCEEDED – SPC retries exceeded; only for user-initiated OTASP • 0x02 – OTASP_STATUS_AKEY_EXCHANGED – A-key exchanged; only for user-initiated OTASP • 0x03 – OTASP_STATUS_SSD_UPDATED – SSD updated; for both user-initiated OTASP and network-initiated OTASP (OTAPA) • 0x04 – OTASP_STATUS_NAM_DOWNLOADED – NAM downloaded; only for user-initiated OTASP • 0x05 – OTASP_STATUS_MDN_DOWNLOADED – MDN downloaded; only for user-initiated OTASP • 0x06 – OTASP_STATUS_IMSI_DOWNLOADED – IMSI downloaded; only for user-initiated OTASP • 0x07 – OTASP_STATUS_PRL_DOWNLOADED – PRL downloaded; only for user-initiated OTASP • 0x08 – OTASP_STATUS_COMMITTED – Commit successful; only for user-initiated OTASP • 0x09 – OTASP_STATUS_OTAPA_STARTED – OTAPA started; only for network-initiated OTASP (OTAPA) • 0x0A – OTASP_STATUS_OTAPA_STOPPED – OTAPA stopped; only for network-initiated OTASP (OTAPA) • 0x0B – OTASP_STATUS_OTAPA_ABORTED – OTAPA aborted; only for network-initiated OTASP (OTAPA) • 0x0C – OTASP_STATUS_OTAPA_COMMITTED – OTAPA committed; only for network-initiated OTASP (OTAPA)
Type	0x17		1	Voice Privacy*
Length	1		2	
Value	→	voice_privacy	1	Values: • 0x00 – VOICE_PRIVACY_STANDARD – Standard privacy • 0x01 – VOICE_PRIVACY_ENHANCED – Enhanced privacy
Type	0x18		1	Array of Call End Reason**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • call_end_reason
		call_id	1	Unique call identifier for the call.

Field	Field value	Parameter	Size (byte)	Description
		call_end_reason	2	Call end reason; see Table A-3 for a list of valid voice-related call end reasons.
Type	0x19		1	Array of Alpha Identifier**
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • call_id • alpha_dcs • alpha_len • alpha_text
		call_id	1	Unique call identifier for the call.
		alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x1A		1	Array of Connected Party Number
Length	Var		2	
Value	→	conn_party_num_len	1	Number of sets of the following elements: • call_id • conn_num_pi • conn_num_si • conn_num_type • conn_num_plan • conn_num_len • conn_num
		call_id	1	Unique call identifier for the call.
		conn_num_pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.
		conn_num_si	1	Connected number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network

Field	Field value	Parameter	Size (byte)	Description
		conn_num_type	1	Connected number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		conn_num_plan	1	Connected number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		conn_num_len	1	Number of sets of the following elements: • conn_num
		conn_num	Var	Connected number in ASCII characters.
Type	0x1B		1	Array of Diagnostic Information
Length	Var		2	
Value	→	diagnostic_info_len	1	Number of sets of the following elements: • call_id • diagnostic_info_len • diagnostic_info
		call_id	1	Unique call identifier for the call.
		diagnostic_info_len	1	Number of sets of the following elements: • diagnostic_info
		diagnostic_info	Var	Diagnostic information.
Type	0x1C		1	Array of Called Party Number**
Length	Var		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	called_party_num_len	1	Number of sets of the following elements: • call_id • num_pi • num_si • num_type • num_plan • num_len • num
		call_id	1	Unique call identifier for the call.
		num_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		num_si	1	Number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Number in ASCII characters.
Type	0x1D		1	Array of Redirecting Party Number**
Length	Var		2	
Value	→	redirecting_party_num_len	1	Number of sets of the following elements: • call_id • num_pi • num_si • num_type • num_plan • num_len • num
		call_id	1	Unique call identifier for the call.
		num_pi	1	Presentation indicator. Values: • 0x00 – PRESENTATION_ALLOWED – Allowed presentation • 0x01 – PRESENTATION_RESTRICTED – Restricted presentation • 0x02 – PRESENTATION_NUM_UNAVAILABLE – Unavailable presentation • 0x04 – PRESENTATION_PAYPHONE – Payphone presentation (GSM/UMTS specific)
		num_si	1	Number screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network

Field	Field value	Parameter	Size (byte)	Description
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Number in ASCII characters.

3.16.3 Description of QMI_VOICE_GET_ALL_CALL_INFO REQ/RESP

This command is used by the control point to get the updated information of all the calls from the service point. See Section 3.15.2 for details regarding the call information.

The alpha identifier is applicable only if the card gives the alpha and the call state is ORIGINATION.

Call state SETUP is applicable for MT calls only in 3GPP devices.

3.17 QMI_VOICE_MANAGE_CALLS

Manages the calls by using the supplementary service applicable during the call (applicable only for 3GPP).

VOICE message ID

0x0031

Version introduced

Major - 2, Minor - 0

3.17.1 Request - QMI_VOICE_MANAGE_CALLS_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Manage Calls Information	2.1

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Manage Calls Information
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	sups_type	1	Supplementary service type during the call. Values: • 0x01 – SUPS_TYPE_RELEASE_HELD_OR_WAITING – Release is held or waiting • 0x02 – SUPS_TYPE_RELEASE_ACTIVE_ACCEPT_HELD_OR_WAITING – Release is active and accepting held or waiting • 0x03 – SUPS_TYPE_HOLD_ACTIVE_ACCEPT_WAITING_OR_HELD – Hold is active and accepting waiting or held • 0x04 – SUPS_TYPE_HOLD_ALL_EXCEPT_SPECIFIED_CALL – Hold all calls except a specified one • 0x05 – SUPS_TYPE_MAKE_CONFERENCE_CALL – Make a conference call • 0x06 – SUPS_TYPE_EXPLICIT_CALL_TRANSFER – Explicit call transfer • 0x07 – SUPS_TYPE_CCBS_ACTIVATION – Activate completion of calls to busy subscriber • 0x08 – SUPS_TYPE_END_ALL_CALLS – End all calls • 0x09 – SUPS_TYPE_RELEASE_SPECIFIED_CALL – Release a specified call

Optional TLVs

Name	Version last modified
Call ID	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Applicable only for sups_type 0x04, 0x07, and 0x09.

3.17.2 Response - QMI_VOICE_MANAGE_CALLS_RESP

Message type

Response

Sender

Control point

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Name	Version last modified
Failure_cause	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.17.3 Description of QMI_VOICE_MANAGE_CALLS REQ/RESP

This command manages calls by using various supplementary services applicable during the call.

In cases of successful command completion, if the state of any call is changed, it is indicated using QMI_VOICE_ALL_CALL_STATUS_IND. The control point must always process QMI_VOICE_ALL_CALL_STATUS_IND and update the call states.

Handling of supplementary services during the call is described in [S21, Section 6.5.5]. Supplementary services procedures during the call, such as Call Deflection, Call Waiting, Call Hold, Explicit Call Transfer, Multiparty Services, and Completion of Calls to Busy Subscriber are described in [S7], [S8], [S9], [S10], and [S5] respectively.

This command is applicable only in 3GPP devices.

3.18 QMI_VOICE_SUPS_NOTIFICATION_IND

Used for supplementary service notifications to the control points (applicable only for 3GPP).

VOICE message ID

0x0032

Version introduced

Major - 2, Minor - 0

3.18.1 Indication - QMI_VOICE_SUPS_NOTIFICATION_IND

Message type

Indication

Sender

Service

Indication scope

Unicast (per control point)

Mandatory TLVs

Name	Version last modified
Notification Information	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Notification Information
Length	2		2	
Value	→	call_id	1	Unique identifier of the call for which the notification is applicable.

Field	Field value	Parameter	Size (byte)	Description
		notification_type	1	Notification type; see Section A.4 for descriptions. Values: • 0x01 – NOTIFICATION_TYPE_OUTGOING_CALL_IS_FORWARDED • 0x02 – NOTIFICATION_TYPE_OUTGOING_CALL_IS_WAITING • 0x03 – NOTIFICATION_TYPE_OUTGOING_CUG_CALL • 0x04 – NOTIFICATION_TYPE_OUTGOING_CALLS_BARRED • 0x05 – NOTIFICATION_TYPE_OUTGOING_CALL_IS_DEFLECTED • 0x06 – NOTIFICATION_TYPE_INCOMING_CUG_CALL • 0x07 – NOTIFICATION_TYPE_INCOMING_CALLS_BARRED • 0x08 – NOTIFICATION_TYPE_INCOMING_FORWARDED_CALL • 0x09 – NOTIFICATION_TYPE_INCOMING_DEFLECTED_CALL • 0x0A – NOTIFICATION_TYPE_INCOMING_CALL_IS_FORWARDED • 0x0B – NOTIFICATION_TYPE_UNCOND_CALL_FORWARD_ACTIVE • 0x0C – NOTIFICATION_TYPE_COND_CALL_FORWARD_ACTIVE • 0x0D – NOTIFICATION_TYPE_CLIR_SUPPRESSION_REJECTED • 0x0E – NOTIFICATION_TYPE_CALL_IS_ON_HOLD • 0x0F – NOTIFICATION_TYPE_CALL_IS_RETRIEVED • 0x10 – NOTIFICATION_TYPE_CALL_IS_IN_MPTY • 0x11 – NOTIFICATION_TYPE_INCOMING_CALL_IS_ECT

Optional TLVs

Name	Version last modified
CUG Index	2.0
ECT Number	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	CUG Index

Field	Field value	Parameter	Size (byte)	Description
Length	2		2	
Value	→	index	2	Index of the CUG call. Range: 0x00 to 0x7FFF.
Type	0x11		1	ECT Number
Length	Var		2	
Value	→	ect_call_state	1	ECT call state. Values: • 0x00 – ECT_CALL_STATE_NONE – None • 0x01 – ECT_CALL_STATE_ALERTING – Alerting • 0x02 – ECT_CALL_STATE_ACTIVE – Active
		pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values. Supported values: • 0x00 – presentationAllowedAddress • 0x01 – presentationRestricted • 0x02 – numberNotAvailable • 0x04 – presentationRestrictedAddress
		number_len	1	Number of sets of the following elements: • number
		number	Var	Number in ASCII characters.

3.18.2 Description of QMI_VOICE_SUPS_NOTIFICATION_IND

This indication notifies the control points about supplementary service notifications.

The optional CUG Index TLV is used to indicate that the incoming/outgoing call is a CUG call. The index of the CUG call is the value of the Index field in the CUG Index TLV.

The optional ECT Number TLV is used to indicate that the incoming call is an explicitly transferred call. The number from which this incoming call is transferred is indicated in the number field of the ECT Number TLV. Refer to [S9] for details.

The description of each of the notifications is described in Section A.4.

This indication is applicable only in 3GPP devices.

3.19 QMI_VOICE_SET_SUPS_SERVICE

Manages all call-independent supplementary services, such as activation, deactivation, registration, and erasure (applicable only for 3GPP).

VOICE message ID

0x0033

Version introduced

Major - 2, Minor - 0

3.19.1 Request - QMI_VOICE_SET_SUPS_SERVICE_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Supplementary Service Information	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Supplementary Service Information
Length	2		2	
Value	→	voice_service	1	Service. Values: • 0x01 – VOICE_SERVICE_ACTIVATE – Activate • 0x02 – VOICE_SERVICE_DEACTIVATE – Deactivate • 0x03 – VOICE_SERVICE_REGISTER – Register • 0x04 – VOICE_SERVICE_ERASE – Erase

Field	Field value	Parameter	Size (byte)	Description
		reason	1	Reason. Values: • 0x01 – QMI_VOICE_REASON_FWD_ UNCONDITIONAL – Unconditional call forwarding • 0x02 – QMI_VOICE_REASON_FWD_ MOBILEBUSY – Forward when the mobile is busy • 0x03 – QMI_VOICE_REASON_FWD_NOREPLY – Forward when there is no reply • 0x04 – QMI_VOICE_REASON_FWD_ UNREACHABLE – Forward when the call is unreachable • 0x05 – QMI_VOICE_REASON_FWD_ ALLFORWARDING – All forwarding • 0x06 – QMI_VOICE_REASON_FWD_ ALLCONDITIONAL – All conditional forwarding • 0x07 – QMI_VOICE_REASON_BARR_ ALLOUTGOING – All outgoing • 0x08 – QMI_VOICE_REASON_BARR_ OUTGOINGINT – Outgoing internal • 0x09 – QMI_VOICE_REASON_BARR_ OUTGOINGINTEXTOHOME – Outgoing external to home • 0x0A – QMI_VOICE_REASON_BARR_ ALLINCOMING – All incoming • 0x0B – QMI_VOICE_REASON_BARR_ INCOMINGROAMING – Roaming incoming • 0x0C – QMI_VOICE_REASON_BARR_ ALLBARRING – All calls are barred • 0x0D – QMI_VOICE_REASON_BARR_ ALLOUTGOINGBARRING – All outgoing calls are barred • 0x0E – QMI_VOICE_REASON_BARR_ ALLINCOMINGBARRING – All incoming calls are barred • 0x0F – QMI_VOICE_REASON_CALLWAITING – Call waiting

Optional TLVs

Name	Version last modified
Service Class	2.0
Call Barring Password	2.0
Call Forwarding Number	2.0
Call Forwarding No Reply Timer	2.0
Call Forwarding Number Type and Plan	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service class is a combination (sum) of information class constants (information class constants are described in Table A-5).
Type	0x11		1	Call Barring Password
Length	4		2	
Value	→	password	4	Password is required if call barring is provisioned using a password. Password consists of 4 ASCII digits. Range: 0000 to 9999.
Type	0x12		1	Call Forwarding Number
Length	Var		2	
Value	→	number	Var	Call forwarding number to be registered with the network; ASCII string.
Type	0x13		1	Call Forwarding No Reply Timer
Length	1		2	
Value	→	timer_value	1	Timer value in seconds (range: 5 to 30 in steps of 5) per [S21, Annex B].
Type	0x14		1	Call Forwarding Number Type and Plan
Length	2		2	
Value	→	num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_ INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_ SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_ EXTENSION – Reserved extension

Field	Field value	Parameter	Size (byte)	Description
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension

3.19.2 Response - QMI_VOICE_SET_SUPS_SERVICE_RESP

Message type

Response

Sender

Control point

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x11		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x12		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x13		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x14		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.19.3 Description of QMI_VOICE_SET_SUPS_SERVICE REQ/RESP

This command manages call-independent supplementary services, e.g., activation of call forwarding (to forward incoming calls to a third party), activation of call barring (to request the network to block some of the call attempts), and activation of call waiting (to be notified of an incoming call even when the user is engaged in an active or held call).

Some of the call-independent services are provided by the network operator as part of the service agreement. If they are not provided by default, the user has to explicitly request them. This command provides the facility to the control point for sending the explicit request to the network for enabling/disabling a specific supplementary service.

A description of service parameter of the request can be found in [S11, Section 2.2].

The optional Service Class TLV is used to request the supplementary service for a specific class, e.g., a request can be made for activating call forwarding supplementary service only for voice calls. When it is not included in the message, it is assumed that the service is requested for all default service classes.

The call barring supplementary service can be provisioned by the network using a password, in which case the password must be provided when enabling/disabling the call barring supplementary service. The optional Call Barring Password TLV is included only when the reason corresponds to the type of call barring.

For enabling the call forwarding supplementary service, a number must be provided in the request to which the incoming calls will be diverted upon successful activation of the service. The optional Call Forwarding Number TLV is used for providing the number in the request for all call forwarding services.

The optional Call Forwarding Number TLV is included in the request only when the service is set to REGISTER and the reason corresponds to one of the types of call forwarding.

The optional Call Forwarding No Reply Timer TLV is included only when the service is set to REGISTER and the reason is set to FWD_NOREPLY.

Refer to [S12], [S13], [S14], and [S8] for more details regarding call forwarding, CLIP/CLIR, call barring, and call waiting supplementary services.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

The Call Forwarding Number Type and Plan TLV is ignored when the Call Forwarding Number TLV is not included.

This command is applicable only in 3GPP devices.

3.20 QMI_VOICE_GET_CALL_WAITING

Queries the status of call waiting supplementary service (applicable only for 3GPP).

VOICE message ID

0x0034

Version introduced

Major - 2, Minor - 0

3.20.1 Request - QMI_VOICE_GET_CALL_WAITING_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version last modified
Service Class	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service class is a combination (sum) of information class constants (information class constants are described in Table A-5).

3.20.2 Response - QMI_VOICE_GET_CALL_WAITING_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Service Class is present when the result code is QMI_RESULT_SUCCESS.

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
Service Class	2.0
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5), which indicates that call waiting is active for those information classes. Service Class is set to 0 if call waiting is not active for any of the information classes.
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.

Field	Field value	Parameter	Size (byte)	Description
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.20.3 Description of QMI_VOICE_GET_CALL_WAITING REQ/RESP

This command queries the status of the call waiting supplementary service, i.e., to find whether the call waiting supplementary service is active.

The optional Service Class TLV is used to query the call waiting supplementary service for a specific class, e.g., a request can be made for querying the status of the call waiting supplementary service only for voice calls. When it is not included in the message, it is assumed that the service is requested for all default service classes.

The optional Service Class TLV value in the response indicates the information classes for which call waiting is active. The Service Class value must be set to 0 if call waiting is not active for any of the information classes.

Refer to [S8] for more details regarding call waiting supplementary services.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.21 QMI_VOICE_GET_CALL_BARRING

Queries the status of call barring supplementary service (applicable only for 3GPP).

VOICE message ID

0x0035

Version introduced

Major - 2, Minor - 0

3.21.1 Request - QMI_VOICE_GET_CALL_BARRING_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call Barring Reason	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call Barring Reason
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	reason	1	Reason. Values: • 0x07 – QMI_VOICE_REASON_BARR_ ALLOUTGOING – All outgoing • 0x08 – QMI_VOICE_REASON_BARR_ OUTGOINGINT – Outgoing internal • 0x09 – QMI_VOICE_REASON_BARR_ OUTGOINGINTEXTOHOME – Outgoing external to home • 0x0A – QMI_VOICE_REASON_BARR_ ALLINCOMING – All incoming • 0x0B – QMI_VOICE_REASON_BARR_ INCOMINGROAMING – Roaming incoming • 0x0C – QMI_VOICE_REASON_BARR_ ALLBARRING – All calls are barred • 0x0D – QMI_VOICE_REASON_BARR_ ALLOUTGOINGBARRING – All outgoing calls are barred • 0x0E – QMI_VOICE_REASON_BARR_ ALLINCOMINGBARRING – All incoming calls are barred

Optional TLVs

Name	Version last modified
Service Class	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5).

3.21.2 Response - QMI_VOICE_GET_CALL_BARRING_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Service Class is present when the result code is QMI_RESULT_SUCCESS.

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
Service Class	2.0
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5), which indicates that call barring is active for those information classes. Service Class is set to 0 if call barring is not active for any of the information classes.
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available

QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.21.3 Description of QMI_VOICE_GET_CALL_BARRING REQ/RESP

This command queries the status of the call barring supplementary service, i.e., to find whether the call barring supplementary service is active and, if active, for which service classes it is active.

The optional Service Class TLV is used to query the call barring supplementary service for a specific class, e.g., a request can be made to query the status of the call barring supplementary service only for data calls. When it is not included in the message, it is assumed that the service is requested for all default service classes.

The optional Service Class TLV value in the response indicates the information classes for which call barring is active. The Service Class value should be set to 0 if call barring is not active for any of the information classes.

Refer to [S14] for more details regarding call barring supplementary services.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.22 QMI_VOICE_GET_CLIP

Queries the status of the Calling Line Identification Presentation (CLIP) supplementary service (applicable only for 3GPP).

VOICE message ID

0x0036

Version introduced

Major - 2, Minor - 0

3.22.1 Request - QMI_VOICE_GET_CLIP_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.22.2 Response - QMI_VOICE_GET_CLIP_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

CLIP Response is present when the result code is QMI_RESULT_SUCCESS.

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
CLIP Response	2.0
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	CLIP Response
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type

Field	Field value	Parameter	Size (byte)	Description
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported

QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.22.3 Description of QMI_VOICE_GET_CLIP REQ/RESP

This command queries the status of the CLIP supplementary service.

The CLIP Response TLV indicates whether CLIP is active/inactive and provisioned/not provisioned in the network.

The active_status field is only applicable when provision_status is PROVISIONED, i.e., there is not any case where provision_status is NOT_PROVISIONED and active_status is ACTIVE.

Refer to [S13] for more details regarding CLIP.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.23 QMI_VOICE_GET_CLIR

Queries the status of the Calling Line Identification Restriction (CLIR) supplementary service (applicable only for 3GPP).

VOICE message ID

0x0037

Version introduced

Major - 2, Minor - 0

3.23.1 Request - QMI_VOICE_GET_CLIR_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.23.2 Response - QMI_VOICE_GET_CLIR_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

CLIR Response is present when the result code is QMI_RESULT_SUCCESS.

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
CLIR Response	2.0
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	CLIR Response
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED_ PERMANENT – Permanently provisioned • 0x02 – PROVISION_STATUS_PRESENTATION_ RESTRICTED – Restricted presentation • 0x03 – PROVISION_STATUS_PRESENTATION_ ALLOWED – Allowed presentation
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2

Field	Field value	Parameter	Size (byte)	Description
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response

QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.23.3 Description of QMI_VOICE_GET_CLIR REQ/RESP

This command queries the status of the CLIR supplementary service.

The active_status field is only applicable when provision_status is PROVISIONED, i.e., there is not any case where provision_status is NOT_PROVISIONED and active_status is ACTIVE.

Refer to [S13] for more details regarding CLIR.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.24 QMI_VOICE_GET_CALL_FORWARDING

Queries the status of call forwarding supplementary service (applicable only for 3GPP).

VOICE message ID

0x0038

Version introduced

Major - 2, Minor - 0

3.24.1 Request - QMI_VOICE_GET_CALL_FORWARDING_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call Forwarding Reason	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call Forwarding Reason
Length	1		2	
Value	→	reason	1	Reason. Values: • 0x01 – QMI_VOICE_REASON_FWDREASON_ UNCONDITIONAL – Unconditional call forwarding • 0x02 – QMI_VOICE_REASON_FWDREASON_ MOBILEBUSY – Forward when the mobile is busy • 0x03 – QMI_VOICE_REASON_FWDREASON_ NOREPLY – Forward when there is no reply • 0x04 – QMI_VOICE_REASON_FWDREASON_ UNREACHABLE – Forward when the call is unreachable • 0x05 – QMI_VOICE_REASON_FWDREASON_ ALLFORWARDING – All forwarding • 0x06 – QMI_VOICE_REASON_FWDREASON_ ALLCONDITIONAL – All conditional forwarding

Optional TLVs

Name	Version last modified
Service Class	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5).

3.24.2 Response - QMI_VOICE_GET_CALL_FORWARDING_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Get Call Forwarding Info is present when the result code is QMI_RESULT_SUCCESS.

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Get Call Forwarding Extended Info is present when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Get Call Forwarding Info	2.0
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5

Name	Version last modified
Call Control Supplementary Service Type	2.5
Get Call Forwarding Extended Info	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Get Call Forwarding Info
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • service_status • service_class • number_len • number • no_reply_timer
		service_status	1	Service status. Values: • 0x00 – SERVICE_STATUS_INACTIVE – Inactive • 0x01 – SERVICE_STATUS_ACTIVE – Active
		service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5).
		number_len	1	Number of sets of the following elements: • number
		number	Var	Call forwarding number in ASCII characters.
		no_reply_timer	1	No reply timer value in seconds; a value of 0 indicates that no_reply_timer is ignored.
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.
Type	0x16		1	Get Call Forwarding Extended Info
Length	Var		2	
Value	→	num_instances	1	Number of sets of the following elements: • service_status • service_class • no_reply_timer • pi • si • num_type • num_plan • num_len • num
		service_status	1	Service status. Values: • 0x00 – SERVICE_STATUS_INACTIVE – Inactive • 0x01 – SERVICE_STATUS_ACTIVE – Active
		service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5).
		no_reply_timer	1	No reply timer value in seconds; a value of 0 indicates that no_reply_timer is ignored.
		pi	1	Presentation indicator; refer to [S1, Table 2.7.4.4-1] for valid values.

Field	Field value	Parameter	Size (byte)	Description
		si	1	Screening indicator. Values: • 0x00 – QMI_VOICE_SI_USER_PROVIDED_NOT_SCREENED – Provided user is not screened • 0x01 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_PASSED – Provided user passed verification • 0x02 – QMI_VOICE_SI_USER_PROVIDED_VERIFIED_FAILED – Provided user failed verification • 0x03 – QMI_VOICE_SI_NETWORK_PROVIDED – Provided network
		num_type	1	Number type. Values: • 0x00 – QMI_VOICE_NUM_TYPE_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_TYPE_INTERNATIONAL – International • 0x02 – QMI_VOICE_NUM_TYPE_NATIONAL – National • 0x03 – QMI_VOICE_NUM_TYPE_NETWORK_SPECIFIC – Network-specific • 0x04 – QMI_VOICE_NUM_TYPE_SUBSCRIBER – Subscriber • 0x05 – QMI_VOICE_NUM_TYPE_RESERVED – Reserved • 0x06 – QMI_VOICE_NUM_TYPE_ABBREVIATED – Abbreviated • 0x07 – QMI_VOICE_NUM_TYPE_RESERVED_EXTENSION – Reserved extension
		num_plan	1	Number plan. Values: • 0x00 – QMI_VOICE_NUM_PLAN_UNKNOWN – Unknown • 0x01 – QMI_VOICE_NUM_PLAN_ISDN – ISDN • 0x03 – QMI_VOICE_NUM_PLAN_DATA – Data • 0x04 – QMI_VOICE_NUM_PLAN_TELEX – Telex • 0x08 – QMI_VOICE_NUM_PLAN_NATIONAL – National • 0x09 – QMI_VOICE_NUM_PLAN_PRIVATE – Private • 0x0B – QMI_VOICE_NUM_PLAN_RESERVED_CTS – Reserved cordless telephony system • 0x0F – QMI_VOICE_NUM_PLAN_RESERVED_EXTENSION – Reserved extension
		num_len	1	Number of sets of the following elements: • num
		num	Var	Caller ID in ASCII string.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.24.3 Description of QMI_VOICE_GET_CALL_FORWARDING REQ/RESP

This command queries the status of the call forwarding supplementary service, i.e., to find whether the call forwarding supplementary service is active and, if active, for which service classes and call forwarding number it is active.

The optional Service Class TLV is used to query the call forwarding supplementary service for a specific class, e.g., a request can be made to query the status of the call forwarding supplementary service only for voice calls. When it is not included in the message, it is assumed that the service is requested for all default service classes.

The optional Get Call Forwarding Info TLV in the response indicates in the service_class field the information classes for which call forwarding is active.

If call forwarding is not registered for any of the service classes, the response will have the number of instances set to 1 with service status set to inactive and service class set to all service classes.

Refer to [S12] for more details regarding call forwarding supplementary services.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.25 QMI_VOICE_SET_CALL_BARRING_PASSWORD

Sets a call barring password (applicable only for 3GPP).

VOICE message ID

0x0039

Version introduced

Major - 2, Minor - 0

3.25.1 Request - QMI_VOICE_SET_CALL_BARRING_PASSWORD_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call Barring Password Information	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call Barring Password Information
Length	13		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	reason	1	Reason. Values: • 0x07 – QMI_VOICE_REASON_BARR_ALLOUTGOING – All outgoing • 0x08 – QMI_VOICE_REASON_BARR_OUTGOINGINT – Outgoing internal • 0x09 – QMI_VOICE_REASON_BARR_OUTGOINGINTEXTOHOME – Outgoing external to home • 0x0A – QMI_VOICE_REASON_BARR_ALLINCOMING – All incoming • 0x0B – QMI_VOICE_REASON_BARR_INCOMINGROAMING – Roaming incoming • 0x0C – QMI_VOICE_REASON_BARR_ALLBARRING – All calls are barred • 0x0D – QMI_VOICE_REASON_BARR_ALLOUTGOINGBARRING – All outgoing calls are barred • 0x0E – QMI_VOICE_REASON_BARR_ALLINCOMINGBARRING – All incoming calls are barred
		old_password	4	Old password. Password consists of 4 ASCII digits. Range: 0000 to 9999.
		new_password	4	New password. Password consists of 4 ASCII digits. Range: 0000 to 9999.
		new_password_again	4	New password again. Password consists of 4 ASCII digits. Range: 0000 to 9999.

Optional TLVs

None

3.25.2 Response - QMI_VOICE_SET_CALL_BARRING_PASSWORD_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

Name	Version last modified
Failure_cause	2.0
Alpha Identifier	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x11		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x12		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x13		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x14		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.25.3 Description of QMI_VOICE_SET_CALL_BARRING_PASSWORD REQ/RESP

This command changes the call barring supplementary service password. Refer to [S11] for more details regarding passwords.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.26 QMI_VOICE_ORIG_USSD

Initiates an Unstructured Supplementary Service Data (USSD) operation (applicable only for 3GPP).

VOICE message ID

0x003A

Version introduced

Major - 2, Minor - 0

3.26.1 Request - QMI_VOICE_ORIG_USSD_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
USS Information	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	USS Information
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.

Optional TLVs

None

3.26.2 Response - QMI_VOICE_ORIG_USSD_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Failure_cause is present when the result code indicates failure and the qmi_error field is set to QMI_ERR_SUPS_FAILURE_CAUSE.

Alpha Identifier can be present regardless of the result code, i.e., in both success and failure cases. In case of a failure, Alpha Identifier is present only if the error code is QMI_ERR_CARD_CALL_CONTROL_FAILED.

USS data (if any) is received from the network as a response to the current USSD request. USS data is present only when the result code is QMI_RESULT_SUCCESS.

Name	Version last modified
Failure_cause	2.0
Alpha Identifier	2.0
USS Data from Network	2.0
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x11		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text

Field	Field value	Parameter	Size (byte)	Description
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x12		1	USS Data from Network
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control; ID is present when cc_result_type is present and is Voice.
Type	0x15		1	Call Control Supplementary Service Type (Supplementary service data that resulted from call control; data is present when cc_result_type is present and is other than Voice.)
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed
QMI_ERR_NETWORK_ABORTED	Operation was released abruptly by the network
QMI_ERR_ABORTED	Operation was aborted by the user

3.26.3 Description of QMI_VOICE_ORIG_USSD REQ/RESP

This command starts a new USSD operation. Refer to [S19] and [S20] for more details on USSD.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.27 QMI_VOICE_ANSWER_USSD

Responds to the USSD request from the network (applicable only for 3GPP).

VOICE message ID

0x003B

Version introduced

Major - 2, Minor - 0

3.27.1 Request - QMI_VOICE_ANSWER_USSD_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
USS Information	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	USS Information
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.

Optional TLVs

None

3.27.2 Response - QMI_VOICE_ANSWER_USSD_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.27.3 Description of QMI_VOICE_ANSWER_USSD REQ/RESP

This command sends the user‘s response to a USSD request from the network. This is used in a MO multiple USSD operation and in a network-initiated USSD request.

Refer to [S19] and [S20] for more details on USSD.

This command is applicable only in 3GPP devices.

3.28 QMI_VOICE_CANCEL_USSD

Aborts an ongoing USSD operation (applicable only for 3GPP).

VOICE message ID

0x003C

Version introduced

Major - 2, Minor - 0

3.28.1 Request - QMI_VOICE_CANCEL_USSD_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.28.2 Response - QMI_VOICE_CANCEL_USSD_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.28.3 Description of QMI_VOICE_CANCEL_USSD REQ/RESP

Only one USSD operation is possible at a time and that will be aborted.

Refer to [S19] for more details regarding USSD.

This command is applicable only in 3GPP devices.

3.29 QMI_VOICE_USSD_RELEASE_IND

Notifies clients that the USSD session is terminated by the network (applicable only for 3GPP).

VOICE message ID

0x003D

Version introduced

Major - 2, Minor - 0

3.29.1 Indication - QMI_VOICE_USSD_RELEASE_IND

Message type

Indication

Sender

Service

Indication scope

Broadcast

Mandatory TLVs

None

Optional TLVs

None

3.29.2 Description of QMI_VOICE_USSD_RELEASE_IND

This indication is sent for both user-initiated and network-initiated USSD requests upon termination (normal/abort) of the USSD requests by the network. Since there can be only one USSD operation at a time, this indication notifies that the existing USSD operation has been terminated.

For more details, refer to [S20].

This indication is applicable only in 3GPP devices.

3.30 QMI_VOICE_USSD_IND

Notifies clients about any USSD requests or notifications from the network (applicable only for 3GPP).

VOICE message ID

0x003E

Version introduced

Major - 2, Minor - 0

3.30.1 Indication - QMI_VOICE_USSD_IND

Message type

Indication

Sender

Service

Mandatory TLVs

Name	Version last modified
Notification Type	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Notification Type
Length	1		2	
Value	→	notification_type	1	Notification type. Values: • 0x01 – FURTHER_USER_ACTION_NOT_ REQUIRED – Further action is required • 0x02 – FURTHER_USER_ACTION_REQUIRED – No further action is required

Optional TLVs

Name	Version last modified
USS Data from Network	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	USS Data from Network
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.

3.30.2 Description of QMI_VOICE_USSD_IND

If the notification_type is 0x02, it means the network expects the user to respond. The user response can be sent via the QMI_VOICE_ANSWER_USSD command.

USS data (if any) sent by the network is relayed to the control point through the optional TLV.

For more details, refer to [S20].

This indication is applicable only in 3GPP devices.

3.31 QMI_VOICE_UUS_IND

Indicates a notification of User-to-User Signaling (UUS) information from the network (applicable only for 3GPP).

VOICE message ID

0x003F

Version introduced

Major - 2, Minor - 0

3.31.1 Indication - QMI_VOICE_UUS_IND

Message type

Indication

Sender

Service

Mandatory TLVs

Name	Version last modified
UUS Information**	2.0

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	UUS Information**
Length	Var		2	
Value	→	call_id	1	Unique call identifier for the call.
		uus_type	1	UUS type. Values: • 0x00 – UUS_TYPE_DATA – Data • 0x01 – UUS_TYPE1_IMPLICIT – Type 1 implicit • 0x02 – UUS_TYPE1_REQUIRED – Type 1 required • 0x03 – UUS_TYPE1_NOT_REQUIRED – Type 1 not required • 0x04 – UUS_TYPE2_REQUIRED – Type 2 required • 0x05 – UUS_TYPE2_NOT_REQUIRED – Type 2 not required • 0x06 – UUS_TYPE3_REQUIRED – Type 3 required • 0x07 – UUS_TYPE3_NOT_REQUIRED – Type 3 not required

Field	Field value	Parameter	Size (byte)	Description
		uus_dcs	1	UUS data coding scheme. Values: • 0x01 – UUS_DCS_USP – USP • 0x02 – UUS_DCS_OHLP – OHLP • 0x03 – UUS_DCS_X244 – X244 • 0x04 – UUS_DCS_SMCF – SMCF • 0x05 – UUS_DCS_IA5 – IA5 • 0x06 – UUS_DCS_RV12RD – RV12RD • 0x07 – UUS_DCS_Q931UNCCM – Q931UNCCM
		uus_data_len	1	Number of sets of the following elements: • uus_data
		uus_data	Var	UUS data encoded as per coding scheme.

Optional TLVs

None

3.31.2 Description of QMI_VOICE_UUS_IND

This indication communicates the notification of UUS information received from the network.

For more details, refer to [S5].

This indication is applicable only in 3GPP devices.

3.32 QMI_VOICE_SET_CONFIG

Sets various configuration parameters that control the modem behavior related to circuit-switched services.

VOICE message ID

0x0040

Version introduced

Major - 2, Minor - 1

3.32.1 Request - QMI_VOICE_SET_CONFIG_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version last modified
Auto Answer	2.1
Air Timer	2.1
Roam Timer	2.1
TTY mode	2.1
Preferred Voice SO	2.1
Preferred Voice Domain	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Auto Answer (value specified is written to NV_AUTO_ANSWER_I)
Length	1		2	
Value	→	auto_answer	1	Values: • 0x00 – Disable • 0x01 – Enable

Field	Field value	Parameter	Size (byte)	Description
Type	0x11		1	Air Timer (value specified is written to NV_AIR_CNT_I)
Length	5		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		air_timer	4	Time in minutes; cumulative air time is slammed.
Type	0x12		1	Roam Timer (value specified is written to NV_ROAM_CNT_I)
Length	5		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		roam_timer	4	Time in minutes; cumulative air time is slammed.
Type	0x13		1	TTY mode (value specified is written to NV_TTY_I)
Length	1		2	
Value	→	tty_mode	1	Values: • 0x00 – TTY_MODE_FULL – Full • 0x01 – TTY_MODE_VCO – Voice carry over • 0x02 – TTY_MODE_HCO – Hearing carry over • 0x03 – TTY_MODE_OFF – Off
Type	0x14		1	Preferred Voice SO (EVRC capability and preferred voice service options for the given NAM; value specified is written to NV_PREF_VOICE_SO_I)
Length	8		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		evrc_capability	1	EVRC capability. Values: • 0x00 – Disable • 0x01 – Enable
		home_page_ voice_so	2	Home page voice SO; most preferred CDMA SO to be requested from the network when receiving an incoming (MT) voice call within the home network. Values: • 0x0000 – VOICE_SO_WILD – Any service option • 0x0001 – VOICE_SO_IS_96A – IS-96A • 0x0003 – VOICE_SO_EVRC – EVRC • 0x0011 – VOICE_SO_13K_IS733 – 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE_ VOCODER – Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND – 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND – 4GV wideband • 0x8000 – VOICE_SO_13K – 13K • 0x8001 – VOICE_SO_IS_96 – IS-96 • 0x8023 – VOICE_SO_WVRC – WVRC

Field	Field value	Parameter	Size (byte)	Description
		home_orig_ voice_so	2	Home origination voice SO; most preferred CDMA SO to be requested from the network when initiating an MO voice call within the home network. Values: • 0x0000 – VOICE_SO_WILD - Any service option • 0x0001 – VOICE_SO_IS_96A - IS-96A • 0x0003 – VOICE_SO_EVRC - EVRC • 0x0011 – VOICE_SO_13K_IS733 - 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE_ VOCODER - Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND - 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND - 4GV wideband • 0x8000 – VOICE_SO_13K - 13K • 0x8001 – VOICE_SO_IS_96 - IS-96 • 0x8023 – VOICE_SO_WVRC - WVRC
		roam_orig_ voice_so	2	Roaming origination voice SO; most preferred CDMA SO to be requested from the network when initiating an MO voice call outside the home network. Values: • 0x0000 – VOICE_SO_WILD - Any service option • 0x0001 – VOICE_SO_IS_96A - IS-96A • 0x0003 – VOICE_SO_EVRC - EVRC • 0x0011 – VOICE_SO_13K_IS733 - 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE _VOCODER - Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND - 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND - 4GV wideband • 0x8000 – VOICE_SO_13K - 13K • 0x8001 – VOICE_SO_IS_96 - IS-96 • 0x8023 – VOICE_SO_WVRC - WVRC
Type	0x15		1	Preferred Voice Domain
Length	1		2	
Value	→	voice_domain	1	Values: • 0x00 – VOICE_DOMAIN_PREF_CS_ONLY – Circuit-switched (CS) only • 0x01 – VOICE_DOMAIN_PREF_PS_ONLY – Packet-switched (PS) only • 0x02 – VOICE_DOMAIN_PREF_CS_PREF – CS is preferred; PS is secondary • 0x03 – VOICE_DOMAIN_PREF_PS_PREF – PS is preferred; CS is secondary

3.32.2 Response - QMI_VOICE_SET_CONFIG_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
Auto Answer Status	2.1
Air Timer Status	2.1
Roam Timer Status	2.1
TTY Config Status	2.1
Preferred Voice SO Status	2.1
Voice Domain Preference Status	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Auto Answer Status
Length	1		2	
Value	→	auto_answer_ outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed
Type	0x11		1	Air Timer Status
Length	1		2	
Value	→	air_timer_outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed
Type	0x12		1	Roam Timer Status
Length	1		2	
Value	→	roam_timer_ outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed
Type	0x13		1	TTY Config Status
Length	1		2	
Value	→	tty_mode_outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed

Field	Field value	Parameter	Size (byte)	Description
Type	0x14		1	Preferred Voice SO Status
Length	1		2	
Value	→	pref_voice_so_ outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed
Type	0x15		1	Voice Domain Preference Status
Length	1		2	
Value	→	voice_domain_ pref_outcome	1	Values: • 0x00 – Information was written successfully • 0x01 – Information write failed

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_NOT_SUPPORTED	Request is currently not supported

3.32.3 Description of QMI_VOICE_SET_CONFIG REQ/RESP

Any invalid value in a request message causes the service point to reject the message without updating any configuration information.

In the case of a successful update of all requested information, a QMI_ERR_NONE error is returned. In the case where a subset of information failed to be written, a QMI_ERR_INTERNAL error is returned with corresponding optional TLVs for the information requested in the request message.

3.33 QMI_VOICE_GET_CONFIG

Retrieves various configuration parameters that control the modem behavior related to circuit switched services.

VOICE message ID

0x0041

Version introduced

Major - 2, Minor - 1

3.33.1 Request - QMI_VOICE_GET_CONFIG_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version last modified
Auto Answer Status	2.1
Air Timer	2.1
Roam Timer	2.1
TTY Mode	2.1
Preferred Voice SO	2.1
AMR Status	2.1
Preferred Voice Privacy	2.1
Number Assignment Module Index	2.3
Voice Domain Preference	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Auto Answer Status

Field	Field value	Parameter	Size (byte)	Description
Length	1		2	
Value	→	auto_answer	1	Value: • 0x01 – Include auto answer information in the response message
Type	0x11		1	Air Timer
Length	1		2	
Value	→	air_timer	1	Value: • 0x01 – Include air calls timer count information in the response message
Type	0x12		1	Roam Timer
Length	1		2	
Value	→	roam_timer	1	Value: • 0x01 – Include roam calls timer information in the response message
Type	0x13		1	TTY Mode
Length	1		2	
Value	→	tty_mode	1	Value: • 0x01 – Include TTY configuration status information in the response message
Type	0x14		1	Preferred Voice SO
Length	1		2	
Value	→	pref_voice_so	1	Value: • 0x01 – Include preferred voice configuration status information in the response message
Type	0x15		1	AMR Status
Length	1		2	
Value	→	amr_status	1	Value: • 0x01 – Include AMR status information in the response message
Type	0x16		1	Preferred Voice Privacy
Length	1		2	
Value	→	voice_privacy	1	Value: • 0x01 – Include preferred voice privacy status information in the response message
Type	0x17		1	Number Assignment Module Index
Length	1		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
Type	0x18		1	Voice Domain Preference
Length	1		2	
Value	→	voice_domain_pref	1	Value: • 0x01 – Include voice domain preference information in the response message

3.33.2 Response - QMI_VOICE_GET_CONFIG_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
Auto Answer Status	2.1
Air Timer Count	2.1
Roam Timer Count	2.1
Current TTY Mode	2.1
Current Preferred Voice SO	2.1
Current AMR Configuration	2.1
Current Voice Privacy Preference	2.1
Current Voice Domain Preference	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Auto Answer Status (value returned is read from NV_AUTO_ANSWER_I)
Length	1		2	
Value	→	auto_answer_status	1	Values: • 0x00 – Disabled • 0x01 – Enabled
Type	0x11		1	Air Timer Count (value returned is read from NV_AIR_CNT_I)
Length	5		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		air_timer	4	Time in minutes; cumulative air time is slammed.
Type	0x12		1	Roam Timer Count (value returned is read from NV_ROAM_CNT_I)
Length	5		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		roam_timer	4	Time in minutes; cumulative air time is slammed.
Type	0x13		1	Current TTY Mode (value returned is read from NV_TTY_I)
Length	1		2	
Value	→	current_tty_mode	1	Values: • 0x00 – TTY_MODE_FULL – Full • 0x01 – TTY_MODE_VCO – Voice carry over • 0x02 – TTY_MODE_HCO – Hearing carry over • 0x03 – TTY_MODE_OFF – Off
Type	0x14		1	Current Preferred Voice SO (EVRC capability and preferred service options; value returned is read from NV_PREF_VOICE_SO_I)
Length	8		2	
Value	→	nam_id	1	Index of the NAM (CDMA subscription) to be configured. Range: 0 to 3. Note that some modems support only 1 or 2 NAMs.
		evrc_capability	1	EVRC capability. Values: • 0x00 – Disable • 0x01 – Enable
		home_page_ voice_so	2	Home page voice SO; most preferred CDMA SO to be requested from the network when receiving an incoming (MT) voice call within the home network. Values: • 0x0000 – VOICE_SO_WILD – Any service option • 0x0001 – VOICE_SO_IS_96A – IS-96A • 0x0003 – VOICE_SO_EVRC – EVRC • 0x0011 – VOICE_SO_13K_IS733 – 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE_ VOCODER – Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND – 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND – 4GV wideband • 0x8000 – VOICE_SO_13K – 13K • 0x8001 – VOICE_SO_IS_96 – IS-96 • 0x8023 – VOICE_SO_WVRC – WVRC

Field	Field value	Parameter	Size (byte)	Description
		home_orig_ voice_so	2	Home origination voice SO; most preferred CDMA SO to be requested from the network when initiating an MO voice call within the home network. Values: • 0x0000 – VOICE_SO_WILD - Any service option • 0x0001 – VOICE_SO_IS_96A - IS-96A • 0x0003 – VOICE_SO_EVRC - EVRC • 0x0011 – VOICE_SO_13K_IS733 - 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE_ VOCODER - Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND - 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND - 4GV wideband • 0x8000 – VOICE_SO_13K - 13K • 0x8001 – VOICE_SO_IS_96 - IS-96 • 0x8023 – VOICE_SO_WVRC - WVRC
		roam_orig_ voice_so	2	Roaming origination voice SO; most preferred CDMA SO to be requested from the network when initiating an MO voice call outside the home network. Values: • 0x0000 – VOICE_SO_WILD - Any service option • 0x0001 – VOICE_SO_IS_96A - IS-96A • 0x0003 – VOICE_SO_EVRC - EVRC • 0x0011 – VOICE_SO_13K_IS733 - 13K_IS733 • 0x0038 – VOICE_SO_SELECTABLE_MODE _VOCODER - Selectable mode vocoder • 0x0044 – VOICE_SO_4GV_NARR0W_BAND - 4GV narrowband • 0x0046 – VOICE_SO_4GV_WIDE_BAND - 4GV wideband • 0x8000 – VOICE_SO_13K - 13K • 0x8001 – VOICE_SO_IS_96 - IS-96 • 0x8023 – VOICE_SO_WVRC - WVRC
Type	0x15		1	Current AMR Configuration (values returned are read from NV_GSM_ARM_CALL_CONFIG_I and NV_UMTS_AMR_CODEC_PREFERENCE_ CONFIG_I)
Length	2		2	
Value	→	gsm_amr_status	1	Values: • 0x00 – Disable • 0x01 – Enable

Field	Field value	Parameter	Size (byte)	Description
		wcdma_amr_status	1	One or a combination of the following bitmask values: • Bit 0 – QMI_VOICE_WCDMA_AMR_STATUS_NOT_SUPPORTED_BIT – AMR codec advertised is not supported • Bit 1 – QMI_VOICE_WCDMA_AMR_STATUS_WCDMA_AMR_WB_BIT – Controls WCDMA AMR wideband • Bit 2 – QMI_VOICE_WCDMA_AMR_STATUS_GSM_HR_AMR_BIT – Controls GSM half rate AMR • Bit 3 – QMI_VOICE_WCDMA_AMR_STATUS_GSM_AMR_WB_BIT – Controls GSM AMR wideband • Bit 4 – QMI_VOICE_WCDMA_AMR_STATUS_GSM_AMR_NB_BIT – Controls GSM AMR narrowband
Type	0x16		1	Current Voice Privacy Preference (value returned is read from NV_VOICE_PRIV_I)
Length	1		2	
Value	→	current_voice_privacy_pref	1	Values: • 0x00 – VOICE_PRIVACY_STANDARD – Standard privacy • 0x01 – VOICE_PRIVACY_ENHANCED – Enhanced privacy
Type	0x17		1	Current Voice Domain Preference
Length	1		2	
Value	→	voice_domain	1	Values: • 0x00 – VOICE_DOMAIN_PREF_CS_ONLY – Circuit-switched (CS) only • 0x01 – VOICE_DOMAIN_PREF_PS_ONLY – Packet-switched (PS) only • 0x02 – VOICE_DOMAIN_PREF_CS_PREF – CS is preferred; PS is secondary • 0x03 – VOICE_DOMAIN_PREF_PS_PREF – PS is preferred; CS is secondary

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_NOT_SUPPORTED	Request is currently not supported

3.33.3 Description of QMI_VOICE_GET_CONFIG REQ/RESP

Any invalid value in a request message causes the service point to reject the message without retrieving any configuration information.

The Number Assignment Module Index (TLV 0x17) is valid only when the request contains at least one of these TLVs: Air Timer, Roam Timer, and Preferred Voice SO. If no nam_id value is specified in the request, the default value is 0.

3.34 QMI_VOICE_SUPS_IND

Notifies clients about the modem-originated supplementary service requests and the responses received from the network (applicable only for 3GPP).

VOICE message ID

0x0042

Version introduced

Major - 2, Minor - 1

3.34.1 Indication - QMI_VOICE_SUPS_IND

Message type

Indication

Sender

Service

Indication scope

Unicast (per control point)

Mandatory TLVs

Name	Version last modified
Supplementary Service Info	2.1

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Supplementary Service Info
Length	2		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	service_type	1	Service type. Values: • 0x01 – SERVICE_TYPE_ACTIVATE – Activate • 0x02 – SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – SERVICE_TYPE_REGISTER – Register • 0x04 – SERVICE_TYPE_ERASE – Erase • 0x05 – SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – SERVICE_TYPE_USSD – USSD
		is_modified_by_call_control	1	Indicates whether the supplementary service data is modified by the card (SIM/USIM) as part of the call control: • 0 – False • 1 – True

Optional TLVs

Name	Version last modified
Service Class	2.1
Reason	2.1
Call Forwarding Number	2.1
Call Forwarding No Reply Timer	2.1
USS Information	2.1
Call ID	2.1
Alpha Identifier	2.1
Call Barring Password	2.1
New Password Data	2.1
Sups Data Source	2.5
Failure_cause	2.5
Call Forwarding Data from Network	2.5
CLIR Status from Network	2.5
CLIP Status from Network	2.5
COLP Status from Network	2.5
COLR Status from Network	2.5
CNAP Status from Network	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Service Class
Length	1		2	
Value	→	service_class	1	Service class is a combination (sum) of information class constants (information class constants are defined in Table A-5).

Field	Field value	Parameter	Size (byte)	Description
Type	0x11		1	Reason
Length	1		2	
Value	→	reason	1	Reason. Values: • 0x01 – VOICE_SUPS_IND_REASON_FWD_ UNCONDITIONAL – Unconditional call forwarding • 0x02 – VOICE_SUPS_IND_REASON_FWD_ MOBILEBUSY – Forward when the mobile is busy • 0x03 – VOICE_SUPS_IND_REASON_FWD_ NOREPLY – Forward when there is no reply • 0x04 – VOICE_SUPS_IND_REASON_FWD_ UNREACHABLE – Forward when the call is unreachable • 0x05 – VOICE_SUPS_IND_REASON_FWD_ ALLFORWARDING – All forwarding • 0x06 – VOICE_SUPS_IND_REASON_FWD_ ALLCONDITIONAL – All conditional forwarding • 0x07 – VOICE_SUPS_IND_REASON_BARR_ ALLOUTGOING – All outgoing • 0x08 – VOICE_SUPS_IND_REASON_BARR_ OUTGOINGINT – Outgoing internal • 0x09 – VOICE_SUPS_IND_REASON_BARR_ OUTGOINGINTEXTOHOME – Outgoing external to home • 0x0A – VOICE_SUPS_IND_REASON_BARR_ ALLINCOMING – All incoming • 0x0B – VOICE_SUPS_IND_REASON_BARR_ INCOMINGROAMING – Roaming incoming • 0x0C – VOICE_SUPS_IND_REASON_BARR_ ALLBARRING – All calls are barred • 0x0D – VOICE_SUPS_IND_REASON_BARR_ ALLOUTGOINGBARRING – All outgoing calls are barred • 0x0E – VOICE_SUPS_IND_REASON_BARR_ ALLINCOMINGBARRING – All incoming calls are barred • 0x0F – VOICE_SUPS_IND_REASON_ CALLWAITING – Call waiting • 0x10 – VOICE_SUPS_IND_REASON_CLIP – Calling line identification presentation • 0x11 – VOICE_SUPS_IND_REASON_CLIR – Calling line identification restriction • 0x12 – VOICE_SUPS_IND_REASON_COLP – Connected line identification presentation • 0x13 – VOICE_SUPS_IND_REASON_COLR – Connected line identification restriction • 0x14 – VOICE_SUPS_IND_REASON_CNAP – Calling name presentation

Field	Field value	Parameter	Size (byte)	Description
Type	0x12		1	Call Forwarding Number
Length	Var		2	
Value	→	number	Var	Call forwarding number to be registered with the network; ASCII string.
Type	0x13		1	Call Forwarding No Reply Timer
Length	1		2	
Value	→	timer_value	1	Timer value in seconds (range: 5 to 30 in steps of 5) per [S21, Annex B].
Type	0x14		1	USS Information
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.
Type	0x15		1	Call ID
Length	1		2	
Value	→	call_id	1	Call identifier of the voice call that has been modified to a supplementary service as a result of call control.
Type	0x16		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x17		1	Call Barring Password
Length	4		2	
Value	→	password	4	Password is required if call barring is provisioned using a password. Password consists of 4 ASCII digits. Range: 0000 to 9999. This also serves as the old password in the register password scenario.
Type	0x18		1	New Password Data
Length	8		2	
Value	→	new_password	4	New password. Password consists of 4 ASCII digits. Range: 0000 to 9999.
		new_password_ again	4	New password again. Password consists of 4 ASCII digits. Range: 0000 to 9999.
Type	0x19		1	Sups Data Source
Length	1		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	data_source	1	Used to distinguish between the supplementary service data sent to the network and the response received from the network. In the absence of this TLV, the supplementary service data in this indication can be assumed as a request sent to the network.
Type	0x1A		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x1B		1	Call Forwarding Data from Network
Length	Var		2	
Value	→	call_forwarding_ info_len	1	Number of sets of the following elements: • service_status • service_class • number_len • number • no_reply_timer
		service_status	1	Service status. Values: • 0x00 – SERVICE_STATUS_INACTIVE – Inactive • 0x01 – SERVICE_STATUS_ACTIVE – Active
		service_class	1	Service Class is a combination (sum) of information class constants (information class constants are described in Table A-5).
		number_len	1	Number of sets of the following elements: • number
		number	Var	Call forwarding number in ASCII characters.
		no_reply_timer	1	No reply timer value in seconds; a value of 0 indicates that no_reply_timer is ignored.
Type	0x1C		1	CLIR Status from Network
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED_ PERMANENT – Permanently provisioned • 0x02 – PROVISION_STATUS_PRESENTATION_ RESTRICTED – Restricted presentation • 0x03 – PROVISION_STATUS_PRESENTATION_ ALLOWED – Allowed presentation
Type	0x1D		1	CLIP Status from Network
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active

Field	Field value	Parameter	Size (byte)	Description
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x1E		1	COLP Status from Network
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x1F		1	COLR Status from Network
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x20		1	CNAP Status from Network
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned

3.34.2 Description of QMI_VOICE_SUPS_IND

Through this indication, the control point is informed of the self/card (SIM/USIM) generated supplementary service requests. As per [S18], during its call control operation the card (SIM/USIM) can modify the supplementary service data and can optionally give an alpha that is to be passed on to the user. Only when the call control operation is successful, the request is forwarded to the network.

When the supplementary service request originated by the control point is modified by call control, a response failure is sent followed by this indication with the modified supplementary service data and an optional alpha identifier.

A response received from the network is also sent via this indication for supplementary service requests that are:

- Not originated by the control point.
- Originated by the control point and modified by call control.

The control point must register via the QMI_VOICE_INDICATION_REGISTER command to receive this indication.

This indication is applicable only in 3GPP devices.

3.35 QMI_VOICE_ORIG_USSD_NO_WAIT

Initiates a USSD operation such that the response for this request is returned immediately and the data is returned via an indication (applicable only for 3GPP).

VOICE message ID

0x0043

Version introduced

Major - 2, Minor - 3

3.35.1 Request - QMI_VOICE_ORIG_USSD_NO_WAIT_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
USS Information	2.3

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	USS Information
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.

Optional TLVs

None

3.35.2 Response - QMI_VOICE_ORIG_USSD_NO_WAIT_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.35.3 Description of QMI_VOICE_ORIG_USSD_NO_WAIT REQ/RESP

This command starts a new USSD operation. The response to the request is sent immediately. The response result is sent to the client via the QMI_VOICE_ORIG_USSD_NO_WAIT_IND indication.

Refer to [S19] and [S20] for more details on USSD.

This command is applicable only in 3GPP devices.

3.35.4 Indication - QMI_VOICE_ORIG_USSD_NO_WAIT_IND

Message type

Indication

Sender

Service

Mandatory TLVs

None

Optional TLVs

Name	Version last modified
Error	2.3
Failure_cause	2.3
USS Data from Network	2.3
Alpha Identifier	2.3

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Error
Length	2		2	
Value	→	error	2	Type of error (if any).
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	USS Data from Network
Length	Var		2	
Value	→	uss_dcs	1	Unstructured supplementary service data coding scheme. Values: • 0x01 – USS_DCS_ASCII – ASCII coding scheme • 0x02 – USS_DCS_8BIT – 8-bit coding scheme per [S16] • 0x03 – USS_DCS_UCS2 – UCS2
		uss_len	1	Number of sets of the following elements: • uss_data
		uss_data	Var	USS data per the coding scheme.
Type	0x13		1	Alpha Identifier
Length	Var		2	

Field	Field value	Parameter	Size (byte)	Description
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.

Error codes

QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NETWORK_ABORTED	Operation was released abruptly by the network

3.35.5 Description of QMI_VOICE_ORIG_USSD_NO_WAIT_IND

This indication is received as a response for the QMI_VOICE_ORIG_USSD_NO_WAIT_REQ request.

The failure_cause is present if a QMI_ERR_SUPS_FAILURE_CAUSE error is returned.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

Refer to [S19] and [S20] for more details on USSD.

This indication is applicable only in 3GPP devices.

3.36 QMI_VOICE_BIND_SUBSCRIPTION

Binds a subscription type to a specific voice client ID.

VOICE message ID

0x0044

Version introduced

Major - 2, Minor - 8

3.36.1 Request - QMI_VOICE_BIND_SUBSCRIPTION_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Subscription Type	2.8

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Subscription Type
Length	1		2	
Value	→	subs_type	1	Values: • 0x00 – VOICE_SUBS_TYPE_PRIMARY – Primary • 0x01 – VOICE_SUBS_TYPE_SECONDARY – Secondary

Optional TLVs

None

3.36.2 Response - QMI_VOICE_BIND_SUBSCRIPTION_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ID	Invalid call ID was sent in the request
QMI_ERR_NO_SUBSCRIPTION	Device does not have a subscription

3.36.3 Description of QMI_VOICE_BIND_SUBSCRIPTION REQ/RESP

Some versions of the modem support the Dual SIM feature. With this feature the modem can register with two different cellular networks simultaneously. Each network registration is associated with a different subscription, e.g., phone number, such that the modem appears to the network to be two different users. By default, the QMI_VOICE client is bound to the primary subscription. This command allows the QMI_VOICE client to change this binding. After receiving a successful response to this command, all future commands sent by the client will affect the newly bound subscription only.

3.37 QMI_VOICE_ALS_SET_LINE_SWITCHING

Sets the line switch setting on the card (applicable only for 3GPP).

VOICE message ID

0x0045

Version introduced

Major - 2, Minor - 5

3.37.1 Request - QMI_VOICE_ALS_SET_LINE_SWITCHING_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Voice Privacy Preference	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Voice Privacy Preference
Length	1		2	
Value	→	switch_option	1	Values: • 0x00 – VOICE_LINE_SWITCHING_NOT_ ALLOWED - Line switching is not allowed • 0x01 – VOICE_LINE_SWITCHING_ALLOWED - Line switching is allowed

Optional TLVs

None

3.37.2 Response - QMI_VOICE_ALS_SET_LINE_SWITCHING_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_EFFECT	Request had no effect
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.37.3 Description of QMI_VOICE_ALS_SET_LINE_SWITCHING REQ/RESP

This command sets a line to be switchable or unswitchable, and the switch status is updated on the card.

The command is supported only for specific SIM/USIMs that support alternate line service per [S22]. For more details, refer to [S22].

A QMI_ERR_NO_EFFECT error is returned if the update on the card fails.

This command is applicable only in 3GPP devices.

3.38 QMI_VOICE_ALS_SELECT_LINE

Allows the user to select the preferred line (applicable only for 3GPP).

VOICE message ID

0x0046

Version introduced

Major - 2, Minor - 5

3.38.1 Request - QMI_VOICE_ALS_SELECT_LINE_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
ALS Line Value	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	ALS Line Value
Length	1		2	
Value	→	line_value	1	ALS line. Values: • 0x00 – ALS_LINE1 – Line 1 (default) • 0x01 – ALS_LINE2 – Line 2

Optional TLVs

None

3.38.2 Response - QMI_VOICE_ALS_SELECT_LINE_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_EFFECT	Request had no effect
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.38.3 Description of QMI_VOICE_ALS_SELECT_LINE REQ/RESP

This command allows the user to select the preferred line, and the status is updated on the card.

The command is supported only for specific SIM/USIMs that support alternate line service per [S22]. For more details, refer to [S22].

A QMI_ERR_NO_EFFECT error is returned if the update on the card fails.

This command is applicable only in 3GPP devices.

3.39 QMI_VOICE_AOC_RESET_ACM

Resets the Accumulated Call Meter (ACM) value to 0 (applicable only for 3GPP).

VOICE message ID

0x0047

Version introduced

Major - 2, Minor - 5

3.39.1 Request - QMI_VOICE_AOC_RESET_ACM_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.39.2 Response - QMI_VOICE_AOC_RESET_ACM_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_EFFECT	Request had no effect
QMI_ERR_OP_NETWORK_ UNSUPPORTED	Operation is not supported by the network
QMI_ERR_DEVICE_NOT_READY	Device is not ready

3.39.3 Description of QMI_VOICE_AOC_RESET_ACM REQ/RESP

This command resets the ACM value on the card. For more details, refer to [S23].

A QMI_ERR_NO_EFFECT error is returned if the update on the card fails.

This command is applicable only in 3GPP devices.

3.40 QMI_VOICE_AOC_SET_ACMMAX

Sets a maximum value for ACM (applicable only for 3GPP).

VOICE message ID

0x0048

Version introduced

Major - 2, Minor - 5

3.40.1 Request - QMI_VOICE_AOC_SET_ACMMAX_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Maximum Value for Accumulated Call Meter	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Maximum Value for Accumulated Call Meter
Length	4		2	
Value	→	acmmax	4	Maximum value for accumulated call meter. Range: 0 to 0xFFFFFF. ACMMAX value is in charging units; refer to [S25]for information on charging units.

Optional TLVs

None

3.40.2 Response - QMI_VOICE_AOC_SET_ACMMAX_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_EFFECT	Request had no effect
QMI_ERR_DEVICE_NOT_READY	Device is not ready

3.40.3 Description of QMI_VOICE_AOC_SET_ACMMAX REQ/RESP

This command sets a maximum ACM value on the card. For more details, refer to [S23].

A QMI_ERR_NO_EFFECT error is returned if the update on the card fails.

This command is applicable only in 3GPP devices.

3.41 QMI_VOICE_AOC_GET_CALL_METER_INFO

Retrieves the ACMMAX, Current Call Meter (CCM), and ACM values (applicable only for 3GPP).

VOICE message ID

0x0049

Version introduced

Major - 2, Minor - 5

3.41.1 Request - QMI_VOICE_AOC_GET_CALL_METER_INFO_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Call Meter Info Mask	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Call Meter Info Mask
Length	2		2	
Value	→	info_mask	2	Bitmask of the following items to be fetched. Values: • Bit 0 – QMI_VOICE_AOC_CALL_METER_INFO_ACM_BIT – ACM • Bit 1 – QMI_VOICE_AOC_CALL_METER_INFO_ACMMAX_BIT – ACMMAX • Bit 2 – QMI_VOICE_AOC_CALL_METER_INFO_CCM_BIT – CCM

Optional TLVs

None

3.41.2 Response - QMI_VOICE_AOC_GET_CALL_METER_INFO_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
Accumulated Call Meter	2.5
Maximum Accumulated Call Meter	2.5
Current Call Meter	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Accumulated Call Meter
Length	4		2	
Value	→	acm	4	ACM value is in charging units; refer to [S25] for information on charging units.
Type	0x11		1	Maximum Accumulated Call Meter
Length	4		2	
Value	→	acmmax	4	ACMMAX value is in charging units; refer to [S25] for information on charging units.
Type	0x12		1	Current Call Meter
Length	4		2	
Value	→	ccm	4	CCM value is in charging units; refer to [S25] for information on charging units.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_DEVICE_NOT_READY	Device is not ready

3.41.3 Description of QMI_VOICE_AOC_GET_CALL_METER_INFO REQ/RESP

This command fetches the ACM, ACMMAX, and CCM values. For more details, refer to [S23].

This command is applicable only in 3GPP devices.

3.42 QMI_VOICE_AOC_LOW_FUNDS_IND

Indicates that the phone is out of funds.

VOICE message ID

0x004A

Version introduced

Major - 2, Minor - 5

3.42.1 Indication - QMI_VOICE_AOC_LOW_FUNDS_IND

Message type

Indication

Sender

Service

Indication scope

Broadcast

Mandatory TLVs

None

Optional TLVs

None

3.42.2 Description of QMI_VOICE_AOC_LOW_FUNDS_IND

This indication communicates a lack of funds on the phone. For more details, refer to [S23].

3.43 QMI_VOICE_GET_COLP

Queries the status of the Connected Line identification Presentation (COLP) supplementary service (applicable only for 3GPP).

VOICE message ID

0x004B

Version introduced

Major - 2, Minor - 5

3.43.1 Request - QMI_VOICE_GET_COLP_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.43.2 Response - QMI_VOICE_GET_COLP_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
COLP Response	2.5
Failure_cause	2.5
Alpha Identifier	2.5
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	COLP Response
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID

Field	Field value	Parameter	Size (byte)	Description
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control.
Type	0x15		1	Call Control Supplementary Service Type
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.43.3 Description of QMI_VOICE_GET_COLP REQ/RESP

This command queries the status of the COLP supplementary service.

A response indicates whether COLP is active/inactive and provisioned/not provisioned in the network.

The active_status field is only applicable when provision_status is PROVISIONED, i.e., there is not any case where provision_status is NOT_PROVISIONED and active_status is ACTIVE.

Refer to [S13] for more details regarding COLP.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.44 QMI_VOICE_GET_COLR

Queries the status of the Connected Line identification Restriction (COLR) supplementary service (applicable only for 3GPP).

VOICE message ID

0x004C

Version introduced

Major - 2, Minor - 5

3.44.1 Request - QMI_VOICE_GET_COLR_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.44.2 Response - QMI_VOICE_GET_COLR_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
COLR Response	2.5
Failure_cause	2.5
Alpha Identifier	2.5
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	COLR Response
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID

Field	Field value	Parameter	Size (byte)	Description
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control.
Type	0x15		1	Call Control Supplementary Service Type
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.44.3 Description of QMI_VOICE_GET_COLR REQ/RESP

This command queries the status of the COLR supplementary service.

A response indicates whether COLR is active/inactive and provisioned/not provisioned in the network.

The active_status field is only applicable when provision_status is PROVISIONED, i.e., there is not any case where provision_status is NOT_PROVISIONED and active_status is ACTIVE.

Refer to [S13] for more details regarding COLR.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.45 QMI_VOICE_GET_CNAP

Queries the status of the Calling Name Presentation (CNAP) supplementary service (applicable only for 3GPP).

VOICE message ID

0x004D

Version introduced

Major - 2, Minor - 5

3.45.1 Request - QMI_VOICE_GET_CNAP_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.45.2 Response - QMI_VOICE_GET_CNAP_RESP

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
CNAP Response	2.5
Failure_cause	2.5
Alpha Identifier	2.5
Call Control Result Type	2.5
Call ID	2.5
Call Control Supplementary Service Type	2.5

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	CNAP Response
Length	2		2	
Value	→	active_status	1	Active status. Values: • 0x00 – ACTIVE_STATUS_INACTIVE – Inactive • 0x01 – ACTIVE_STATUS_ACTIVE – Active
		provision_status	1	Provisioned status. Values: • 0x00 – PROVISION_STATUS_NOT_ PROVISIONED – Not provisioned • 0x01 – PROVISION_STATUS_PROVISIONED – Provisioned
Type	0x11		1	Failure_cause
Length	2		2	
Value	→	failure_cause	2	Supplementary services failure cause; see Table A-3 for more information.
Type	0x12		1	Alpha Identifier
Length	Var		2	
Value	→	alpha_dcs	1	Alpha coding scheme. Values: • 0x01 – ALPHA_DCS_GSM – GSM Default_Char • 0x02 – ALPHA_DCS_UCS2 – UCS2
		alpha_len	1	Number of sets of the following elements: • alpha_text
		alpha_text	Var	Data encoded per alpha_dcs.
Type	0x13		1	Call Control Result Type
Length	1		2	
Value	→	cc_result_type	1	Values: • 0x00 – CC_RESULT_TYPE_VOICE – Voice • 0x01 – CC_RESULT_TYPE_SUPS – Supplementary service • 0x02 – CC_RESULT_TYPE_USSD – Unstructured supplementary service
Type	0x14		1	Call ID

Field	Field value	Parameter	Size (byte)	Description
Length	1		2	
Value	→	call_id	1	Call ID of the voice call that resulted from call control.
Type	0x15		1	Call Control Supplementary Service Type
Length	2		2	
Value	→	service_type	1	Service type. Values: • 0x01 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ACTIVATE – Activate • 0x02 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_DEACTIVATE – Deactivate • 0x03 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER – Register • 0x04 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_ERASE – Erase • 0x05 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_INTERROGATE – Interrogate • 0x06 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_REGISTER_PASSWORD – Register password • 0x07 – VOICE_CC_SUPS_RESULT_SERVICE_TYPE_USSD – USSD
		reason	1	Call control supplementary service result reason; see Table A-1 for more information.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_SUPS_FAILURE_CAUSE	Indicates supplementary services failure information; see Table A-3 for failure cause
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_FDN_RESTRICT	FDN restriction
QMI_ERR_CARD_CALL_CONTROL_FAILED	SIM/R-UIM call control failed

3.45.3 Description of QMI_VOICE_GET_CNAP REQ/RESP

This command is queries the status of the CNAP service.

A response indicates whether CNAP is active/inactive and provisioned/not provisioned in the network.

The active_status field is only applicable when provision_status is PROVISIONED, i.e., there is not any case where provision_status is NOT_PROVISIONED and active_status is ACTIVE.

The optional Alpha Identifier TLV is used to pass the alpha (if any) given by the SIM/R-UIM after call control. For more details, refer to [S18, Section 9.1.3].

This command is applicable only in 3GPP devices.

3.46 QMI_VOICE_MANAGE_IP_CALLS

Manages Voice over IP (VoIP) calls by using the supplementary service applicable during the call.

VOICE message ID

0x004E

Version introduced

Major - 2, Minor - 9

3.46.1 Request - QMI_VOICE_MANAGE_IP_CALLS_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version last modified
Manage IP Calls Information	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x01		1	Manage IP Calls Information
Length	1		2	
Value	→	sups_type	1	Supplementary service type during the call. Values: • 0x01 – VOIP_SUPS_TYPE_RELEASE_HELD_OR_WAITING – Release the held or waiting call • 0x02 – VOIP_SUPS_TYPE_RELEASE_ACTIVE_ACCEPT_HELD_OR_WAITING – Release the active call and accept the held or waiting call • 0x03 – VOIP_SUPS_TYPE_HOLD_ACTIVE_ACCEPT_WAITING_OR_HELD – Hold the active call and accept the waiting or held call • 0x04 – VOIP_SUPS_TYPE_MAKE_CONFERENCE_CALL – Make a conference call • 0x05 – VOIP_SUPS_TYPE_END_ALL_CALLS – End all existing calls

Optional TLVs

None

3.46.2 Response - QMI_VOICE_MANAGE_IP_CALLS_RESP

Message type

Response

Sender

Control point

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Optional TLVs

Name	Version last modified
Call ID	2.9

Field	Field value	Parameter	Size (byte)	Description
Type	0x10		1	Call ID
Length	1		2	
Value	→	call_id	1	Applicable for a conference call request (sups_type 0x04).

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_NO_RADIO	Radio is not available
QMI_ERR_NOT_SUPPORTED	Request is currently not supported
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.46.3 Description of QMI_VOICE_MANAGE_IP_CALLS REQ/RESP

This command manages calls by using various supplementary services applicable during a VoIP call.

In cases of successful command completion, if the state of any call is changed, it is indicated using QMI_VOICE_ALL_CALL_STATUS_IND. The control point must always process QMI_VOICE_ALL_CALL_STATUS_IND and update the call states.

The call_id in the response is sent to the control point only in cases of successfully establishing a conference call. This call_id identifies the new VoIP conference call.

A Additional Information

A.1 Call Control Result Reasons

Table A-1 lists the call control supplementary service result reasons.

Table A-1 Call control result reasons

Value	Name	Description
0x00	VOICE_CC_SUPS_RESULT_REASON_NONE	None
0x01	VOICE_CC_SUPS_RESULT_REASON_FWD_UNCONDITIONAL	Unconditional call forwarding
0x02	VOICE_CC_SUPS_RESULT_REASON_FWD_MOBILEBUSY	Forward when the mobile is busy
0x03	VOICE_CC_SUPS_RESULT_REASON_FWD_NOREPLY	Forward when there is no reply
0x04	VOICE_CC_SUPS_RESULT_REASON_FWD_UNREACHABLE	Forward when the call is unreachable
0x05	VOICE_CC_SUPS_RESULT_REASON_FWD_ALLFORWARDING	All forwarding
0x06	VOICE_CC_SUPS_RESULT_REASON_FWD_ALLCONDITIONAL	All conditional forwarding
0x07	VOICE_CC_SUPS_RESULT_REASON_BARR_ALLOUTGOING	All outgoing
0x08	VOICE_CC_SUPS_RESULT_REASON_BARR_OUTGOINGINT	Outgoing internal
0x09	VOICE_CC_SUPS_RESULT_REASON_BARR_OUTGOINGINTEXTOHOME	Outgoing external to home
0x0A	VOICE_CC_SUPS_RESULT_REASON_BARR_ALLINCOMING	All incoming
0x0B	VOICE_CC_SUPS_RESULT_REASON_BARR_INCOMINGROAMING	Roaming incoming
0x0C	VOICE_CC_SUPS_RESULT_REASON_BARR_ALLBARRING	All calls are barred
0x0D	VOICE_CC_SUPS_RESULT_REASON_BARR_ALLOUTGOINGBARRING	All outgoing calls are barred
0x0E	VOICE_CC_SUPS_RESULT_REASON_BARR_ALLINCOMINGBARRING	All incoming calls are barred
0x0F	VOICE_CC_SUPS_RESULT_REASON_CALLWAITING	Call waiting
0x10	VOICE_CC_SUPS_RESULT_REASON_CLIP	CLIP
0x11	VOICE_CC_SUPS_RESULT_REASON_CLIR	CLIR

Table A-1 Call control result reasons (cont.)

Value	Name	Description
0x12	VOICE_CC_SUPS_RESULT_REASON_COLP	COLP
0x13	VOICE_CC_SUPS_RESULT_REASON_COLR	COLR
0x14	VOICE_CC_SUPS_RESULT_REASON_CNAP	CNAP

A.2 Service Options

Table A-2 lists the standard service option number assignments per [S2, Table 3.1-1].

Table A-2 Service options

Value	Name	Description
0x0001	SRV_OPT_BASIC_VAR_RATE_VOICE_SERV	Basic variable rate voice service (8 kbps)
0x0002	SRV_OPT_MOBILE_STATION_LOOPBACK_8_KBPS	Mobile station loopback (8 kbps)
0x0003	SRV_OPT_ENHANCED_VAR_RATE_VOICE_SERV	Enhanced variable rate voice service (8 kbps)
0x0004	SRV_OPT_ASYNCH_DATA_SERV_9_KBPS	Asynchronous data service (9.6 kbps)
0x0005	SRV_OPT_GROUP_3_FACSIMILE_9_KBPS	Group 3 facsimile (9.6 kbps)
0x0006	SRV_OPT_SMS_RATE_SET_1	Short message service (rate set 1)
0x0007	SRV_OPT_PDS_INTERNET_OR_ISO_PROTOCOL_9_KBPS	Packet data service: Internet or ISO Protocol stack (9.6 kbps)
0x0008	SRV_OPT_PDS_CDPD_PROTOCOL_9_KBPS	Packet data service: CDPD Protocol stack (9.6 kbps)
0x0009	SRV_OPT_MOBILE_STATION_LOOPBACK_13_KBPS	Mobile station loopback (13 kbps)
0x000A	SRV_OPT_STU_III_TRANSPARENT_SERV	STU-III transparent service
0x000B	SRV_OPT_STU_III_NON_TRANSPARENT_SERV	STU-III nontransparent service
0x000C	SRV_OPT_ASYNCH_DATA_SERV_9_OR_14_KBPS	Asynchronous data service (14.4 or 9.6 kbps)
0x000D	SRV_OPT_GROUP_3_FACSIMILE_9_OR_14_KBPS	Group 3 facsimile (14.4 or 9.6 kbps)
0x000E	SRV_OPT_SMS_RATE_SET_2	Short message service (rate set 2)
0x000F	SRV_OPT_PDS_INTERNET_OR_ISO_PROTOCOL_14_KBPS	Packet data service: Internet or ISO Protocol stack (14.4 kbps)
0x0010	SRV_OPT_PDS_CDPD_PROTOCOL_14_KBPS	Packet data service: CDPD Protocol stack (14.4 kbps)
0x0011	SRV_OPT_HIGH_RATE_VOICE_SERV_13_KBPS	High-rate voice service (13 kbps)
0x0012	SRV_OPT_OTA_PARAM_ADMIN_RATE_SET_1	Over-the-air parameter administration (rate set 1)
0x0013	SRV_OPT_OTA_PARAM_ADMIN_RATE_SET_2	Over-the-air parameter administration (rate set 2)

Table A-2 Service options (cont.)

Value	Name	Description
0x0014	SRV_OPT_GROUP_3_ANALOG_FACSIMILE_RATE_SET_1	Group 3 analog facsimile (rate set 1)
0x0015	SRV_OPT_GROUP_3_ANALOG_FACSIMILE_RATE_SET_2	Group 3 analog facsimile (rate set 2)
0x0016	SRV_OPT_PDS_INTERNET_OR_ISO_PROTOCOL_RS1F_RS1R	High-speed packet data service: Internet or ISO Protocol stack (RS1 forward, RS1 reverse)
0x0017	SRV_OPT_PDS_INTERNET_OR_ISO_PROTOCOL_RS1F_RS2R	High-speed packet data service: Internet or ISO Protocol stack (RS1 forward, RS2 reverse)
0x0018	SRV_OPT_HSPDS_INTERNET_OR_ISO_PROTOCOL_RS2F_RS1R	High-speed packet data service: Internet or ISO Protocol stack (RS2 forward, RS1 reverse)
0x0019	SRV_OPT_HSPDS_INTERNET_OR_ISO_PROTOCOL_RS2F_RS2R	High-speed packet data service: Internet or ISO Protocol stack (RS2 forward, RS2 reverse)
0x001A	SRV_OPT_HSPDS_CDPD_PROTOCOL_RS1F_RS1R	High-speed packet data service: CDPD Protocol stack (RS1 forward, RS1 reverse)
0x001B	SRV_OPT_HSPDS_CDPD_PROTOCOL_RS1F_RS2R	High-speed packet data service: CDPD Protocol stack (RS1 forward, RS2 reverse)
0x001C	SRV_OPT_HSPDS_CDPD_PROTOCOL_RS2F_RS1R	High-speed packet data service: CDPD Protocol stack (RS2 forward, RS1 reverse)
0x001D	SRV_OPT_HSPDS_CDPD_PROTOCOL_RS2F_RS2R	High-speed packet data service: CDPD Protocol stack (RS2 forward, RS2 reverse)
0x001E	SRV_OPT_SUPP_CHANNEL_LOOPBACK_TEST_RATE_SET_1	Supplemental channel loopback test for rate set 1
0x001F	SRV_OPT_SUPP_CHANNEL_LOOPBACK_TEST_RATE_SET_2	Supplemental channel loopback test for rate set 2
0x0020	SRV_OPT_TDSO	Test Data Service Option (TDSO)
0x0021	SRV_OPT_CDMA2000_HSPDS_INTERNET_OR_ISO_PROTOCOL_SO_33	cdma2000 high-speed packet data service, Internet or ISO Protocol stack
0x0022	SRV_OPT_CDMA2000_HSPDS_CDPD_PROTOCOL	cdma2000 high-speed packet data service, CDPD Protocol stack
0x0023	SRV_OPT_LOCATION_SERV_RATE_SET_1	Location services, rate set 1 (9.6 kbps)
0x0024	SRV_OPT_LOCATION_SERV_RATE_SET_2	Location services, rate set 2 (14.4 kbps)
0x0025	SRV_OPT_ISDN_INTERWORKING_SERV	ISDN interworking service (64 kbps)

Table A-2 Service options (cont.)

Value	Name	Description
0x0026	SRV_OPT_GSM_VOICE	GSM voice
0x0027	SRV_OPT_GSM_CIRCUIT_DATA	GSM circuit data
0x0028	SRV_OPT_GSM_PACKET_DATA	GSM packet data
0x0029	SRV_OPT_GSM_SMS	GSM short message service
0x0036	SRV_OPT_MSO	Markov Service Option (MSO)
0x0037	SRV_OPT_LSO	Loopback Service Option (LSO)
0x0038	SRV_OPT_SELECTABLE_MODE_VOCODER	Selectable mode vocoder
0x0039	SRV_OPT_32_KBPS_CIRCUIT_VID_ CONFERENCING	32 kbps circuit video conferencing
0x003A	SRV_OPT_64_KBPS_CIRCUIT_VID_ CONFERENCING	64 kbps circuit video conferencing
0x003B	SRV_OPT_HRPD_PDS	HRPD packet data service, which when used in paging over the 1X air interface, a page response is not required
0x003C	SRV_OPT_LLA_ROHC_HEADER_REMOVAL	Link Layer Assisted Robust Header Compression (LLA ROHC) – header removal
0x003D	SRV_OPT_LLA_ROHC_HEADER_COMPRESSION	LLA ROHC – Header Compression
0x003E	SRV_OPT_VMR_WB_RATE_SET_2	Source-controlled Variable-Rate Multimode Wideband (VMR-WB) speech codec rate set 2
0x003F	SRV_OPT_VMR_WB_RATE_SET_1	Source-controlled VMR-WB speech codec rate set 1
0x0040	SRV_OPT_HRPD_AUX_PDS_INSTANCE	HRPD auxiliary packet data service instance
0x0041	SRV_OPT_CDMA2000_GPRS_INTERWORKING	cdma2000/GPRS interworking
0x0042	SRV_OPT_CDMA2000_HSPDS_INTERNET_OR_ ISO_PROTOCOL_SO_66	cdma2000 high-speed packet data service, Internet or ISO Protocol stack
0x0043	SRV_OPT_HRPD_PDS_IP_OR_ROHC	HRPD packet data IP service where higher layer protocol is IP or ROHC
0x0044	SRV_OPT_EVRC_B	Enhanced variable rate voice service (EVRC-B)
0x0045	SRV_OPT_HRPD_PDS_PAGING_REQ	HRPD packet data service, which when used in paging over the 1X air interface, a page response is required
0x0046	SRV_OPT_EVRC_WB	Enhanced variable rate voice service (EVRC-WB)
0x1004	SRV_OPT_ASYNCH_DATA_SERV_REV_1_9_OR_ 14_KBPS	Asynchronous data service, Revision 1 (9.6 or 14.4 kbps)

Table A-2 Service options (cont.)

Value	Name	Description
0x1005	SRV_OPT_GROUP_3_FACSIMILE_REV_1_9_OR_14_KBPS	Group 3 facsimile, Revision 1 (9.6 or 14.4 kbps)
0x1007	SRV_OPT_PDS_INTERNET_OR_ISO_PROTOCOL_REV_1_9_OR_14_KBPS	Packet data service: Internet or ISO Protocol stack, Revision 1 (9.6 or 14.4 kbps)
0x1008	SRV_OPT_PDS_CDPD_PROTOCOL_REV_1_9_OR_14_KBPS	Packet data service: CDPD Protocol stack, Revision 1 (9.6 or 14.4 kbps)
0x7FF8	SRV_OPT_ID_0	Identifies service reference identifier 0
0x7FF9	SRV_OPT_ID_1	Identifies service reference identifier 1
0x7FFA	SRV_OPT_ID_2	Identifies service reference identifier 2
0x7FFB	SRV_OPT_ID_3	Identifies service reference identifier 3
0x7FFC	SRV_OPT_ID_4	Identifies service reference identifier 4
0x7FFD	SRV_OPT_ID_5	Identifies service reference identifier 5
0x7FFE	SRV_OPT_ID_6	Identifies service reference identifier 6
0x7FFF	SRV_OPT_ID_7	Identifies service reference identifier 7

A.3 Call and Supplementary Services End Reasons

Table A-3 lists the values, error code names, and descriptions of possible call end reasons resulting from a connection being terminated.

Table A-3 Call and supplementary services end reasons

Value	Name	Description
0	QMI_FAILURE_CAUSE_OFFLINE	Phone is offline
20	QMI_FAILURE_CAUSE_CDMA_LOCK	Phone is CDMA locked until a power cycle; CDMA only
21	QMI_FAILURE_CAUSE_NO_SRV	Phone has no service
22	QMI_FAILURE_CAUSE_FADE	Call has ended abnormally; CDMA only
23	QMI_FAILURE_CAUSE_INTERCEPT	Received intercept from the base station; originating only; CDMA only
24	QMI_FAILURE_CAUSE_REORDER	Received reorder from the base station; originating only; CDMA only

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
25	QMI_FAILURE_CAUSE_REL_NORMAL	Received release from the base station; no reason was given
26	QMI_FAILURE_CAUSE_REL_SO_REJ	Received release from the base station; SO reject; CDMA only
27	QMI_FAILURE_CAUSE_INCOM_CALL	Received incoming call from the base station
28	QMI_FAILURE_CAUSE_ALERT_STOP	Received alert stop from the base station; incoming only; CDMA only
29	QMI_FAILURE_CAUSE_CLIENT_END	Client ended the call
30	QMI_FAILURE_CAUSE_ACTIVATION	Received end activation; OTASP call only; CDMA only
31	QMI_FAILURE_CAUSE_MC_ABORT	MC aborted the origination/conversation; CDMA only
32	QMI_FAILURE_CAUSE_MAX_ACCESS_PROBE	Maximum access probes were transmitted; CDMA only
33	QMI_FAILURE_CAUSE_PSIST_N	Persistence test failure; FEATURE_JCDMA only; CDMA only
34	QMI_FAILURE_CAUSE_UIM_NOT_PRESENT	R-UIM is not present
35	QMI_FAILURE_CAUSE_ACC_IN_PROG	Access attempt is already in progress
36	QMI_FAILURE_CAUSE_ACC_FAIL	Access failure for a reason other than the above
37	QMI_FAILURE_CAUSE_RETRY_ORDER	Received retry order; originating only; IS 2000; CDMA only
38	QMI_FAILURE_CAUSE_CCS_NOT_SUPPORTED_BYBS	Concurrent service is not supported by the base station
39	QMI_FAILURE_CAUSE_NO_RESPONSE_FROM_BS	No response was received from the base station
40	QMI_FAILURE_CAUSE_REJECTED_BY_BS	Call was rejected by the base station; CDMA only
41	QMI_FAILURE_CAUSE_INCOMPATIBLE	Concurrent services requested were not compatible; CDMA only
42	QMI_FAILURE_CAUSE_ACCESS_BLOCK	Access is blocked by the base station; CDMA only
43	QMI_FAILURE_CAUSE_ALREADY_IN_TC	Corresponds to CM_CALL_ORIG_ERR_ALREADY_IN_TC
44	QMI_FAILURE_CAUSE_EMERGENCY_FLASHED	Call is ended because an emergency call is flashed over this call; CDMA only
45	QMI_FAILURE_CAUSE_USER_CALL_ORIG_DURING_GPS	Used if CM is ending a GPS call in preference of a user call

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
46	QMI_FAILURE_CAUSE_USER_CALL_ORIG_ DURING_SMS	Used if CM is ending an SMS call in preference of a user call
47	QMI_FAILURE_CAUSE_USER_CALL_ORIG_ DURING_DATA	Used if CM is ending a data call in preference of an emergency call
48	QMI_FAILURE_CAUSE_REDIR_OR_HANDOFF	Call was rejected because of a redirection or handoff
49	QMI_FAILURE_CAUSE_ACCESS_BLOCK_ALL	Access is blocked by the base station for all mobiles; KDDI-specific; CDMA only
50	QMI_FAILURE_CAUSE_OTASP_SPC_ERR	To support OTASP SPC Error indication
51	QMI_FAILURE_CAUSE_IS707B_MAX_ACC	Maximum access probes for an IS-707B call; CDMA only
102	QMI_FAILURE_CAUSE_INCOM_REJ	WCDMA/GSM only; client rejected an incoming call
103	QMI_FAILURE_CAUSE_SETUP_REJ	WCDMA/GSM only; client rejected a setup indication
104	QMI_FAILURE_CAUSE_NETWORK_END	WCDMA/GSM only; network ended the call
105	QMI_FAILURE_CAUSE_NO_FUNDS	WCDMA/GSM only
106	QMI_FAILURE_CAUSE_NO_GW_SRV	GWM/WCDMA only; phone has no service
107	QMI_FAILURE_CAUSE_NO_CDMA_SRV	1X only; phone has no service
108	QMI_FAILURE_CAUSE_NO_FULL_SRV	Full service is unavailable
109	QMI_FAILURE_CAUSE_MAX_PS_CALLS	Indicates resources are not available to handle a new MO/MT PS call
Supplementary service errors		
110	QMI_FAILURE_CAUSE_UNKNOWN_SUBSCRIBER	See [S3, Section 4.5]
111	QMI_FAILURE_CAUSE_ILLEGAL_SUBSCRIBER	See [S3, Section 4.5]
112	QMI_FAILURE_CAUSE_BEARER_SERVICE_NOT_ PROVISIONED	See [S3, Section 4.5]
113	QMI_FAILURE_CAUSE_TELE_SERVICE_NOT_ PROVISIONED	See [S3, Section 4.5]
114	QMI_FAILURE_CAUSE_ILLEGAL_EQUIPMENT	See [S3, Section 4.5]
115	QMI_FAILURE_CAUSE_CALL_BARRED	See [S3, Section 4.5]
116	QMI_FAILURE_CAUSE_ILLEGAL_SS_OPERATION	See [S3, Section 4.5]
117	QMI_FAILURE_CAUSE_SS_ERROR_STATUS	See [S3, Section 4.5]
118	QMI_FAILURE_CAUSE_SS_NOT_AVAILABLE	See [S3, Section 4.5]
119	QMI_FAILURE_CAUSE_SS_SUBSCRIPTION_ VIOLATION	See [S3, Section 4.5]
120	QMI_FAILURE_CAUSE_SS_INCOMPATIBILITY	See [S3, Section 4.5]
121	QMI_FAILURE_CAUSE_FACILITY_NOT_ SUPPORTED	See [S3, Section 4.5]
122	QMI_FAILURE_CAUSE_ABSENT_SUBSCRIBER	See [S3, Section 4.5]

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
123	QMI_FAILURE_CAUSE_SHORT_TERM_DENIAL	See [S3, Section 4.5]
124	QMI_FAILURE_CAUSE_LONG_TERM_DENIAL	See [S3, Section 4.5]
125	QMI_FAILURE_CAUSE_SYSTEM_FAILURE	See [S3, Section 4.5]
126	QMI_FAILURE_CAUSE_DATA_MISSING	See [S3, Section 4.5]
127	QMI_FAILURE_CAUSE_UNEXPECTED_DATA_ VALUE	See [S3, Section 4.5]
128	QMI_FAILURE_CAUSE_PWD_REGISTRATION_ FAILURE	See [S3, Section 4.5]
129	QMI_FAILURE_CAUSE_NEGATIVE_PWD_CHECK	See [S3, Section 4.5]
130	QMI_FAILURE_CAUSE_NUM_OF_PWD_ ATTEMPTS_VIOLATION	See [S3, Section 4.5]
131	QMI_FAILURE_CAUSE_POSITION_METHOD_ FAILURE	See [S3, Section 4.5]
132	QMI_FAILURE_CAUSE_UNKNOWN_ALPHABET	See [S3, Section 4.5]
133	QMI_FAILURE_CAUSE_USSD_BUSY	See [S3, Section 4.5]
134	QMI_FAILURE_CAUSE_REJECTED_BY_USER	See [S3, Section 4.5]
135	QMI_FAILURE_CAUSE_REJECTED_BY_NETWORK	See [S3, Section 4.5]
136	QMI_FAILURE_CAUSE_DEFLECTION_TO_ SERVED_SUBSCRIBER	See [S3, Section 4.5]
137	QMI_FAILURE_CAUSE_SPECIAL_SERVICE_CODE	See [S3, Section 4.5]
138	QMI_FAILURE_CAUSE_INVALID_DEFLECTED_ TO_NUMBER	See [S3, Section 4.5]
139	QMI_FAILURE_CAUSE_MPTY_PARTICIPANTS_ EXCEEDED	See [S3, Section 4.5]
140	QMI_FAILURE_CAUSE_RESOURCES_NOT_ AVAILABLE	See [S3, Section 4.5]
Call control cause values		
141	QMI_FAILURE_CAUSE_UNASSIGNED_NUMBER	See [S3, Annex H]
142	QMI_FAILURE_CAUSE_NO_ROUTE_TO_ DESTINATION	See [S3, Annex H]
143	QMI_FAILURE_CAUSE_CHANNEL_ UNACCEPTABLE	See [S3, Annex H]
144	QMI_FAILURE_CAUSE_OPERATOR_ DETERMINED_BARRING	See [S3, Annex H]
145	QMI_FAILURE_CAUSE_NORMAL_CALL_ CLEARING	See [S3, Annex H]
146	QMI_FAILURE_CAUSE_USER_BUSY	See [S3, Annex H]
147	QMI_FAILURE_CAUSE_NO_USER_RESPONDING	See [S3, Annex H]
148	QMI_FAILURE_CAUSE_USER_ALERTING_NO_ ANSWER	See [S3, Annex H]
149	QMI_FAILURE_CAUSE_CALL_REJECTED	See [S3, Annex H]
150	QMI_FAILURE_CAUSE_NUMBER_CHANGED	See [S3, Annex H]
151	QMI_FAILURE_CAUSE_PREEMPTION	See [S3, Annex H]
152	QMI_FAILURE_CAUSE_DESTINATION_OUT_OF_ ORDER	See [S3, Annex H]

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
153	QMI_FAILURE_CAUSE_INVALID_NUMBER_ FORMAT	See [S3, Annex H]
154	QMI_FAILURE_CAUSE_FACILITY_REJECTED	See [S3, Annex H]
155	QMI_FAILURE_CAUSE_RESP_TO_STATUS_ ENQUIRY	See [S3, Annex H]
156	QMI_FAILURE_CAUSE_NORMAL_UNSPECIFIED	See [S3, Annex H]
157	QMI_FAILURE_CAUSE_NO_CIRCUIT_OR_ CHANNEL_AVAILABLE	See [S3, Annex H]
158	QMI_FAILURE_CAUSE_NETWORK_OUT_OF_ ORDER	See [S3, Annex H]
159	QMI_FAILURE_CAUSE_TEMPORARY_FAILURE	See [S3, Annex H]
160	QMI_FAILURE_CAUSE_SWITCHING_EQUIPMENT_ CONGESTION	See [S3, Annex H]
161	QMI_FAILURE_CAUSE_ACCESS_INFORMATION_ DISCARDED	See [S3, Annex H]
162	QMI_FAILURE_CAUSE_REQUESTED_CIRCUIT_ OR_CHANNEL_NOT_AVAILABLE	See [S3, Annex H]
163	QMI_FAILURE_CAUSE_RESOURCES_ UNAVAILABLE_OR_UNSPECIFIED	See [S3, Annex H]
164	QMI_FAILURE_CAUSE_QOS_UNAVAILABLE	See [S3, Annex H]
165	QMI_FAILURE_CAUSE_REQUESTED_FACILITY_ NOT_SUBSCRIBED	See [S3, Annex H]
166	QMI_FAILURE_CAUSE_INCOMING_CALLS_ BARRED_WITHIN_CUG	See [S3, Annex H]
167	QMI_FAILURE_CAUSE_BEARER_CAPABILITY_ NOT_AUTH	See [S3, Annex H]
168	QMI_FAILURE_CAUSE_BEARER_CAPABILITY_ UNAVAILABLE	See [S3, Annex H]
169	QMI_FAILURE_CAUSE_SERVICE_OPTION_ NOT_AVAILABLE	See [S3, Annex H]
170	QMI_FAILURE_CAUSE_ACM_LIMIT_EXCEEDED	See [S3, Annex H]
171	QMI_FAILURE_CAUSE_BEARER_SERVICE_NOT_ IMPLEMENTED	See [S3, Annex H]
172	QMI_FAILURE_CAUSE_REQUESTED_FACILITY_ NOT_IMPLEMENTED	See [S3, Annex H]
173	QMI_FAILURE_CAUSE_ONLY_DIGITAL_ INFORMATION_BEARER_AVAILABLE	See [S3, Annex H]
174	QMI_FAILURE_CAUSE_SERVICE_OR_OPTION_ NOT_IMPLEMENTED	See [S3, Annex H]
175	QMI_FAILURE_CAUSE_INVALID_TRANSACTION_ IDENTIFIER	See [S3, Annex H]
176	QMI_FAILURE_CAUSE_USER_NOT_MEMBER_ OF_CUG	See [S3, Annex H]
177	QMI_FAILURE_CAUSE_INCOMPATIBLE_ DESTINATION	See [S3, Annex H]

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
178	QMI_FAILURE_CAUSE_INVALID_TRANSIT_NW_ SELECTION	See [S3, Annex H]
179	QMI_FAILURE_CAUSE_SEMANTICALLY_ INCORRECT_MESSAGE	See [S3, Annex H]
180	QMI_FAILURE_CAUSE_INVALID_MANDATORY_ INFORMATION	See [S3, Annex H]
181	QMI_FAILURE_CAUSE_MESSAGE_TYPE_NON_ IMPLEMENTED	See [S3, Annex H]
182	QMI_FAILURE_CAUSE_MESSAGE_TYPE_NOT_ COMPATIBLE_WITH_PROTOCOL_STATE	See [S3, Annex H]
183	QMI_FAILURE_CAUSE_INFORMATION_ELEMENT_ NON_EXISTENT	See [S3, Annex H]
184	QMI_FAILURE_CAUSE_CONDITONAL_IE_ERROR	See [S3, Annex H]
185	QMI_FAILURE_CAUSE_MESSAGE_NOT_ COMPATIBLE_WITH_PROTOCOL_STATE	See [S3, Annex H]
186	QMI_FAILURE_CAUSE_RECOVERY_ON_TIMER_ EXPIRED	See [S3, Annex H]
187	QMI_FAILURE_CAUSE_PROTOCOL_ERROR_ UNSPECIFIED	See [S3, Annex H]
188	QMI_FAILURE_CAUSE_INTERWORKING_ UNSPECIFIED	See [S3, Annex H]
189	QMI_FAILURE_CAUSE_OUTGOING_CALLS_ BARRED_WITHIN_CUG	See [S3, Annex H]
190	QMI_FAILURE_CAUSE_NO_CUG_SELECTION	See [S3, Annex H]
191	QMI_FAILURE_CAUSE_UNKNOWN_CUG_INDEX	See [S3, Annex H]
192	QMI_FAILURE_CAUSE_CUG_INDEX_ INCOMPATIBLE	See [S3, Annex H]
193	QMI_FAILURE_CAUSE_CUG_CALL_FAILURE_ UNSPECIFIED	See [S3, Annex H]
194	QMI_FAILURE_CAUSE_CLIR_NOT_SUBSCRIBED	See [S3, Annex H]
195	QMI_FAILURE_CAUSE_CCBS_POSSIBLE	See [S3, Annex H]
196	QMI_FAILURE_CAUSE_CCBS_NOT_POSSIBLE	See [S3, Annex H]
MM/GMM reject causes		
197	QMI_FAILURE_CAUSE_IMSI_UNKNOWN_IN_HLR	See [S3, Section 10.5.3.6]
198	QMI_FAILURE_CAUSE_ILLEGAL_MS	See [S3, Section 10.5.3.6]
199	QMI_FAILURE_CAUSE_IMSI_UNKNOWN_IN_VLR	See [S3, Section 10.5.3.6]
200	QMI_FAILURE_CAUSE_IMEI_NOT_ACCEPTED	See [S3, Section 10.5.3.6]
201	QMI_FAILURE_CAUSE_ILLEGAL_ME	See [S3, Section 10.5.3.6]
202	QMI_FAILURE_CAUSE_PLMN_NOT_ALLOWED	See [S3, Section 10.5.3.6]
203	QMI_FAILURE_CAUSE_LOCATION_AREA_NOT_ ALLOWED	See [S3, Section 10.5.3.6]
204	QMI_FAILURE_CAUSE_ROAMING_NOT_ ALLOWED_IN_THIS_LOCATION_AREA	See [S3, Section 10.5.3.6]
205	QMI_FAILURE_CAUSE_NO_SUITABLE_CELLS_ IN_LOCATION_AREA	See [S3, Section 10.5.3.6]
206	QMI_FAILURE_CAUSE_NETWORK_FAILURE	See [S3, Section 10.5.3.6]

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
207	QMI_FAILURE_CAUSE_MAC_FAILURE	See [S3, Section 10.5.3.6]
208	QMI_FAILURE_CAUSE_SYNCH_FAILURE	See [S3, Section 10.5.3.6]
209	QMI_FAILURE_CAUSE_NETWORK_CONGESTION	See [S3, Section 10.5.3.6]
210	QMI_FAILURE_CAUSE_GSM_AUTHENTICATION_ UNACCEPTABLE	See [S3, Section 10.5.3.6]
211	QMI_FAILURE_CAUSE_SERVICE_NOT_ SUBSCRIBED	See [S3, Section 10.5.3.6]
212	QMI_FAILURE_CAUSE_SERVICE_TEMPORARILY_ OUT_OF_ORDER	See [S3, Section 10.5.3.6]
213	QMI_FAILURE_CAUSE_CALL_CANNOT_BE_ IDENTIFIED	See [S3, Section 10.5.3.6]
214	QMI_FAILURE_CAUSE_INCORRECT_SEMANTICS_ IN_MESSAGE	See [S3, Section 10.5.3.6]
215	QMI_FAILURE_CAUSE_MANDATORY_ INFORMATION_INVALID	See [S3, Section 10.5.3.6]
216	QMI_FAILURE_CAUSE_ACCESS_STRATUM_ FAILURE	Call failed due to other access stratum failures
217	QMI_FAILURE_CAUSE_INVALID_SIM	SIM is invalid
218	QMI_FAILURE_CAUSE_WRONG_STATE	Invalid call state
229	QMI_FAILURE_CAUSE_ACCESS_CLASS_BLOCKED	Access class is blocked
220	QMI_FAILURE_CAUSE_NO_RESOURCES	No resources are in the protocol stack to allow the call
221	QMI_FAILURE_CAUSE_INVALID_USER_DATA	Invalid user data was received
MM reject causes		
222	QMI_FAILURE_CAUSE_TIMER_T3230_EXPIRED	Timer T3230 is expired
223	QMI_FAILURE_CAUSE_NO_CELL_AVAILABLE	No cell is available
224	QMI_FAILURE_CAUSE_ABORT_MSG_RECEIVED	Abort message was received
225	QMI_FAILURE_CAUSE_RADIO_LINK_LOST	Radio link was lost due to other lower layer causes
CNM reject causes		
226	QMI_FAILURE_CAUSE_TIMER_T303_EXPIRED	Timer T303 is expired
227	QMI_FAILURE_CAUSE_CNM_MM_REL_PENDING	CNM MM release is pending
Access stratum reject causes		
228	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ RR_REL_IND	Access stratum RR release indication
229	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ RR_RANDOM_ACCESS_FAILURE	Access stratum random access failure
230	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ RRC_REL_IND	Access stratum RRC release indication
231	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ RRC_CLOSE_SESSION_IND	Access stratum close session indication
232	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ RRC_OPEN_SESSION_FAILURE	Access stratum open session failure
233	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ LOW_LEVEL_FAIL	Access stratum low level failure

Table A-3 Call and supplementary services end reasons (cont.)

Value	Name	Description
234	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_LOW_LEVEL_FAIL_REDIAL_NOT_ALLOWED	Access stratum low level failure redial is not allowed
235	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_LOW_LEVEL_IMMED_RETRY	Access stratum low level immediate retry
236	QMI_FAILURE_CAUSE_ACCESS_STRATUM_REJ_ABORT_RADIO_UNAVAILABLE	Access stratum abort radio is unavailable
OTA reject causes		
237	QMI_FAILURE_CAUSE_SERVICE_OPTION_NOT_SUPPORTED	Service option is not supported

A.4 Supplementary Service Notifications

Supplementary service notification types are listed in Table A-4.

Table A-4 Supplementary service notifications description

Value	Type	Description
1	OUTGOING_CALL_IS_FORWARDED	Originated MO call is being forwarded to another user
2	OUTGOING_CALL_IS_WAITING	Originated MO call is waiting at the called user
3	OUTGOING_CUG_CALL	Outgoing call is a CUG call
4	OUTGOING_CALLS_BARRED	Outgoing calls are barred
5	OUTGOING_CALL_IS_DEFLECTED	Outgoing call is deflected
6	INCOMING_CUG_CALL	Incoming call is a CUG call
7	INCOMING_CALLS_BARRED	Incoming calls are barred
8	INCOMING_FORWARDED_CALL	Incoming call received is a forwarded call
9	INCOMING_DEFLECTED_CALL	Incoming call is a deflected call
10	INCOMING_CALL_IS_FORWARDED	Incoming call is forwarded to another user
11	UNCOND_CALL_FORWARD_ACTIVE	Unconditional call forwarding is active
12	COND_CALL_FORWARD_ACTIVE	Conditional call forwarding is active
13	CLIR_SUPPRESSION_REJECTED	CLIR suppression is rejected
14	CALL_IS_ON_HOLD	Call is put on hold at the remote party
15	CALL_IS_RETRIEVED	Call is retrieved at the remote party from the Hold state
16	CALL_IS_IN_MPTY	Call is in a conference
17	INCOMING_CALL_IS_ECT	Incoming call is an explicit call transfer

A.5 Supplementary Service Information Classes

Supplementary service information classes are listed in Table A-5.

Table A-5 Supplementary service information classes

No.	Service class	Value
1	CLASS_NONE	0X00
2	CLASS_VOICE	0X01
3	CLASS_DATA	0X02
4	CLASS_FAX	0X04
5	CLASS_SMS	0X08
6	CLASS_DATACIRCUITSYNC	0X10
7	CLASS_DATACIRCUITASYNC	0X20
8	CLASS_PACKETACCESS	0X40
9	CLASS_PADACCESS	0X80

A.6 Mapping of MMI Service Code to Service Information Classes

Mapping of the MMI service code values, as defined in [S21, Annex C], to the service information class values are described in Table A-6.

Table A-6 Mapping of MMI service code to service information classes

Value	Telecommunication service	MMI service code value	Service class combination	Service class value
1	All teleservices	10	CLASS_VOICE + CLASS_FAX + CLASS_SMS	0x0D
2	Telephony	11	CLASS_VOICE	0x01
3	All data teleservices	12	CLASS_FAX + CLASS_SMS	0x0C
4	Facsimile services	13	CLASS_FAX	0x04
5	Short message services	16	CLASS_SMS	0x08
6	All teleservices except SMS	19	CLASS_VOICE + CLASS_FAX	0x05
7	All bearer services	20	CLASS_DATACIRCUITSYNC + CLASS_DATACIRCUITASYNC	0x30
8	All async services	21	CLASS_DATACIRCUITASYNC + CLASS_ PADACCESS	0xA0
9	All sync services	22	CLASS_ DATACIRCUITSYNC + CLASS_PACKETACCESS	0x50
10	All data circuit sync	24	CLASS_DATACIRCUITSYNC	0x10
11	All data circuit async	25	CLASS_DATACIRCUITASYNC	0x20
12	Telephony and all sync services	26	CLASS_DATACIRCUITSYNC + CLASS_VOICE	0x11
13	All GPRS bearer services	99	CLASS_PACKETACCESS	0x40

A.7 Known Issues, Assumptions, and Llimitations

Known issues/assumptions/limitations are:

- UUS data decoding is left to the control points; the UUS coding scheme and data are passed transparently to the control point.
- Type of Address (TOA) of the calling number must be derived by the control point based on the first character of the calling number, i.e., if the first character is “+”, then type should be considered as international.
- CLIR activation is not supported because the 3GPP specification does not allow CLIR activation; if there is any API in the High-Level Operating System (HLOS), the control point must take care of its handling and include the CLIR type in QMI_VOICE_DIAL_CALL_REQ.
- Service class values and their possible combinations (mapping to MMI values) are described in Section A.6; the control point must take care of mapping the service class received from the respective HLOS framework to these values.
- As a part of call control, if a card modifies the call type from voice to a supplementary service/USSD, the call type change (to SUPS) is indicated to the control point through QMI_VOICE_ALL_CALL_STATUS_IND. The subsequent supplementary service notifications (if any) that are expected to be sent to the control point are not supported in this version.

B Changes from Voice 1.0 to Voice 2.0

The goal of QMI is to maintain backward compatibility at all times. Voice 2.0 could not achieve this goal of being backward compatible. QMI_VOICE_CALL_STATUS_IND failed to report the status of UMTS calls during the process of adding UMTS support to Voice 1.0.

To replace the QMI_VOICE_CALL_STATUS_IND indication with a new indication, it would still require the Voice service to give the old indication with a mandatory TLV. This change was misleading to clients using Voice 1.0 interface. Hence, a decision was made to increase the major number from Voice 1.0 to Voice 2.0. The developers capitalized on this one-time opportunity and made other clean-up changes as well.

B.1 Changes that Affect Voice 1.0 Clients

This section describes the non-backward compatible changes made between Voice 1.0 and Voice 2.0:

- QMI_VOICE_CALL_STATUS_IND is removed from Voice 2.0 and is replaced with QMI_VOICE_ALL_CALL_STATUS_IND. The control point now uses QMI_VOICE_ALL_CALL_STATUS_IND to detect when a call is originated, connected, or ended. This change is made to accommodate 3GPP multiparty (conference) call scenarios. When the state of calls change in multiparty call scenarios, it is logical for the new state of all calls to be reported in one consolidated indication.
- QMI_VOICE_ANSWER_CALL is used only to answer the initial incoming voice call. For additional incoming calls like call waiting, use QMI_VOICE_SEND_FLASH for 3GPP2 (CDMA) and QMI_VOICE_MANAGE_CALLS for 3GPP (UMTS).
- Some of the TLVs such as Call ID were incorrectly numbered in Voice 1.0. To adhere to the optional TLVs convention that starts at 0x10, some TLVs were renumbered, as listed in Table B-1.

Table B-1 Renumbered TLVs

Interface	Type	New TLV number
QMI_VOICE_DIAL_CALL	Response	0x10 Call ID
QMI_VOICE_END_CALL	Response	0x10 Call ID
QMI_VOICE_ANSWER_CALL	Response	0x10 Call ID
QMI_VOICE_SEND_FLASH*	Response	0x10 Call ID
QMI_VOICE_START_CONT_DTMF	Response	0x10 Call ID
QMI_VOICE_STOP_CONT_DTMF	Response	0x10 Call ID
QMI_VOICE_BURST_DTMF*	Response	0x10 Call ID
QMI_VOICE_GET_CALL_INFO	Response	• 0x10 Call Information • 0x11 Remote Party Number • 0x12 Service Option* • 0x13 Voice Privacy* • 0x14 OTASP Status*

B.2 Extensions for Voice 2.0

The changes described in this section do not affect compatibility between Voice 1.0 and Voice 2.0. This information is provided to document the differences between the two major revisions of Voice Service.

Table B-2 lists the new messages added for Voice 2.0. These new messages are added to support GSM/UMTS voice and supplementary services.

Table B-2 New interface

New interface
QMI_VOICE_ALL_CALL_STATUS_IND
QMI_VOICE_GET_ALL_CALL_INFO
QMI_VOICE_MANAGE_CALLS**
QMI_VOICE_SUPS_NOTIFICATION_IND**
QMI_VOICE_SET_SUPS_SERVICE**
QMI_VOICE_GET_CALL_WAITING**
QMI_VOICE_GET_CALL_BARRING**
QMI_VOICE_GET_CLIP**
QMI_VOICE_GET_CLIR**
QMI_VOICE_GET_CALL_FORWARDING**
QMI_VOICE_SET_CALL_BARRING_PASSWORD**
QMI_VOICE_ORIG_USSD**
QMI_VOICE_ANSWER_USSD**
QMI_VOICE_CANCEL_USSD**
QMI_VOICE_USSD_RELEASE_IND**
QMI_VOICE_USSD_IND**
QMI_VOICE_UUS_IND**

Table B-3 lists the TLVs that were added as part of Voice 2.0. These new TLVs are added primarily to support GSM and UMTS voice calls.

Table B-3 New TLVs

Interface	Type	New TLV
QMI_VOICE_INDICATION_REGISTER	Request	0x12 Supplementary Service Notification Events**
QMI_VOICE_DIAL_CALL	Request	• 0x11 CLIR in temporary mode ** • 0x12 UUS** • 0x13 CUG**
	Response	0x11 Alpha Identifier
QMI_VOICE_GET_CALL_INFO	Response	• 0x15 Remote Party Name** • 0x16 UUS Information** • 0x17 Alerting Type**
QMI_VOICE_BURST_DTMF*	Request	0x10 DTMF Lengths*