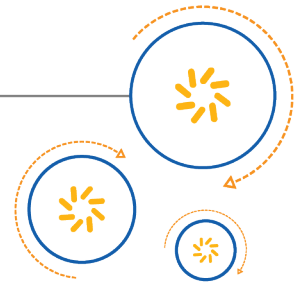Qualcomm Technologies, Inc.

QMI NAS 1.156 for MPSS.JO.1.0

QMI Network Access Service Spec

80-NV300-6 D

February 10, 2016

Revision History

Revision	Date	Description
A	Dec 2014	Initial release. Created from 80-NH952-6 AH.
		Updates for this revision include minor version 123 through minor version 130.
		Updated optional HS call status TLV (Sections 3.12.2 and 3.13.1).
		Added new TLVs:
		• T3346 timer status change
		• Call mode status
		• Service-specific access class barring information for voice calls – SIB2
		• Service-specific access class barring information for video calls – SIB2
		Added new messages:
		• QMI_NAS_AVOID_TUNEAWAY (Section 3.122)
		• QMI_NAS_SET_MCC (Section 3.123)
		• QMI_NAS_SET_DATA_ROAMING (Section 3.124)
		• QMI_NAS_GET_DATA_ROAMING (Section 3.125)
		• QMI_NAS_SET_SRVCC (Section 3.126)
		• QMI_NAS_SET_BSR_TIMER (Section 3.127)
		• QMI_NAS_GET_BSR_TIMER (Section 3.128)
		• QMI_NAS_SET_DRX_SCALING_FACTOR (Section 3.129)
B	Jul 2015	Updates for this revision include minor version 131 through minor version 143.
		Updated:
		• Mandatory TLVs:
		– RF band information list (Section 3.26.2)
		– RF band information (Section 3.76.1)
		– Limit sys info change reporting (Sections 3.86.1 and 3.87.2)
		– Radio access technology (Section 3.88.1)
		– LTE band priority list (Section 3.100.1)
		• Optional TLVs:
		– RF band information list (Section 3.4.1)
		– RF dedicated band information list (Sections 3.26.2 and 3.76.1)
		– RF band information list, extended format (Sections 3.26.2 and 3.76.1)
		– Scell information (Section 3.102.1)
		– Pcell information (Section 3.102.1)
		– LTE band priority list (Section 3.103.2)
		– LTE supported band priority list (Section 3.103.2)
		• Sections 3.28.3, 3.102.2, 3.108.3, and 3.110.3
		Added the following error codes to QMI_NAS_SET_DUAL_STANDBY_PREF_RESP_MSG (Section 3.49.2):
		• QMI_ERR_DEVICE_IN_USE
		• QMI_ERR_INCOMPATIBLE_STATE

Revision	Date	Description
B (cont.)	Jul 2015	Updates for minor version 131 through minor version 143 (cont.):

Added new TLVs:

- Service-specific access class barring ext
- Manual network scan failure
- LTE band preference extended
- Force preferences
- Disabled RAT bitmask
- DDS switch cause
- Scell index

Added new messages:

- QMI_NAS_SET_SSAC_HYSTERESIS_TIMER (Section 3.130)
- QMI_NAS_GET_SSAC_HYSTERESIS_TIMER (Section 3.131)
- QMI_NAS_GET_HDR_INFO (Section 3.132)
- QMI_NAS_GET_HDR_DRC_RATE (Section 3.133)
- QMI_NAS_SET_RPM_PARAMETERS (Section 3.134)
- QMI_NAS_GET_RPM_PARAMETERS (Section 3.135)
- QMI_NAS_SET_RPM_STATE (Section 3.136)
- QMI_NAS_GET_LTE_CPHY_CA_INFO (Section 3.137)
- QMI_NAS_MANUAL_SCAN_FAIL_IND (Section 3.138)
- QMI_NAS_GET_NEGOTIATED_DRX (Section 3.139)

Updated Table A-1; added:

- 154 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_32
- 155 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_125
- 156 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_126
- 157 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_127
- 158 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_28
- 159 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_29
- 160 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_30

Updated Table A-3; added:

- Bit 29 – E_UTRA_OPERATING_BAND_32
- Bit 60 – E_UTRA_OPERATING_BAND_125
- Bit 61 – E_UTRA_OPERATING_BAND_126
- Bit 62 – E_UTRA_OPERATING_BAND_127

Moved reference documents and acronyms to an appendix.

Revision	Date	Description
C	Dec 2015	Updates for this revision include minor version 144 through minor version 150.
		Updated:
		• Mandatory TLV: Limit sys info change reporting (Sections 3.86.1 and 3.87.2) • Optional TLVs: – LTE band preference (Sections 3.9.1 and 3.105.1) – CSG search LTE band preference (Sections 3.108.1 and 3.110.2)
		Added new TLVs:
		• Timer expiry • Emergency mode status • NAS info - EMM state • NAS info - EMM substate • NAS info - RRC state
		Added new messages:
		• QMI_NAS_SET_CELL_LOCK_CONFIG (Section 3.140) • QMI_NAS_LTE_UE_CONFIG_MSG (Section 3.141) • QMI_NAS_TIMER_EXPIRY_IND (Section 3.142) • QMI_NAS_EMERGENCY_MODE_STATUS_IND (Section 3.143) • QMI_NAS_ECALL_DEREGISTRATION (Section 3.144)
		Updated Table A-3; added Bit 31 – E_UTRA_OPERATING_BAND_30
D	Feb 2016	Updates for this revision include minor version 151 through minor version 156.
		Updated:
		• Mandatory TLVs: – LTE band priority list (Sections 3.100.1 and 3.103.2) – LTE supported band priority list (Section 3.103.2) • Optional TLV: Scan type (Sections 3.9.1 and 3.105.1)
		Added new TLVs:
		• PCI information • Default data subscription type
		Added new messages:
		• QMI_NAS_UPDATE_CA_BAND_COMBO_MSG (Section 3.145) • QMI_NAS_GET_CA_BAND_COMBO_MSG (Section 3.146) • QMI_NAS_ECALL_TIMER_RESTART_MSG (Section 3.147)
		Updated Table A-1; added: • 161 – NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_66

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1 Introduction

1.1 Purpose

This specification documents Major Version 1 of the Qualcomm Messaging Interface (QMI) for Network Access Service (QMI_NAS).

QMI_NAS provides applications running on a host PC with commands related to network access:

- Signal strength

- Network registration and attach

- Serving system

- Network scan

- Home, preferred, and forbidden networks

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

1.2 Scope

This document is intended for QMI clients to perform operations and to learn about network access for Qualcomm MSM devices via the QMI_NAS.

This document provides the following details about QMI_NAS:

- Theory of operation – Chapter 2 provides the theory of operation of QMI_NAS. The chapter includes messaging conventions, assigned QMI service type, 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_NAS specification.

- Call flows and additional information – Appendix A through Appendix D provide tables for band class, band preferences, and HDR session close reasons; call flow scenarios; a list of deprecated messages; and references and acronyms.

1.3   Conventions

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

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

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

1.4   Technical Assistance

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

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

2 Theory of Operation

2.1 Generalized QMI Service Compliance

The QMI_NAS 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 80-VB816-1. Extensions to the generalized QMI service theory of operation are noted in subsequent sections of this chapter.

2.2 NAS Service Type

NAS is assigned QMI service type 0x03.

2.3 Message Definition Template

2.3.1 Response Message Result TLV

This Type-Length-Value (TLV) is present in all Response messages defined in this document. It is not present in the Indication messages.

Name	Version introduced	Version last modified
Result Code	Corresponding response's *Version introduced*	Corresponding response's *Version last modified*

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x02			1	Result Code
Length	4			2	
Value	→	uint16	qmi_result	2	Result code • QMI_RESULT_SUCCESS • QMI_RESULT_FAILURE
		uint16	qmi_error	2	Error code – Possible error code values are described in the error codes section of each message definition

2.4   QMI_NAS Fundamental Concepts

The QMI_NAS service provides NAS to its control points. These services include interfaces to control registration, attachment, and network selection performed by the device, as well as interfaces to obtain status information regarding the visible and serving networks.

To get service, the MSM device must register with a network and select the type of service it desires.

The registration procedure is performed to notify the network of the mobile's presence and to validate that the user is allowed to use the network. The control point can select Automatic Registration mode, in which the device chooses the network with which to register. The control point can also select Manual Registration mode, in which it can specify a particular PLMN (MCC + MNC) with which to register. Note that the concept of user-driven manual registration is defined only in the 3GPP wireless standard. In 3GPP2 standards, the device always operates in Automatic Registration mode.

QMI_NAS also allows control points to perform a 3GPP network scan to discover the 3GPP networks that are currently visible to the device. The control point can then use this information to select a network for manual registration.

In the 3GPP wireless standard, the device must be attached to a service domain when it is registered on a network. This is a way to identify to the network which services may be used by the device during its registration. Service domains include Packet-Switched (PS) and Circuit-Switched (CS) data services.

QMI control points can control this registration, network selection, and service domain attachment using QMI_NAS. The control points can also query the home network of the device. The home network of the device includes the MCC and MNC derived from the IMSI.

In the 3GPP wireless standard, there is a list of preferred and forbidden networks stored on a UIM, such as a SIM.

The preferred networks list is a list of networks which the device prefers to register to in priority order. During automatic registration, the device gives preference to the listed networks over other visible networks.

The forbidden networks list is a list of networks with which the device will not register.

QMI_NAS enables the control point to query and update these preferred and forbidden network lists. QMI_NAS control points can also learn the network providing service and details of that service provided to the device. This includes the registration state, available service domains, registered network, and the radio technology in use.

A wireless device obtains a number of services, e.g., voice service and IP data service, via a radio that may act in accordance with different wireless standards. The radio technology indicates which wireless standard is currently in use by the device.

QMI control points may wish to monitor the signal strength measured by the device.

Generally, the control point can obtain the above information via a polling mechanism (Request and Response messages).

The signal strength change can also be reported via asynchronous indications. The control point can register signal strength thresholds. An asynchronous indication is sent when the current signal strength crosses one of the thresholds registered by the control point.

These event-reporting settings registered by the control point are stored in the control point's service state variables.

The Reset message can be used to clear these settings, restoring them to their default values.

2.5   Service State Variables

2.5.1   Shared State Variables

No QMI_NAS state variables are shared across control points.

2.5.2   State Variables Per Control Point

Name	Description	Possible values	Default value
report_signal_strength	Whether a change in signal strength is reported to a control point	• FALSE • TRUE	FALSE
report_signal_strength_threshold_list	Sequence of thresholds delimiting signal strength bands; threshold is a signed 1 byte value	-128 to +127	-128
report_rf_band_info	Whether a change in the radio interface is reported to a control point	• FALSE • TRUE	FALSE
report_reg_reject	Whether registration reject reasons are reported to a control point	• FALSE • TRUE	FALSE
report_rssi	Whether a change in RSSI is reported to a control point	• FALSE • TRUE	FALSE
rssi_delta	RSSI delta; an unsigned 1 byte value	0 to 255	N/A
report_ecio	Whether a change in ECIO is reported to a control point	• FALSE • TRUE	FALSE
ecio_delta	ECIO delta; an unsigned 1 byte value	0 to 255	N/A
report_io	Whether a change in IO is reported to a control point	• FALSE • TRUE	FALSE
io_delta	IO delta; an unsigned 1 byte value	0 to 255	N/A
report_sinr	Whether a change in SINR is reported to a control point	• FALSE • TRUE	FALSE
sinr_delta	SINR delta; an unsigned 1 byte value	0 to 255	N/A
report_rsrq	Whether a change in RSRQ is reported to a control point	• FALSE • TRUE	FALSE
rsrq_delta	RSRQ delta; an unsigned 1 byte value	5	N/A
report_lte_snr	Whether a change in LTE SNR is reported to a control point	• FALSE • TRUE	FALSE
lte_snr_delta	LTE SNR delta; an unsigned 2 byte value	0 to 255	N/A
report_lte_rsrp	Whether a change in LTE RSRP is reported to a control point	• FALSE • TRUE	FALSE
lte_rsrp_delta	LTE RSRP delta; an unsigned 1 byte value	0 to 255	N/A
req_serving_system	Whether serving system events are reported to a control point	• FALSE • TRUE	TRUE
reg_sys_sel_pref	Whether system selection preferences are reported to a control point	• FALSE • TRUE	FALSE
reg_ddtm_events	Whether DDTM events are reported to a control point	• FALSE • TRUE	FALSE

3 QMI_NAS Messages

Table 3-1 QMI_NAS messages

Command	ID	Description
QMI_NAS_RESET	0x0000	Resets the NAS service state variables of the requesting control point.
QMI_NAS_ABORT	0x0001	Aborts a previously issued QMI_NAS command.
QMI_NAS_SET_EVENT_REPORT	0x0002	Sets the NAS state reporting conditions for the requesting control point. (Deprecated)
QMI_NAS_EVENT_REPORT_IND	0x0002 indication	Indicates the NAS state change. (Deprecated)
QMI_NAS_INDICATION_REGISTER	0x0003	Sets the registration state for different QMI_NAS indications for the requesting control point.
QMI_NAS_GET_SUPPORTED_MSGS	0x001E	Queries the set of messages implemented by the currently running software.
QMI_NAS_GET_SUPPORTED_FIELDS	0x001F	Queries the fields supported for a single command as implemented by the currently running software.
QMI_NAS_GET_SIGNAL_STRENGTH	0x0020	Queries the current signal strength as measured by the device. (Deprecated)
QMI_NAS_PERFORM_NETWORK_SCAN	0x0021	Performs a scan for visible networks.
QMI_NAS_INITIATE_NETWORK_REGISTER	0x0022	Initiates a network registration. (Deprecated)
QMI_NAS_INITIATE_ATTACH	0x0023	Initiates a domain attach or detach action. (Deprecated)
QMI_NAS_GET_SERVING_SYSTEM	0x0024	Queries information regarding the system that currently provides service. (Deprecated)
QMI_NAS_SERVING_SYSTEM_IND	0x0024 indication	Indicates a change in the current serving system registration state and/or radio technology. (Deprecated)
QMI_NAS_GET_HOME_NETWORK	0x0025	Retrieves information about the home network of the device.
QMI_NAS_GET_PREFERRED_NETWORKS	0x0026	Queries the list of preferred networks from the device.
QMI_NAS_SET_PREFERRED_NETWORKS	0x0027	Writes the specified list of preferred networks to the device.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_GET_FORBIDDEN_NETWORKS	0x0028	Queries the list of forbidden networks from the device.
QMI_NAS_SET_FORBIDDEN_NETWORKS	0x0029	Writes the specified list of forbidden networks to the device.
QMI_NAS_SET_TECHNOLOGY_PREFERENCE	0x002A	Sets the technology preference. (Deprecated)
QMI_NAS_GET_TECHNOLOGY_PREFERENCE	0x002B	Retrieves the technology preference. (Deprecated)
QMI_NAS_GET_ACCOLC	0x002C	Queries the Access Overload Class (ACCOLC) of the device.
QMI_NAS_SET_ACCOLC	0x002D	Sets the ACCOLC of the device.
QMI_NAS_GET_NETWORK_SYSTEM_PREFERENCE	0x002E	Retrieves the network system preference.
QMI_NAS_GET_DEVICE_CONFIG	0x002F	Queries the network-related configuration setting of the device.
QMI_NAS_SET_DEVICE_CONFIG	0x0030	Sets network-related configuration settings of the device.
QMI_NAS_GET_RF_BAND_INFO	0x0031	Queries radio band/channel information regarding the system currently providing service.
QMI_NAS_GET_AN_AAA_STATUS	0x0032	Queries the status of the last AN-AAA authentication request for the current 1xEV-DO session.
QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE	0x0033	Sets the different system selection preferences of the device.
QMI_NAS_GET_SYSTEM_SELECTION_PREFERENCE	0x0034	Queries the different system selection preferences of the device.
QMI_NAS_SET_DDTM_PREFERENCE	0x0037	Sets the Data Dedicated Transmission Mode (DDTM) preference for the device.
QMI_NAS_DDTM	0x0038	Provides the DDTM status of the device.
QMI_NAS_GET_OPERATOR_NAME_DATA	0x0039	Retrieves operator name data from multiple sources. (Deprecated)
QMI_NAS_OPERATOR_NAME_DATA_IND	0x003A	Indicates a change in operator name data, which is obtained from multiple sources. (Deprecated)
QMI_NAS_GET_CSP_PLMN_MODE_BIT	0x003B	Retrieves the PLMN MODE bit data from the Customer Service Profile (CSP).
QMI_NAS_CSP_PLMN_MODE_BIT_IND	0x003C	Provides any change in the PLMN MODE bit in the CSP.
QMI_NAS_UPDATE_AKEY	0x003D	Updates the A-KEY. (Discontinued)

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_GET_3GPP2_SUBSCRIPTION_INFO	0x003E	Retrieves 3GPP2 subscription-related information.
QMI_NAS_SET_3GPP2_SUBSCRIPTION_INFO	0x003F	Writes 3GPP2 subscription-related information.
QMI_NAS_GET_MOB_CAI_REV	0x0040	Retrieves Mobile CAI revision information.
QMI_NAS_GET_RTRE_CONFIG	0x0041	Retrieves current RTRE configuration information.
QMI_NAS_SET_RTRE_CONFIG	0x0042	Sets RTRE configuration preference.
QMI_NAS_GET_CELL_LOCATION_INFO	0x0043	Retrieves cell location-related information.
QMI_NAS_GET_PLMN_NAME	0x0044	Queries the operator name for a specified network.
QMI_NAS_BIND_SUBSCRIPTION	0x0045	Binds the current control point to a specific subscription.
QMI_NAS_MANAGED_ROAMING	0x0046	Indicates whether managed roaming is enabled.
QMI_NAS_DUAL_STANDBY_PREF_IND	0x0047	Informs the control point of any changes in dual standby subscription.
QMI_NAS_SUBSCRIPTION_INFO_IND	0x0048	Indicates any change in the subscription information.
QMI_NAS_GET_MODE_PREF	0x0049	Retrieves the mode preference.
QMI_NAS_SET_DUAL_STANDBY_PREF	0x004B	Configures dual standby preference.
QMI_NAS_NETWORK_TIME_IND	0x004C	Indicates a time change reported by the network.
QMI_NAS_GET_SYS_INFO	0x004D	Provides the system information.
QMI_NAS_SYS_INFO_IND	0x004E	Indicates a change in the system information.
QMI_NAS_GET_SIG_INFO	0x004F	Queries information regarding the signal strength.
QMI_NAS_CONFIG_SIG_INFO	0x0050	Sets the signal strength reporting thresholds. (Deprecated)
QMI_NAS_SIG_INFO_IND	0x0051	Provides any change in signal strength status.
QMI_NAS_GET_ERR_RATE	0x0052	Queries the current error rate information.
QMI_NAS_ERR_RATE_IND	0x0053	Provides RAT-specific error rate information.
QMI_NAS_HDR_SESSION_CLOSE_IND	0x0054	Indicates when an HDR session has closed and returns a close reason.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_HDR_UATI_UPDATE_IND	0x0055	Indicates when an HDR unique access terminal identifier has been updated and returns its new value.
QMI_NAS_GET_HDR_SUBTYPE	0x0056	Retrieves the current HDR protocol subtype.
QMI_NAS_GET_HDR_COLOR_CODE	0x0057	Retrieves the HDR color code value.
QMI_NAS_GET_CURRENT_ACQ_SYS_MODE	0x0058	Retrieves the current acquisition system mode. (Deprecated)
QMI_NAS_SET_RX_DIVERSITY	0x0059	Sets the Rx diversity.
QMI_NAS_GET_TX_RX_INFO	0x005A	Retrieves the detailed Tx/Rx information.
QMI_NAS_UPDATE_AKEY_EXT	0x005B	Updates the A-KEY (extended).
QMI_NAS_GET_DUAL_STANDBY_PREF	0x005C	Retrieves dual standby preference.
QMI_NAS_DETACH_LTE	0x005D	Detaches the current LTE system.
QMI_NAS_BLOCK_LTE_PLMN	0x005E	Blocks the LTE PLMN.
QMI_NAS_UNBLOCK_LTE_PLMN	0x005F	Unblocks the LTE PLMN.
QMI_NAS_RESET_LTE_PLMN_BLOCKING	0x0060	Resets all previous LTE PLMN blocking operations.
QMI_NAS_CURRENT_PLMN_NAME_IND	0x0061	Indicates the current SPN and PLMN name information.
QMI_NAS_CONFIG_EMBMS	0x0062	Requests the UE to enable or disable eMBMS.
QMI_NAS_GET_EMBMS_STATUS	0x0063	Queries the eMBMS status.
QMI_NAS_EMBMS_STATUS_IND	0x0064	Reports the UE's current eMBMS status change.
QMI_NAS_GET_CDMA_POSITION_INFO	0x0065	Queries the current CDMA base station position information for active and neighbor's position information.
QMI_NAS_RF_BAND_INFO_IND	0x0066	Reports current RF band information.
QMI_NAS_FORCE_NETWORK_SEARCH	0x0067	Forces a network search procedure.
QMI_NAS_NETWORK_REJECT_IND	0x0068	Reports network reject information.
QMI_NAS_GET_MANAGED_ROAMING_CONFIG	0x0069	Queries the current managed roaming configuration information.
QMI_NAS_RTRE_CONFIG_IND	0x006A	Reports a change in the RTRE configuration status.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_GET_CENTRALIZED_EONS_SUPPORT_STATUS	0x006B	Queries the modem support status for centralized EONS.
QMI_NAS_CONFIG_SIG_INFO2	0x006C	Sets the signal strength reporting thresholds.
QMI_NAS_GET_TDS_CELL_AND_POSITION_INFO	0x006D	Retrieves the cell information and neighbor cell information for TD-SCDMA.
QMI_NAS_SET_HPLMN_IRAT_SEARCH_TIMER	0x006E	Sets the periodic search timer configuration for a home operator-specific BPLMN search to LTE.
QMI_NAS_GET_EMBMS_SIG	0x006F	Retrieves the current signal quality at L1 for each MBSFN area.
QMI_NAS_LIMIT_SYS_INFO_IND_REPORTING	0x0070	Limits the reporting of QMI_NAS_SYS_INFO_IND to only when certain fields have changed.
QMI_NAS_GET_SYS_INFO_IND_REPORTING_LIMIT	0x0071	Retrieves the limitations set on the reporting of QMI_NAS_SYS_INFO_IND.
QMI_NAS_UPDATE_IMS_STATUS	0x0072	Updates the IMS registration status.
QMI_NAS_GET_IMS_PREF_STATUS	0x0073	Retrieves the IMS preference status.
QMI_NAS_IMS_PREF_STATUS_IND	0x0074	Reports a change in the IMS preference.
QMI_NAS_CONFIG_PLMN_NAME_IND_REPORTING	0x0075	Configures whether QMI_NAS_CURRENT_PLMN_NAME_IND returns the modem-determined name or all available information.
QMI_NAS_CDMA_AVOID_SYSTEM	0x0076	Facilitates avoiding a CDMA system and clearing the avoided systems list.
QMI_NAS_GET_CDMA_AVOID_SYSTEM_LIST	0x0077	Retrieves the list of previously avoided CDMA systems.
QMI_NAS_SET_HPLMN_SEARCH_TIMER	0x0078	Sets the HPLMN search timer in the modem.
QMI_NAS_GET_HPLMN_SEARCH_TIMER	0x0079	Retrieves the HPLMN search timer.
QMI_NAS_GET_SUBSCRIPTION_INFO	0x007C	Queries the current subscription information.
QMI_NAS_GET_NETWORK_TIME	0x007D	Retrieves the latest time change reported by the network.
QMI_NAS_GET_LTE_SIB16_NETWORK_TIME	0x007E	Retrieves the LTE network time from the UE.
QMI_NAS_LTE_SIB16_NETWORK_TIME_IND	0x007F	Indicates an LTE time change reported by the network.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_SET_LTE_BAND_PRIORITY	0x0080	Sets the priority for LTE bands.
QMI_NAS_GET_EMBMS_SIG_EXT	0x0081	Retrieves the current signal quality at L1 for each MBSFN area.
QMI_NAS_LTE_CPHY_CA_IND	0x0082	Indicates a carrier aggregation event has occurred.
QMI_NAS_GET_LTE_BAND_PRIORITY_LIST	0x0083	Gets the list of priority LTE bands.
QMI_NAS_SET_BUILTIN_PLMN_LIST	0x0084	Sets the built-in PLMN list.
QMI_NAS_PERFORM_INCREMENTAL_ NETWORK_SCAN	0x0085	Performs the network scan and gives results incrementally.
QMI_NAS_SET_DRX	0x0088	Sets the DRX for the device.
QMI_NAS_GET_DRX	0x0089	Retrieves the DRX for the device.
QMI_NAS_CSG_SEARCH_SELECTION_ CONFIG	0x008A	Configures the CSG search and selection parameters, and triggers an immediate periodic search and selection based on the configured parameters.
QMI_NAS_CSG_IMMEDIATE_SEARCH_ SELECTION	0x008B	Triggers an immediate CSG search and selection based on already configured parameters.
QMI_NAS_GET_CSG_SEARCH_ SELECTION_CONFIGURATION	0x008C	Retrieves configured CSG search and selection parameters.
QMI_NAS_SSAC_INFO_IND	0x008D	Indicates Service-Specific Access Class (SSAC) barring information for MMTEL voice/video originating calls. (Deprecated)
QMI_NAS_GET_LTE_EMBMS_INFO	0x008E	Retrieves the LTE eMBMS statistics.
QMI_NAS_GET_SERV_CELL_SIB	0x008F	Gets the serving cell SIB.
QMI_NAS_SSAC_CHANGE_INFO_IND	0x0090	Indicates a change in SSAC class barring information for MMTEL voice/video originating calls.
QMI_NAS_GET_SSAC_INFO	0x0091	Retrieves the SSAC barring information for MMTEL voice/video originating calls.
QMI_NAS_SET_PERIODIC_SEARCH_ ALLOWED	0x0092	Enables or disables a periodic search.
QMI_NAS_EMM_T3402_CHANGED_IND	0x0093	Indicates a change in the T3402 timer value.
QMI_NAS_GET_ACB_INFO	0x0094	Retrieves the Access Class Barring (ACB) information.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_SET_DATA_SUBS_PRIORITY	0x0095	Configures the data priority for a bound subscription.
QMI_NAS_GET_DATA_SUBS_PRIORITY	0x0096	Retrieves the current data priority status of a subscription.
QMI_NAS_DATA_SUBS_PRIORITY_IND	0x0097	Informs the control point of any changes in the data subscription priority.
QMI_NAS_AVOID_TUNEAWAY	0x0098	Raises or drops the Transceiver Resource Manager (TRM) priority to block or unblock tune-aways.
QMI_NAS_SET_MCC	0x0099	Informs the modem of an MCC discovered by the client.
QMI_NAS_SET_DATA_ROAMING	0x009A	Informs the modem about a change in the data roaming status.
QMI_NAS_GET_DATA_ROAMING	0x009B	Retrieves the data roaming status from the modem.
QMI_NAS_SET_SRVCC	0x009C	Informs the modem about a change in the Single Radio Voice Call Continuity (SRVCC) status.
QMI_NAS_SET_BSR_TIMER	0x009D	Informs the modem about a change in the Better System Reselection (BSR) timer value.
QMI_NAS_GET_BSR_TIMER	0x009E	Retrieves the BSR timer value from the modem.
QMI_NAS_SET_DRX_SCALING_FACTOR	0x009F	Scales the wake-up duration by controlling the idle DRX cycle; also used to skip the Idle mode measurements.
QMI_NAS_SET_SSAC_HYSTERESIS_TIMER	0x00A5	Sets the SSAC hysteresis timer.
QMI_NAS_GET_SSAC_HYSTERESIS_TIMER	0x00A6	Retrieves the last known SSAC hysteresis timer.
QMI_NAS_GET_HDR_INFO	0x00A7	Retrieves the HDR sector ID, pilot pseudorandom noise, and MAC index.
QMI_NAS_GET_HDR_DRC_RATE	0x00A8	Retrieves the HDR data rate control.
QMI_NAS_SET_RPM_PARAMETERS	0x00A9	Sets the Radio Policy Manager (RPM) details if RPM is active.
QMI_NAS_GET_RPM_PARAMETERS	0x00AA	Retrieves the RPM details if RPM is active.
QMI_NAS_SET_RPM_STATE	0x00AB	Enables and disables RPM.
QMI_NAS_GET_LTE_CPHY_CA_INFO	0x00AC	Retrieves the previous carrier aggregation event information.

Table 3-1 QMI_NAS messages (cont.)

Command	ID	Description
QMI_NAS_MANUAL_SCAN_FAIL_IND	0x00AD	Informs the control point that the manual network search could not find any networks with the specified parameters.
QMI_NAS_GET_NEGOTIATED_DRX	0x00AE	Retrieves the network negotiated DRX level.
QMI_NAS_SET_CELL_LOCK_CONFIG	0x00AF	Configures the cell list so that service acquisition is limited only to the listed cells.
QMI_NAS_LTE_UE_CONFIG_MSG	0x00B0	Dynamically upgrades or downgrades an LTE UE category, enables or disables carrier aggregation, or both.
QMI_NAS_TIMER_EXPIRY_IND	0x00B1	Indicates the ID for the timer that has expired.
QMI_NAS_EMERGENCY_MODE_STATUS_ IND	0x00B2	Indicates the Emergency mode status.
QMI_NAS_ECALL_DEREGISTRATION	0x00B3	Triggers a deregistration operation for an ECall.
QMI_NAS_UPDATE_CA_BAND_COMBO_ MSG	0x00B4	Updates the specified carrier aggregation band combination string for a PLMN.
QMI_NAS_GET_CA_BAND_COMBO_MSG	0x00B5	Retrieves the specified carrier aggregation band combination string for a specific PLMN.
QMI_NAS_ECALL_TIMER_RESTART_MSG	0x00B6	Allows APPS to request the timer restart and give the remaining time for the timer to run.

3.1   QMI_NAS_RESET

Resets the NAS service state variables of the requesting control point.

NAS message ID

0x0000

Version introduced

Major - 1, Minor - 0

3.1.1   Request - QMI_NAS_RESET_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.1.2   Response - QMI_NAS_RESET_RESP_MSG

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

3.1.3   Description of QMI_NAS_RESET REQ/RESP

This command resets the issuing control point state (see Section 2.5.2) kept by the service. As a result, each shared state variable may change, depending on its arbitration policy (see Section 2.5.1).

This is equivalent to closing the service and reopening it again, although it is performed as one operation and, hence, the client ID of the requesting control point does not change.

The control point state variables change to their default values before the response is issued.

3.2   QMI_NAS_ABORT

Aborts a previously issued QMI_NAS command.

NAS message ID

0x0001

Version introduced

Major - 1, Minor - 0

3.2.1   Request - QMI_NAS_ABORT_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
TX_ID	Unknown	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	TX_ID
Length	2			2	
Value	→	uint16	tx_id	2	Transaction ID of the request to be aborted.

Optional TLVs

None

3.2.2   Response - QMI_NAS_ABORT_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_TX_ID	Transaction ID supplied in the request does not match any pending transaction; i.e., either the transaction was not received or it is already executed by the device
QMI_ERR_UNABORTABLE_ TRANSACTION	Specified transaction could not be aborted; none of the requests in the transaction were abortable

3.2.3 Description of QMI_NAS_ABORT REQ/RESP

This command aborts a previously issued QMI_NAS command. It is useful for requests that take a long time to execute, in the case where the user is no longer interested in the result.

The following QMI_NAS messages can be aborted:

- QMI_NAS_PERFORM_NETWORK_SCAN_REQ

- QMI_NAS_PERFORM_INCREMENTAL_NETWORK_SCAN_REQ

3.3   QMI_NAS_SET_EVENT_REPORT

Sets the NAS state reporting conditions for the requesting control point. (Deprecated)

NAS message ID

0x0002

Version introduced

Major - 1, Minor - 0

3.3.1   Request - QMI_NAS_SET_EVENT_REPORT_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

At least one of the following optional TLVs must be included in this request.

Name	Version introduced	Version last modified
Signal Strength Indicator	Unknown	1.0
RF Band Information	Unknown	1.1
Registration Reject Reason**	Unknown	1.1
RSSI Indicator	Unknown	1.1
ECIO Indicator	Unknown	1.1
IO Indicator*	Unknown	1.1
SINR Indicator*	Unknown	1.1
Error Rate Indicator	Unknown	1.1
RSRQ Indicator*	Unknown	1.3
ECIO Threshold	Unknown	1.7
SINR Threshold	Unknown	1.7
LTE SNR Delta	1.15	1.40
RSRP Delta	1.15	1.15

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Signal Strength Indicator
Length	Var			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	boolean	report_signal_ strength	1	Values: • 0 – Do not report • 1 – Report
		uint8	num_signal_ strength_ thresholds	1	Number of sets of the following elements: • report_signal_strength_threshold_list
		int8	report_signal_ strength_ threshold_list	Var	A sequence of thresholds delimiting signal strength Var bands. Each threshold specifies the signal strength (in dBm) at which an event report indication, including the current signal strength, will be sent to the requesting control point. Threshold is a signed 1 byte value. Valid values: -128 dBm to +127 dBm.
Type	0x11			1	RF Band Information
Length	1			2	
Value	→	boolean	report_rf_ band_info	1	Values: • 0 – Do not report • 1 – Report
Type	0x12			1	Registration Reject Reason**
Length	1			2	
Value	→	boolean	report_reg_ reject	1	Values: • 0 – Do not report • 1 – Report
Type	0x13			1	RSSI Indicator
Length	2			2	
Value	→	boolean	report_rssi	1	Values: • 0 – Do not report • 1 – Report
		uint8	rssi_delta	1	RSSI delta (in dBm) at which an event report indication, including the current RSSI, will be sent to the requesting control point. RSSI delta is an unsigned 1 byte value.
Type	0x14			1	ECIO Indicator
Length	2			2	
Value	→	boolean	report_ecio	1	Values: • 0 – Do not report • 1 – Report
		uint8	ecio_delta	1	ECIO delta at which an event report indication, ecio_delta including the current ECIO, will be sent to the requesting control point. ECIO delta is an unsigned 1 byte value that increments in negative 0.5 dB, e.g., ecio_delta of 2 means a change of -1 dB.
Type	0x15			1	IO Indicator*
Length	2			2	
Value	→	boolean	report_io	1	Values: • 0 – Do not report • 1 – Report

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Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	io_delta	1	IO delta (in dBm) at which an event report indication, io_delta including the current IO, will be sent to the requesting control point. IO delta is an unsigned 1 byte value.
Type	0x16			1	SINR Indicator*
Length	2			2	
Value	→	boolean	report_sinr	1	Values: • 0 – Do not report • 1 – Report
		uint8	sinr_delta	1	SINR delta level at which an event report indication, sinr_delta including the current SINR, will be sent to the requesting control point. SINR delta level is an unsigned 1 byte value.
Type	0x17			1	Error Rate Indicator
Length	1			2	
Value	→	boolean	report_error_ rate	1	Values: • 0 – Do not report • 1 – Report
Type	0x18			1	RSRQ Indicator*
Length	2			2	
Value	→	boolean	report_rsrq	1	Values: • 0 – Do not report • 1 – Report
		uint8	rsrq_delta	1	RSRQ delta level at which an event report indication, including the current RSRQ, will be sent to the requesting control point. RSRQ delta level is an unsigned 1 byte value.
Type	0x19			1	ECIO Threshold
Length	Var			2	
Value	→	boolean	report_ecio	1	Values: • 0 – Do not report • 1 – Report
		uint8	threshold_ list_len	1	Number of sets of the following elements: • threshold_list
		int16	threshold_list	Var	A sequence of thresholds delimiting ECIO event reporting bands. Every time a new ECIO value crosses a threshold value, an event report indication message with the new ECIO value is sent to the requesting control point. For this field: • Each threshold value is a signed 2 byte value • Maximum number of threshold values is 10 • At least one value must be specified (if report_ecio is set)
Type	0x1A			1	SINR Threshold
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	boolean	report_sinr	1	Values: • 0 – Do not report • 1 – Report
		uint8	threshold_list_len	1	Number of sets of the following elements: • threshold_list
		uint8	threshold_list	Var	A sequence of thresholds delimiting SINR event reporting bands. Every time a new SINR value crosses a threshold value, an event report indication message with the new SINR value is sent to the requesting control point. For this field: • Each threshold value will be an unsigned 1 byte value • Maximum number of threshold values is 5 • At least one value must be specified (if report_sinr is set)
Type	0x1B			1	LTE SNR Delta
Length	3			2	
Value	→	boolean	report_lte_snr	1	Values: • 0 – Do not report • 1 – Report
		uint16	lte_snr_delta	2	LTE SNR delta level at which an event report indication, including the current SNR, will be sent to the requesting control point. LTE SNR delta level is an unsigned 2 byte value, representing the delta in units of 0.1 dB, e.g., lte_snr_delta of 3 means a change 0.3 dB.
Type	0x1C			1	RSRP Delta
Length	2			2	
Value	→	boolean	report_lte_rsrp	1	Values: • 0 – Do not report • 1 – Report
		uint8	lte_rsrp_delta	1	LTE RSRP delta level at which an event report indication, including the current RSRP, will be sent to the requesting control point. LTE RSRP delta level is an unsigned 1 byte value, representing the delta in dB.

3.3.2   Response - QMI_NAS_SET_EVENT_REPORT_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_NO_THRESHOLDS	No thresholds were specified in an enable signal strength request

3.3.3   Description of QMI_NAS_SET_EVENT_REPORT REQ/RESP

The control point state variables that control event reporting are modified to reflect the settings indicated in the TLVs that are present in the request message. The service maintains a separate set of state variables for each control point. See Section 2.5.2 for a list of state variables and their explanations.

The control point learns of changes in state via the QMI_NAS_EVENT_REPORT_IND indication.

The AT command equivalents to this command are AT+CMER, AT+CIND, and AT+CIEV (refer to 3GPP TS 27.007).

This command is deprecated. Use QMI_NAS_CONFIG_SIG_INFO2 (Section 3.82) to configure signal strength reporting thresholds. Use QMI_NAS_INDICATION_REGISTER (Section 3.5) to register for QMI_NAS_SIG_INFO_IND, QMI_NAS_ERR_RATE_IND, and/or QMI_NAS_RF_BAND_INFO_IND messages.

3.4 QMI_NAS_EVENT_REPORT_IND

Indicates the NAS state change. (Deprecated)

NAS message ID

0x0002

Version introduced

Major - 1, Minor - 0

3.4.1 Indication - QMI_NAS_EVENT_REPORT_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

At least one of the following optional TLVs must be included in this indication.

Name	Version introduced	Version last modified
Signal Strength	Unknown	1.3
RF Band Information List	Unknown	1.142
Registration Reject Reason**	Unknown	1.2
RSSI	Unknown	1.3
ECIO	Unknown	1.1
IO*	Unknown	1.1
SINR*	Unknown	1.1
Error Rate	Unknown	1.1
RSRQ**	Unknown	1.3
LTE SNR	Unknown	1.15
LTE RSRP	Unknown	1.15

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Signal Strength
Length	2			2	
Value	→	int8	sig_strength	1	Received signal strength in dBm: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength • For LTE, this indicates the total received wideband power observed by the UE
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
Type	0x11			1	RF Band Information List
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • active_band • active_channel
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		enum16	active_band	2	Active band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes
		uint16	active_channel	2	Active channel. If the channel is not relevant to the technology, a value of 0 is returned.
Type	0x12			1	Registration Reject Reason**
Length	3			2	
Value	→	enum8	service_domain	1	Network service domain that was rejected. Possible values: • 1 – CIRCUIT_SWITCHED • 2 – PACKET_SWITCHED • 3 – CIRCUIT_AND_PACKET_ SWITCHED

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	reject_cause	2	Reject cause; refer to 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
Type	0x13			1	RSSI
Length	2			2	
Value	→	uint8	rssi	1	RSSI represented as a positive value; control points need to convert this to negative to get actual value in dBm: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
Type	0x14			1	ECIO
Length	2			2	
Value	→	uint8	ecio	1	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS
Type	0x15			1	IO*
Length	4			2	
Value	→	int32	io	4	Received IO in dBm. IO is only applicable for 1xEV-DO.
Type	0x16			1	SINR*
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	sinr	1	SINR level. SINR is only applicable for 1xEV-DO. Valid levels are 0 to 8, where the maximum value for: • 0x00 – SINR_LEVEL_0 is -9 dB • 0x01 – SINR_LEVEL_1 is -6 dB • 0x02 – SINR_LEVEL_2 is -4.5 dB • 0x03 – SINR_LEVEL_3 is -3 dB • 0x04 – SINR_LEVEL_4 is -2 dB • 0x05 – SINR_LEVEL_5 is +1 dB • 0x06 – SINR_LEVEL_6 is +3 dB • 0x07 – SINR_LEVEL_7 is +6 dB • 0x08 – SINR_LEVEL_8 is +9 dB
Type	0x17			1	Error Rate
Length	3			2	
Value	→	uint16	error_rate	2	Error rate value corresponds to the RAT that is currently registered. For CDMA, the error rate reported is Frame Error Rate: • Valid error rate values between 1 and 10000 are returned to indicate percentage, e.g., a value of 300 means the error rate is 3% • A value of 0xFFFF indicates that the error rate is unknown or unavailable For HDR, the error rate reported is Packet Error Rate: • Valid error rate values between 1 and 10000 are returned to indicate percentage, e.g., a value of 300 means the error rate is 3% • A value of 0xFFFF indicates that the error rate is unknown or unavailable For GSM, the error rate reported is Bit Error Rate: • Valid values are 0, 100, 200, 300, 400, 500, 600, and 700 • The reported value divided by 100 gives the error rate as an RxQual value as defined in 3GPP TS 45.008 Section 8.2.4, e.g., a value of 300 represents an RxQual value of 3 • A value of 25500 indicates No Data For WCDMA, the error rate reported is Block Error Rate (BLER): • Valid values are 1 to 10000 • The reported value divided by 100 provides the error rate in percentages, e.g., a value of 300 represents a BLER of 3% • A value of 0 indicates No Data

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS
Type	0x18			1	RSRQ**
Length	2			2	
Value	→	int8	rsrq	1	RSRQ value in dB (signed integer value). Range: -3 to -20 (-3 means -3 dB, -20 means -20 dB).
		uint8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x08 – LTE
Type	0x19			1	LTE SNR
Length	2			2	
Value	→	int16	snr	2	LTE SNR level as a scaled integer in units of 0.1 dB; e.g., -16 dB has a value of -160 and 24.6 dB has a value of 246.
Type	0x1A			1	LTE RSRP
Length	2			2	
Value	→	int16	rsrp	2	Current LTE RSRP in dBm as measured by L1. Range: -44 to -140 (-44 means -44 dBm, -140 means -140 dBm).

3.4.2 Description of QMI_NAS_EVENT_REPORT_IND

This unsolicited indication is sent by the service to interested control points when the device state corresponding to any TLV listed previously changes. Interested control points are those that previously registered, using the QMI_NAS_SET_EVENT_REPORT_REQ message, for the corresponding state to be reported.

The Signal Strength TLV is included in the indication if the control point report_signal_strength state variable is set and the current signal strength moves past a threshold specified by the control point, relative to the last value indicated to the control point.

The AT command equivalents to this command are AT+CMER, AT+CIND, and AT+CIEV (refer to 3GPP TS 27.007).

The RF Band Information List TLV is included in the indication if the control point report_rf_band_info state variable is set and the current radio band or channel changes on a network to which the device is registered.

The Registration Reject Reason TLV is included in the indication if the control point report_reg_reject_reason state variable is set and a registration request is rejected by the network. Presence of this indication means that the network rejected a registration request, but not that the serving system registration was affected. If the serving system registration changes, a new serving system indication is sent to the control point (see Section 3.13.2).

The RSSI TLV is included in the indication if the control point report_rssi state variable is set, and the difference between the current RSSI and the last value indicated to the control point crosses the delta specified by the control point.

The ECIO TLV is included in the indication if the control point report_ecio state variable is set, and the difference between the current ECIO and the last value indicated to the control point crosses the delta specified by the control point.

The IO TLV is included in the indication if the control point report_io state variable is set, and the difference between the current IO and the last value indicated to the control point crosses the delta specified by the control point.

The SINR TLV is included in the indication if the control point report_sinr state variable is set, and the difference between the current SINR and the last value indicated to the control point crosses the delta specified by the control point.

The Error Rate TLV is included in the indication if the control point report_error_rate state 10 variable is set along with one or more of report_signal_strength, report_ecio, report_io, report_sinr state variables, and if an error rate is available to report along with one or more of the Signal Strength, RSSI, ECIO, IO, or SINR TLVs.

The RSRQ TLV is included in the indication if the control point report_rsrq state variable is set, and the difference between the current RSRQ and the last value indicated to the control point crosses the delta specified by the control point.

This indication is deprecated. Use QMI_NAS_SIG_INFO_IND (Section 3.55) for signal strength-related information and QMI_NAS_ERR_RATE_IND (Section 3.57) for error rate-related information.

3.5   QMI_NAS_INDICATION_REGISTER

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

NAS message ID

0x0003

Version introduced

Major - 1, Minor - 1

3.5.1   Request - QMI_NAS_INDICATION_REGISTER_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
System Selection Preference	Unknown	1.1
DDTM Events	Unknown	1.1
Serving System Events	Unknown	1.2
Dual Standby Preference	Unknown	1.7
Subscription Info	Unknown	1.7
Network Time	Unknown	1.8
Sys Info	Unknown	1.8
Signal Strength	Unknown	1.8
Error Rate	Unknown	1.8
HDR New UATI Assigned	Unknown	1.9
HDR Session Closed	Unknown	1.9
Managed Roaming	Unknown	1.11
Current PLMN Name	Unknown	1.14
eMBMS Status	Unknown	1.16
RF Band Information	Unknown	1.19
Network Reject Information	Unknown	1.22
Operator Name Data	1.24	1.24
CSP PLMN Mode Bit	1.24	1.24
RTRE Configuration	1.25	1.25
IMS Preference Status	1.51	1.51
E911 State Ready Status	1.66	1.66

Name	Version introduced	Version last modified
LTE SIB16 Network Time	1.73	1.73
LTE Physical Carrier Aggregation Information	1.81	1.81
Subscription Change	1.93	1.93
Service-Specific Access Class Barring	1.98	1.98
T3402 Timer Value	1.114	1.114
Access Class Barring	1.119	1.119
Data Subscription Priority	1.121	1.121
T3346 Timer Status Change	1.128	1.128
Call Mode Status	1.128	1.128
Service-Specific Access Class Barring Ext	1.136	1.136
Manual Network Scan Failure	1.139	1.139
Timer Expiry	1.147	1.147
Emergency Mode Status	1.148	1.148

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	System Selection Preference
Length	1			2	
Value	→	boolean	reg_sys_sel_pref	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x12			1	DDTM Events
Length	1			2	
Value	→	boolean	reg_ddtm_events	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x13			1	Serving System Events
Length	1			2	
Value	→	boolean	req_serving_system	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x14			1	Dual Standby Preference
Length	1			2	
Value	→	boolean	dual_standby_pref	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x15			1	Subscription Info
Length	1			2	
Value	→	boolean	subscription_info	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x17			1	Network Time
Length	1			2	
Value	→	boolean	reg_network_time	1	Values: • 0x00 – Disable • 0x01 – Enable

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x18			1	Sys Info
Length	1			2	
Value	→	boolean	sys_info	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x19			1	Signal Strength
Length	1			2	
Value	→	boolean	sig_info	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x1A			1	Error Rate
Length	1			2	
Value	→	boolean	err_rate	1	Values: • 0x00 – Disable • 0x01 – Enable
Type	0x1B			1	HDR New UATI Assigned
Length	1			2	
Value	→	boolean	reg_hdr_uati	1	Controls the reporting of QMI_NAS_HDR_UATI_UPDATE_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x1C			1	HDR Session Closed
Length	1			2	
Value	→	boolean	reg_hdr_ session_close	1	Controls the reporting of QMI_NAS_HDR_SESSION_CLOSE_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x1D			1	Managed Roaming
Length	1			2	
Value	→	boolean	reg_ managed_ roaming	1	Controls the reporting of QMI_NAS_MANAGED_ROAMING_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x1E			1	Current PLMN Name
Length	1			2	
Value	→	boolean	reg_current_ plmn_name	1	Controls the reporting of QMI_NAS_CURRENT_PLMN_NAME_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x1F			1	eMBMS Status
Length	1			2	
Value	→	boolean	reg_embms_ status	1	Controls the reporting of QMI_NAS_EMBMS_STATUS_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x20			1	RF Band Information

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	1			2	
Value	→	boolean	reg_rf_band_info	1	Controls the reporting of QMI_NAS_RF_BAND_INFO_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x21			1	Network Reject Information
Length	2			2	
Value	→	boolean	reg_network_reject	1	Controls the reporting of QMI_NAS_NETWORK_REJECT_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
		boolean	suppress_sys_info	1	Controls the reporting of QMI_NAS_SYS_INFO_IND when only the reject_cause field has changed. Values: • 0x00 – Do not suppress (default value) • 0x01 – Suppress
Type	0x22			1	Operator Name Data
Length	1			2	
Value	→	boolean	reg_operator_name_data	1	Controls the reporting of QMI_NAS_OPERATOR_NAME_DATA_IND. Values: • 0x00 – Disable • 0x01 – Enable (default value)
Type	0x23			1	CSP PLMN Mode Bit
Length	1			2	
Value	→	boolean	reg_csp_plmn_mode_bit	1	Controls the reporting of QMI_NAS_CSP_PLMN_MODE_BIT_IND. Values: • 0x00 – Disable • 0x01 – Enable (default value)
Type	0x24			1	RTRE Configuration
Length	1			2	
Value	→	boolean	reg_rtre_cfg	1	Controls the reporting of QMI_NAS_RTRE_CONFIG_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x25			1	IMS Preference Status
Length	1			2	
Value	→	boolean	reg_ims_pref_status	1	Controls the reporting of QMI_NAS_IMS_PREF_STATUS_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x26			1	E911 State Ready Status
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	boolean	reg_e911_ state_ready_ status	1	Controls the reporting of QMI_NAS_E911_STATE_READY_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x27			1	LTE SIB16 Network Time
Length	1			2	
Value	→	boolean	reg_lte_sib16_ network_time	1	Controls the reporting of QMI_NAS_LTE_SIB16_NETWORK_TIME_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x28			1	LTE Physical Carrier Aggregation Information
Length	1			2	
Value	→	boolean	reg_lte_cphy_ ca	1	Controls the reporting of QMI_NAS_LTE_CPHY_CA_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x29			1	Subscription Change
Length	1			2	
Value	→	boolean	reg_ subscription_ change	1	Controls the reporting of QMI_NAS_SUBSCRIPTION_CHANGE_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2A			1	Service-Specific Access Class Barring
Length	1			2	
Value	→	boolean	reg_ssac_info	1	Controls the reporting of QMI_NAS_SSAC_INFO_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2B			1	T3402 Timer Value
Length	1			2	
Value	→	boolean	reg_emm_ t3402_change	1	Controls the reporting of QMI_NAS_EMM_T3402_CHANGED_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2C			1	Access Class Barring
Length	1			2	
Value	→	boolean	reg_acb_info_ change	1	Controls the reporting of QMI_NAS_ACB_INFO_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2D			1	Data Subscription Priority
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	boolean	reg_data_ subs_priority_ change	1	Controls the reporting of QMI_NAS_DATA_SUBS_PRIORITY_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2E			1	T3346 Timer Status Change
Length	1			2	
Value	→	boolean	reg_t3346_ timer_status_ change	1	Controls the reporting of QMI_NAS_T3346_TIMER_STATUS_CHANGE_ IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x2F			1	Call Mode Status
Length	1			2	
Value	→	boolean	reg_call_ mode_change	1	Controls the reporting of QMI_NAS_CALL_MODE_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x30			1	Service-Specific Access Class Barring Ext
Length	1			2	
Value	→	boolean	reg_ssac_ change_info	1	Controls the reporting of QMI_NAS_SSAC_CHANGE_INFO_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x31			1	Manual Network Scan Failure
Length	1			2	
Value	→	boolean	reg_manual_ scan_fail	1	Controls the reporting of QMI_NAS_MANUAL_SCAN_FAIL_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x32			1	Timer Expiry
Length	1			2	
Value	→	boolean	reg_timer_ expiry_ind	1	Controls the reporting of QMI_NAS_TIMER_EXPIRY IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable
Type	0x33			1	Emergency Mode Status
Length	1			2	
Value	→	boolean	reg_ emergency_ mode_status_ ind	1	Controls the reporting of QMI_NAS_EMERGENCY_MODE_STATUS_IND. Values: • 0x00 – Disable (default value) • 0x01 – Enable

3.5.2   Response - QMI_NAS_INDICATION_REGISTER_RESP_MSG

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

3.5.3   Description of QMI_NAS_INDICATION_REGISTER REQ/RESP

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

The reg_ddtm_events field in the DDTM Events TLV must be set to Enable to register a control point for the DDTM events and Disable to deregister. When this registration is enabled, the control point learns of DDTM events via the QMI_NAS_DDTM_IND indication.

The reg_sys_sel_pref field in the System Selection Preference TLV must be set to Enable to register a control point for the system selection preference events and Disable to deregister. When this registration is enabled, the control point learns of system selection preference changes via the QMI_NAS_SYSTEM_SELECTION_PREFERENCE_IND indication.

By default, QMI_NAS_SERVING_SYSTEM_IND is a broadcast indication that is sent to all QMI NAS control points when the serving system information changes. To deregister the control point from receiving this indication, the req_serving_system field in the Serving System Events TLV must be set to Disable.

The sys_info field must be set to Enable for a control point to receive the QMI_NAS_SYS_INFO_IND indication. To deregister the control point from receiving this indication, the sys_info field must be set to Disable.

The Network Reject Information TLV must be sent to receive the QMI_NAS_NETWORK_REJECT_IND indication. The Network Reject Information TLV contains two fields to fill out, reg_network_reject and suppress_sys_info. The reg_network_reject field enables or disables sending the indication. If the reg_network_reject field is enabled, the suppress_sys_info field can be used to prevent sys_info indications from being sent if only the reject_cause field has changed. The suppress_sys_info field only takes effect if both the sys_info and reg_network_reject fields are enabled.

3.6 QMI_NAS_GET_SUPPORTED_MSGS

Queries the set of messages implemented by the currently running software.

NAS message ID

0x001E

Version introduced

Major - 1, Minor - 54

3.6.1 Request - QMI_NAS_GET_SUPPORTED_MSGS_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.6.2 Response - QMI_NAS_GET_SUPPORTED_MSGS_RESP

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Common version introduced	Common version last modified
Result Code	1.6	1.7

Optional TLVs

Name	Common version introduced	Common version last modified
List of Supported Messages	1.6	1.6

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	List of Supported Messages
Length	Var			2	
Value	→	uint16	supported_ msgs_len	2	Number of sets of the following elements: • supported_msgs
		uint8	supported_ msgs	Var	This array of uint8 is a bitmask where each bit represents a message ID, i.e., starting with the LSB, bit 0 represents message ID 0, bit 1 represents message ID 1, etc. The bit is set to 1 if the message is supported; otherwise, it is set to zero. For example, if a service supports exactly four messages with IDs 0, 1, 30, and 31 (decimal), the array (in hexadecimal) is 4 bytes [03 00 00 c0].

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INFO_UNAVAILABLE	Information is not available

3.6.3   Description of QMI_NAS_GET_SUPPORTED_MSGS REQ/RESP

This command queries the set of messages implemented by the currently running software. This may be a subset of the messages defined in this revision of the service.

3.7   QMI_NAS_GET_SUPPORTED_FIELDS

Queries the fields supported for a single command as implemented by the currently running software.

NAS message ID

0x001F

Version introduced

Major - 1, Minor - 54

3.7.1   Request - QMI_NAS_GET_SUPPORTED_FIELDS_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Common version introduced	Common version last modified
Service Message ID	1.6	1.6

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Service Message ID
Length	2			2	
Value	→	uint16	msg_id	2	ID of the command for which the supported fields are requested.

Optional TLVs

None

3.7.2   Response - QMI_NAS_GET_SUPPORTED_FIELDS_RESP

Message type

Response

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

Sender

Service

Mandatory TLVs

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

Name	Common version introduced	Common version last modified
Result Code	1.6	1.7

Optional TLVs

Name	Common version introduced	Common version last modified
List of Supported Request Fields	1.6	1.6
List of Supported Response Fields	1.6	1.6
List of Supported Indication Fields	1.6	1.6

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	List of Supported Request Fields
Length	Var			2	
Value	→	uint8	request_fields_len	1	Number of sets of the following elements: • request_fields
		uint8	request_fields	Var	This field describes which optional field IDs are supported in the QMI request. The array of uint8 is a bitmask where each bit represents a field (TLV) ID. Because fields 0 to 15 (decimal) are mandatory by definition, the first bit represents field ID 16. Starting with the LSB, bit 0 represents field ID 16, bit 1 represents field ID 17, etc. The bit is set to 1 if the field ID is supported; otherwise, it is set to zero. For example, if a service supports exactly four fields with IDs 16, 17, 30, and 31 (decimal), the array (in hexadecimal) is 2 bytes [03 c0].
Type	0x11			1	List of Supported Response Fields
Length	Var			2	
Value	→	uint8	response_fields_len	1	Number of sets of the following elements: • response_fields
		uint8	response_fields	Var	This field describes which optional field IDs are supported in the QMI response. Its format is the same as request_fields.
Type	0x12			1	List of Supported Indication Fields
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	indication_ fields_len	1	Number of sets of the following elements: • indication_fields
		uint8	indication_ fields	Var	This field describes which optional field IDs are supported in the QMI indication. Its format is the same as request_fields.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_REQUESTED_NUM_ UNSUPPORTED	Requested message ID is not supported by the currently running software
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_INFO_UNAVAILABLE	Information is not available

3.7.3 Description of QMI_NAS_GET_SUPPORTED_FIELDS REQ/RESP

This command queries the fields supported for a single command as implemented by the currently running software.

If the request, response, or indication is supported for the given message ID, the corresponding optional array is included in QMI_NAS_GET_SUPPORTED_FIELDS_RESP, even if the message does not contain any optional fields. This enables the client to distinguish this case from one where the service does not support the request, response, or indication.

Examples are:

- If the specified message ID is not supported by the service, the response has qmi_result = QMI_RESULT_FAILURE and qmi_error = QMI_ERR_REQUESTED_NUM_UNSUPPORTED.

- If the specified message ID is an empty message, the response has qmi_result = QMI_RESULT_SUCCESS and qmi_error = QMI_ERR_NONE. None of the optional arrays are included.

- If the specified message ID supports the request with 0 optional fields, the response with 3 optional fields (16, 17, and 18 decimal), and does not support an indication, the response has the following:

  - qmi_result = QMI_RESULT_SUCCESS

  - qmi_error = QMI_ERR_NONE

  - request_fields array is included with length zero

  - response_fields array is included with length 1 value [07]

  - indication_fields array is not included

Trailing zero bytes are omitted from the response. For example, if the message defines 20 different fields but the response only contains 16 bits, the client is to assume the last four fields are not supported.

3.8   QMI_NAS_GET_SIGNAL_STRENGTH

Queries the current signal strength as measured by the device. (Deprecated)

NAS message ID

0x0020

Version introduced

Major - 1, Minor - 0

3.8.1   Request - QMI_NAS_GET_SIGNAL_STRENGTH_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Request Mask	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Request Mask
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	request_mask	2	Request additional signal information for: Bit 0 (0x01) – QMI_NAS_REQUEST_SIG_INFO_ RSSI_MASK; values: • 0 – Do not request additional information for RSSI • 1 – Request additional information for RSSI Bit 1 (0x02) – QMI_NAS_REQUEST_SIG_INFO_ ECIO_MASK; values: • 0 – Do not request additional information for ECIO • 1 – Request additional information for ECIO Bit 2 (0x04) – QMI_NAS_REQUEST_SIG_INFO_ IO_MASK; values: • 0 – Do not request additional information for IO • 1 – Request additional information for IO Bit 3 (0x08) – QMI_NAS_REQUEST_SIG_INFO_ SINR_MASK; values: • 0 – Do not request additional information for SINR • 1 – Request additional information for SINR Bit 4 (0x10) – QMI_NAS_REQUEST_SIG_INFO_ ERROR_RATE_MASK; values: • 0 – Do not request additional information for Error Rate • 1 – Request additional information for Error Rate Bit 5 (0x20) – QMI_NAS_REQUEST_SIG_INFO_ RSRQ_MASK; values: • 0 – Do not request additional information for RSRQ • 1 – Request additional information for RSRQ Bit 6 (0x40) – QMI_NAS_REQUEST_SIG_INFO_ LTE_SNR_MASK; values: • 0 – Do not request additional information for LTE SNR • 1 – Request additional information for LTE SNR Bit 7 (0x80) – QMI_NAS_REQUEST_SIG_INFO_ LTE_RSRP_MASK; values: • 0 – Do not request additional information for LTE RSRP • 1 – Request additional information for LTE RSRP

3.8.2   Response - QMI_NAS_GET_SIGNAL_STRENGTH_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Signal Strength	Unknown	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Signal Strength
Length	2			2	
Value	→	int8	sig_strength	1	Received signal strength in dBm: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength • For LTE, this indicates the total received wideband power observed by the UE
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE

Optional TLVs

Name	Version introduced	Version last modified
Signal Strength List	Unknown	1.0
RSSI List	Unknown	1.3
ECIO List	Unknown	1.1
IO	Unknown	1.1
SINR	Unknown	1.1

Name	Version introduced	Version last modified
Error Rate List	Unknown	1.1
RSRQ	Unknown	1.3
LTE SNR	Unknown	1.15
LTE RSRP	Unknown	1.15

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Signal Strength List
Length	Var			2	
Value	→	uint16	num_instances	2	Number of sets of the following elements: • sig_strength • radio_if
		int8	sig_strength	1	Received signal strength in dBm: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO)
Type	0x11			1	RSSI List
Length	Var			2	
Value	→	uint16	num_instances	2	Number of sets of the following elements: • rssi • radio_if
		uint8	rssi	1	RSSI represented as a positive value; control points need to convert this to negative to get actual value in dBm: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
Type	0x12			1	ECIO List
Length	Var			2	
Value	→	uint16	num_instances	2	Number of sets of the following elements: • ecio • radio_if

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	ecio	1	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS
Type	0x13			1	IO
Length	4			2	
Value	→	uint32	io	4	Received IO in dBm. IO is only applicable for 1xEV-DO.
Type	0x14			1	SINR
Length	1			2	
Value	→	enum8	sinr	1	SINR level. SINR is only applicable for 1xEV-DO. Valid levels are 0 to 8, where the maximum value for: • 0x00 – SINR_LEVEL_0 is -9 dB • 0x01 – SINR_LEVEL_1 is -6 dB • 0x02 – SINR_LEVEL_2 is -4.5 dB • 0x03 – SINR_LEVEL_3 is -3 dB • 0x04 – SINR_LEVEL_4 is -2 dB • 0x05 – SINR_LEVEL_5 is +1 dB • 0x06 – SINR_LEVEL_6 is +3 dB • 0x07 – SINR_LEVEL_7 is +6 dB • 0x08 – SINR_LEVEL_8 is +9 dB
Type	0x15			1	Error Rate List
Length	Var			2	
Value	→	uint16	num_instances	2	Number of sets of the following elements: • error_rate • radio_if

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	error_rate	2	Error rate value corresponds to the RAT that is currently registered. For CDMA, the error rate reported is Frame Error Rate: • Valid error rate values between 1 and 10000 are returned to indicate percentage, e.g., a value of 300 means the error rate is 3% • A value of 0xFFFF indicates that the error rate is unknown or unavailable For HDR, the error rate reported is Packet Error Rate: • Valid error rate values between 1 and 10000 are returned to indicate percentage, e.g., a value of 300 means the error rate is 3% • A value of 0xFFFF indicates that the error rate is unknown or unavailable For GSM, the error rate reported is Bit Error Rate: • Valid values are 0, 100, 200, 300, 400, 500, 600, and 700 • The reported value divided by 100 gives the error rate as an RxQual value as defined in 3GPP TS 45.008 Section 8.2.4, e.g., a value of 300 represents an RxQual value of 3 • A value of 25500 indicates No Data For WCDMA, the error rate reported is Block Error Rate (BLER): • Valid values are 1 to 10000 • The reported value divided by 100 provides the error rate in percentages, e.g., a value of 300 represents a BLER of 3% • A value of 0 indicates No Data
		enum8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS
Type	0x16			1	RSRQ
Length	2			2	
Value	→	int8	rsrq	1	RSRQ value in dB (signed integer value). Range: -3 to -20 (-3 means -3 dB, -20 means -20 dB).
		uint8	radio_if	1	Radio interface technology of the signal being measured. Values: • 0x08 – LTE

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x17			1	LTE SNR
Length	2			2	
Value	→	int16	snr	2	LTE SNR level as a scaled integer in units of 0.1 dB; e.g., -16 dB has a value of -160 and 24.6 dB has a value of 246. LTE SNR is included only when the current serving system is LTE.
Type	0x18			1	LTE RSRP
Length	2			2	
Value	→	int16	lte_rsrp	2	Current LTE RSRP in dBm as measured by L1. Range: -44 to -140 (-44 means -44 dBm, -140 means -140 dBm). LTE RSRP is included only if the current serving system is LTE.

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

3.8.3 Description of QMI_NAS_GET_SIGNAL_STRENGTH REQ/RESP

This command queries the current pilot signal strength (in dBm) and the associated radio technology as measured by the receiver.

The optional Signal Strength List TLV is present if the device has more than one signal strength to indicate, e.g., in 3GPP2 Hybrid mode, both the mandatory Signal Strength TLV and the optional Signal Strength List TLV is returned to indicate the signal strengths of CDMA and EV-DO technologies.

A sig_strength value of -125 dBm or lower is used to indicate No Signal.

The optional Request Mask TLV can be used in the request to query additional signal information, such as RSSI, ECIO, IO, SINR, and error rate, which are returned in the RSSI, ECIO List, IO, SINR, and Error Rate List TLVs respectively, if available. If the device has more that one signal, e.g., in 3GPP2 Hybrid mode, the signal information is returned as a list TLV, such as RSSI List, ECIO List, and Error Rate List.

The AT command equivalent to this command is AT+CSQ, as defined in 3GPP TS 27.007, 3GPP2 C.S0017-003-A, and TIA/EIA/IS-131.

This command is deprecated. Use QMI_NAS_GET_SIG_INFO (Section 3.53).

3.9   QMI_NAS_PERFORM_NETWORK_SCAN

Performs a scan for visible networks.

NAS message ID

0x0021

Version introduced

Major - 1, Minor - 0

3.9.1   Request - QMI_NAS_PERFORM_NETWORK_SCAN_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Network Type	1.9	1.60
Scan Type	1.41	1.155
Band Preference	1.83	1.83
LTE Band Preference	1.83	1.146
TDSCDMA Band Preference	1.83	1.83

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Network Type
Length	1			2	
Value	→	mask8	network_type	1	Bitmask representing the network type to scan. Values: • Bit 0 – GSM • Bit 1 – UMTS • Bit 2 – LTE • Bit 3 – TD-SCDMA Any combination of the bit positions can be used. If the mask is sent with no bits set, the scan is performed using the currently set preference.
Type	0x11			1	Scan Type
Length	4			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	scan_type	4	Network scan type. Values: • NAS_SCAN_TYPE_PLMN (0x00) – PLMN (default) • NAS_SCAN_TYPE_CSG (0x01) – Closed subscriber group • NAS_SCAN_TYPE_MODE_PREF (0x02) – Mode preference • NAS_SCAN_TYPE_PCI (0x03) – Physical cell ID
Type	0x12			1	Band Preference
Length	8			2	
Value	→	mask	band_pref	8	Bitmask representing the band preference to be scanned. See Table A-2 for details.
Type	0x13			1	LTE Band Preference
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be scanned. See Table A-3 for details.
Type	0x14			1	TDSCDMA Band Preference
Length	8			2	
Value	→	mask	tdscdma_ band_pref	8	Bitmask representing the TD-SCDMA band preference to be scanned. Values: • NAS_TDSCDMA_BAND_A (0x01) – TD-SCDMA Band A • NAS_TDSCDMA_BAND_B (0x02) – TD-SCDMA Band B • NAS_TDSCDMA_BAND_C (0x04) – TD-SCDMA Band C • NAS_TDSCDMA_BAND_D (0x08) – TD-SCDMA Band D • NAS_TDSCDMA_BAND_E (0x10) – TD-SCDMA Band E • NAS_TDSCDMA_BAND_F (0x20) – TD-SCDMA Band F All other bits are reserved and must be set to 0.

3.9.2   Response - QMI_NAS_PERFORM_NETWORK_SCAN_RESP_MSG

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 introduced	Version last modified
3GPP Network Information**	Unknown	1.0
Network Radio Access Technology**	Unknown	1.16
MNC PCS Digit Include Status	Unknown	1.10
Network Scan Result	1.30	1.30
CSG Information	1.41	1.41
CSG Signal Strength Information	1.91	1.91
Network Name Source	1.106	1.106
PCI Information	1.155	1.155

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Network Information**
Length	Var			2	
Value	→	uint16	num_network_info_instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code • network_status • network_description_length • network_description
		uint16	mobile_country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	network_status	1	Status of the network identified by MCC and MNC preceding it. The status is encoded in a bitmapped value as follows: Bits 0-1 – QMI_NAS_NETWORK_IN_USE_ STATUS_BITS – In-use status • 0 – QMI_NAS_NETWORK_IN_USE_STATUS_ UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_IN_USE_STATUS_ CURRENT_SERVING – Current serving • 2 – QMI_NAS_NETWORK_IN_USE_STATUS_ AVAILABLE – Available Bits 2-3 – QMI_NAS_NETWORK_ROAMING_ STATUS_BITS – Roaming status • 0 – QMI_NAS_NETWORK_ROAMING_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_ROAMING_ STATUS_HOME – Home • 2 – QMI_NAS_NETWORK_ROAMING_ STATUS_ROAM – Roam Bits 4-5 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_BITS – Forbidden status • 0 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_FORBIDDEN – Forbidden • 2 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_NOT_FORBIDDEN – Not forbidden Bits 6-7 – QMI_NAS_NETWORK_PREFERRED_ STATUS_BITS – Preferred status • 0 – QMI_NAS_NETWORK_PREFERRED_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_PREFERRED_ STATUS_PREFERRED – Preferred • 2 – QMI_NAS_NETWORK_PREFERRED_ STATUS_NOT_PREFERRED – Not preferred
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_description
		string	network_ description	Var	An optional string containing the network name or description.
Type	0x11			1	Network Radio Access Technology**
Length	Var			2	
Value	→	uint16	num_inst	2	Number of sets of the following elements: • mcc • mnc • rat
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.

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Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint8	rat	1	Radio access technology. Values: • 0x04 – GERAN • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
Type	0x12			1	MNC PCS Digit Include Status
Length	Var			2	
Value	→	uint16	mnc_includes_pcs_digit_len	2	Number of sets of the following elements: • mcc • mnc • mnc_includes_pcs_digit
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x13			1	Network Scan Result
Length	4			2	
Value	→	enum	scan_result	4	Indicates the status of the network scan. Values: • 0x00 – NAS_SCAN_SUCCESS – Network scan was successful • 0x01 – NAS_SCAN_AS_ABORT – Network scan was aborted • 0x02 – NAS_SCAN_REJ_IN_RLF – Network scan did not complete due to a radio link failure recovery in progress
Type	0x14			1	CSG Information
Length	Var			2	
Value	→	uint8	csg_info_len	1	Number of sets of the following elements: • mcc • mnc • csg_list_cat • id • name_len • name
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	csg_list_cat	4	Closed subscriber group category. Values: • 0 – NAS_CSG_LIST_CAT_UNKNOWN – Unknown CSG list • 1 – NAS_CSG_LIST_CAT_ALLOWED – Allowed CSG list • 2 – NAS_CSG_LIST_CAT_OPERATOR – Operator CSG list
		uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.
Type	0x15			1	CSG Signal Strength Information
Length	Var			2	
Value	→	uint8	csg_sig_info_len	1	Number of sets of the following elements: • mcc • mnc • csg_id • signal_strength
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint32	csg_id	4	Closed subscriber group identifier.
		int32	signal_strength	4	Signal strength information in dBm.
Type	0x16			1	Network Name Source
Length	Var			2	
Value	→	uint8	nw_name_source_len	1	Number of sets of the following elements: • nw_name_source
		enum	nw_name_source	Var	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name
Type	0x17			1	PCI Information

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	Var			2	
Value	→	uint8	pci_cell_info_len	1	Number of sets of the following elements: • freq • cell_id • global_cell_id • mcc • mnc • mnc_includes_pcs_digit
		uint32	freq	4	Absolute cell's frequency. Range: 0 to 65535.
		uint16	cell_id	2	Cell ID
		uint32	global_cell_id	4	Global cell ID
		uint8	plmn_len	1	Number of sets of the following elements: • mcc • mnc • mnc_includes_pcs_digit
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
		int16	rsrp	2	Combined RSRP
		int16	rsrp_rx0	2	Rx0 RSRP
		int16	rsrp_rx1	2	Rx1 RSRP
		int16	rsrq	2	Combined RSRQ
		int16	rsrq_rx0	2	Rx0 RSRQ
		int16	rsrq_rx1	2	Rx1 RSRQ

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_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_ABORTED	Operation was aborted by the control point using QMI_NAS_ABORT_REQ
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.9.3   Description of QMI_NAS_PERFORM_NETWORK_SCAN REQ/RESP

This command performs a network scan and returns a list of visible networks. If the Network Type TLV is not included in the request, the scan is performed on GSM, WCDMA, and LTE. If the Network Type TLV is included in the request, the scan is performed on the specified networks.

In the Network Type TLV, if the RAT bitmask is not valid, a QMI_ERR_INVALID_OPERATION error is returned.

The 3GPP Network Information TLV includes zero or more sets of parameters; each set describes a single visible network detected during the scan.

If nas_3gpp_network_info_len in the 3GPP Network Information TLV is 0, the Network Radio Access Technology TLV is not included.

The Scan Type TLV is used to select the type of network scanning: regular PLMN scanning vs closed subscriber group network scanning.

If the Band Preference, LTE Band Preference, or TDSCDMA Band Preference TLVs are provided, only the bands specified are scanned. If these TLVs are not included, all bands applicable to the RAT are scanned.

This operation is not supported on CDMA.

The AT command equivalent to this command is AT+COPS, as defined in 3GPP TS 27.007.

3.10 QMI_NAS_INITIATE_NETWORK_REGISTER

Initiates a network registration. (Deprecated)

NAS message ID

0x0022

Version introduced

Major - 1, Minor - 0

3.10.1 Request - QMI_NAS_INITIATE_NETWORK_REGISTER_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Register Action	Unknown	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Register Action
Length	1			2	
Value	→	enum8	register_action	1	Specifies one of the following actions: • 0x01 – NAS_AUTO_REGISTER – Device registers according to its provisioning; optional TLVs supplied with the command are ignored • 0x02 – NAS_MANUAL_REGISTER – Device registers to a specified network; the optional Manual Network Register Information TLV must also be included for the command to process successfully; supported only for 3GPP

Optional TLVs

Name	Version introduced	Version last modified
Manual Network Register Information**	Unknown	1.17
Change Duration**	Unknown	1.5
MNC PCS Digit Include Status	Unknown	1.12

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Manual Network Register Information**
Length	5			2	
Value	→	uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		enum8	radio_access_ technology	1	Radio access technology for which to register. Values: • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE • -1 – RADIO_IF_NO_CHANGE – No change in the mode preference
Type	0x11			1	Change Duration**
Length	1			2	
Value	→	enum8	change_ duration	1	Duration of the change. Values: • 0x00 – Power cycle – Remains active until the next device power cycle • 0x01 – Permanent – Remains active through power cycles until changed by the client **Note:** The device will use "0x00 – Power cycle" as the default value if the TLV is omitted.
Type	0x12			1	MNC PCS Digit Include Status
Length	1			2	
Value	→	boolean	mnc_includes_ pcs_digit	1	This TLV applies to the MNC field of the manual_network_register_info data structure. Values: • TRUE – MNC is a three-digit value • FALSE – MNC is a two-digit value If this TLV is not included in the case of a manual register option, the value of the MNC value specified in manual_network_register_info is interpreted as follows: • If the MNC value is less than 100, the MNC value provided is interpreted as a two-digit value. • If the MNC value is greater than or equal to 100, the MNC value provided is interpreted as a three-digit value.

3.10.2   Response - QMI_NAS_INITIATE_NETWORK_REGISTER_RESP_-MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_OP_DEVICE_UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_REGISTER_ACTION	Invalid register action value was specified in the request
QMI_ERR_NO_NETWORK_FOUND	Network specified in the manual registration request cannot be found
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.10.3   Description of QMI_NAS_INITIATE_NETWORK_REGISTER REQ/RESP

This command initiates an automatic or manual registration to the specified network.

If the Result Code TLV indicates success, the device has started the requested operation.

The control point must always process the QMI_NAS_SERVING_SYSTEM_IND indication to learn the current registration state of the device.

The AT command equivalent to this command is AT+COPS, as defined in 3GPP TS 27.007.

This command is deprecated. Qualcomm recommends using QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE (Section 3.28) to set the system selection preference. From version 1.5, the Network Selection Preference TLV is added in QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE; the functionality of the QMI_NAS_INITIATE_NETWORK_REGISTER command is also achieved via QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE.

3.11   QMI_NAS_INITIATE_ATTACH

Initiates a domain attach or detach action. (Deprecated)

NAS message ID

0x0023

Version introduced

Major - 1, Minor - 0

3.11.1   Request - QMI_NAS_INITIATE_ATTACH_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

The following optional TLV must be included in this request.

Name	Version introduced	Version last modified
PS Attach Action**	Unknown	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	PS Attach Action**
Length	1			2	
Value	→	enum8	ps_attach_ action	1	Initiates a packet domain attach or detach action. Values: • 0x01 – PS_ACTION_ATTACH – Initiates an immediate packet domain attach action • 0x02 – PS_ACTION_DETACH – Initiates an immediate packet domain detach action

3.11.2   Response - QMI_NAS_INITIATE_ATTACH_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_OP_NETWORK_ UNSUPPORTED	Operation is not supported by the network
QMI_ERR_INVALID_PS_ATTACH_ ACTION	Invalid PS attach action value was specified in the request

3.11.3   Description of QMI_NAS_INITIATE_ATTACH REQ/RESP

This command initiates a domain attach or detach action.

If the Result Code TLV indicates success, this means the device has started the requested operation.

The control point must always process the QMI_NAS_SERVING_SYSTEM_IND indication to learn the current attachment state of the device.

CDMA networks do not have the concept of domain attachment. This command fails if the current mode is CDMA.

The AT command equivalent to this command is AT+CGATT, as defined in 3GPP TS 27.007.

This command is deprecated. Use QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE (Section 3.28).

3.12 QMI_NAS_GET_SERVING_SYSTEM

Queries information regarding the system that currently provides service. (Deprecated)

NAS message ID

0x0024

Version introduced

Major - 1, Minor - 0

3.12.1 Request - QMI_NAS_GET_SERVING_SYSTEM_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.12.2 Response - QMI_NAS_GET_SERVING_SYSTEM_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Serving System	Unknown	1.3

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Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Serving System
Length	Var			2	
Value	→	enum8	registration_state	1	Registration state of the mobile. Values: • 0x00 – NOT_REGISTERED – Not registered; mobile is not currently searching for a new network to provide service • 0x01 – REGISTERED – Registered with a network • 0x02 – NOT_REGISTERED_SEARCHING – Not registered, but mobile is currently searching for a new network to provide service • 0x03 – REGISTRATION_DENIED – Registration denied by the visible network • 0x04 – REGISTRATION_UNKNOWN – Registration state is unknown
		enum8	cs_attach_state	1	Circuit-switched domain attach state of the mobile. Values: • 0x00 – CS_UNKNOWN – Unknown or not applicable • 0x01 – CS_ATTACHED – Attached • 0x02 – CS_DETACHED – Detached
		enum8	ps_attach_state	1	Packet-switched domain attach state of the mobile. Values: • 0x00 – PS_UNKNOWN – Unknown or not applicable • 0x01 – PS_ATTACHED – Attached • 0x02 – PS_DETACHED – Detached
		enum8	selected_network	1	Type of selected radio access network. Values: • 0x00 – SELECTED_NETWORK_UNKNOWN – Unknown • 0x01 – SELECTED_NETWORK_3GPP2 – 3GPP2 network • 0x02 – SELECTED_NETWORK_3GPP – 3GPP network
		uint8	in_use_radio_if_list_num	1	Number of sets of the following elements: • radio_if
		enum8	radio_if	Var	Radio interface currently in use. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE

Optional TLVs

Name	Version introduced	Version last modified
Roaming Indicator Value	Unknown	1.0
Data Service Capability	Unknown	1.4
Current PLMN	Unknown	1.0
CDMA System ID	Unknown	1.1
CDMA Base Station Information	Unknown	1.1
Roaming Indicator List	Unknown	1.3
Default Roaming Indicator	Unknown	1.1
3GGP2 Time Zone	Unknown	1.1
CDMA P_Rev in Use	Unknown	1.1
3GPP Time Zone	Unknown	1.4
3GPP Network Daylight Saving Adjustment	Unknown	1.4
3GPP Location Area Code	Unknown	1.5
3GPP Cell ID	Unknown	1.5
3GPP2 Concurrent Service Info	Unknown	1.5
3GPP2 PRL Indicator	Unknown	1.5
Dual Transfer Mode Indication	Unknown	1.5
Detailed Service Information	Unknown	1.5
CDMA System Info	Unknown	1.6
HDR Personality	Unknown	1.7
TAC Information for LTE	Unknown	1.7
Call Barring Status	Unknown	1.12
UMTS Primary Scrambling Code	Unknown	1.14
MNC PCS Digit Include Status	Unknown	1.17
HS Call Status	1.23	1.125
3GPP Network Name Source	1.113	1.113

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Roaming Indicator Value
Length	1			2	
Value	→	enum8	roaming_ indicator	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home • 0x02 and above – Operator-defined values
Type	0x11			1	Data Service Capability
Length	Var			2	
Value	→	uint8	data_ capability_ list_len	1	Number of sets of the following elements: • data_capabilities

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	data_ capabilities	Var	List of data capabilities (each is 1 byte) of the current serving system. Possible values: • 0x01 – DATA_CAPABILITIES_GPRS – GPRS • 0x02 – DATA_CAPABILITIES_EDGE – EDGE • 0x03 – DATA_CAPABILITIES_HSDPA – HSDPA • 0x04 – DATA_CAPABILITIES_HSUPA – HSUPA • 0x05 – DATA_CAPABILITIES_WCDMA – WCDMA • 0x06 – DATA_CAPABILITIES_CDMA – CDMA • 0x07 – DATA_CAPABILITIES_EVDO_REV_O – EV-DO REV 0 • 0x08 – DATA_CAPABILITIES_EVDO_REV_A – EV-DO REV A • 0x09 – DATA_CAPABILITIES_GSM – GSM • 0x0A – DATA_CAPABILITIES_EVDO_REV_B – EV-DO REV B • 0x0B – DATA_CAPABILITIES_LTE – LTE • 0x0C – DATA_CAPABILITIES_HSDPA_PLUS – HSDPA+ • 0x0D – DATA_CAPABILITIES_DC_HSDPA_ PLUS – DC-HSDPA+
Type	0x12			1	Current PLMN
Length	Var			2	
Value	→	uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_description
		string	network_ description	Var	An optional string containing the network name or description.
Type	0x13			1	CDMA System ID
Length	4			2	
Value	→	uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
Type	0x14			1	CDMA Base Station Information
Length	10			2	
Value	→	uint16	base_id	2	Base station identification number.
		int32	base_lat	4	Base station latitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying North latitudes.
		int32	base_long	4	Base station longitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying East longitude.
Type	0x15			1	Roaming Indicator List
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • roaming_indicator
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
		enum8	roaming_indicator	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home Values from 2 onward are applicable only for 3GPP2. Refer to 3GPP2 C.R1001-F for the meanings of these values.
Type	0x16			1	Default Roaming Indicator
Length	1			2	
Value	→	enum8	def_roam_ind	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home Values from 2 onward are applicable only for 3GPP2. Refer to 3GPP2 C.R1001-F for the meanings of these values.
Type	0x17			1	3GGP2 Time Zone
Length	3			2	
Value	→	uint8	lp_sec	1	Number of leap seconds since the start of CDMA system time.
		int8	ltm_offset	1	Offset of local time from system time in units of 30 min. The value in this field conveys the offset as an 8-bit two's complement number.
		boolean	daylt_savings	1	Daylight saving indicator. Values: • 0x00 – OFF (daylight saving not in effect) • 0x01 – ON (daylight saving in effect)
Type	0x18			1	CDMA P_Rev in Use
Length	1			2	
Value	→	uint8	p_rev_in_use	1	P_Rev that is currently in use.
Type	0x1A			1	3GPP Time Zone
Length	1			2	
Value	→	int8	time_zone	1	Offset from Universal time, i.e., difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x1B			1	3GPP Network Daylight Saving Adjustment
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	adj	1	3GPP network daylight saving adjustment. Values: • 0x00 – No adjustment for Daylight Saving Time • 0x01 – 1 hr adjustment for Daylight Saving Time • 0x02 – 2 hr adjustment for Daylight Saving Time
Type	0x1C			1	3GPP Location Area Code
Length	2			2	
Value	→	uint16	lac	2	Location area code.
Type	0x1D			1	3GPP Cell ID
Length	4			2	
Value	→	uint32	cell_id	4	3GPP cell ID.
Type	0x1E			1	3GPP2 Concurrent Service Info
Length	1			2	
Value	→	uint8	ccs	1	3GPP2 concurrent service information. Values: • 0x00 – Concurrent service not available • 0x01 – Concurrent service available
Type	0x1F			1	3GPP2 PRL Indicator
Length	1			2	
Value	→	uint8	prl_ind	1	3GPP2 PRL indicator. Values: • 0x00 – System not in PRL • 0x01 – System is in PRL
Type	0x20			1	Dual Transfer Mode Indication (GSM Only)
Length	1			2	
Value	→	uint8	dtm_ind	1	Dual Transfer mode indication. Values: • 0x00 – DTM not supported • 0x01 – DTM supported
Type	0x21			1	Detailed Service Information
Length	5			2	
Value	→	uint8	srv_status	1	Service status. Values: • 0x00 – No service • 0x01 – Limited service • 0x02 – Service available • 0x03 – Limited regional service • 0x04 – MS in power save or deep sleep
		uint8	srv_capability	1	System's service capability. Values: • 0x00 – No service • 0x01 – Circuit-switched only • 0x02 – Packet-switched only • 0x03 – Circuit-switched and-packet switched • 0x04 – MS found the right system but not yet registered/attached
		uint8	hdr_srv_status	1	HDR service status. Values: • 0x00 – No service • 0x01 – Limited service • 0x02 – Service available • 0x03 – Limited regional service • 0x04 – MS in power save or deep sleep

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	hdr_hybrid	1	HDR hybrid information. Values: • 0x00 – System is not hybrid • 0x01 – System is hybrid
		uint8	is_sys_ forbidden	1	Forbidden system information. Values: • 0x00 – System is not a forbidden system • 0x01 – System is a forbidden system
Type	0x22			1	CDMA System Info
Length	3			2	
Value	→	uint16	mcc	2	Mobile country code.
		uint8	imsi_11_12	1	IMSI_11_12.
Type	0x23			1	HDR Personality
Length	1			2	
Value	→	enum8	hdr_personality	1	HDR personality information. Values: • 0x00 – Unknown • 0x01 – HRPD • 0x02 – eHRPD
Type	0x24			1	TAC Information for LTE
Length	2			2	
Value	→	uint16	tac	2	Tracking area code information for LTE.
Type	0x25			1	Call Barring Status
Length	8			2	
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x26			1	UMTS Primary Scrambling Code
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	umts_psc	2	Primary scrambling code.
Type	0x27			1	MNC PCS Digit Include Status
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x28			1	HS Call Status
Length	1			2	
Value	→	enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • SYS_HS_IND_HSDPA_HSUPA_UNSUPP_CELL (0x00) – HSDPA and HSUPA are unsupported • SYS_HS_IND_HSDPA_SUPP_CELL (0x01) – HSDPA is supported • SYS_HS_IND_HSUPA_SUPP_CELL (0x02) – HSUPA is supported • SYS_HS_IND_HSDPA_ HSUPA_SUPP_CELL (0x03) – HSDPA and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_SUPP_CELL (0x04) – HSDPA+ is supported • SYS_HS_IND_HSDPAPLUS_HSUPA_SUPP_ CELL (0x05) – HSDPA+ and HSUPA are supported • SYS_HS_IND_DC_HSDPAPLUS_SUPP_CELL (0x06) – Dual-cell HSDPA+ is supported • SYS_HS_IND_DC_HSDPAPLUS_HSUPA_SUPP_ CELL (0x07) – Dual-cell HSDPA+ and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_64QAM_HSUPA_ SUPP_CELL (0x08) – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_64QAM_SUPP_ CELL (0x09) – Dual-cell HSDPA+ and 64 QAM are supported • SYS_HS_IND_DC_HSDPAPLUS_DC_HSUPA_ SUPP_CELL (0x0A) – Dual-cell HSDPA+ and dual-cell HSUPA are supported
Type	0x29			1	3GPP Network Name Source
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	nas_3gpp_nw_ name_source	4	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_ PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_ MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name

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_INFO_UNAVAILABLE	Information is not available at this time

3.12.3   Description of QMI_NAS_GET_SERVING_SYSTEM REQ/RESP

This command queries current serving system and registration information, including system identification, registration state, and radio technology information.

The roaming indicator and the current PLMN are not included in the response when the device is not registered.

If registered on the 3GPP network, and relevant information has been sent from the network, the 3GPP Time Zone and/or 3GPP Network Daylight Saving Adjustment TLVs are included.

The 3GPP Location Area Code and 3GPP Cell ID TLVs are included if the UE is registered on the 3GPP network. The 3GPP2 Concurrent Service Info and 3GPP2 PRL Indicator TLVs are included if the UE is registered on the 3GPP2 network. The Dual Transfer Mode Indication TLV is included if the UE is registered on the GSM network. The Detailed Service Information TLV is included so clients can retrieve detailed information about the Call Manager layer to fine-tune their internal states.

The Call Barring Status TLV is included only in GSM or WCDMA networks.

The AT command equivalent to this command is AT+CSS, as defined in 3GPP TS 27.007, 3GPP2 C.S0017-003-A, and TIA/EIA/IS-131.

The MNC PCS Digit Include Status TLV is used to indicate if pcs_digit is included in mnc. This TLV is present when the Current PLMN (TLV 0x12) is also present.

This command is deprecated. Use QMI_NAS_GET_SYS_INFO (Section 3.51).

3.13   QMI_NAS_SERVING_SYSTEM_IND

Indicates a change in the current serving system registration state and/or radio technology. (Deprecated)

NAS message ID

0x0024

Version introduced

Major - 1, Minor - 0

3.13.1   Indication - QMI_NAS_SERVING_SYSTEM_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Serving System	Unknown	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Serving System
Length	Var			2	
Value	→	enum8	registration_state	1	Registration state of the mobile. Values: • 0x00 – NOT_REGISTERED – Not registered; mobile is not currently searching for a new network to provide service • 0x01 – REGISTERED – Registered with a network • 0x02 – NOT_REGISTERED_SEARCHING – Not registered, but mobile is currently searching for a new network to provide service • 0x03 – REGISTRATION_DENIED – Registration denied by the visible network • 0x04 – REGISTRATION_UNKNOWN – Registration state is unknown

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	cs_attach_state	1	Circuit-switched domain attach state of the mobile. Values: • 0x00 – CS_UNKNOWN – Unknown or not applicable • 0x01 – CS_ATTACHED – Attached • 0x02 – CS_DETACHED – Detached
		enum8	ps_attach_state	1	Packet-switched domain attach state of the mobile. Values: • 0x00 – PS_UNKNOWN – Unknown or not applicable • 0x01 – PS_ATTACHED – Attached • 0x02 – PS_DETACHED – Detached
		enum8	selected_ network	1	Type of selected radio access network. Values: • 0x00 – SELECTED_NETWORK_UNKNOWN – Unknown • 0x01 – SELECTED_NETWORK_3GPP2 – 3GPP2 network • 0x02 – SELECTED_NETWORK_3GPP – 3GPP network
		uint8	in_use_radio_ if_list_num	1	Number of sets of the following elements: • radio_if
		enum8	radio_if	Var	Radio interface currently in use. Values: • 0x00 – RADIO_IF_NO_SVC – None (no service) • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE

Optional TLVs

Name	Version introduced	Version last modified
Roaming Indicator Value	Unknown	1.0
Data Service Capability	Unknown	1.4
Current PLMN	Unknown	1.0
CDMA System ID	Unknown	1.1
CDMA Base Station Information	Unknown	1.1
Roaming Indicator List	Unknown	1.3
Default Roaming Indicator	Unknown	1.1
3GGP2 Time Zone	Unknown	1.1
CDMA P_Rev in Use	Unknown	1.1
3GPP PLMN Name Flag	Unknown	1.6
3GPP Time Zone	Unknown	1.4
3GPP Network Daylight Saving Adjustment	Unknown	1.4
3GPP Universal Time and Local Time Zone	Unknown	1.4

Name	Version introduced	Version last modified
3GPP Location Area Code	Unknown	1.5
3GPP Cell ID	Unknown	1.5
3GPP2 Concurrent Service Info	Unknown	1.5
3GPP2 PRL Indicator	Unknown	1.5
Dual Transfer Mode Indication	Unknown	1.5
Detailed Service Information	Unknown	1.5
CDMA System Info Ext	Unknown	1.7
HDR Personality	Unknown	1.7
TAC Information for LTE	Unknown	1.7
Call Barring Status	Unknown	1.12
PLMN Change Status	Unknown	1.13
UMTS Primary Scrambling Code	Unknown	1.14
MNC PCS Digit Include Status	Unknown	1.17
HS Call Status	1.23	1.125
3GPP Network Name Source	1.113	1.113

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Roaming Indicator Value
Length	1			2	
Value	→	enum8	roaming_ indicator	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home • 0x02 – ROAMING_IND_FLASHING – Flashing • 0x03 and above – Operator-defined values
Type	0x11			1	Data Service Capability
Length	Var			2	
Value	→	uint8	data_ capability_ list_lent	1	Number of sets of the following elements: • data_capabilities

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	data_ capabilities	Var	List of data capabilities (each is 1 byte) of the current serving system. Possible values: • 0x01 – DATA_CAPABILITIES_GPRS – GPRS • 0x02 – DATA_CAPABILITIES_EDGE – EDGE • 0x03 – DATA_CAPABILITIES_HSDPA – HSDPA • 0x04 – DATA_CAPABILITIES_HSUPA – HSUPA • 0x05 – DATA_CAPABILITIES_WCDMA – WCDMA • 0x06 – DATA_CAPABILITIES_CDMA – CDMA • 0x07 – DATA_CAPABILITIES_EVDO_REV_O – EV-DO REV 0 • 0x08 – DATA_CAPABILITIES_EVDO_REV_A – EV-DO REV A • 0x09 – DATA_CAPABILITIES_GSM – GSM • 0x0A – DATA_CAPABILITIES_EVDO_REV_B – EV-DO REV B • 0x0B – DATA_CAPABILITIES_LTE – LTE • 0x0C – DATA_CAPABILITIES_HSDPA_PLUS – HSDPA+ • 0x0D – DATA_CAPABILITIES_DC_HSDPA_ PLUS – DC-HSDPA+
Type	0x12			1	Current PLMN
Length	Var			2	
Value	→	uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_description
		string	network_ description	Var	An optional string containing the network name or description.
Type	0x13			1	CDMA System ID
Length	4			2	
Value	→	uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
Type	0x14			1	CDMA Base Station Information
Length	10			2	
Value	→	uint16	base_id	2	Base station identification number.
		int32	base_lat	4	Base station latitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying North latitudes.
		int32	base_long	4	Base station longitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying East longitude.
Type	0x15			1	Roaming Indicator List
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • roaming_indicator
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x03 – RADIO_IF_AMPS – AMPS • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
		enum8	roaming_indicator	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home Values from 2 onward are applicable only for 3GPP2. Refer to 3GPP2 C.R1001-F for the meanings of these values.
Type	0x16			1	Default Roaming Indicator
Length	1			2	
Value	→	enum8	def_roam_ind	1	Roaming indicator. Values: • 0x00 – ROAMING_IND_ON – Roaming • 0x01 – ROAMING_IND_OFF – Home Values from 2 onward are applicable only for 3GPP2. Refer to 3GPP2 C.R1001-F for the meanings of these values.
Type	0x17			1	3GGP2 Time Zone
Length	3			2	
Value	→	uint8	lp_sec	1	Number of leap seconds since the start of CDMA system time.
		int8	ltm_offset	1	Offset of local time from system time in units of 30 min. The value in this field conveys the offset as an 8-bit two's complement number.
		boolean	daylt_savings	1	Daylight saving indicator. Values: • 0x00 – OFF (daylight saving not in effect) • 0x01 – ON (daylight saving in effect)
Type	0x18			1	CDMA P_Rev in Use
Length	1			2	
Value	→	uint8	p_rev_in_use	1	P_Rev that is currently in use.
Type	0x19			1	3GPP PLMN Name Flag
Length	1			2	
Value	→	boolean	plmn_ description_ changed	1	Flag indicating that the 3GPP EONS network description changed. Values: • 0x01 – PLMN name changed
Type	0x1A			1	3GPP Time Zone
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int8	time_zone	1	Offset from Universal time, i.e., difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x1B			1	3GPP Network Daylight Saving Adjustment
Length	1			2	
Value	→	uint8	adj	1	3GPP network daylight saving adjustment. Values: • 0x00 – No adjustment for Daylight Saving Time • 0x01 – 1 hr adjustment for Daylight Saving Time • 0x02 – 2 hr adjustment for Daylight Saving Time
Type	0x1C			1	3GPP Universal Time and Local Time Zone
Length	8			2	
Value	→	uint16	year	2	Year.
		uint8	month	1	Month.
		uint8	day	1	Day.
		uint8	hour	1	Hour.
		uint8	minute	1	Minute.
		uint8	second	1	Second.
		int8	time_zone	1	Offset from Universal time, i.e., difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x1D			1	3GPP Location Area Code
Length	2			2	
Value	→	uint16	lac	2	Location area code.
Type	0x1E			1	3GPP Cell ID
Length	4			2	
Value	→	uint32	cell_id	4	3GPP cell ID.
Type	0x1F			1	3GPP2 Concurrent Service Info
Length	1			2	
Value	→	uint8	ccs	1	3GPP2 concurrent service information. Values: • 0x00 – Concurrent service not available • 0x01 – Concurrent service available
Type	0x20			1	3GPP2 PRL Indicator
Length	1			2	
Value	→	uint8	prl_ind	1	3GPP2 PRL indicator. Values: • 0x00 – System not in PRL • 0x01 – System is in PRL
Type	0x21			1	Dual Transfer Mode Indication (GSM Only)
Length	1			2	
Value	→	uint8	dtm_ind	1	Dual Transfer mode indication. Values: • 0x00 – DTM not supported • 0x01 – DTM supported
Type	0x22			1	Detailed Service Information
Length	5			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	srv_status	1	Service status. Values: • 0x00 – No service • 0x01 – Limited service • 0x02 – Service available • 0x03 – Limited regional service • 0x04 – MS in power save or deep sleep
		uint8	srv_capability	1	System's service capability. Values: • 0x00 – No service • 0x01 – Circuit-switched only • 0x02 – Packet-switched only • 0x03 – Circuit-switched and-packet switched • 0x04 – MS found the right system but not yet registered/attached
		uint8	hdr_srv_status	1	HDR service status. Values: • 0x00 – No service • 0x01 – Limited service • 0x02 – Service available • 0x03 – Limited regional service • 0x04 – MS in power save or deep sleep
		uint8	hdr_hybrid	1	HDR hybrid information. Values: • 0x00 – System is not hybrid • 0x01 – System is hybrid
		uint8	is_sys_ forbidden	1	Forbidden system information. Values: • 0x00 – System is not a forbidden system • 0x01 – System is a forbidden system
Type	0x23			1	CDMA System Info Ext
Length	3			2	
Value	→	uint16	mcc	2	Mobile country code.
		uint8	imsi_11_12	1	IMSI_11_12.
Type	0x24			1	HDR Personality
Length	1			2	
Value	→	enum8	hdr_personality	1	HDR personality information. Values: • 0x00 – Unknown • 0x01 – HRPD • 0x02 – eHRPD
Type	0x25			1	TAC Information for LTE
Length	2			2	
Value	→	uint16	tac	2	Tracking area code information for LTE.
Type	0x26			1	Call Barring Status
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x27			1	PLMN Change Status
Length	1			2	
Value	→	boolean	srv_sys_no_change	1	Flag used to notify clients that a request to select a network ended with no change in the PLMN. Values: • 0x01 – No change in serving system information
Type	0x28			1	UMTS Primary Scrambling Code
Length	2			2	
Value	→	uint16	umts_psc	2	Primary scrambling code.
Type	0x29			1	MNC PCS Digit Include Status
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x2A			1	HS Call Status

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	1			2	
Value	→	enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • SYS_HS_IND_HSDPA_HSUPA_UNSUPP_CELL (0x00) – HSDPA and HSUPA are unsupported • SYS_HS_IND_HSDPA_SUPP_CELL (0x01) – HSDPA is supported • SYS_HS_IND_HSUPA_SUPP_CELL (0x02) – HSUPA is supported • SYS_HS_IND_HSDPA_ HSUPA_SUPP_CELL (0x03) – HSDPA and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_SUPP_CELL (0x04) – HSDPA+ is supported • SYS_HS_IND_HSDPAPLUS_HSUPA_SUPP_ CELL (0x05) – HSDPA+ and HSUPA are supported • SYS_HS_IND_DC_HSDPAPLUS_SUPP_CELL (0x06) – Dual-cell HSDPA+ is supported • SYS_HS_IND_DC_HSDPAPLUS_HSUPA_SUPP_ CELL (0x07) – Dual-cell HSDPA+ and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_64QAM_HSUPA_ SUPP_CELL (0x08) – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • SYS_HS_IND_HSDPAPLUS_64QAM_SUPP_ CELL (0x09) – Dual-cell HSDPA+ and 64 QAM are supported • SYS_HS_IND_DC_HSDPAPLUS_DC_HSUPA_ SUPP_CELL (0x0A) – Dual-cell HSDPA+ and dual-cell HSUPA are supported
Type	0x2B			1	3GPP Network Name Source
Length	4			2	
Value	→	enum	nas_3gpp_nw_name_source	4	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_ PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_ MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name

3.13.2   Description of QMI_NAS_SERVING_SYSTEM_IND

This broadcast indication is sent (intended for all control points) when the current serving system registration state and/or radio technology changes.

The roaming indicator and the current PLMN are not included in the response when the device is not registered.

If registered on the 3GPP network and time zone, and relevant information has been sent from the network, the 3GPP Universal Time and Local Time Zone, 3GPP Time Zone, and/or 3GPP Network Daylight Saving Adjustment TLVs are included.

If registered, the presence of the optional 3GPP PLMN Name Flag TLV indicates that the operator name may have changed. The QMI_NAS_GET_PLMN_NAME command must be used to query the updated network name for the current PLMN.

The 3GPP Location Area Code and 3GPP Cell ID TLVs are included if the UE is registered on the 3GPP network. The 3GPP2 Concurrent Service Info and 3GPP2 PRL Indicator TLVs are included if the UE is registered on the 3GPP2 network. The Dual Transfer Mode Indication TLV is included if the UE is registered on the GSM network. The Detailed Service Information TLV is included so clients can retrieve detailed information about the Call Manager layer to fine-tune their internal states.

The Call Barring Status TLV is included only in GSM or WCDMA networks.

The AT command equivalent to this command is AT+CSS, defined in 3GPP2 C.S0017-003-A and TIA/EIA/IS-131, and AT+CREG is defined in 3GPP TS 27.007.

The MNC PCS Digit Include Status TLV is used to indicate if pcs_digit is included in mnc. This TLV is present when the Current PLMN (TLV 0x12) is also present.

This indication is deprecated. Use QMI_NAS_SYS_INFO_IND (Section 3.52).

3.14 QMI_NAS_GET_HOME_NETWORK

Retrieves information about the home network of the device.

NAS message ID

0x0025

Version introduced

Major - 1, Minor - 0

3.14.1 Request - QMI_NAS_GET_HOME_NETWORK_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.14.2 Response - QMI_NAS_GET_HOME_NETWORK_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Home Network	Unknown	1.0

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Home Network
Length	Var			2	
Value	→	uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_description
		string	network_ description	Var	An optional string containing the network name or description.

Optional TLVs

Name	Version introduced	Version last modified
Home System ID	Unknown	1.1
3GPP2 Home Network Ext	Unknown	1.25
3GPP Home Network MNC	1.47	1.47
3GPP Network Name Source	1.106	1.106

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Home System ID
Length	4			2	
Value	→	uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
Type	0x11			1	3GPP2 Home Network Ext
Length	Var			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		enum8	network_desc_ display	1	Whether the network name is to be conditionally displayed: • 0x00 – Do not display • 0x01 – Display • 0xFF – Unknown **Note:** This value is ignored if the network_description_len is zero.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	network_desc_ encoding	1	Encoding of the network description. Refer to 3GPP2 C.R1001-F Table 9.1.1 for a list of all defined values. Common (but not all) values include: • 0x00 – Octet, unspecified • 0x02 – 7-bit ASCII • 0x04 – Unicode (refer to ISO/IEC 10646) • 0x09 – GSM 7-bit default (refer to 3GPP TS 23.038) **Note:** This value is ignored if the network_description_len is zero. If the encoding type is not recognized the network_description is ignored.
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_desc
		opaque	network_desc	Var	Length of network description string that follows. If the network name is unknown or not included, the length is 0.
Type	0x12			1	3GPP Home Network MNC (includes PCS digit status)
Length	2			2	
Value	→	boolean	is_3gpp_ network	1	TRUE if TLV 0x01 corresponds to a 3GPP network; otherwise FALSE.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the mobile_network_code reported in TLV 0x01. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90 **Note:** This value is ignored if is_3gpp_network is FALSE.
Type	0x13			1	3GPP Network Name Source
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	nas_3gpp_nw_name_source	4	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name

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_NOT_PROVISIONED	Home network is not provisioned on the device

3.14.3   Description of QMI_NAS_GET_HOME_NETWORK REQ/RESP

This command returns the home network (MCC and MNC) and a description string, when available.

If available in the device provisioning, this command returns an optional System ID and Network ID (SID and NID).

If available in the device provisioning, this command returns an optional 3GPP2 Home Network Ext TLV. This TLV includes the 3GPP2 home network (MCC and MNC), network description and encoding, if available, and display setting.

3.15   QMI_NAS_GET_PREFERRED_NETWORKS

Queries the list of preferred networks from the device.

NAS message ID

0x0026

Version introduced

Major - 1, Minor - 0

3.15.1   Request - QMI_NAS_GET_PREFERRED_NETWORKS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.15.2   Response - QMI_NAS_GET_PREFERRED_NETWORKS_RESP_-
MSG

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 introduced	Version last modified
3GPP Preferred Networks**	Unknown	1.3
Static 3GPP Preferred Networks**	Unknown	1.3
3GPP Preferred Networks MNC	1.45	1.45
Static 3GPP Preferred Networks MNC	1.45	1.45

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Preferred Networks**
Length	Var			2	
Value	→	uint16	num_preferred_network_instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code • radio_access_technology
		uint16	mobile_country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint16	radio_access_technology	2	RAT as a bitmask (bit count begins from zero). Values: • Bit 15 – UMTS • Bit 14 – LTE • Bit 7 – GSM • Bit 6 – GSM compact • All bits set to 0 – No access technology is available from the device
Type	0x11			1	Static 3GPP Preferred Networks**
Length	Var			2	
Value	→	uint16	num_preferred_network_instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code • radio_access_technology
		uint16	mobile_country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint16	radio_access_technology	2	RAT as a bitmask (bit count begins from zero). Values: • Bit 15 – UMTS • Bit 14 – LTE • Bit 7 – GSM • Bit 6 – GSM compact • All bits set to 0 – No access technology is available from the device
Type	0x12			1	3GPP Preferred Networks MNC (includes PCS digit status)

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	Var			2	
Value	→	uint8	nas_3gpp_ mnc_includes_ pcs_digit_len	1	Number of sets of the following elements: • mcc • mnc • mnc_includes_pcs_digit
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x13			1	Static 3GPP Preferred Networks MNC (includes PCS digit status)
Length	Var			2	
Value	→	uint8	static_3gpp_ mnc_includes_ pcs_digit_len	1	Number of sets of the following elements: • mcc • mnc • mnc_includes_pcs_digit
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_SIM_FILE_NOT_FOUND	Operation could not be performed as the relevant file (EF) is not present in the SIM

3.15.3 Description of QMI_NAS_GET_PREFERRED_NETWORKS REQ/RESP

This command queries the list of preferred networks from the device. Higher priority networks appear first in the list.

The 3GPP preferred networks list can be queried, regardless of the radio interface in use (CDMA, UMTS, etc.).

The AT command equivalent to this command is AT+CPOL, as defined in TIA/EIA/IS-131.

The Static 3GPP Preferred Networks TLV is used to return a read-only list of preferred networks from the device. This read-only list is typically set in the device by the operator. The networks that appear in the 3GPP Preferred Networks TLV get higher priority than the networks in the static 3GPP preferred networks list.

3.16   QMI_NAS_SET_PREFERRED_NETWORKS

Writes the specified list of preferred networks to the device.

NAS message ID

0x0027

Version introduced

Major - 1, Minor - 0

3.16.1   Request - QMI_NAS_SET_PREFERRED_NETWORKS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

The following optional TLV must be included in this request.

Name	Version introduced	Version last modified
3GPP Preferred Networks**	Unknown	1.3
3GPP Preferred Networks MNC	1.45	1.45
Clear Previous Preferred Networks List	1.45	1.45

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Preferred Networks**
Length	Var			2	
Value	→	uint16	num_ preferred_ network_ instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code • radio_access_technology
		uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	radio_access_ technology	2	RAT as a bitmask (bit count begins from zero). Values: • Bit 15 – UMTS • Bit 14 – LTE • Bit 7 – GSM • Bit 6 – GSM compact • All bits set to 0 – No access technology is available from the device
Type	0x11			1	3GPP Preferred Networks MNC (includes PCS digit status)
Length	Var			2	
Value	→	uint8	nas_3gpp_ mnc_includes_ pcs_digit_len	1	Number of sets of the following elements: • mcc • mnc • mnc_includes_pcs_digit
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x12			1	Clear Previous Preferred Networks List
Length	1			2	
Value	→	boolean	clear_prev_ preferred_ networks	1	Indicates whether to add padding to the incoming preferred networks list and to fully clear out the previous preferred networks list.

3.16.2 Response - QMI_NAS_SET_PREFERRED_NETWORKS_RESP_-MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_SIM_FILE_NOT_FOUND	Operation could not be performed as the relevant file (EF) is not present in the SIM

3.16.3   Description of QMI_NAS_SET_PREFERRED_NETWORKS REQ/RESP

This command writes the specified list of preferred networks to the device; it also overwrites the existing preferred networks list in the device.

The preferred network list affects network selection when automatic registration is performed by the device. Networks must be specified in order of priority, i.e., the most preferred network must appear first in the list. The control point may query the existing list and present the list to the user, rather than blindly overwriting it.

The 3GPP preferred network list can be written, regardless of the radio interface in use (CDMA, UMTS, etc.).

The AT command equivalent to this command is AT+CPOL, as defined in TIA/EIA/IS-131.

In cases where the device does not support the storage of RAT, only the MCC and MNC list that is present in the request will be attempted to be set, and the RAT value in the request is ignored. In such cases, the QMI_NAS_GET_PREFERRED_NETWORKS request, if successful, returns the preferred networks list with a RAT value of 0 in the response, as described in Section 3.15.3.

3.17   QMI_NAS_GET_FORBIDDEN_NETWORKS

Queries the list of forbidden networks from the device.

NAS message ID

0x0028

Version introduced

Major - 1, Minor - 0

3.17.1   Request - QMI_NAS_GET_FORBIDDEN_NETWORKS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.17.2   Response - QMI_NAS_GET_FORBIDDEN_NETWORKS_RESP_-
MSG

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 introduced	Version last modified
3GPP Forbidden Networks**	Unknown	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Forbidden Networks**
Length	Var			2	
Value	→	uint16	num_ forbidden_ network_ instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code
		uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_SIM_FILE_NOT_FOUND	Operation could not be performed as the relevant file (EF) is not present in the SIM

3.17.3   Description of QMI_NAS_GET_FORBIDDEN_NETWORKS REQ/RESP

This command queries the list of forbidden networks from the device. The forbidden network list specifies networks to be avoided when automatic registration is performed by the device.

The list of 3GPP forbidden networks applies only to UMTS/GSM automatic registration.

The 3GPP preferred network list can be queried, regardless of the radio interface in use (CDMA, UMTS, etc.).

3.18   QMI_NAS_SET_FORBIDDEN_NETWORKS

Writes the specified list of forbidden networks to the device.

NAS message ID

0x0029

Version introduced

Major - 1, Minor - 0

3.18.1   Request - QMI_NAS_SET_FORBIDDEN_NETWORKS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

The following optional TLV must be included in this request.

Name	Version introduced	Version last modified
3GPP Forbidden Networks**	Unknown	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Forbidden Networks**
Length	Var			2	
Value	→	uint16	num_ forbidden_ network_ instances	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code
		uint16	mobile_ country_ code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.

3.18.2   Response - QMI_NAS_SET_FORBIDDEN_NETWORKS_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_SIM_FILE_NOT_FOUND	Operation could not be performed as the relevant file (EF) is not present in the SIM

3.18.3   Description of QMI_NAS_SET_FORBIDDEN_NETWORKS REQ/RESP

This command writes the specified list of forbidden networks to the device; it also overwrites the existing forbidden networks list stored in the device. The forbidden network list specifies networks to be avoided when automatic registration is performed by the device.

The control point may query the existing list and present the list to the user, rather than blindly overwriting it.

The 3GPP forbidden network list can be written, regardless of the radio interface in use (CDMA, UMTS, etc.).

3.19 QMI_NAS_SET_TECHNOLOGY_PREFERENCE

Sets the technology preference. (Deprecated)

NAS message ID

0x002A

Version introduced

Major - 1, Minor - 7

3.19.1 Request - QMI_NAS_SET_TECHNOLOGY_PREFERENCE_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Technology Preference	Unknown	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Technology Preference
Length	3			2	
Value	→	mask16	technology_pref	2	Bitmask representing the radio technology preference set. No bits set indicates to the device to automatically determine the technology to use. Values: • Bit 0 – Technology is 3GPP2 • Bit 1 – Technology is 3GPP Any combination of the following may be returned: • Bit 2 – Analog – AMPS if 3GPP2, GSM if 3GPP • Bit 3 – Digital – CDMA if 3GPP2, WCDMA if 3GPP • Bit 4 – HDR • Bit 5 – LTE • Bits 6 to 15 – Reserved **Note:** Bits 0 and 1 are exclusive; only one may be set at a time. All unlisted bits are reserved for future use and are ignored.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	duration	1	Preference duration. Values: • 0x00 – Permanent – Preference is used permanently • 0x01 – Power cycle – Preference is used until the next device power cycle

Optional TLVs

None

3.19.2   Response - QMI_NAS_SET_TECHNOLOGY_PREFERENCE_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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.19.3 Description of QMI_NAS_SET_TECHNOLOGY_PREFERENCE REQ/RESP

This command writes the specified technology preference to the device. This setting is global to the device and is not unique to each control point.

When setting the technology preference, a duration must be specified that signifies whether the new preference is permanent or whether the preference represents how long the specified preference is to remain active. These values may be specified as:

- Permanent – The technology preference takes effect immediately and is written to persistent storage to remain set after the device is power cycled.

- Power cycle – The technology preference takes effect immediately and remains active until the device is power cycled. Once power cycled, the technology preference is reset to the persistent value stored on the device.

Regardless of duration, the technology preference is overwritten by a subsequent request to set the technology preference.

Requests to set an invalid technology preference for the current device configuration elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

Success of this command indicates that the specified technology change has been accepted by the device. Regardless of the specified duration, the specified technology preference takes effect immediately, or if the phone is in the Active state, waits until the next session.

This command is deprecated. Use QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE (Section 3.28).

3.20   QMI_NAS_GET_TECHNOLOGY_PREFERENCE

Retrieves the technology preference. (Deprecated)

NAS message ID

0x002B

Version introduced

Major - 1, Minor - 7

3.20.1   Request - QMI_NAS_GET_TECHNOLOGY_PREFERENCE_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.20.2   Response - QMI_NAS_GET_TECHNOLOGY_PREFERENCE_RESP

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Active Technology Preference	Unknown	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Active Technology Preference
Length	3			2	

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	technology_ pref	2	Bitmask representing the radio technology preference set. No bits set indicates to the device to automatically determine the technology to use. Values: • Bit 0 – Technology is 3GPP2 • Bit 1 – Technology is 3GPP Any combination of the following may be returned: • Bit 2 – Analog – AMPS if 3GPP2, GSM if 3GPP • Bit 3 – Digital – CDMA if 3GPP2, WCDMA if 3GPP • Bit 4 – HDR • Bit 5 – LTE • Bits 6 to 15 – Reserved **Note:** Bits 0 and 1 are exclusive; only one may be set at a time. All unlisted bits are reserved for future use and are ignored.
		enum8	duration	1	Duration of the active preference. Values: • 0x00 – Permanent – Preference is used permanently • 0x01 – Power cycle – Preference is used until the next device power cycle • 0x02 – 1 call – Until the end of the next call or a power cycle • 0x03 – 1 call or time – Until the end of the next call, a specified time, or a power cycle • 0x04-0x06 – Internal 1 call – Until the end of the next call

Optional TLVs

Name	Version introduced	Version last modified
Persistent Technology Preference	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Persistent Technology Preference
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	persistent_ technology_ pref	2	Bitmask representing the radio technology preference set. No bits set indicates to the device to automatically determine the technology to use. Values: • Bit 0 – Technology is 3GPP2 • Bit 1 – Technology is 3GPP Any combination of the following may be returned: • Bit 2 – Analog – AMPS if 3GPP2, GSM if 3GPP • Bit 3 – Digital – CDMA if 3GPP2, WCDMA if 3GPP • Bit 4 – HDR • Bit 5 – LTE • Bits 6 to 15 – Reserved **Note:** Bits 0 and 1 are exclusive; only one may be set at a time. All unlisted bits are reserved for future use and are ignored.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.20.3   Description of QMI_NAS_GET_TECHNOLOGY_PREFERENCE REQ/RESP

This command queries the preferred technology settings for the device.

If the active technology preference of the device is not set to the permanent value (as specified by the value of duration), an optional TLV is included that signifies the persistent technology preference of the device.

For more information regarding the technology preference settings and the description of QMI_NAS_SET_TECHNOLOGY_PREFERENCE, see Section 3.19.3.

This command is deprecated. Use QMI_NAS_GET_SYSTEM_SELECTION_PREFERENCE (Section 3.29).

3.21   QMI_NAS_GET_ACCOLC

Queries the Access Overload Class (ACCOLC) of the device.

NAS message ID

0x002C

Version introduced

Major - 1, Minor - 1

3.21.1   Request - QMI_NAS_GET_ACCOLC_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.21.2   Response - QMI_NAS_GET_ACCOLC_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Access Overload Class	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Access Overload Class
Length	1			2	
Value	→	uint8	accolc	1	An 8-bit integer representation of the ACCOLC. Range: 0 to 15 (0x00 to 0x0F).

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.21.3   Description of QMI_NAS_GET_ACCOLC REQ/RESP

This command queries the ACCOLC setting from the device (refer to TIA/EIA/IS-95 Section 6.3.5).

The ACCOLC setting is applicable to CDMA devices only. Attempts to read the ACCOLC setting from a non-CDMA device elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

3.22   QMI_NAS_SET_ACCOLC

Sets the ACCOLC of the device.

NAS message ID

0x002D

Version introduced

Major - 1, Minor - 1

3.22.1   Request - QMI_NAS_SET_ACCOLC_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Access Overload Class	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Access Overload Class
Length	7			2	
Value	→	char	spc	6	Service programming code in ASCII format (digits 0 to 9 only).
		uint8	accolc	1	An 8-bit integer representation of the ACCOLC. Range: 0 to 15 (0x00 to 0x0F).

Optional TLVs

None

3.22.2   Response - QMI_NAS_SET_ACCOLC_RESP_MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_AUTHENTICATION_ FAILED	Authentication of the supplied SPC failed
QMI_ERR_AUTHENTICATION_LOCK	Maximum number of authentication failures has been reached
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_NO_EFFECT	Request had no effect

3.22.3 Description of QMI_NAS_SET_ACCOLC REQ/RESP

This command is a service programming request and is protected by the service programming security of QMI. Only the SPC, not the one-time-subsidy-lock code, may be used to restore the factory default settings of the device. The correct service programming authentication code must be specified for this command. Requests with an invalid SPC elicit a QMI_ERR_AUTHENTICATION_FAILED error. If too many requests are made with an invalid SPC by any control point, the device enters an Authentication Lock state and elicits a QMI_ERR_AUTHENTICATION_LOCK error. When the Authentication Lock state is reached, the device automatically issues a power-down procedure and shuts down. Upon rebooting, the Authentication Lock state is removed and the device will again process service programming requests.

This command writes the ACCOLC value for the device. The ACCOLC setting is protected by an SPC that must be supplied and verified before the new value is saved.

After successful completion, the device must be power cycled before the new parameters take effect.

The ACCOLC setting is applicable to CDMA devices only. Attempts to read the ACCOLC setting from a non-CDMA device elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

Attempts to set the ACCOLC value to the existing value elicit a QMI_ERR_NO_EFFECT error.

3.23   QMI_NAS_GET_NETWORK_SYSTEM_PREFERENCE

Retrieves the network system preference.

NAS message ID

0x002E

Version introduced

Major - 1, Minor - 7

3.23.1   Request - QMI_NAS_GET_NETWORK_SYSTEM_-PREFERENCE_REQ

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.23.2   Response - QMI_NAS_GET_NETWORK_SYSTEM_-PREFERENCE_RESP

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
System Preference	Unknown	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	System Preference
Length	1			2	
Value	→	enum8	system_pref	1	Duration of the active preference. Values: • 0x00 – Automatic • 0x01 – Auto A • 0x02 – Auto B

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.23.3   Description of QMI_NAS_GET_NETWORK_SYSTEM_- PREFERENCE REQ/RESP

This command queries the network system preference setting from the device. The system preference setting is applicable to CDMA devices only. Attempts to query this setting from a non-CDMA device elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

3.24   QMI_NAS_GET_DEVICE_CONFIG

Queries the network-related configuration setting of the device.

NAS message ID

0x002F

Version introduced

Major - 1, Minor - 1

3.24.1   Request - QMI_NAS_GET_DEVICE_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.24.2   Response - QMI_NAS_GET_DEVICE_CONFIG_RESP_MSG

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 introduced	Version last modified
Slot Cycle Index*	Unknown	1.1
Station Class Mark*	Unknown	1.1
Registration Parameters*	Unknown	1.1
Force HDR Revision*	Unknown	1.1

Name	Version introduced	Version last modified
HDR SCP Custom Config*	Unknown	1.1
Roam Preference*	Unknown	1.1
Force HDR SCP AT Config	Unknown	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	Slot Cycle Index*
Length	1			2	
Value	→	uint8	sci	1	Slot cycle index (refer to 3GPP2 C.R1001-F Section 6.6.2.1).
Type	0x12			1	Station Class Mark*
Length	1			2	
Value	→	uint8	scm	1	Station class mark (refer to 3GPP2 C.R1001-F Section 6.3.3).
Type	0x13			1	Registration Parameters*
Length	3			2	
Value	→	boolean	reg_home_sid	1	Register on home system. Values: • 0x00 – Disable • 0x01 – Enable
		boolean	reg_foreign_sid	1	Register on foreign system. Values: • 0x00 – Disable • 0x01 – Enable
		boolean	reg_foreign_nid	1	Register on foreign network. Values: • 0x00 – Disable • 0x01 – Enable
Type	0x14			1	Force HDR Revision*
Length	1			2	
Value	→	boolean	force_rev0	1	Force Rev0. Values: • 0x00 – Disabled • 0x01 – Enabled **Note:** This TLV is now DISCONTINUED, and is present here as a placeholder only for existing clients referencing this TLV.
Type	0x15			1	HDR SCP Custom Config* **Note:** This TLV is now DISCONTINUED, and is present here as a placeholder only for existing clients referencing this TLV.
Length	13			2	
Value	→	boolean	state	1	HDR custom configuration for session control protocol. Values: • 0x00 – Disable • 0x01 – Enable; enable may only be specified if Force HDR Revision is set to Disable

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint32	protocol_mask	4	Protocol subtype bitmask. Values: • Bit 0 – Subtype 2 physical layer • Bit 1 – Enhanced CCMAC • Bit 2 – Enhanced ACMAC • Bit 3 – Enhanced FTCMAC • Bit 4 – Subtype 3 RTCMAC • Bit 5 – Subtype 1 RTCMAC • Bit 6 – Enhanced idle • Bit 7 – Generic multimode-capable disc port All unlisted bits are reserved for future use and are ignored.
		uint32	broadcast_ mask	4	Broadcast subtype bitmask. Values: • Bit 0 – Generic broadcast enabled All unlisted bits are reserved for future use and are ignored.
		uint32	application_ mask	4	Application subtype bitmask. Values: • Bit 0 – SN multiflow packet application • Bit 1 – SN enhanced multiflow packet application All unlisted bits are reserved for future use and are ignored.
Type	0x16			1	Roam Preference*
Length	1			2	
Value	→	enum8	roam_pref	1	Roaming preference. Values: • 0x00 – ROAM_CONFIG_PREF_AUTO – Acquire systems regardless of roaming status • 0x01 – ROAM_CONFIG_PREF_HOME_ONLY – Acquire home systems only • 0x02 – ROAM_CONFIG_PREF_ROAM_ONLY – Acquire nonhome systems only • 0x03 – ROAM_CONFIG_PREF_HOME_AND_ AFFILIATE – Acquire home and affiliated roaming systems only
Type	0x17			1	Force HDR SCP AT Config
Length	1			2	
Value	→	enum8	force_hdrscp_ config_at	1	Values: • 0x00 – HDR Rev0 Protocols only • 0x01 – HDR RevA Protocols with MFPA • 0x02 – HDR RevA Protocols with MFPA and EMPA • 0x03 – HDR RevB Protocols with MMPA • 0x04 – HDR RevA Protocols with eHRPD • 0x05 – HDR RevB Protocols with eHRPD

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.24.3 Description of QMI_NAS_GET_DEVICE_CONFIG REQ/RESP

This command queries network-related settings from the device. Each response includes all settings listed under optional TLVs with the exception of TLVs for nonprovisioned settings, which will be absent from the response.

Attempts to read settings from the device that are not supported elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

3.25   QMI_NAS_SET_DEVICE_CONFIG

Sets network-related configuration settings of the device.

NAS message ID

0x0030

Version introduced

Major - 1, Minor - 1

3.25.1   Request - QMI_NAS_SET_DEVICE_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Service Programming Code*	Unknown	1.1
Force HDR Revision*	Unknown	1.1
HDR SCP Custom Config*	Unknown	1.1
Roam Preference*	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service Programming Code*
Length	6			2	
Value	→	char	spc	6	Service programming code in ASCII format (digits 0 to 9 only).
Type	0x14			1	Force HDR Revision*
Length	1			2	
Value	→	boolean	force_hdr_rev0	1	Force Rev0. Values: • 0x00 – Disable • 0x01 – Enable; enable may only be specified if HDR SCP Custom Config state is set to Disable **Note:** This TLV is now DISCONTINUED, and is present here as a placeholder only for existing clients referencing this TLV.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x15			1	HDR SCP Custom Config* **Note:** This TLV is now DISCONTINUED, and is present here as a placeholder only for existing clients referencing this TLV.
Length	13			2	
Value	→	boolean	state	1	HDR custom configuration for session control protocol. Values: • 0x00 – Disable • 0x01 – Enable; enable may only be specified if Force HDR Revision is set to Disable
		uint32	protocol_mask	4	Protocol subtype bitmask. Values: • Bit 0 – Subtype 2 physical layer • Bit 1 – Enhanced CCMAC • Bit 2 – Enhanced ACMAC • Bit 3 – Enhanced FTCMAC • Bit 4 – Subtype 3 RTCMAC • Bit 5 – Subtype 1 RTCMAC • Bit 6 – Enhanced idle • Bit 7 – Generic multimode-capable disc port All unlisted bits are reserved for future use and are ignored.
		uint32	broadcast_mask	4	Broadcast subtype bitmask. Values: • Bit 0 – Generic broadcast enabled All unlisted bits are reserved for future use and are ignored.
		uint32	application_mask	4	Application subtype bitmask. Values: • Bit 0 – SN multiflow packet application • Bit 1 – SN enhanced multiflow packet application All unlisted bits are reserved for future use and are ignored.
Type	0x16			1	Roam Preference*
Length	1			2	
Value	→	enum8	roam_pref	1	Roaming preference. Values: • 0x00 – ROAM_CONFIG_PREF_AUTO – Acquire systems regardless of roaming status • 0x01 – ROAM_CONFIG_PREF_HOME_ONLY – Acquire home systems only • 0x02 – ROAM_CONFIG_PREF_ROAM_ONLY – Acquire nonhome systems only • 0x03 – ROAM_CONFIG_PREF_HOME_AND_ AFFILIATE – Acquire home and affiliated roaming systems only

3.25.2   Response - QMI_NAS_SET_DEVICE_CONFIG_RESP_MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_AUTHENTICATION_ FAILED	Authentication of the supplied SPC failed
QMI_ERR_AUTHENTICATION_LOCK	Maximum number of authentication failures has been reached

3.25.3   Description of QMI_NAS_SET_DEVICE_CONFIG REQ/RESP

This command contains some service programming components that are protected by the QMI service programming security. For the settings that require them, the correct service programming authentication code must be included. The SPC is checked only if it is required by one or more of the specified settings; otherwise, it is ignored. Requests requiring an SPC, but containing an invalid code, elicit a QMI_ERR_AUTHENTICATION_FAILED error. If too many requests are made with an invalid SPC by any control point, the device enters an Authentication Lock state and elicits a QMI_ERR_AUTHENTICATION_LOCK error. When the Authentication Lock state is reached, the device automatically issues a power-down procedure and shuts down. Upon rebooting, the Authentication Lock state is removed and the device will again process service programming requests.

This command sets network-related settings for the device. Some service programming components, as listed below, require the optional Service Programming Code TLV be supplied with the request. If any of the requested parameters require an SPC and it is not provided, a QMI_ERR_MISSING_ARG error is returned without any values being changed.

The following TLVs require that the Service Programming Code TLV be provided in the request containing the valid code:

- Force HDR revision (DISCONTINUED)

- HDR SCP custom config (DISCONTINUED)

After successful completion, the following parameters require that the device be power cycled before the new parameters take effect:

- Force HDR revision (DISCONTINUED)

- HDR SCP custom config (DISCONTINUED)

- Roaming preference

Error checking is performed on all specified parameters before any updates are committed to the device. Any request made with an invalid parameter results in the request being aborted and elicits a QMI_ERR_INVALID_ARG error.

The Force HDR revision and HDR SCP custom config parameters are now discontinued, and if the corresponding TLVs are set, they are ignored.

Attempts to set any parameters not supported by the device elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

3.26   QMI_NAS_GET_RF_BAND_INFO

Queries radio band/channel information regarding the system currently providing service.

NAS message ID

0x0031

Version introduced

Major - 1, Minor - 1

3.26.1   Request - QMI_NAS_GET_RF_BAND_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.26.2   Response - QMI_NAS_GET_RF_BAND_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
RF Band Information List	Unknown	1.142

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	RF Band Information List
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • active_band • active_channel
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		enum16	active_band	2	Active band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes
		uint16	active_channel	2	Active channel. If the channel is not relevant to the technology, a value of 0 is returned.

Optional TLVs

Name	Version introduced	Version last modified
RF Dedicated Band Information List	1.102	1.142
RF Band Information List, Extended Format	1.112	1.142

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	RF Dedicated Band Information List
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • dedicated_band
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum16	dedicated_band	2	Dedicated band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes • 0xFFFF is invalid; indicates that the UE moved out from the dedicated band
Type	0x11			1	RF Band Information List, Extended Format (Extended sizes to accommodate LTE.)
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • radio_if • active_band • active_channel
		enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		enum16	active_band	2	Active band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes
		uint32	active_channel	4	Active channel. If the channel is not relevant to the technology, a value of 0 is returned.

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_INFO_UNAVAILABLE	Information is not available at this time
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.26.3   Description of QMI_NAS_GET_RF_BAND_INFO REQ/RESP

This command queries radio band and channel information for the current serving system, but is only returned when the device has registered with a network.

Requests for radio band and channel information while the device is not registered elicit a QMI_ERR_INFO_UNAVAILABLE error.

3.27   QMI_NAS_GET_AN_AAA_STATUS

Queries the status of the last AN-AAA authentication request for the current 1xEV-DO session.

NAS message ID

0x0032

Version introduced

Major - 1, Minor - 1

3.27.1   Request - QMI_NAS_GET_AN_AAA_STATUS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.27.2   Response - QMI_NAS_GET_AN_AAA_STATUS_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLV is present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
AN-AAA Authentication Status	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	AN-AAA Authentication Status
Length	1			2	
Value	→	enum8	an_aaa_status	1	Status of the last AN-AAA authentication request, if any, for the current 1xEV-DO session. Values: • 0 – AAA_STATUS_FAILED – Authentication failed • 1 – AAA_STATUS_SUCCESS – Authentication success • 2 – AAA_STATUS_NO_REQUEST – No authentication requested

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.27.3   Description of QMI_NAS_GET_AN_AAA_STATUS REQ/RESP

This command queries the last AN-AAA authentication status of the current cdma2000® HRPD (1xEV-DO) session for the current serving system. AN-AAA authentication is initiated by the serving system and can be requested multiple times, or not at all, for a single 1xEV-DO session.

AN-AAA authentication is applicable to CDMA devices supporting 1xEV-DO only. Attempts to read the AN-AAA status from a device that does not support 1xEV-DO elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

3.28　QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE

Sets the different system selection preferences of the device.

NAS message ID

0x0033

Version introduced

Major - 1, Minor - 1

3.28.1　Request - QMI_NAS_SET_SYSTEM_SELECTION_- PREFERENCE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Emergency Mode	Unknown	1.1
Mode Preference	Unknown	1.16
Band Preference	Unknown	1.16
CDMA PRL Preference	Unknown	1.1
Roaming Preference	Unknown	1.1
LTE Band Preference (Deprecated; use LTE Band Preference Extended)	1.16	1.138 (Deprecated)
Network Selection Preference	1.5	1.69
Change Duration	Unknown	1.5
Service Domain	1.34	1.121
GSM/WCDMA Acquisition Order	Unknown	1.11
MNC PCS Digit Include Status	Unknown	1.10
Service Domain Preference	1.34	1.121
GSM/WCDMA Acquisition Order Preference	Unknown	1.11
TDSCDMA Band Preference	Unknown	1.13
Acquisition Order Preference	Unknown	1.20
Network Selection Registration Restriction Preference	1.34	1.34
CSG ID	1.41	1.41
Usage Preference	1.67	1.67

Name	Version introduced	Version last modified
Radio Access Technology	1.69	1.69
Voice Domain Preference	1.92	1.92
LTE Band Preference Extended	1.138	1.138
Force Preferences	1.140	1.140

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Emergency Mode
Length	1			2	
Value	→	boolean	emergency_ mode	1	Values: • 0x00 – OFF (normal) • 0x01 – ON (emergency)
Type	0x11			1	Mode Preference
Length	2			2	
Value	→	mask16	mode_pref	2	Bitmask representing the radio technology mode preference to be set. Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_ GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_ UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_ LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_ TDSCDMA – TD-SCDMA All unlisted bits are reserved for future use and the service point ignores them if used.
Type	0x12			1	Band Preference
Length	8			2	
Value	→	mask	band_pref	8	Bitmask representing the band preference to be set. See Table A-2 for details.
Type	0x13			1	CDMA PRL Preference
Length	2			2	
Value	→	enum16	prl_pref	2	PRL preference to be set for band class 0 (BC0) prl_pref. Values: • 0x0001 – PRL_PREF_A_SIDE_ONLY – Acquire available system only on the A side • 0x0002 – PRL_PREF_B_SIDE_ONLY – Acquire available system only on the B side • 0x3FFF – PRL_PREF_ANY – Acquire any available systems
Type	0x14			1	Roaming Preference
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum16	roam_pref	2	Roaming preference to be set. Values: • 0x01 – ROAMING_PREF_OFF – Acquire only systems for which the roaming indicator is off • 0x02 – ROAMING_PREF_NOT_OFF – Acquire a system as long as its roaming indicator is not off • 0x03 – ROAMING_PREF_NOT_FLASING – Acquire only systems for which the roaming indicator is off or solid on, i.e., not flashing; CDMA only • 0xFF – ROAMING_PREF_ANY – Acquire systems, regardless of their roaming indicator
Type	0x15			1	LTE Band Preference (Deprecated; use LTE Band Preference Extended)
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be set. See Table A-3 for details.
Type	0x16			1	Network Selection Preference
Length	5			2	
Value	→	enum8	net_sel_pref	1	Specifies one of the following actions: • 0x00 – NAS_NET_SEL_PREF_AUTOMATIC – Device registers according to its provisioning; mcc and mnc fields must also contain valid values if Radio Access Technology (TLV 0x22) is present. Otherwise, mcc and mnc are ignored. • 0x01 – NAS_NET_SEL_PREF_MANUAL – Device registers to specified network; mcc and mnc fields must also contain valid values. All other values are reserved.
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
Type	0x17			1	Change Duration
Length	1			2	
Value	→	enum8	change_duration	1	Duration of the change. Values: • 0x00 – Power cycle – Remains active until the next device power cycle • 0x01 – Permanent – Remains active through power cycles until changed by the client **Note:** The device will use "0x01 – Permanent" as the default value if the TLV is omitted.
Type	0x18			1	Service Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	srv_domain_ pref	4	Service domain preference. Values: • QMI_SRV_DOMAIN_PREF_CS_ONLY (0x00) – Circuit-switched only • QMI_SRV_DOMAIN_PREF_PS_ONLY (0x01) – Packet-switched only • QMI_SRV_DOMAIN_PREF_CS_PS (0x02) – Circuit-switched and packet-switched • QMI_SRV_DOMAIN_PREF_PS_ATTACH (0x03) – Packet-switched attach • QMI_SRV_DOMAIN_PREF_PS_DETACH (0x04) – Packet-switched detach • QMI_SRV_DOMAIN_PREF_PS_DETACH_ NO_PREF_CHANGE (0x05) – Packet-switched • QMI_SRV_DOMAIN_PREF_ON_DEMAND_ PS_ATTACH (0x06) – Packet-switched detach with no change in the service domain preference
Type	0x19			1	GSM/WCDMA Acquisition Order
Length	4			2	
Value	→	enum	gw_acq_ order_pref	4	GSM/WCDMA acquisition order preference. Values: • 0x00 – NAS_GW_ACQ_ORDER_PREF_ AUTOMATIC – Automatic • 0x01 – NAS_GW_ACQ_ORDER_PREF_ GSM_WCDMA – GSM then WCDMA • 0x02 – NAS_GW_ACQ_ORDER_PREF_ WCDMA_GSM – WCDMA then GSM
Type	0x1A			1	MNC PCS Digit Include Status
Length	1			2	
Value	→	boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the Network Selection Preference TLV (0x16). Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x1B			1	Service Domain Preference (duplicate of 0x18)
Length	0			2	
Value	→	duplicate	srv_domain_ pref	0	Duplicate of Service Domain Preference
Type	0x1C			1	GSM/WCDMA Acquisition Order Preference (duplicate of 0x19)
Length	0			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	duplicate	gw_acq_ order_pref	0	GSM/WCDMA acquisition order preference. Values: • 0x00 – NAS_GW_ACQ_ORDER_PREF_ AUTOMATIC – Automatic • 0x01 – NAS_GW_ACQ_ORDER_PREF_ GSM_WCDMA – GSM then WCDMA • 0x02 – NAS_GW_ACQ_ORDER_PREF_ WCDMA_GSM – WCDMA then GSM
Type	0x1D			1	TDSCDMA Band Preference
Length	8			2	
Value	→	mask	tdscdma_ band_pref	8	Bitmask representing the TD-SCDMA band preference to be set. Values: • 0x01 – NAS_TDSCDMA_BAND_A – TD-SCDMA Band A • 0x02 – NAS_TDSCDMA_BAND_B – TD-SCDMA Band B • 0x04 – NAS_TDSCDMA_BAND_C – TD-SCDMA Band C • 0x08 – NAS_TDSCDMA_BAND_D – TD-SCDMA Band D • 0x10 – NAS_TDSCDMA_BAND_E – TD-SCDMA Band E • 0x20 – NAS_TDSCDMA_BAND_F – TD-SCDMA Band F All other bits are reserved.
Type	0x1E			1	Acquisition Order Preference
Length	Var			2	
Value	→	uint8	acq_order_len	1	Number of sets of the following elements: • acq_order
		enum8	acq_order	Var	Acquisition order preference to be set. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x1F			1	Network Selection Registration Restriction Preference
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	srv_reg_ restriction	4	Registration restriction preference. Specifies one of the following modifiers to net_sel_pref: • 0x00 – NAS_SRV_REG_RESTRICTION_ UNRESTRICTED – Device follows the normal registration process • 0x01 – NAS_SRV_REG_RESTRICTION_ CAMPED_ONLY – Device camps on the network according to its provisioning, but does not register • 0x02 – NAS_SRV_REG_RESTRICTION_ LIMITED – Device selects the network for limited service All other values are reserved.
Type	0x20			1	CSG ID
Length	10			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of CSG MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of CSG MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
		uint32	id	4	Closed subscriber group identifier.
		enum8	rat	1	Radio interface technology of the CSG network. Values: • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE • 0x09 – RADIO_IF_TDSCDMA – TDS
Type	0x21			1	Usage Preference
Length	4			2	
Value	→	enum	usage_setting	4	Modem usage preference to be set. Values: • NAS_USAGE_VOICE_CENTRIC (1) – Voice centric • NAS_USAGE_DATA_CENTRIC (2) – Data centric
Type	0x22			1	Radio Access Technology
Length	1			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	rat	1	Radio access technology for the corresponding PLMN ID in the Network Selection Preference TLV (0x16). If this TLV is present and the net_sel_pref field is set to automatic, the provided MCC, MNC, and RAT are searched for first. If they are not found, the selection falls back to automatic. This TLV can also be used with the net_sel_pref field set to manual to indicate the RAT of the specified MCC and MNC. Values: • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x23			1	Voice Domain Preference
Length	4			2	
Value	→	enum	voice_domain_ pref	4	Voice domain preference to be set. Values: • NAS_VOICE_DOMAIN_PREF_CS_ONLY (0x00) – Circuit-switched (CS) voice only • NAS_VOICE_DOMAIN_PREF_PS_ONLY (0x01) – Packet-switched (PS) voice only • NAS_VOICE_DOMAIN_PREF_CS_PREF (0x02) – CS is preferred; PS is secondary • NAS_VOICE_DOMAIN_PREF_PS_PREF (0x03) – PS is preferred; CS is secondary
Type	0x24			1	LTE Band Preference Extended
Length	32			2	
Value	→	uint64	bits_1_64	8	Bits 1 to 64 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_65_128	8	Bits 65 to 128 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_129_192	8	Bits 129 to 192 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_193_256	8	Bits 193 to 256 of the 256-bit LTE E-UTRA Operating Band bitmask
Type	0x25			1	Force Preferences
Length	1			2	
Value	→	boolean	force	1	When TRUE, indicates that the UE cannot process the request due to an LPM transition, the lower layer is busy, etc. The request is buffered and processed as soon as possible instead of returning an error. The default value is FALSE.

3.28.2 Response - QMI_NAS_SET_SYSTEM_SELECTION_- PREFERENCE_RESP_MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_OPERATION	Operation is not supported by the device

3.28.3 Description of QMI_NAS_SET_SYSTEM_SELECTION_- PREFERENCE REQ/RESP

This command writes the specified system selection preference to the device. This setting is global to the device and is not unique to each control point. The preference is written to persistent storage to remain set after the device is power cycled.

A system selection preference is overwritten by a subsequent request to set the system selection preference.

Requests to set an invalid system selection preference for the current device configuration elicit a QMI_ERR_OP_DEVICE_UNSUPPORTED error.

Success of this command indicates that the specified change has been requested. The control point must always process the QMI_NAS_SYSTEM_SELECTION_PREFERENCE_IND indication to learn the current system selection of the device.

At least one optional TLV specifying a system selection preference must be present in the request. If not, a QMI_ERR_MISSING_ARG error is returned.

The control point must include the Emergency Mode TLV with a value set to ON if users want to enable Emergency mode. All other TLVs included in the command are ignored. To exit Emergency mode, the control point can either include the Emergency Mode TLV with a value set to OFF or include the Mode Preference TLV. When coming out of Emergency mode, the mode preference is set to whatever the Mode Preference TLV specifies (if the TLV is included) or to whatever mode preference that is set in persistent memory (if the Mode Preference TLV is not included).

When the Network Selection Preference TLV (0x16) is included, its information is used to control which networks the modem selects.

The Acquisition Order Preference TLV (0x1E) takes priority over the GSM/WCDMA Acquisition Order Preference TLV (0x1C); if both are sent, the Acquisition Order Preference TLV is used. If the Acquisiton Order Preference TLV is not supported, a QMI_ERR_INVALID_OPERATION error is returned. Only the listed radio interfaces are supported. If a different radio interface is sent, or there are duplicates in the list, a QMI_ERR_INVALID_ARG error is returned.

The acquisition order preference list contains a list of RATs (1X, 1xEV-DO, ..., LTE, TD-SCDMA, etc.). When the client attempts to change its order, the client must provide a list that contains the same RATs but in a different order. A RAT that was there previously cannot be removed and a new RAT cannot be added.

When the optional Service Domain Preference TLV (0x18) is sent as QMI_SRV_DOMAIN_PREF_PS_ATTACH, PS will be added to the current preference. If PS is already in the service domain preference, the request for the attach returns an error. If the TLV is sent as QMI_SRV_DOMAIN_PREF_PS_DETACH, PS is removed from the current preference. If the device was already PS_ONLY, the UE moves to Power Save mode. A value of QMI_SRV_DOMAIN_PREF_PS_DETACH_NO_PREF_CHANGE performs the PS detach without modifying the service domain preference.

The optional Network Selection Registration Restriction Preference TLV (0x1F) is used to put the device into or pull it out of Limited mode or Camped Only mode. When using this TLV with a value other than NAS_SRV_REG_RESTRICTION_UNRESTRICTED, the Change Duration TLV (0x17) must be set to "Power cycle".

Only one of the LTE Band Preference TLVs, either TLV 0x15 (deprecated) or TLV 0x24, can be included in the request; otherwise, a QMI_ERR_INVALID_ARG error is returned.

3.29   QMI_NAS_GET_SYSTEM_SELECTION_PREFERENCE

Queries the different system selection preferences of the device.

NAS message ID

0x0034

Version introduced

Major - 1, Minor - 1

3.29.1   Request - QMI_NAS_GET_SYSTEM_SELECTION_- PREFERENCE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.29.2   Response - QMI_NAS_GET_SYSTEM_SELECTION_- PREFERENCE_RESP_MSG

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

At least one of the following optional TLVs are present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Emergency Mode	Unknown	1.1
Mode Preference	Unknown	1.16
Band Preference	Unknown	1.16
CDMA PRL Preference	Unknown	1.1
Roaming Preference	Unknown	1.1
LTE Band Preference (Deprecated; use LTE Band Preference Extended)	Unknown	1.138 (Deprecated)
Network Selection Preference	1.5	1.5
Service Domain Preference	Unknown	1.34
GSM/WCDMA Acquisition Order Preference	Unknown	1.11
TDSCDMA Band Preference	Unknown	1.13
Manual Network Selection PLMN	Unknown	1.19
Acquisition Order Preference	Unknown	1.20
Network Selection Registration Restriction Preference	1.34	1.34
CSG ID	1.41	1.41
Usage Preference	1.67	1.67
Voice Domain Preference	1.92	1.92
LTE Disable Cause	1.100	1.100
Disabled RAT Bitmask	1.132	1.132
LTE Band Preference Extended	1.138	1.138

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Emergency Mode
Length	1			2	
Value	→	boolean	emergency_ mode	1	Values: • 0x00 – OFF (normal) • 0x01 – ON (emergency)
Type	0x11			1	Mode Preference
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	mode_pref	2	Bitmask representing the radio technology mode preference to be set. Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_TDSCDMA – TD-SCDMA All unlisted bits are reserved for future use and the service point ignores them if used.
Type	0x12			1	Band Preference
Length	8			2	
Value	→	mask	band_pref	8	Bitmask representing the band preference to be set. See Table A-2 for details.
Type	0x13			1	CDMA PRL Preference
Length	2			2	
Value	→	enum16	prl_pref	2	PRL preference to be set for band class 0 (BC0) prl_pref. Values: • 0x0001 – PRL_PREF_A_SIDE_ONLY – Acquire available system only on the A side • 0x0002 – PRL_PREF_B_SIDE_ONLY – Acquire available system only on the B side • 0x3FFF – PRL_PREF_ANY – Acquire any available systems
Type	0x14			1	Roaming Preference
Length	2			2	
Value	→	enum16	roam_pref	2	Roaming preference to be set. Values: • 0x01 – ROAMING_PREF_OFF – Acquire only systems for which the roaming indicator is off • 0x02 – ROAMING_PREF_NOT_OFF – Acquire a system as long as its roaming indicator is not off • 0x03 – ROAMING_PREF_NOT_FLASING – Acquire only systems for which the roaming indicator is off or solid on, i.e., not flashing; CDMA only • 0xFF – ROAMING_PREF_ANY – Acquire systems, regardless of their roaming indicator
Type	0x15			1	LTE Band Preference (Deprecated; use LTE Band Preference Extended)
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint64	band_pref_ext	8	Bitmask representing the LTE band preference to be set. Values: • Bit 0 – E-UTRA Operating Band 1 • Bit 1 – E-UTRA Operating Band 2 • Bit 2 – E-UTRA Operating Band 3 • Bit 3 – E-UTRA Operating Band 4 • Bit 4 – E-UTRA Operating Band 5 • Bit 5 – E-UTRA Operating Band 6 • Bit 6 – E-UTRA Operating Band 7 • Bit 7 – E-UTRA Operating Band 8 • Bit 8 – E-UTRA Operating Band 9 • Bit 9 – E-UTRA Operating Band 10 • Bit 10 – E-UTRA Operating Band 11 • Bit 11 – E-UTRA Operating Band 12 • Bit 12 – E-UTRA Operating Band 13 • Bit 13 – E-UTRA Operating Band 14 • Bit 16 – E-UTRA Operating Band 17 • Bit 17 – E-UTRA Operating Band 18 • Bit 18 – E-UTRA Operating Band 19 • Bit 19 – E-UTRA Operating Band 20 • Bit 20 – E-UTRA Operating Band 21 • Bit 23 – E-UTRA Operating Band 24 • Bit 24 – E-UTRA Operating Band 25 • Bit 32 – E-UTRA Operating Band 33 • Bit 33 – E-UTRA Operating Band 34 • Bit 34 – E-UTRA Operating Band 35 • Bit 35 – E-UTRA Operating Band 36 • Bit 36 – E-UTRA Operating Band 37 • Bit 37 – E-UTRA Operating Band 38 • Bit 38 – E-UTRA Operating Band 39 • Bit 39 – E-UTRA Operating Band 40 • Bit 40 – E-UTRA Operating Band 41 • Bit 41 – E-UTRA Operating Band 42 • Bit 42 – E-UTRA Operating Band 43 All other bits are reserved.
Type	0x16			1	Network Selection Preference
Length	1			2	
Value	→	enum8	net_sel_pref	1	Network selection preference. Values: • 0x00 – Automatic network selection • 0x01 – Manual network selection
Type	0x18			1	Service Domain Preference
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	srv_domain_ pref	4	Service domain preference. Values: • 0x00 – QMI_SRV_DOMAIN_PREF_CS_ONLY – Circuit-switched only • 0x01 – QMI_SRV_DOMAIN_PREF_PS_ONLY – Packet-switched only • 0x02 – QMI_SRV_DOMAIN_PREF_CS_PS – Circuit-switched and packet-switched
Type	0x19			1	GSM/WCDMA Acquisition Order Preference
Length	4			2	
Value	→	enum	gw_acq_ order_pref	4	GSM/WCDMA acquisition order preference. Values: • 0x00 – NAS_GW_ACQ_ORDER_PREF_ AUTOMATIC – Automatic • 0x01 – NAS_GW_ACQ_ORDER_PREF_ GSM_WCDMA – GSM then WCDMA • 0x02 – NAS_GW_ACQ_ORDER_PREF_ WCDMA_GSM – WCDMA then GSM
Type	0x1A			1	TDSCDMA Band Preference
Length	8			2	
Value	→	mask	tdscdma_ band_pref	8	Bitmask representing the TD-SCDMA band preference to be set. Values: • 0x01 – NAS_TDSCDMA_BAND_A – TD-SCDMA Band A • 0x02 – NAS_TDSCDMA_BAND_B – TD-SCDMA Band B • 0x04 – NAS_TDSCDMA_BAND_C – TD-SCDMA Band C • 0x08 – NAS_TDSCDMA_BAND_D – TD-SCDMA Band D • 0x10 – NAS_TDSCDMA_BAND_E – TD-SCDMA Band E • 0x20 – NAS_TDSCDMA_BAND_F – TD-SCDMA Band F All other bits are reserved.
Type	0x1B			1	Manual Network Selection PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x1C			1	Acquisition Order Preference
Length	Var			2	
Value	→	uint8	acq_order_len	1	Number of sets of the following elements: • acq_order
		enum8	acq_order	Var	Acquisition order preference to be set. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x1D			1	Network Selection Registration Restriction Preference
Length	4			2	
Value	→	enum	srv_reg_ restriction	4	Registration restriction preference. Specifies one of the following modifiers to net_sel_pref: • 0x00 – NAS_SRV_REG_RESTRICTION_ UNRESTRICTED – Device follows the normal registration process • 0x01 – NAS_SRV_REG_RESTRICTION_ CAMPED_ONLY – Device camps on the network according to its provisioning, but does not register • 0x02 – NAS_SRV_REG_RESTRICTION_ LIMITED – Device selects the network for limited service All other values are reserved.
Type	0x1E			1	CSG ID
Length	10			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of CSG MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of CSG MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
		uint32	id	4	Closed subscriber group identifier.
		enum8	rat	1	Radio interface technology of the CSG network. Values: • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE • 0x09 – RADIO_IF_TDSCDMA – TDS
Type	0x1F			1	Usage Preference
Length	4			2	
Value	→	enum	usage_setting	4	Modem usage preference to be set. Values: • NAS_USAGE_UNKNOWN (0) – Unknown • NAS_USAGE_VOICE_CENTRIC (1) – Voice centric • NAS_USAGE_DATA_CENTRIC (2) – Data centric
Type	0x20			1	Voice Domain Preference
Length	4			2	
Value	→	enum	voice_domain_ pref	4	Voice domain preference. Values: • NAS_VOICE_DOMAIN_PREF_CS_ONLY (0x00) – Circuit-switched (CS) voice only • NAS_VOICE_DOMAIN_PREF_PS_ONLY (0x01) – Packet-switched (PS) voice only • NAS_VOICE_DOMAIN_PREF_CS_PREF (0x02) – CS is preferred; PS is secondary • NAS_VOICE_DOMAIN_PREF_PS_PREF (0x03) – PS is preferred; CS is secondary
Type	0x21			1	LTE Disable Cause
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	lte_disable_ cause	4	LTE disable cause. Values: • NAS_LTE_DISABLE_CAUSE_NONE (0x00) – LTE is not disabled • NAS_LTE_DISABLE_CAUSE_PERMANENT_ DS (0x01) – LTE is disabled by DS permanently, e.g., T3316 expiry • NAS_LTE_DISABLE_CAUSE_TEMP_DS (0x02) – LTE is disabled by DS temporarily • NAS_LTE_DISABLE_CAUSE_DOM_SEL (0x03) – LTE disable procedure is called for domain selection purpose • NAS_LTE_DISABLE_CAUSE_DAM (0x04) – LTE disable procedure is called for device aggression management recovery • NAS_LTE_DISABLE_CAUSE_USER (0x05) – LTE disable procedure is called due to user action, e.g., mode_pref change or PS_DETACH triggered by ATCOP/QMI • NAS_LTE_DISABLE_CAUSE_NO_CHANGE (0x06) – No change in LTE disable cause
Type	0x22			1	Disabled RAT Bitmask
Length	2			2	
Value	→	mask16	rat_disabled_ mask	2	Bitmask representing the radio technologies that are disabled. Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_ GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_ UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_ LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_ TDSCDMA – TD-SCDMA All unlisted bits are reserved for future use and the service point ignores them if used.
Type	0x23			1	LTE Band Preference Extended
Length	32			2	
Value	→	uint64	bits_1_64	8	Bits 1 to 64 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_65_128	8	Bits 65 to 128 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_129_192	8	Bits 129 to 192 of the 256-bit LTE E-UTRA Operating Band bitmask

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint64	bits_193_256	8	Bits 193 to 256 of the 256-bit LTE E-UTRA Operating Band bitmask

3.29.3   Indication - QMI_NAS_SYSTEM_SELECTION_PREFERENCE_- IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

At least one of the following optional TLVs are present if the result code is QMI_RESULT_SUCCESS.

Name	Version introduced	Version last modified
Emergency Mode	Unknown	1.1
Mode Preference	Unknown	1.16
Band Preference	Unknown	1.16
CDMA PRL Preference	Unknown	1.1
Roaming Preference	Unknown	1.1
LTE Band Preference (Deprecated; use LTE Band Preference Extended)	1.16	1.138 (Deprecated)
Network Selection Preference	1.5	1.5
Service Domain Preference	Unknown	1.34
GSM/WCDMA Acquisition Order Preference	Unknown	1.11
TDSCDMA Band Preference	Unknown	1.13
Manual Network Selection PLMN	Unknown	1.19
Acquisition Order Preference	Unknown	1.20
Network Selection Registration Restriction Preference	1.34	1.34
CSG ID	1.41	1.41
Usage Preference	1.67	1.67
Voice Domain Preference	1.92	1.92
LTE Disable Cause	1.100	1.100

Name	Version introduced	Version last modified
Disabled RAT Bitmask	1.132	1.132
LTE Band Preference Extended	1.138	1.138

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Emergency Mode
Length	1			2	
Value	→	boolean	emergency_mode	1	Values: • 0x00 – OFF (normal) • 0x01 – ON (emergency)
Type	0x11			1	Mode Preference
Length	2			2	
Value	→	mask16	mode_pref	2	Bitmask representing the radio technology mode preference to be set. Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_ CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_ GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_ UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_ LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_ TDSCDMA – TD-SCDMA All unlisted bits are reserved for future use.
Type	0x12			1	Band Preference
Length	8			2	
Value	→	mask	band_pref	8	Bitmask representing the band preference to be set. See Table A-2 for details.
Type	0x13			1	CDMA PRL Preference
Length	2			2	
Value	→	enum16	prl_pref	2	PRL preference to be set for band class 0 (BC0) prl_pref. Values: • 0x0001 – PRL_PREF_A_SIDE_ONLY – Acquire available system only on the A side • 0x0002 – PRL_PREF_B_SIDE_ONLY – Acquire available system only on the B side • 0x3FFF – PRL_PREF_ANY – Acquire any available systems
Type	0x14			1	Roaming Preference
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum16	roam_pref	2	Roaming preference to be set. Values: • 0x01 – ROAMING_PREF_OFF – Acquire only systems for which the roaming indicator is off • 0x02 – ROAMING_PREF_NOT_OFF – Acquire a system as long as its roaming indicator is not off • 0x03 – ROAMING_PREF_NOT_FLASING – Acquire only systems for which the roaming indicator is off or solid on, i.e., not flashing; CDMA only • 0xFF – ROAMING_PREF_ANY – Acquire systems, regardless of their roaming indicator
Type	0x15			1	LTE Band Preference (Deprecated; use LTE Band Preference Extended)
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be set. See Table A-3 for details.
Type	0x16			1	Network Selection Preference
Length	1			2	
Value	→	enum8	net_sel_pref	1	Network selection preference. Values: • 0x00 – Automatic network selection • 0x01 – Manual network selection
Type	0x18			1	Service Domain Preference
Length	4			2	
Value	→	enum	srv_domain_pref	4	Service domain preference. Values: • 0x00 – QMI_SRV_DOMAIN_PREF_CS_ONLY – Circuit-switched only • 0x01 – QMI_SRV_DOMAIN_PREF_PS_ONLY – Packet-switched only • 0x02 – QMI_SRV_DOMAIN_PREF_CS_PS – Circuit-switched and packet-switched
Type	0x19			1	GSM/WCDMA Acquisition Order Preference
Length	4			2	
Value	→	enum	gw_acq_order_pref	4	GSM/WCDMA acquisition order preference. Values: • 0x00 – NAS_GW_ACQ_ORDER_PREF_AUTOMATIC – Automatic • 0x01 – NAS_GW_ACQ_ORDER_PREF_GSM_WCDMA – GSM then WCDMA • 0x02 – NAS_GW_ACQ_ORDER_PREF_WCDMA_GSM – WCDMA then GSM
Type	0x1A			1	TDSCDMA Band Preference
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask	tdscdma_ band_pref	8	Bitmask representing the TD-SCDMA band preference to be set. Values: • 0x01 – NAS_TDSCDMA_BAND_A – TD-SCDMA Band A • 0x02 – NAS_TDSCDMA_BAND_B – TD-SCDMA Band B • 0x04 – NAS_TDSCDMA_BAND_C – TD-SCDMA Band C • 0x08 – NAS_TDSCDMA_BAND_D – TD-SCDMA Band D • 0x10 – NAS_TDSCDMA_BAND_E – TD-SCDMA Band E • 0x20 – NAS_TDSCDMA_BAND_F – TD-SCDMA Band F All other bits are reserved.
Type	0x1B			1	Manual Network Selection PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x1C			1	Acquisition Order Preference
Length	Var			2	
Value	→	uint8	acq_order_len	1	Number of sets of the following elements: • acq_order
		enum8	acq_order	Var	Acquisition order preference to be set. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x1D			1	Network Selection Registration Restriction Preference
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	srv_reg_ restriction	4	Registration restriction preference. Specifies one of the following modifiers to net_sel_pref: • 0x00 – NAS_SRV_REG_RESTRICTION_ UNRESTRICTED – Device follows the normal registration process • 0x01 – NAS_SRV_REG_RESTRICTION_ CAMPED_ONLY – Device camps on the network according to its provisioning, but does not register • 0x02 – NAS_SRV_REG_RESTRICTION_ LIMITED – Device selects the network for limited service All other values are reserved.
Type	0x1E			1	CSG ID
Length	10			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of CSG MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of CSG MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
		uint32	id	4	Closed subscriber group identifier.
		enum8	rat	1	Radio interface technology of the CSG network. Values: • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE • 0x09 – RADIO_IF_TDSCDMA – TDS
Type	0x1F			1	Usage Preference
Length	4			2	
Value	→	enum	usage_setting	4	Usage preference to be set. Values: • NAS_USAGE_UNKNOWN (0) – Unknown • NAS_USAGE_VOICE_CENTRIC (1) – Voice centric • NAS_USAGE_DATA_CENTRIC (2) – Data centric
Type	0x20			1	Voice Domain Preference
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	voice_domain_pref	4	Voice domain preference. Values: • NAS_VOICE_DOMAIN_PREF_CS_ONLY (0x00) – Circuit-switched (CS) voice only • NAS_VOICE_DOMAIN_PREF_PS_ONLY (0x01) – Packet-switched (PS) voice only • NAS_VOICE_DOMAIN_PREF_CS_PREF (0x02) – CS is preferred; PS is secondary • NAS_VOICE_DOMAIN_PREF_PS_PREF (0x03) – PS is preferred; CS is secondary
Type	0x21			1	LTE Disable Cause
Length	4			2	
Value	→	enum	lte_disable_cause	4	LTE disable cause. Values: • NAS_LTE_DISABLE_CAUSE_NONE (0x00) – LTE is not disabled • NAS_LTE_DISABLE_CAUSE_PERMANENT_DS (0x01) – LTE is disabled by DS permanently, e.g., T3316 expiry • NAS_LTE_DISABLE_CAUSE_TEMP_DS (0x02) – LTE is disabled by DS temporarily • NAS_LTE_DISABLE_CAUSE_DOM_SEL (0x03) – LTE disable procedure is called for domain selection purpose • NAS_LTE_DISABLE_CAUSE_DAM (0x04) – LTE disable procedure is called for device aggression management recovery • NAS_LTE_DISABLE_CAUSE_USER (0x05) – LTE disable procedure is called due to user action, e.g., mode_pref change or PS_DETACH triggered by ATCOP/QMI • NAS_LTE_DISABLE_CAUSE_NO_CHANGE (0x06) – No change in LTE disable cause
Type	0x22			1	Disabled RAT Bitmask
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	rat_disabled_mask	2	Bitmask representing the radio technologies that are disabled. Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_TDSCDMA – TD-SCDMA All unlisted bits are reserved for future use and the service point ignores them if used.
Type	0x23			1	LTE Band Preference Extended
Length	32			2	
Value	→	uint64	bits_1_64	8	Bits 1 to 64 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_65_128	8	Bits 65 to 128 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_129_192	8	Bits 129 to 192 of the 256-bit LTE E-UTRA Operating Band bitmask
		uint64	bits_193_256	8	Bits 193 to 256 of the 256-bit LTE E-UTRA Operating Band bitmask

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_OP_DEVICE_UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request

3.29.4 Description of QMI_NAS_GET_SYSTEM_SELECTION_- PREFERENCE

This command queries the preferred system selection settings for the device.

For more information regarding the preference settings and the description of QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE, see Section 3.28.3.

The Manual Network Selection PLMN TLV is included only when the Network Selection Preference TLV is set to "Manual network selection".

If the Emergency Mode TLV is set to "ON", the Mode Preference TLV will be populated with the last received non-emergency value.

The CSG ID TLV is included only when the PLMN listed is a CSG network.

Description of QMI_NAS_SYSTEM_SELECTION_PREFERENCE_IND

This indication communicates the current preferred system selection settings for the device.

The Manual Network Selection PLMN TLV is included only when the current network selection preference is set to manual.

If the Emergency Mode TLV is set to "ON", the Mode Preference TLV will be populated with the last received non-emergency value.

The CSG ID TLV is included only when the PLMN listed is a CSG network.

3.30   QMI_NAS_SET_DDTM_PREFERENCE

Sets the Data Dedicated Transmission Mode (DDTM) preference for the device.

NAS message ID

0x0037

Version introduced

Major - 1, Minor - 1

3.30.1   Request - QMI_NAS_SET_DDTM_PREFERENCE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
DDTM Preference	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	DDTM Preference
Length	Var			2	
Value	→	enum8	ddtm_pref	1	DDTM preference setting. Values: • 0x00 – DDTM_PREF_OFF – Disable DDTM • 0x01 – DDTM_PREF_ON – Enable DDTM • 0x02 – DDTM_PREF_NO_CHANGE – Do not change DDTM preference

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	ddtm_action	2	Bitmask (with each bit specifying action) representing what combined DDTM actions should take place. Values: • Bit 0 – QMI_NAS_DDTM_ACTION_SUPPRESS_L2ACK_BIT – Do not send L2 ACK on 1X • Bit 1 – QMI_NAS_DDTM_ACTION_SUPPRESS_REG_BIT – Suppress 1X registrations • Bit 2 – QMI_NAS_DDTM_ACTION_IGNORE_SO_PAGES_BIT – Ignore 1X pages with specified service options • Bit 3 – QMI_NAS_DDTM_ACTION_SUPPRESS_MO_DBM_BIT – Block MO SMS and DBM To enable all masks, a value of 0x3FFF must be sent in this field.
		enum8	so_list_action	1	Action to be taken with the specified SO list in the SO field. Values: • 0x00 – SO_LIST_ACTION_ADD – Add the specified SOs to the current DDTM SO list • 0x01 – SO_LIST_ACTION_REPLACE – Replace the current DDTM SO list • 0x02 – SO_LIST_ACTION_DELETE – Delete the specified SOs from the DDTM SO list • 0x03 – SO_LIST_ACTION_NO_CHANGE – No change in the DDTM SO list
		uint8	num_so_instances	1	Number of sets of the following elements: • so
		uint16	so	Var	Service option for which SO pages are ignored when DDTM status is ON. Refer to 3GPP2 C.R1001-F Table 3.1-1 for standard SO number assignments. To ignore all SO pages, a value of 0xFFFF must be specified.

Optional TLVs

None

3.30.2   Response - QMI_NAS_SET_DDTM_PREFERENCE_RESP_MSG

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_ARG_TOO_LONG	More than the maximum allowed thresholds were specified

3.30.3   Description of QMI_NAS_SET_DDTM_PREFERENCE REQ/RESP

This command sets the DDTM preference. This command is applicable only for 3GPP2 devices.

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3.31   QMI_NAS_DDTM

Provides the DDTM status of the device.

NAS message ID

0x0038

Version introduced

Major - 1, Minor - 1

3.31.1   Indication - QMI_NAS_DDTM_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
DDTM Settings	Unknown	1.1

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	DDTM Settings
Length	Var			2	
Value	→	enum8	curr_ddtm_ status	1	Current DDTM status. Values: • 0x00 – CURRENT_DDTM_STATUS_DISABLED • 0x01 – CURRENT_DDTM_STATUS_ENABLED
		enum8	ddtm_pref	1	DDTM preference setting. Values: • 0x00 – DDTM_PREF_OFF – Disable DDTM • 0x01 – DDTM_PREF_ON – Enable DDTM

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	ddtm_action	2	Bitmask (with each bit specifying action) representing what combined DDTM actions should take place. Values: • Bit 0 – QMI_NAS_DDTM_ACTION_ SUPPRESS_ L2ACK_BIT – Do not send L2 ACK on 1X • Bit 1 – QMI_NAS_DDTM_ACTION_ SUPPRESS_ REG_BIT – Suppress 1X registrations • Bit 2 – QMI_NAS_DDTM_ACTION_IGNORE_ SO_ PAGES_BIT – Ignore 1X pages with specified service options • Bit 3 – QMI_NAS_DDTM_ACTION_ SUPPRESS_ MO_DBM_BIT – Block MO SMS and DBM To enable all masks, a value of 0x3FFF must be sent in this field
		enum8	so_list_action	1	Action to be taken with the specified SO list in the SO field. Values: • 0x00 – SO_LIST_ACTION_ADD – Add the specified SOs to the current DDTM SO list • 0x01 – SO_LIST_ACTION_REPLACE – Replace the current DDTM SO list • 0x02 – SO_LIST_ACTION_DELETE – Delete the specified SOs from the DDTM SO list • 0x03 – SO_LIST_ACTION_NO_CHANGE – No change in the DDTM SO list
		uint8	num_so_ instances	1	Number of sets of the following elements: • so
		uint16	so	Var	Service option for which SO pages are ignored when DDTM status is ON. Refer to 3GPP2 C.R1001-F Table 3.1-1 for standard SO number assignments. To ignore all SO pages, a value of 0xFFFF must be specified.

Optional TLVs

None

3.31.2   Description of QMI_NAS_DDTM

This indication communicates the DDTM status of the device. This indication is applicable only in 3GPP2 devices.

3.32   QMI_NAS_GET_OPERATOR_NAME_DATA

Retrieves operator name data from multiple sources. (Deprecated)

NAS message ID

0x0039

Version introduced

Major - 1, Minor - 3

Version deprecated

Major - 1, Minor - 24

3.32.1   Request - QMI_NAS_GET_OPERATOR_NAME_DATA_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.32.2   Response - QMI_NAS_GET_OPERATOR_NAME_DATA_RESP_MSG

Message type

Response

Sender

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Service

Mandatory TLVs

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

Optional TLVs

Name	Version introduced	Version last modified
Service Provider Name	Unknown	1.3
Operator PLMN List	Unknown	1.3
PLMN Network Name	Unknown	1.4
Operator Name String	Unknown	1.3
NITZ Information	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service Provider Name (refer to 3GPP TS 31.102 Section 4.2.12)
Length	Var			2	
Value	→	uint8	display_cond	1	Display condition
		uint8	spn_len	1	Number of sets of the following elements: • spn.
		uint8	spn	Var	Service provider name string must use: • The SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 9 • One UCS2 code option defined in 3GPP TS 11.11 Annex B
Type	0x11			1	Operator PLMN List (refer to 3GPP TS 31.102 Section 4.2.59)
Length	Var			2	
Value	→	uint16	num_inst	2	Number of sets of the following elements: • mcc • mnc • lac1 • lac2 • pnn_rec_id
		char	mcc	3	MCC in ASCII string (a value of D in any of the digits is to be used to indicate a "wild" value for that corresponding digit).
		char	mnc	3	MNC in ASCII string (a value of D in any of the digits is to be used to indicate a "wild" value for that corresponding digit; digit 3 in MNC is optional and when not present, will be set as ASCII F).
		uint16	lac1	2	Location area code 1.
		uint16	lac2	2	Location area code 2.
		uint8	pnn_rec_id	1	PLMN network name record identifier.
Type	0x12			1	PLMN Network Name (refer to 3GPP TS 24.008 Section 10.5.3.5a)

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	Var			2	
Value	→	uint8	num_inst	1	Number of sets of the following elements: • coding_scheme • ci • long_name_spare_bits • short_name_spare_bits • long_name_len • long_name • short_name_len • short_name
		enum8	coding_scheme	1	Coding scheme. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – Cell broadcast data coding scheme, GSM default alphabet, language unspecified; defined in 3GPP TS 23.038 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit) ISO/IEC 10646
		enum8	ci	1	Country's initials. Values: • 0x00 – COUNTRY_INITIALS_ DO_NOT_ADD – MS does not add the letters for the country's initials to the text string • 0x01 – COUNTRY_INITIALS_ADD – MS adds the letters for the country's initials and a separator, e.g., a space, to the text string
		enum8	long_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	short_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		uint8	long_name_len	1	Number of sets of the following elements: • long_name
		uint8	long_name	Var	Long name string in coding_scheme.
		uint8	short_name_ len	1	Number of sets of the following elements: • short_name
		uint8	short_name	Var	Short name string in coding_scheme.
Type	0x13			1	Operator Name String (refer to CPHS4_2.WW6 Section B.4.1.2)
Length	Var			2	
Value	→	string	plmn_name	Var	PLMN name must be coded in a default 7-bit alphabet with b8 set to 0.
Type	0x14			1	NITZ Information
Length	Var			2	
Value	→	enum8	coding_scheme	1	Coding scheme. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – Cell broadcast data coding scheme, GSM default alphabet, language unspecified; defined in 3GPP TS 23.038 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit) ISO/IEC 10646
		enum8	ci	1	Country's initials. Values: • 0x00 – COUNTRY_INITIALS_ DO_NOT_ADD – MS does not add the letters for the country's initials to the text string • 0x01 – COUNTRY_INITIALS_ADD – MS adds the letters for the country's initials and a separator, e.g., a space, to the text string

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	long_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		enum8	short_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		uint8	long_name_len	1	Number of sets of the following elements: • long_name
		uint8	long_name	Var	Long name string in coding_scheme.
		uint8	short_name_ len	1	Number of sets of the following elements: • short_name
		uint8	short_name	Var	Short name string in coding_scheme.

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

3.32.3 Description of QMI_NAS_GET_OPERATOR_NAME_DATA REQ/RESP

This command retrieves the operator name data from multiple sources. If certain TLV information is not available, it is not included in the response message. In this command:

- Service Provider Name is retrieved from EF_SPN (6F46).

- Operator PLMN List is retrieved from EF_OPL (6FC6).

- PLMN Network Name is retrieved from EF_PNN (6FC5).

- Operator Name String is retrieved from EF_ONS (6F14).

- NITZ Information is retrieved from the (G)MM INFORMATION message.

- Service Provider Name Ext is retrieved from EF_SPN (6F46).

This command is deprecated. Use QMI_NAS_GET_PLMN_NAME (Section 3.43).

3.33   QMI_NAS_OPERATOR_NAME_DATA_IND

Indicates a change in operator name data, which is obtained from multiple sources. (Deprecated)

NAS message ID

0x003A

Version introduced

Major - 1, Minor - 3

Version deprecated

Major - 1, Minor - 24

3.33.1   Indication - QMI_NAS_OPERATOR_NAME_DATA_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Service Provider Name	Unknown	1.3
Operator PLMN List	Unknown	1.3
PLMN Network Name	Unknown	1.4
Operator Name String	Unknown	1.3
NITZ Information	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service Provider Name (refer to 3GPP TS 31.102 Section 4.2.12)
Length	Var			2	
Value	→	uint8	display_cond	1	Display condition

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	spn_len	1	Number of sets of the following elements: • spn
		uint8	spn	Var	Service provider name string must use: • The SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 9 • One UCS2 code option defined in 3GPP TS 11.11 Annex B
Type	0x11			1	Operator PLMN List (refer to 3GPP TS 31.102 Section 4.2.59)
Length	Var			2	
Value	→	uint16	num_inst	2	Number of sets of the following elements: • mcc • mnc • lac1 • lac2 • pnn_rec_id
		char	mcc	3	MCC in ASCII string (a value of D in any of the digits is to be used to indicate a "wild" value for that corresponding digit).
		char	mnc	3	MNC in ASCII string (a value of D in any of the digits is to be used to indicate a "wild" value for that corresponding digit; digit 3 in MNC is optional and when not present, will be set as ASCII F).
		uint16	lac1	2	Location area code 1.
		uint16	lac2	2	Location area code 2.
		uint8	pnn_rec_id	1	PLMN network name record identifier.
Type	0x12			1	PLMN Network Name (refer to 3GPP TS 24.008 Section 10.5.3.5a)
Length	Var			2	
Value	→	uint8	num_inst	1	Number of sets of the following elements: • coding_scheme • ci • long_name_spare_bits • short_name_spare_bits • long_name_len • long_name • short_name_len • short_name
		enum8	coding_scheme	1	Coding scheme. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – Cell broadcast data coding scheme, GSM default alphabet, language unspecified; defined in 3GPP TS 23.038 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit) ISO/IEC 10646

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	ci	1	Country's initials. Values: • 0x00 – COUNTRY_INITIALS_ DO_NOT_ADD – MS does not add the letters for the country's initials to the text string • 0x01 – COUNTRY_INITIALS_ADD – MS adds the letters for the country's initials and a separator, e.g., a space, to the text string
		enum8	long_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		enum8	short_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		uint8	long_name_len	1	Number of sets of the following elements: • long_name
		uint8	long_name	Var	Long name string in coding_scheme.
		uint8	short_name_ len	1	Number of sets of the following elements: • short_name
		uint8	short_name	Var	Short name string in coding_scheme.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x13			1	Operator Name String (refer to CPHS4_2.WW6 Section B.4.1.2)
Length	Var			2	
Value	→	string	plmn_name	Var	PLMN name must be coded in a default 7-bit alphabet with b8 set to 0
Type	0x14			1	NITZ Information
Length	Var			2	
Value	→	enum8	coding_scheme	1	Coding scheme. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – Cell broadcast data coding scheme, GSM default alphabet, language unspecified; defined in 3GPP TS 23.038 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit) ISO/IEC 10646
		enum8	ci	1	Country's initials. Values: • 0x00 – COUNTRY_INITIALS_ DO_NOT_ADD – MS does not add the letters for the country's initials to the text string • 0x01 – COUNTRY_INITIALS_ADD – MS adds the letters for the country's initials and a separator, e.g., a space, to the text string
		enum8	long_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	short_name_ spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n
		uint8	long_name_len	1	Number of sets of the following elements: • long_name
		uint8	long_name	Var	Long name string in coding_scheme.
		uint8	short_name_ len	1	Number of sets of the following elements: • short_name
		uint8	short_name	Var	Short name string in coding_scheme.

3.33.2 Description of QMI_NAS_OPERATOR_NAME_DATA_IND

This indication notifies clients of any change in the operator name data from multiple sources, including the card and NITZ information. Only TLVs with updated information are included in the indication.

The client can use the Operator Name Data TLV in the QMI_NAS_INDICATION_REGISTER command to enable or disable this indication.

This indication is deprecated. Use QMI_NAS_CURRENT_PLMN_NAME_IND (Section 3.71).

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

3.34   QMI_NAS_GET_CSP_PLMN_MODE_BIT

Retrieves the PLMN MODE bit data from the Customer Service Profile (CSP).

NAS message ID

0x003B

Version introduced

Major - 1, Minor - 3

3.34.1   Request - QMI_NAS_GET_CSP_PLMN_MODE_BIT_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.34.2   Response - QMI_NAS_GET_CSP_PLMN_MODE_BIT_RESP_MSG

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 introduced	Version last modified
PLMN Mode	Unknown	1.4

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	PLMN Mode (refer to CPHS4_2.WW6 Section 4.7.1)
Length	1			2	
Value	→	enum8	plmn_mode	1	Values: • 0x00 – PLMN_MODE_DO_NOT_RESTRICT – Do not restrict menu options for manual PLMN selection • 0x01 – PLMN_MODE_RESTRICT – Restrict menu options for manual PLMN selection

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_SIM_FILE_NOT_FOUND	Operation could not be performed as the relevant file (EF) is not present in the SIM

3.34.3   Description of QMI_NAS_GET_CSP_PLMN_MODE_BIT REQ/RESP

This command retrieves the PLMN MODE bit data from the CSP. Data is retrieved from EF_CSP (6F15).

3.35   QMI_NAS_CSP_PLMN_MODE_BIT_IND

Provides any change in the PLMN MODE bit in the CSP.

NAS message ID

0x003C

Version introduced

Major - 1, Minor - 3

3.35.1   Indication - QMI_NAS_CSP_PLMN_MODE_BIT_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
PLMN Mode	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	PLMN Mode (refer to CPHS4_2.WW6 Section 4.7.1)
Length	1			2	
Value	→	enum8	plmn_mode	1	Values: • 0x00 – PLMN_MODE_DO_NOT_RESTRICT – Do not restrict menu options for manual PLMN selection • 0x01 – PLMN_MODE_RESTRICT – Restrict menu options for manual PLMN selection

3.35.2   Description of QMI_NAS_CSP_PLMN_MODE_BIT_IND

This indication notifies clients of any change in the PLMN MODE bit from the CSP. The client can use the CSP PLMN Mode Bit TLV in the QMI_NAS_INDICATION_REGISTER command to enable or disable this indication.

3.36   QMI_NAS_UPDATE_AKEY

Updates the A-KEY. (Discontinued)

NAS message ID

0x003D

Version introduced

Major - 1, Minor - 4

3.36.1   Request - QMI_NAS_UPDATE_AKEY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
AKEY	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	AKEY
Length	26			2	
Value	→	uint8	akey	26	AKEY value + checksum value in ASCII (first 20 bytes are the AKEY value, last 6 bytes are the checksum).

Optional TLVs

None

3.36.2   Response - QMI_NAS_UPDATE_AKEY_RESP_MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.36.3   Description of QMI_NAS_UPDATE_AKEY REQ/RESP

This command updates AKEY. The modem runs authentication on the presented AKEY before updating AKEY. An authentication failure results in an error response. On successful operation, the command updates the NV_A_KEY_I NV item.

Support for this command is now discontinued. Use QMI_NAS_UPDATE_AKEY_EXT (Section 3.65) instead.

3.37   QMI_NAS_GET_3GPP2_SUBSCRIPTION_INFO

Retrieves 3GPP2 subscription-related information.

NAS message ID

0x003E

Version introduced

Major - 1, Minor - 4

3.37.1   Request - QMI_NAS_GET_3GPP2_SUBSCRIPTION_INFO_REQ_-MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
NAM ID	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	NAM ID
Length	1			2	
Value	→	uint8	nam_id	1	NAM ID of the information to be retrieved. The index starts from 0. A nam_id of 0xFF is used to retrieve information of current NAM.

Optional TLVs

Name	Version introduced	Version last modified
Get 3GPP2 Info Bitmask	Unknown	1.14

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Get 3GPP2 Info Bitmask
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask32	get_3gpp2_ info_mask	4	Bitmasks included in this field decide which optional TLVs are to be included in the response message. If this TLV is not included, all available information is sent as part of the response message.
					The bitmask enum value, bitmask enum member name, and TLV that is included are: • 0x01 – QMI_NAS_GET_3GPP2_SUBS_INFO_ NAM_NAME – NAM Name • 0x02 – QMI_NAS_GET_3GPP2_SUBS_INFO_ DIR_NUM – Directory Number • 0x04 – QMI_NAS_GET_3GPP2_SUBS_INFO_ HOME_SID_IND – Home SID/NID • 0x08 – QMI_NAS_GET_3GPP2_SUBS_INFO_ MIN_BASED_IMSI – MIN-based IMSI • 0x10 – QMI_NAS_GET_3GPP2_SUBS_INFO_ TRUE_IMSI – True IMSI • 0x20 – QMI_NAS_GET_3GPP2_SUBS_INFO_ CDMA_CHANNEL – CDMA Channel • 0x40 – QMI_NAS_GET_3GPP2_SUBS_INFO_ MDN – Mobile Directory Number All other bits are reserved for future use.

3.37.2 Response - QMI_NAS_GET_3GPP2_SUBSCRIPTION_INFO_RESP_- MSG

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 introduced	Version last modified
NAM Name	Unknown	1.4
Directory Number	Unknown	1.4
Home SID/NID	Unknown	1.4
MIN-based IMSI	Unknown	1.4
True IMSI	Unknown	1.4
CDMA Channel	Unknown	1.4
Mobile Directory Number	Unknown	1.14

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	NAM Name (information retrieved from NV_NAME_NAM_I)
Length	Var			2	
Value	→	uint8	nam_name_len	1	Number of sets of the following elements: • nam_name
		char	nam_name	Var	Name information in ASCII. The maximum length of nam_name is 12.
Type	0x11			1	Directory Number (information retrieved from NV_DIR_NUMBER_I)
Length	Var			2	
Value	→	uint8	dir_num_len	1	Number of sets of the following elements: • dir_num
		char	dir_num	Var	Directory number in ASCII characters.
Type	0x12			1	Home SID/NID (information retrieved from NV_HOME_SID_NID_I)
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • sid • nid
		uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
Type	0x13			1	MIN-based IMSI (information retrieved from NV_IMSI_MCC_I, NV_IMSI_11_12_I, NV_MIN1_I, and NV_MIN2_I)
Length	15			2	
Value	→	char	mcc_m	3	ASCII character representation of MCC_M; example: 000, 123, etc.
		char	imsi_m_11_12	2	ASCII character representation of IMSI_M_11_12 value; example: 00, 01, etc.
		char	imsi_m_s1	7	ASCII character representation of IMSI_M_S1 value; example: 0123456.
		char	imsi_m_s2	3	ASCII character representation of IMSI_M_S2 value; example: 012.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x14			1	True IMSI (information retrieved from NV_IMSI_T_MCC_I, NV_IMSI_T_11_12_I, NV_IMSI_T_S1_I, NV_IMSI_T_S2_I, and NV_IMSI_T_ADDR_NUM_I)
Length	16			2	
Value	→	char	mcc_t	3	ASCII character representation of MCC_T; example: 000, 123, etc.
		char	imsi_t_11_12	2	ASCII character representation of IMSI_T_11_12 value; example: 00, 01, etc.
		char	imsi_t_s1	7	ASCII character representation of IMSI_T_S1 value; example: 0123456.
		char	imsi_t_s2	3	ASCII character representation of IMSI_T_S2 value; example: 012.
		uint8	imsi_t_addr_num	1	Value of IMSI_T_ADDR_NUM.
Type	0x15			1	CDMA Channel (information retrieved from NV_PCDMACH_I and NV_SCDMACH_I)
Length	8			2	
Value	→	uint16	pri_ch_a	2	A Channel number for the primary carrier.
		uint16	pri_ch_b	2	B Channel number for the primary carrier.
		uint16	sec_ch_a	2	A Channel number for the secondary carrier.
		uint16	sec_ch_b	2	B Channel number for the secondary carrier.
Type	0x16			1	Mobile Directory Number (information retrieved from NV_DIR_NUMBER_PCS_I)
Length	Var			2	
Value	→	uint8	mdn_len	1	Number of sets of the following elements: • mdn
		char	mdn	Var	Mobile directory number represented in ASCII format with a maximum length of 15 characters. Valid values for individual characters in the MDN are digits 0 through 9, and special characters * and #.

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.37.3 Description of QMI_NAS_GET_3GPP2_SUBSCRIPTION_INFO REQ/RESP

This command retrieves 3GPP2 subscription-related information. In case the client is interested in only a subset of the information reported by the response message, the optional Get 3GPP2 Info Bitmask TLV can be included in the request message with the appropriate bitmasks set.

The QMI_ERR_INTERNAL error is returned when no information can be retrieved from the modem. In case only a subset of information is available, the response message only contains the available TLVs.

3.38   QMI_NAS_SET_3GPP2_SUBSCRIPTION_INFO

Writes 3GPP2 subscription-related information.

NAS message ID

0x003F

Version introduced

Major - 1, Minor - 4

3.38.1   Request - QMI_NAS_SET_3GPP2_SUBSCRIPTION_INFO_REQ_-MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
NAM ID	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	NAM ID
Length	1			2	
Value	→	uint8	nam_id	1	NAM ID of the information to be written. The index starts from 0. A nam_id of 0xFF is used to write information to current NAM.

Optional TLVs

Name	Version introduced	Version last modified
Directory Number	Unknown	1.4
Home SID/NID	Unknown	1.4
MIN-based IMSI	Unknown	1.4
True IMSI	Unknown	1.4
CDMA Channel	Unknown	1.4
NAM Name	Unknown	1.4
Mobile Directory Number	Unknown	1.14
Service Programming Code	1.50	1.50

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Directory Number (information written to NV_DIR_NUMBER_I)
Length	Var			2	
Value	→	uint8	dir_num_len	1	Number of sets of the following elements: • dir_num
		char	dir_num	Var	Directory number in ASCII characters.
Type	0x11			1	Home SID/NID (information written to NV_HOME_SID_NID_I)
Length	Var			2	
Value	→	uint8	num_instances	1	Number of sets of the following elements: • sid • nid
		uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
Type	0x12			1	MIN-based IMSI (information written to NV_IMSI_MCC_I, NV_IMSI_11_12_I, NV_MIN1_I, and NV_MIN2_I)
Length	15			2	
Value	→	char	mcc_m	3	ASCII character representation of MCC_M; example: 000, 123, etc.
		char	imsi_m_11_12	2	ASCII character representation of IMSI_M_11_12 value; example: 00, 01, etc.
		char	imsi_m_s1	7	ASCII character representation of IMSI_M_S1 value; example: 0123456.
		char	imsi_m_s2	3	ASCII character representation of IMSI_M_S2 value; example: 012.
Type	0x13			1	True IMSI (information written to NV_IMSI_T_MCC_I, NV_IMSI_T_11_12_I, NV_IMSI_T_S1_I, NV_IMSI_T_S2_I, and NV_IMSI_T_ADDR_NUM_I)
Length	16			2	
Value	→	char	mcc_t	3	ASCII character representation of MCC_T; example: 000, 123, etc.
		char	imsi_t_11_12	2	ASCII character representation of IMSI_T_11_12 value; example: 00, 01, etc.
		char	imsi_t_s1	7	ASCII character representation of IMSI_T_S1 value; example: 0123456.
		char	imsi_t_s2	3	ASCII character representation of IMSI_T_S2 value; example: 012.
		uint8	imsi_t_addr_num	1	Value of IMSI_T_ADDR_NUM.
Type	0x14			1	CDMA Channel (information written to NV_PCDMACH_I and NV_SCDMACH_I)
Length	8			2	
Value	→	uint16	pri_ch_a	2	A Channel number for the primary carrier.
		uint16	pri_ch_b	2	B Channel number for the primary carrier.
		uint16	sec_ch_a	2	A Channel number for the secondary carrier.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	sec_ch_b	2	B Channel number for the secondary carrier.
Type	0x15			1	NAM Name (information written to NV_NAME_NAM_I)
Length	Var			2	
Value	→	uint8	nam_name_len	1	Number of sets of the following elements: • nam_name
		char	nam_name	Var	Name information in ASCII. The maximum length of nam_name is 12.
Type	0x16			1	Mobile Directory Number (information written to NV_DIR_NUMBER_PCS_I)
Length	Var			2	
Value	→	uint8	mdn_len	1	Number of sets of the following elements: • mdn
		char	mdn	Var	Mobile directory number represented in ASCII format with a maximum length of 15 characters. Valid values for individual characters in the MDN are digits 0 through 9, and special characters * and #.
Type	0x17			1	Service Programming Code
Length	6			2	
Value	→	char	spc	6	Service programming code in ASCII format (digits 0 to 9 only). This TLV is required when any of the following TLVs are present: Directory Number, Home SID/NID, MIN-based IMSI, CDMA Channel, or Mobile Directory.

3.38.2 Response - QMI_NAS_SET_3GPP2_SUBSCRIPTION_INFO_RESP_-MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.38.3　Description of QMI_NAS_SET_3GPP2_SUBSCRIPTION_INFO REQ/RESP

This command sets 3GPP2 subscription-related information.

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

In cases of a successful update of all requested information, a QMI_ERR_NONE error is returned. In case all or a subset of information failed to be written, a QMI_ERR_INTERNAL error is returned.

3.39   QMI_NAS_GET_MOB_CAI_REV

Retrieves Mobile CAI revision information.

NAS message ID

0x0040

Version introduced

Major - 1, Minor - 4

3.39.1   Request - QMI_NAS_GET_MOB_CAI_REV_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.39.2   Response - QMI_NAS_GET_MOB_CAI_REV_RESP_MSG

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 introduced	Version last modified
CAI revision	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CAI revision (information retrieved from NV_MOB_CAI_REV_I)
Length	1			2	
Value	→	uint8	cai_rev	1	CAI revision. Values: • 0x01 – P_REV_JSTD008 • 0x03 – P_REV_IS95A • 0x04 – P_REV_IS95B • 0x06 – P_REV_IS2000 • 0x07 – P_REV_IS2000_REL_A • 0x08 – P_REV_IS2000_REL_B • 0x09 – P_REV_IS2000_REL_C • 0x0A – P_REV_IS2000_REL_C_MI • 0x0B – P_REV_IS2000_REL_D

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

3.39.3   Description of QMI_NAS_GET_MOB_CAI_REV REQ/RESP

This command retrieves Mobile CAI revision information.

3.40 QMI_NAS_GET_RTRE_CONFIG

Retrieves current RTRE configuration information.

NAS message ID

0x0041

Version introduced

Major - 1, Minor - 4

3.40.1 Request - QMI_NAS_GET_RTRE_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.40.2 Response - QMI_NAS_GET_RTRE_CONFIG_RESP_MSG

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 introduced	Version last modified
Current RTRE Configuration	Unknown	1.5
RTRE Configuration Preference	Unknown	1.6

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Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Current RTRE Configuration
Length	1			2	
Value	→	enum8	rtre_cfg	1	Values: • 0x01 – R-UIM only • 0x02 – Internal settings only • 0x04 – GSM on 1X
Type	0x11			1	RTRE Configuration Preference
Length	1			2	
Value	→	enum8	rtre_cfg_pref	1	Values: • 0x01 – R-UIM only • 0x02 – Internal settings only • 0x03 – Use R-UIM if available • 0x04 – GSM on 1X

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

3.40.3   Description of QMI_NAS_GET_RTRE_CONFIG REQ/RESP

This command retrieves current RTRE configuration information. The Current RTRE Configuration TLV returns the current RTRE configuration information, and the RTRE Configuration Preference TLV returns the RTRE configuration preference saved in persistent memory.

3.41   QMI_NAS_SET_RTRE_CONFIG

Sets RTRE configuration preference.

NAS message ID

0x0042

Version introduced

Major - 1, Minor - 4

3.41.1   Request - QMI_NAS_SET_RTRE_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
RTRE Configuration Preference	Unknown	1.4

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	RTRE Configuration Preference
Length	1			2	
Value	→	enum8	rtre_cfg_pref	1	Values: • 0x01 – R-UIM only • 0x02 – Internal settings only • 0x03 – Use R-UIM if available • 0x04 – GSM on 1X (deprecated; will be converted to "Internal settings only" when used)

Optional TLVs

Name	Version introduced	Version last modified
Service Programming Code	1.50	1.50

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service Programming Code
Length	6			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	char	spc	6	Service programming code in ASCII format (digits 0 to 9 only). This TLV is required when the RTRE Configuration Preference TLV is present.

3.41.2 Response - QMI_NAS_SET_RTRE_CONFIG_RESP_MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.41.3 Description of QMI_NAS_SET_RTRE_CONFIG REQ/RESP

This command sets the RTRE configuration preference. If the control point wants to have preference on an R-UIM, but wants to fall back to the internal setting if an R-UIM is not available, "0x03 – Use R-UIM if available" must be used. "0x04 – GSM on 1X" is deprecated. If the control point issues rtre_cfg_pref with 0x04, the service point converts it to "0x02 – Internal settings only" before processing.

3.42 QMI_NAS_GET_CELL_LOCATION_INFO

Retrieves cell location-related information.

NAS message ID

0x0043

Version introduced

Major - 1, Minor - 4

3.42.1 Request - QMI_NAS_GET_CELL_LOCATION_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.42.2 Response - QMI_NAS_GET_CELL_LOCATION_INFO_RESP_MSG

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 introduced	Version last modified
GERAN Info	Unknown	1.9
UMTS Info	Unknown	1.4
CDMA Info	Unknown	1.9
LTE Info - Intrafrequency	Unknown	1.9

Name	Version introduced	Version last modified
LTE Info - Interfrequency	Unknown	1.9
LTE Info - Neighboring GSM	Unknown	1.9
LTE Info - Neighboring WCDMA	Unknown	1.9
UMTS Cell ID	Unknown	1.22
WCDMA Info - LTE Neighbor Cell Info Set	1.46	1.46
CDMA Rx Info	1.64	1.64
HDR Rx Info	1.64	1.64
GSM Cell Info Ext	1.64	1.64
WCDMA Cell Info Ext	1.64	1.64
WCDMA GSM Neighbor Cell Ext	1.64	1.64
LTE Info - Timing Advance	1.70	1.70
WCDMA Info - Active Set	1.70	1.70
WCDMA Info - Active Set Reference Radio Link	1.70	1.70
Extended GERAN Info	1.91	1.91
UMTS Extended Info	1.91	1.91
Extended WCDMA Info - Active Set	1.91	1.91
Scell GERAN Config	1.91	1.91
Current L1 Timeslot	1.91	1.91
Doppler Measurement	1.105	1.105
LTE Info Extended - Intrafrequency EARFCN	1.112	1.112
LTE Info Extended - Interfrequency EARFCN	1.112	1.112
WCDMA Info Extended - LTE Neighbor Cell Info EARFCN	1.112	1.112
NAS Info - EMM State	1.144	1.144
NAS Info - EMM Substate	1.144	1.144
NAS Info - RRC State	1.144	1.144

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	GERAN Info
Length	Var			2	
Value	→	uint32	cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3. (This field is ignored when cell_id is not present.)
		uint16	lac	2	Location area code. (This field is ignored when cell_id is not present.)
		uint16	arfcn	2	Absolute RF channel number.
		uint8	bsic	1	Base station identity code.
		uint32	timing_ advance	4	Measured delay (in bit periods; 1 bit period = 48/13 microsecond) of an access burst transmission on the RACH or PRACH to the expected signal from an MS at zero distance under static channel conditions. (0xFFFFFFFF indicates timing advance information is not present.)

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	rx_lev	2	Serving cell Rx measurement. Values range between 0 and 63, which is mapped to a measured signal level: • Rxlev 0 is a signal strength less than -110 dBm • Rxlev 1 is -110 dBm to -109 dBm • Rxlev 2 is -109 dBm to -108 dBm • ... • Rxlev 62 is -49 dBm to -48 dBm • Rxlev 63 is greater than -48 dBm
		uint8	nmr_inst	1	Number of sets of the following elements: • nmr_cell_id • nmr_plmn • nmr_lac • nmr_arfcn • nmr_bsic • nmr_rx_lev
		uint32	nmr_cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	nmr_plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3. (This field is ignored when nmr_cell_id is not present.)
		uint16	nmr_lac	2	Location area code. (This field is ignored when nmr_cell_id is not present.)
		uint16	nmr_arfcn	2	Absolute RF channel number.
		uint8	nmr_bsic	1	Base station identity code.
		uint16	nmr_rx_lev	2	Cell Rx measurement. Values range between 0 and 63, which is mapped to a measured signal level: • Rxlev 0 is a signal strength less than -110 dBm • Rxlev 1 is -110 dBm to -109 dBm • Rxlev 2 is -109 dBm to -108 dBm • ... • Rxlev 62 is -49 dBm to -48 dBm • Rxlev 63 is greater than -48 dBm
Type	0x11			1	UMTS Info
Length	Var			2	
Value	→	uint16	cell_id	2	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3.
		uint16	lac	2	Location area code.
		uint16	uarfcn	2	UTRA absolute RF channel number.
		uint16	psc	2	Primary scrambling code.
		int16	rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the serving cell.
		int16	ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the serving cell.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	umts_inst	1	Number of sets of the following elements: • umts_uarfcn • umts_psc • umts_rscp • umts_ecio
		uint16	umts_uarfcn	2	UTRA absolute RF channel number.
		uint16	umts_psc	2	Primary scrambling code.
		int16	umts_rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the neighbor/monitored cell.
		int16	umts_ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the neighbor/monitored cell.
		uint8	geran_inst	1	Number of sets of the following elements: • geran_arfcn • geran_bsic_ncc • geran_bsic_bcc • geran_rssi
		uint16	geran_arfcn	2	Absolute RF channel number.
		uint8	geran_bsic_ncc	1	Base station identity code network color code (0xFF indicates information is not present).
		uint8	geran_bsic_bcc	1	Base station identity code base station color code (0xFF indicates information is not present).
		int16	geran_rssi	2	Received signal strength indicator.
Type	0x12			1	CDMA Info
Length	16			2	
Value	→	uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
		uint16	base_id	2	Base station ID.
		uint16	refpn	2	Reference PN.
		uint32	base_lat	4	Latitude of the current base station in units of 0.25 sec.
		uint32	base_long	4	Longitude of the current base station in units of 0.25 sec.
Type	0x13			1	LTE Info - Intrafrequency
Length	Var			2	
Value	→	boolean	ue_in_idle	1	TRUE if the UE is in Idle mode; otherwise FALSE.
		uint8	plmn	3	PLMN ID coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3.
		uint16	tac	2	Tracking area code.
		uint32	global_cell_id	4	Global cell ID in the system information block.
		uint16	earfcn	2	E-UTRA absolute radio frequency channel number of the serving cell. Range: 0 to 65535.
		uint16	serving_cell_id	2	LTE serving cell ID. Range: 0 to 503. This is the cell ID of the serving cell and can be found in the cell list.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	cell_resel_ priority	1	Priority for serving frequency. Range: 0 to 7. (This field is only valid when ue_in_idle is TRUE.)
		uint8	s_non_intra_ search	1	S non-intra search threshold to control non-intrafrequency searches. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)
		uint8	thresh_ serving_low	1	Serving cell low threshold. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)
		uint8	s_intra_search	1	S intra search threshold. Range: 0 to 31. The current cell measurement must fall below this threshold to consider intrafrequency for reselection. (This field is only valid when ue_in_idle is TRUE.)
		uint8	cells_len	1	Number of sets of the following elements: • pci • rsrq • rsrp • rssi • srxlev
		uint16	pci	2	Physical cell ID. Range: 0 to 503.
		int16	rsrq	2	Current RSRQ in 1/10 dB as measured by L1. Range: -200 to -30 (e.g., -200 means -20.0 dB).
		int16	rsrp	2	Current RSRP in 1/10 dBm as measured by L1. Range: -1400 to -440 (e.g., -440 means -44.0 dBm).
		int16	rssi	2	Current RSSI in 1/10 dBm as measured by L1. Range: -1200 to 0 (e.g., -440 means -44.0 dBm).
		int16	srxlev	2	Cell selection Rx level (Srxlev) value. Range: -128 to 128. (This field is only valid when ue_in_idle is TRUE.)
Type	0x14			1	LTE Info - Interfrequency
Length	Var			2	
Value	→	boolean	ue_in_idle	1	TRUE if the UE is in Idle mode; otherwise FALSE.
		uint8	freqs_len	1	Number of sets of the following elements: • earfcn • threshX_low • threshX_high • cell_resel_priority • pci • rsrq • rsrp • rssi • srxlev
		uint16	earfcn	2	E-UTRA absolute radio frequency channel number. Range: 0 to 65535.
		uint8	threshX_low	1	Cell Srxlev low threshold. Range: 0 to 31. When the serving cell does not exceed thresh_serving_low, the value of an evaluated cell must be smaller than this value to be considered for reselection.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	threshX_high	1	Cell Srxlev high threshold. Range: 0 to 31. When the serving cell exceeds thresh_serving_low, the value of an evaluated cell must be greater than this value to be considered for reselection.
		uint8	cell_resel_ priority	1	Cell reselection priority. Range: 0 to 7. (This field is only valid when ue_in_idle is TRUE.)
		uint8	cells_len	1	Number of sets of the following elements: • pci • rsrq • rsrp • rssi • srxlev
		uint16	pci	2	Physical cell ID. Range: 0 to 503.
		int16	rsrq	2	Current RSRQ in 1/10 dB as measured by L1. Range: -200 to -30 (e.g., -200 means -20.0 dB).
		int16	rsrp	2	Current RSRP in 1/10 dBm as measured by L1. Range: -1400 to -440 (e.g., -440 means -44.0 dBm).
		int16	rssi	2	Current RSSI in 1/10 dBm as measured by L1. Range: -1200 to 0 (e.g., -440 means -44.0 dBm).
		int16	srxlev	2	Cell selection Rx level (Srxlev) value. Range: -128 to 128. (This field is only valid when ue_in_idle is TRUE.)
Type	0x15			1	LTE Info - Neighboring GSM
Length	Var			2	
Value	→	boolean	ue_in_idle	1	TRUE if the UE is in Idle mode; otherwise FALSE.
		uint8	freqs_len	1	Number of sets of the following elements: • cell_resel_priority • thresh_gsm_high • thresh_gsm_low • ncc_permitted • arfcn • band_1900 • cell_id_valid • bsic_id • rssi • srxlev
		uint8	cell_resel_ priority	1	Priority of this frequency group. Range: 0 to 7. (This field is only valid when ue_in_idle is TRUE.)
		uint8	thresh_gsm_ high	1	Reselection threshold for high priority layers. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)
		uint8	thresh_gsm_ low	1	Reselection threshold for low priority layers. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	ncc_permitted	1	Bitmask specifying whether a neighbor with a specific network color code is to be reported. Range: 0 to 255. Bit n set to 1 means a neighbor with NCC n must be included in the report. This flag is synonymous with a blacklist in other RATs. (This field is only valid when ue_in_idle is TRUE.)
		uint8	cells_len	1	Number of sets of the following elements: • arfcn • band_1900 • cell_id_valid • bsic_id • rssi • srxlev
		uint16	arfcn	2	GSM frequency being reported. Range: 0 to 1023.
		boolean	band_1900	1	Band indicator for the GSM ARFCN (this field is only valid if arfcn is in the overlapping region). If TRUE and the cell is in the overlapping region, the ARFCN is on the 1900 band. If FALSE, it is on the 1800 band.
		boolean	cell_id_valid	1	Flag indicating whether the base station identity code ID is valid.
		uint8	bsic_id	1	Base station identity code ID, including base station color code and network color code. The lower 6 bits can be set to any value.
		int16	rssi	2	Measured RSSI value in 1/10 dB. Range: -2000 to 0 (e.g., -800 means -80.0 dB).
		int16	srxlev	2	Cell selection Rx level (Srxlev) value. Range: -128 to 128. (This field is only valid when ue_in_idle is TRUE.)
Type	0x16			1	LTE Info - Neighboring WCDMA
Length	Var			2	
Value	→	boolean	ue_in_idle	1	TRUE if the UE is in Idle mode; otherwise FALSE.
		uint8	freqs_len	1	Number of sets of the following elements: • uarfcn • cell_resel_priority • thresh_Xhigh • thresh_Xlow • psc • cpich_rscp • cpich_ecno • srxlev
		uint16	uarfcn	2	WCDMA layer frequency. Range: 0 to 16383.
		uint8	cell_resel_priority	1	Cell reselection priority. Range: 0 to 7. (This field is only valid when ue_in_idle is TRUE.)
		uint16	thresh_Xhigh	2	Reselection low threshold. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)
		uint16	thresh_Xlow	2	Reselection high threshold. Range: 0 to 31. (This field is only valid when ue_in_idle is TRUE.)

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	cells_len	1	Number of sets of the following elements: • psc • cpich_rscp • cpich_ecno • srxlev
		uint16	psc	2	Primary scrambling code. Range: 0 to 511.
		int16	cpich_rscp	2	Absolute power level (in 1/10 dBm) of the common pilot channel as received by the UE. Range: -1200 to -250 (e.g., -250 means -25.0 dBm). Defined in 3GPP TS 25.304.
		int16	cpich_ecno	2	CPICH Ec/No; ratio (in 1/10 dB) of the received energy per PN chip for the CPICH to the total received power spectral density at the UE antenna connector. Range: -500 to 0 (e.g., -25 means -2.5 dB). Defined in 3GPP TS 25.304.
		int16	srxlev	2	Cell selection Rx level (Srxlev) value. Range: -128 to 128. (This field is only valid when ue_in_idle is TRUE.)
Type	0x17			1	UMTS Cell ID
Length	4			2	
Value	→	uint32	umts_cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
Type	0x18			1	WCDMA Info - LTE Neighbor Cell Info Set
Length	Var			2	
Value	→	enum	wcdma_rrc_ state	4	WCDMA RRC states. Values: • 0x00 – NAS_WCDMA_RRC_STATE_ DISCONNECTED – WCDMA RRC state is IDLE defined in 3GPP TS 25.331 • 0x01 – NAS_WCDMA_RRC_STATE_CELL_ PCH – WCDMA RRC state is CELL_PCH defined in 3GPP TS 25.331 • 0x02 – NAS_WCDMA_RRC_STATE_URA_PCH – WCDMA RRC state is URA_PCH defined in 3GPP TS 25.331 • 0x03 – NAS_WCDMA_RRC_STATE_CELL_ FACH – WCDMA RRC state is CELL_FACH defined in 3GPP TS 25.331 • 0x04 – NAS_WCDMA_RRC_STATE_CELL_ DCH – WCDMA RRC state is CELL_DCH defined in 3GPP TS 25.331
		uint8	umts_lte_nbr_ cell_len	1	Number of sets of the following elements: • earfcn • pci • rsrp • rsrq • srxlev • cell_is_tdd

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	earfcn	2	E-UTRA absolute RF channel number of the detected cell.
		uint16	pci	2	Physical cell ID of the detected cell. Range is defined in 3GPP TS 36.211.
		float	rsrp	4	Current received signal strength indication (in dBm) of the detected cell.
		float	rsrq	4	Current reference signal received quality (in dB) of the detected cell.
		int16	srxlev	2	Cell selection Rx level (Srxlev) value of the detected cell in linear scale. (This field is only valid when wcdma_rrc_state is not NAS_WCDMA_RRC_STATE_CELL_FACH or NAS_WCDMA_RRC_STATE_CELL_DCH.)
		boolean	cell_is_tdd	1	TRUE if the cell is TDD; FALSE if the cell is FDD.
Type	0x19			1	CDMA Rx Info
Length	8			2	
Value	→	float	rx0_agc	4	Rx power 0 in dB.
		float	rx1_agc	4	Rx power 1 in dB.
Type	0x1A			1	HDR Rx Info
Length	8			2	
Value	→	float	rx0_agc	4	Rx power 0 in dB.
		float	rx1_agc	4	Rx power 1 in dB.
Type	0x1B			1	GSM Cell Info Ext
Length	4			2	
Value	→	uint16	g_ta	2	Range of the UE from the base station in steps.
		uint16	g_bcch	2	Channel number assigned to the frequency.
Type	0x1C			1	WCDMA Cell Info Ext
Length	10			2	
Value	→	float	w_agc	4	Power in dB.
		float	w_txagc	4	Tx power in dB.
		uint16	w_dl_bler	2	Downlink block error rate percentage.
Type	0x1D			1	WCDMA GSM Neighbor Cell Ext
Length	Var			2	
Value	→	uint8	gncell_bcch_ len	1	Number of sets of the following elements: • gncell_bcch
		uint16	gncell_bcch	Var	Channel number assigned to the frequency for the neighboring GSM cells.
Type	0x1E			1	LTE Info - Timing Advance
Length	4			2	
Value	→	int32	timing_advance	4	Timing advance of the LTE cell in microseconds. (0xFFFFFFFF indicates timing advance information is not present.)
Type	0x1F			1	WCDMA Info - Active Set
Length	Var			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	wcdma_aset_ inst	1	Number of sets of the following elements: • psc • cell_id • rscp • ecio • uarfcn
		uint16	psc	2	Primary scrambling code.
		uint32	cell_id	4	Cell ID.
		int16	rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the active set cell.
		int16	ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the active set cell.
		uint16	uarfcn	2	UTRA absolute RF channel number.
Type	0x20			1	WCDMA Info - Active Set Reference Radio Link
Length	15			2	
Value	→	uint32	cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3.
		uint16	lac	2	Location area code.
		uint16	uarfcn	2	UTRA absolute RF channel number.
		uint16	psc	2	Primary scrambling code.
		uint16	rac	2	Routing area code.
Type	0x21			1	Extended GERAN Info
Length	Var			2	
Value	→	uint32	cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3. (This field is ignored when cell_id is not present.)
		uint16	lac	2	Location area code. (This field is ignored when cell_id is not present.)
		uint16	arfcn	2	Absolute RF channel number.
		uint8	bsic	1	Base station identity code.
		uint32	timing_advance	4	Measured delay (in bit periods; 1 bit period = 48/13 microsecond) of an access burst transmission on the RACH or PRACH to the expected signal from an MS at zero distance under static channel conditions. (0xFFFFFFFF indicates timing advance information is not present.)

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	rx_lev	2	Serving cell Rx measurement. Values range between 0 and 63, which is mapped to a measured signal level: • Rxlev 0 is a signal strength less than -110 dBm • Rxlev 1 is -110 dBm to -109 dBm • Rxlev 2 is -109 dBm to -108 dBm • ... • Rxlev 62 is -49 dBm to -48 dBm • Rxlev 63 is greater than -48 dBm
		uint8	nmr_inst	1	Number of sets of the following elements: • nmr_cell_id • nmr_plmn • nmr_lac • nmr_arfcn • nmr_bsic • nmr_rx_lev • nmr_c1 • nmr_c2 • nmr_c31 • nmr_c32
		uint32	nmr_cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	nmr_plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3. (This field is ignored when nmr_cell_id is not present.)
		uint16	nmr_lac	2	Location area code. (This field is ignored when nmr_cell_id is not present.)
		uint16	nmr_arfcn	2	Absolute RF channel number.
		uint8	nmr_bsic	1	Base station identity code.
		uint16	nmr_rx_lev	2	Cell Rx measurement. Values range between 0 and 63, which is mapped to a measured signal level: • Rxlev 0 is a signal strength less than -110 dBm • Rxlev 1 is -110 dBm to -109 dBm • Rxlev 2 is -109 dBm to -108 dBm • ... • Rxlev 62 is -49 dBm to -48 dBm • Rxlev 63 is greater than -48 dBm
		int32	nmr_c1	4	C1 as defined in 3GPP TS 45.008 Section 6.4. Default: 0.
		int32	nmr_c2	4	C2 as defined in 3GPP TS 45.008 Section 6.4. Default: 0.
		int32	nmr_c31	4	C31 as defined in 3GPP TS 45.008 Section 10.1.2. Default: 0.
		int32	nmr_c32	4	C32 as defined in 3GPP TS 45.008 Section 10.1.2. Default: 0.
Type	0x22			1	UMTS Extended Info
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	cell_id	2	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		char	plmn	3	MCC/MNC information coded as octet 3, 4, and 5 in 3GPP TS 24.008 Section 10.5.1.3.
		uint16	lac	2	Location area code.
		uint16	uarfcn	2	UTRA absolute RF channel number.
		uint16	psc	2	Primary scrambling code.
		int16	rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the serving cell.
		int16	ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the serving cell.
		int16	squal	2	Squal; cell selection quality value in dB.
		int16	srxlev	2	Srxlev; cell selection Rx level value in dB.
		uint8	umts_inst	1	Number of sets of the following elements: • umts_uarfcn • umts_psc • umts_rscp • umts_ecio • umts_squal • umts_srxlev • umts_rank • umts_set
		uint16	umts_uarfcn	2	UTRA absolute RF channel number.
		uint16	umts_psc	2	Primary scrambling code.
		int16	umts_rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the neighbor/monitored cell.
		int16	umts_ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the neighbor/monitored cell.
		int16	umts_squal	2	Squal; cell selection quality value in dB.
		int16	umts_srxlev	2	Srxlev; cell selection Rx level value in dB.
		int16	umts_rank	2	Rank of the cell.
		uint8	umts_set	1	Set of the cell.
		uint8	geran_inst	1	Number of sets of the following elements: • geran_arfcn • geran_bsic_ncc • geran_bsic_bcc • geran_rssi • geran_rank
		uint16	geran_arfcn	2	Absolute RF channel number.
		uint8	geran_bsic_ncc	1	Base station identity code network color code (0xFF indicates information is not present).
		uint8	geran_bsic_bcc	1	Base station identity code base station color code (0xFF indicates information is not present).

Field	Field value	Field type	Parameter	Size (byte)	Description
		int16	geran_rssi	2	Received signal strength indicator.
		int16	geran_rank	2	Rank of the cell.
Type	0x23			1	Extended WCDMA Info - Active Set
Length	Var			2	
Value	→	uint8	wcdma_active_set_cells_len	1	Number of sets of the following elements: • psc • cell_id • rscp • ecio • uarfcn • sf • phy_chan_type • slot_format • is_compressed_mode_on
		uint16	psc	2	Primary scrambling code.
		uint32	cell_id	4	Cell ID.
		int16	rscp	2	Received signal code power; the received power on one code measured in dBm on the primary CPICH channel of the active set cell.
		int16	ecio	2	ECIO; the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the active set cell.
		uint16	uarfcn	2	UTRA absolute RF channel number.
		enum	sf	4	Spreading factor of the channel. Values: • 0x00 – NAS_WCDMA_L1_SF_4 • 0x01 – NAS_WCDMA_L1_SF_8 • 0x02 – NAS_WCDMA_L1_SF_16 • 0x03 – NAS_WCDMA_L1_SF_32 • 0x04 – NAS_WCDMA_L1_SF_64 • 0x05 – NAS_WCDMA_L1_SF_128 • 0x06 – NAS_WCDMA_L1_SF_256 • 0x07 – NAS_WCDMA_L1_SF_512 • 0x08 – NAS_WCDMA_L1_NUM_SF

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	phy_chan_type	4	Physical channel type. Values: • 0x00 – NAS_WCDMA_L1_DL_PHYCHAN_ PCCPCH_S • 0x01 – NAS_WCDMA_L1_DL_PHYCHAN_ PCCPCH_N • 0x02 – NAS_WCDMA_L1_DL_PHYCHAN_ SCCPCH0 • 0x03 – NAS_WCDMA_L1_DL_PHYCHAN_ SCCPCH1 • 0x04 – NAS_WCDMA_L1_DL_PHYCHAN_ PICH • 0x05 – NAS_WCDMA_L1_DL_PHYCHAN_ AICH • 0x06 – NAS_WCDMA_L1_DL_PHYCHAN_ HS_RACH_AICH • 0x07 – NAS_WCDMA_L1_DL_PHYCHAN_ DPCH • 0x08 – NAS_WCDMA_L1_DL_PHYCHAN_ HS_RACH_FDPCH • 0x09 – NAS_WCDMA_L1_DL_PHYCHAN_ FDPCH • 0x0A – NAS_WCDMA_L1_DL_PHYCHAN_ PDSCH • 0x0B – NAS_WCDMA_L1_NUM_DL_ PHYCHAN • 0x0C – NAS_WCDMA_L1_DL_PHYCHAN_ NOCHAN
		uint8	slot_format	1	Indicates slot format. Values range between 0 and 6 per 3GPP TS 25.211.
		boolean	is_ compressed_ mode_on	1	Indicates whether the compressed mode is ON or OFF.
Type	0x24			1	Scell GERAN Config
Length	3			2	
Value	→	uint8	pbcch_present	1	Presence of PBCCH in the cell: • 0 – No • 1 – Yes • 0xff – Invalid
		uint8	gprs_rxlev_ access_min	1	Rx level access minimum. Range: 0 to 63; 0xff is invalid; 3GPP TS 45.008.
		uint8	gprs_ms_ txpwr_max_ cch	1	MS Tx power maximum CCH. Range: 0 to 31; 0xff is invalid; 3GPP TS 45.008 and 3GPP TS 45.005.
Type	0x25			1	Current L1 Timeslot
Length	1			2	
Value	→	uint8	current_l1_ts	1	Timeslot number. Range: 0 to 7.
Type	0x26			1	Doppler Measurement

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	2			2	
Value	→	uint16	doppler_ measurement	2	Doppler measurement in Hz. Range: 0 to 400. Value 0xFFFF indicates that the measurement is yet to be done.
Type	0x27			1	LTE Info Extended - Intrafrequency EARFCN
Length	4			2	
Value	→	uint32	lte_intra_earfcn	4	LTE intrafrequency EARFCN extended size.
Type	0x28			1	LTE Info Extended - Interfrequency EARFCN
Length	Var			2	
Value	→	uint8	lte_inter_ earfcn_len	1	Number of sets of the following elements: • lte_inter_earfcn
		uint32	lte_inter_earfcn	Var	LTE interfrequency EARFCN extended size.
Type	0x29			1	WCDMA Info Extended - LTE Neighbor Cell Info EARFCN
Length	Var			2	
Value	→	uint8	lte_earfcn_len	1	Number of sets of the following elements: • lte_earfcn
		uint32	lte_earfcn	Var	LTE neighbor cell information EARFCN.
Type	0x2A			1	NAS Info - EMM State
Length	4			2	
Value	→	enum	emm_state	4	NAS Extended Mobility Management (EMM) state. Values: • NAS_EMM_NULL (0) – Null • NAS_EMM_DEREGISTERED (1) – Deregistered • NAS_EMM_REGISTERED_INITIATED (2) – Registered, initiated • NAS_EMM_REGISTERED (3) – Registered • NAS_EMM_TRACKING_AREA_ UPDATING_INITIATED (4) – Tracking area update initiated • NAS_EMM_SERVICE_REQUEST_ INITIATED (5) – Service request initiated • NAS_EMM_DEREGISTERED_ INITIATED (6) – Deregistered, initiated
Type	0x2B			1	NAS Info - EMM Substate (Unused/Ignored)
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	emm_substate	4	NAS EMM substate. Values: • NAS_EMM_DEREGISTERED_ NO_IMSI (0) – Deregistered, no IMSI • NAS_EMM_DEREGISTERED_ PLMN_SEARCH (1) – Deregistered, PLMN search • NAS_EMM_DEREGISTERED_ ATTACH_NEEDED (2) – Deregistered, attach needed • NAS_EMM_DEREGISTERED_ NO_CELL_AVAILABLE (3) – Deregistered, no cell is available • NAS_EMM_DEREGISTERED_ ATTEMPTING_TO_ATTACH (4) – Deregistered, attempting to attach • NAS_EMM_DEREGISTERED_ NORMAL_SERVICE (5) – Deregistered, normal service • NAS_EMM_DEREGISTERED_ LIMITED_SERVICE (6) – Deregistered, limited service • NAS_EMM_REGISTERED_NORMAL_ SERVICE (7) – Registered, normal service • NAS_EMM_REGISTERED_UPDATE_ NEEDED (8) – Registered, update needed • NAS_EMM_REGISTERED_ATTEMPTING_ TO_UPDATE (9) – Registered, attempting to update • NAS_EMM_REGISTERED_NO_ CELL_AVAILABLE (10) – Registered, no cell is available • NAS_EMM_REGISTERED_PLMN_ SEARCH (11) – Registered, PLMN search • NAS_EMM_REGISTERED_LIMITED_ SERVICE (12) – Registered, limited service • NAS_EMM_REGISTERED_ATTEMPTING_ TO_UPDATE_MM (13) – Registered, attemping to update MM • NAS_EMM_REGISTERED_IMSI_ DETACH_INITIATED (14) – Registered, IMSI detach initiated • NAS_EMM_INTERNAL_SUBSTATE (15) – Internal substate
Type	0x2C			1	NAS Info - RRC State
Length	4			2	
Value	→	enum	emm_ connection_ state	4	NAS RRC state. Values: • NAS_RRC_IDLE (0) – Status: Idle • NAS_RRC_CONNECTED (1) – Status: Connected

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_NETWORK_FOUND	UE is in a no service area or cell location information is not available

3.42.3   Description of QMI_NAS_GET_CELL_LOCATION_INFO REQ/RESP

This command retrieves cell location-related information. Depending on current serving system, TLV 0x10 or TLV 0x11 or TLV 0x12 is included in the response message. If the UE is registered in the LTE network, TLVs 0x13, 0x14, 0x15, and 0x16 are returned.

If TLV 0x11 (UMTS Info) is returned for the UMTS system, the following TLVs are also included:

- TLV 0x17 (UMTS Cell ID) – Returns a full cell ID

- TLV 0x1C (WCDMA Cell Info Ext) – Returns additional information for the WCDMA system

- TLV 0x1D (WCDMA GSM Neighbor Cell Ext) – Returns additional information for GSM neighbor cells, with the indices matching the information from TLV 0x11

If TLV 0x10 (GERAN Info) is returned for the GSM system, TLV 0x1B (GSM Cell Info Ext) is also included to return additional information.

3.43   QMI_NAS_GET_PLMN_NAME

Queries the operator name for a specified network.

NAS message ID

0x0044

Version introduced

Major - 1, Minor - 6

3.43.1   Request - QMI_NAS_GET_PLMN_NAME_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
PLMN	Unknown	1.6

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	PLMN
Length	4			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Optional TLVs

Name	Version introduced	Version last modified
Suppress SIM Error	1.27	1.27
MNC PCS Digit Include Status	1.28	1.28
Always Send PLMN Name	1.29	1.29
Use Static Table Only	1.31	1.31
CSG ID	1.41	1.41
Radio Access Technology	1.49	1.59
Send All Information	1.57	1.57

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Suppress SIM Error
Length	1			2	
Value	→	boolean	suppress_ sim_error	1	Suppress the QMI_NAS_SIM_NOT_INITIALIZED error, so to allow network name retrieval even when the SIM is not initialized. Values: • FALSE – SIM initialization is checked; an error is returned if the SIM is not available (default value) • TRUE – SIM initialization is not checked; if the SIM is not available, retrieving the name from the SIM files is skipped
Type	0x11			1	MNC PCS Digit Include Status
Length	1			2	
Value	→	boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the PLMN TLV (0x01). Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90 If this TLV is not present, an MNC smaller than 100 is assumed to be a two-digit value, and an MNC greater than or equal to 100 is assumed to be a three-digit value.
Type	0x12			1	Always Send PLMN Name
Length	1			2	
Value	→	boolean	always_send_ plmn_name	1	Indicates that the client wants to receive the PLMN name regardless of the EF display condition. Values: • FALSE – EF SPN PLMN display condition is looked at before attempting to retrieve the name • TRUE – PLMN name is returned regardless of the EF SPN PLMN display condition.
Type	0x13			1	Use Static Table Only
Length	1			2	
Value	→	boolean	use_static_ table_only	1	Indicates that the client wants to receive the network name only from the SE.13 GSM Mobile Network Codes and Names Static Table. Values: • FALSE – Normal procedure is followed when determining the network name (default value) • TRUE – SIM initialization state and the EF SPN PLMN display condition are ignored; the network name is read directly from the table
Type	0x14			1	CSG ID
Length	4			2	
Value	→	uint32	csg_id	4	Closed subscriber group identifier.
Type	0x15			1	Radio Access Technology
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	rat	1	Radio access technology. Values: • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x16			1	Send All Information
Length	1			2	
Value	→	boolean	send_all_ information	1	Indicates that the client wants to receive all available information, including display byte information, without the modem influencing the name sent. Values: • FALSE – Follow the normal procedure (default value) • TRUE – Send all available information

3.43.2   Response - QMI_NAS_GET_PLMN_NAME_RESP_MSG

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 introduced	Version last modified
3GPP EONS PLMN Name	1.6	1.6
Display Bit Information	1.57	1.57
Network Information	1.57	1.57
3GPP EONS PLMN Name with Language ID	1.89	1.89
Additional Information	1.95	1.95
Network Name Source	1.106	1.106
Service Provider Name Ext	1.118	1.118

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP EONS PLMN Name
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	spn_enc	1	Coding scheme for the service provider name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if spn_len is zero.
		uint8	spn_len	1	Number of sets of the following elements: • spn
		char	spn	Var	Service provider name string.
		enum8	plmn_short_ name_enc	1	Coding scheme for plmn_short_name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if plmn_short_name_len is zero.
		enum8	plmn_short_ name_ci	1	Indicates whether the country initials are to be added to the plmn_short_name. Values: • 0x00 – Do not add the letters for the country's initials to the name • 0x01 – Add the country's initials and a text string to the name • 0xFF – Not specified **Note:** This value is ignored if plmn_short_name_len is zero.
		enum8	plmn_short_ spare_bits	1	Values: • 0x01 – Bit 8 is spare and set to 0 in octet n • 0x02 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – Carries no information about the number of spare bits in octet n **Note:** This value is ignored if plmn_short_name_len is zero.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	plmn_short_ name_len	1	Number of sets of the following elements: • plmn_short_name
		char	plmn_short_ name	Var	PLMN short name. If no short name is available for the specified PLMN ID, MCC and MNC values are included in ASCII format with the MCC followed by the MNC within double quotes. For example, for an MCC of 123 and an MNC of 678, the ASCII string "123678" is returned when the short name is not available.
		enum8	plmn_long_ name_enc	1	Coding scheme for plmn_long_name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if plmn_long_name_len is zero.
		enum8	plmn_long_ name_ci	1	Indicates whether the country initials are to be added to the plmn_long_name. Values: • 0x00 – Do not add the letters for the country's initials to the name • 0x01 – Add the country's initials and a text string to the name • 0xFF – Not specified **Note:** This value is ignored if plmn_long_name_len is zero.
		enum8	plmn_long_ spare_bits	1	Values: • 0x01 – Bit 8 is spare and set to 0 in octet n • 0x02 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – Carries no information about the number of spare bits in octet n **Note:** This value is ignored if plmn_long_name_len is zero.
		uint8	plmn_long_ name_len	1	Number of sets of the following elements: • plmn_long_name

Field	Field value	Field type	Parameter	Size (byte)	Description
		char	plmn_long_ name	Var	PLMN long name. If no long name is available for the specified PLMN ID, MCC and MNC values are included in ASCII format with the MCC followed by the MNC within double quotes. For example, for an MCC of 123 and an MNC of 678, the ASCII string "123678" is returned when the long name is not available.
Type	0x11			1	Display Bit Information
Length	8			2	
Value	→	enum	is_spn_set	4	Whether the SPN display bit is set. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
		enum	is_plmn_set	4	Whether the PLMN display bit is set. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x12			1	Network Information
Length	4			2	
Value	→	enum	is_home_ network	4	Whether the network is the home network. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x13			1	3GPP EONS PLMN Name with Language ID
Length	Var			2	
Value	→	uint8	lang_plmn_ names_len	1	Number of sets of the following elements: • plmn_long_name_len • plmn_long_name • plmn_short_name_len • plmn_short_name • lang_id
		uint8	plmn_long_ name_len	1	Number of sets of the following elements: • plmn_long_name
		uint16	plmn_long_ name	Var	PLMN long name, in UCS2 (16 bit, little-endian) encoded format.
		uint8	plmn_short_ name_len	1	Number of sets of the following elements: • plmn_short_name
		uint16	plmn_short_ name	Var	PLMN short name, in UCS2 (16 bit, little-endian) encoded format.
		enum	lang_id	4	Language ID for the PLMN long and short names. Values: • NAS_LANG_ID_UNKNOWN (0x00) – Unknown language ID • NAS_LANG_ID_ZH_TRAD (0x01) – Traditional Chinese • NAS_LANG_ID_ZH_SIMP (0x02) – Simplified Chinese

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x14			1	Additional Information
Length	Var			2	
Value	→	uint8	addl_info_len	1	Number of sets of the following elements: • addl_info
		uint16	addl_info	Var	Additional information provided for the PLMN, in UCS2 (16 bit little-endian) encoded format.
Type	0x15			1	Network Name Source
Length	4			2	
Value	→	enum	nw_name_source	4	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name
Type	0x16			1	Service Provider Name Ext
Length	Var			2	
Value	→	string16	spn_ext	Var	Service provider name.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
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_UIM_NOT_INITIALIZED	UIM is not initialized
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.43.3   Description of QMI_NAS_GET_PLMN_NAME REQ/RESP

This command queries available operator name data for a specified network. The operator name is derived according to 3GPP TS 22.101.

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3.44   QMI_NAS_BIND_SUBSCRIPTION

Binds the current control point to a specific subscription.

NAS message ID

0x0045

Version introduced

Major - 1, Minor - 7

3.44.1   Request - QMI_NAS_BIND_SUBSCRIPTION_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Subscription Type	1.7	1.93

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Subscription Type
Length	1			2	
Value	→	enum8	subs_type	1	Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription

Optional TLVs

None

3.44.2   Response - QMI_NAS_BIND_SUBSCRIPTION_RESP_MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request

3.44.3   Description of QMI_NAS_BIND_SUBSCRIPTION REQ/RESP

This command binds the current control point to a specific subscription. If a control point does not invoke this command to specify its binding, by default the control point is bound to the primary subscription. The control point uses this command to perform an operation or get information for a specific subscription. For a primary subscription, subs_type in TLV 0x01 must be set to "Primary subscription".

For a secondary subscription, subs_type in TLV 0x01 must be set to "Secondary subscription". If the modem does not support the dual SIM dual standby feature, this command returns a QMI_ERR_INTERNAL error.

For a tertiary subscription, subs_type in TLV 0x01 must be set to "Tertiary subscription". If the modem does not support the triple SIM triple standby feature, this command returns a QMI_ERR_INTERNAL error.

3.45   QMI_NAS_MANAGED_ROAMING

Indicates whether managed roaming is enabled.

NAS message ID

0x0046

Version introduced

Major - 1, Minor - 11

3.45.1   Indication - QMI_NAS_MANAGED_ROAMING_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Radio Interface	Unknown	1.22

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Radio Interface
Length	1			2	
Value	→	enum8	radio_if	1	Radio interface from which to get the information. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA

3.45.2 Description of QMI_NAS_MANAGED_ROAMING

This indication lets a client know if managed roaming is enabled. The indication is sent only when managed roaming is enabled.

To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.46   QMI_NAS_DUAL_STANDBY_PREF_IND

Informs the control point of any changes in dual standby subscription.

NAS message ID

0x0047

Version introduced

Major - 1, Minor - 7

3.46.1   Indication - QMI_NAS_DUAL_STANDBY_PREF_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Standby Preference	1.7	1.55
Default Voice Subs	1.55	1.93
Active Subs Mask	1.80	1.80

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Standby Preference
Length	4			2	
Value	→	enum8	standby_pref	1	Values: • 0x01 – Single standby • 0x02 – Dual standby with tune away • 0x04 – Dual standby without tune away • 0x05 – Automatic mode with tune away where applicable • 0x06 – Automatic mode without tune away • 0x07 – Triple standby All other values are reserved.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	priority_subs	1	Subscription to give priority when listening to the paging channel during dual standby. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
		enum8	active_subs	1	Subscription to enable when "standby_pref is 0x01 – Single standby". Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
		enum8	default_data_ subs	1	Default data subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x11			1	Default Voice Subs
Length	1			2	
Value	→	enum8	default_voice_ subs	1	Default voice subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x12			1	Active Subs Mask
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask	active_subs_ mask	8	Bitmask representing the active subscriptions in the device. If a value of 0 is sent, there are no active subscriptions. Values: • Bit 0 (0x01) – QMI_NAS_ACTIVE_SUB_ PRIMARY – Primary subscription • Bit 1 (0x02) – QMI_NAS_ACTIVE_SUB_ SECONDARY – Secondary subscription • Bit 2 (0x04) – QMI_NAS_ACTIVE_SUB_ TERTIARY – Tertiary subscription All unlisted bits are reserved for future use and the service point ignores them if used.

3.46.2   Description of QMI_NAS_DUAL_STANDBY_PREF_IND

This indication communicates any change in the subscription to which the client is bound.

3.47   QMI_NAS_SUBSCRIPTION_INFO_IND

Indicates any change in the subscription information.

NAS message ID

0x0048

Version introduced

Major - 1, Minor - 7

3.47.1   Indication - QMI_NAS_SUBSCRIPTION_INFO_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Priority Subscription Info	Unknown	1.7
Active Subscription Info	Unknown	1.7
Default Data Subscription Info	Unknown	1.11
Voice System ID	1.61	1.61
LTE Voice System ID	1.114	1.114
WLAN Voice System ID	1.114	1.114
Default Data Subscription Type	1.156	1.156

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Priority Subscription Info
Length	1			2	
Value	→	enum8	is_priority_ subs	1	Information on whether the subscription is a priority subscription in cases of dual standby. Values: • 0x00 – Not a priority subscription • 0x01 – Priority subscription

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	Active Subscription Info
Length	1			2	
Value	→	enum8	is_active	1	Information on whether the subscription is active. Values: • 0x00 – Not active • 0x01 – Active
Type	0x12			1	Default Data Subscription Info
Length	1			2	
Value	→	boolean	is_default_ data_subs	1	Information on whether the subscription is the default data subscription in cases of dual standby. Values: • 0x00 – FALSE; not a default data subscription • 0x01 – TRUE; default data subscription
Type	0x13			1	Voice System ID
Length	4			2	
Value	→	uint32	voice_system_ id	4	Voice system ID.
Type	0x14			1	LTE Voice System ID
Length	4			2	
Value	→	uint32	lte_voice_ system_id	4	LTE voice system ID.
Type	0x15			1	WLAN Voice System ID
Length	4			2	
Value	→	uint32	wlan_voice_ system_id	4	WLAN voice system ID.
Type	0x16			1	Default Data Subscription Type
Length	1			2	
Value	→	enum8	dds_type	1	This TLV is only sent when is_default_data_subs is set to TRUE.

3.47.2 Description of QMI_NAS_SUBSCRIPTION_INFO_IND

This indication communicates any change in the subscription to which the client is bound.

3.48   QMI_NAS_GET_MODE_PREF

Retrieves the mode preference.

NAS message ID

0x0049

Version introduced

Major - 1, Minor - 7

3.48.1   Request - QMI_NAS_GET_MODE_PREF_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.48.2   Response - QMI_NAS_GET_MODE_PREF_RESP_MSG

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 introduced	Version last modified
Mode Preference for idx0	Unknown	1.16
Mode Preference for idx1	Unknown	1.16
Mode Preference for idx2	1.55	1.55

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Mode Preference for idx0
Length	2			2	
Value	→	mask16	idx0_mode_pref	2	Bitmask representing the radio technology mode preference set in NV (idx0). Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_TDSCDMA – TD-SCDMA
Type	0x11			1	Mode Preference for idx1
Length	2			2	
Value	→	mask16	idx1_mode_pref	2	Bitmask representing the radio technology mode preference set in NV (idx1). Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_TDSCDMA – TD-SCDMA
Type	0x12			1	Mode Preference for idx2
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask16	idx2_mode_pref	2	Bitmask representing the radio technology mode preference set in NV (idx2). Values: • Bit 0 (0x01) – QMI_NAS_RAT_MODE_PREF_CDMA2000_1X – cdma2000® 1X • Bit 1 (0x02) – QMI_NAS_RAT_MODE_PREF_CDMA2000_HRPD – cdma2000® HRPD (1xEV-DO) • Bit 2 (0x04) – QMI_NAS_RAT_MODE_PREF_GSM – GSM • Bit 3 (0x08) – QMI_NAS_RAT_MODE_PREF_UMTS – UMTS • Bit 4 (0x10) – QMI_NAS_RAT_MODE_PREF_LTE – LTE • Bit 5 (0x20) – QMI_NAS_RAT_MODE_PREF_TDSCDMA – TD-SCDMA

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing

3.48.3   Description of QMI_NAS_GET_MODE_PREF REQ/RESP

This command retrieves the current mode_pref value from the NV memory.

3.49   QMI_NAS_SET_DUAL_STANDBY_PREF

Configures dual standby preference.

NAS message ID

0x004B

Version introduced

Major - 1, Minor - 7

3.49.1   Request - QMI_NAS_DUAL_STANDBY_PREF_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Standby Preference	Unknown	1.7
Priority Subs	1.7	1.93
Default Data Subs	1.7	1.93
Default Voice Subs	1.55	1.93
Active Subs Mask	1.80	1.80
DDS Switch Cause	1.134	1.134

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Standby Preference
Length	1			2	
Value	→	enum8	standby_pref	1	Values: • 0x05 – Automatic mode with tune away where applicable • 0x06 – Automatic mode without tune away All other values are reserved.
Type	0x11			1	Priority Subs
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	priority_subs	1	Subscription to give priority when listening to the paging channel during standby. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x12			1	Default Data Subs
Length	1			2	
Value	→	enum8	default_data_ subs	1	Default data subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x13			1	Default Voice Subs
Length	1			2	
Value	→	enum8	default_voice_ subs	1	Default voice subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x14			1	Active Subs Mask
Length	8			2	
Value	→	mask	active_subs_ mask	8	Bitmask representing the active subscriptions to be set. If a value of 0 is sent, there are no active subscriptions. Values: • Bit 0 (0x01) – QMI_NAS_ACTIVE_SUB_ PRIMARY – Primary subscription • Bit 1 (0x02) – QMI_NAS_ACTIVE_SUB_ SECONDARY – Secondary subscription • Bit 2 (0x04) – QMI_NAS_ACTIVE_SUB_ TERTIARY – Tertiary subscription All unlisted bits are reserved for future use and the service point ignores them if used.
Type	0x15			1	DDS Switch Cause
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	dds_duration	1	Duration of a Designated Data Subscription (DDS) switch. Values: • NAS_DDS_DURATION_PERMANANT (0x00) – Permanent • NAS_DDS_DURATION_TEMPORARY (0x01) – Temporary All other values are reserved.

3.49.2 Response - QMI_NAS_DUAL_STANDBY_PREF_RESP_MSG

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.49.3   Description of QMI_NAS_SET_DUAL_STANDBY_PREF REQ/RESP

This command requests a dual standby preference configuration change. The change request takes effect globally and is overwritten by a subsequent QMI_NAS_SET_DUAL_STANDBY_PREF_REQ message sent by any QMI_NAS client. A QMI_NAS_SET_DUAL_STANDBY_PREF_RESP message with a QMI_ERR_NONE error indicates that the request has been successfully sent to the modem. The control point must process the QMI_NAS_DUAL_STANDBY_PREF_IND indication to learn the current subscription information of the device. Automatic mode in standby_pref sets the modem to decide the standby mode based on the number of subscriptions available. Automatic mode without tune away does the same, but does not perform tune away. Tune away is activated only for applicable DSDS configurations.

3.50   QMI_NAS_NETWORK_TIME_IND

Indicates a time change reported by the network.

NAS message ID

0x004C

Version introduced

Major - 1, Minor - 8

3.50.1   Indication - QMI_NAS_NETWORK_TIME_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Universal Time	Unknown	1.8

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Universal Time
Length	8			2	
Value	→	uint16	year	2	Year.
		uint8	month	1	Month. 1 is January and 12 is December.
		uint8	day	1	Day. Range: 1 to 31.
		uint8	hour	1	Hour. Range: 0 to 23.
		uint8	minute	1	Minute. Range: 0 to 59.
		uint8	second	1	Second. Range: 0 to 59.
		uint8	day_of_week	1	Day of the week. 0 is Monday and 6 is Sunday.

Optional TLVs

Name	Version introduced	Version last modified
Time Zone	Unknown	1.8
Daylight Saving Adjustment	Unknown	1.8
Radio Interface	Unknown	1.22

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Time Zone
Length	1			2	
Value	→	int8	time_zone	1	Offset from Universal time, i.e., the difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x11			1	Daylight Saving Adjustment
Length	1			2	
Value	→	uint8	daylt_sav_adj	1	Daylight saving adjustment in hours. Possible values: 0, 1, and 2. This TLV is ignored if radio_if is NAS_RADIO_IF_CDMA_1XEVDO.
Type	0x12			1	Radio Interface
Length	1			2	
Value	→	enum8	radio_if	1	Radio interface from which to get the information. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA

3.50.2 Description of QMI_NAS_NETWORK_TIME_IND

This indication is sent when the 3GPP or 3GPP2 network sends time information to the UE. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command. Time reported from 3GPP is UTC and time reported from 3GPP2 is GPS time.

3.51   QMI_NAS_GET_SYS_INFO

Provides the system information.

NAS message ID

0x004D

Version introduced

Major - 1, Minor - 8

3.51.1   Request - QMI_NAS_GET_SYS_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.51.2   Response - QMI_NAS_GET_SYS_INFO_RESP_MSG

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 introduced	Version last modified
CDMA Service Status Info	Unknown	1.8
HDR Service Status Info	Unknown	1.8
GSM Service Status Info	Unknown	1.8
WCDMA Service Status Info	Unknown	1.8

Name	Version introduced	Version last modified
LTE Service Status Info	Unknown	1.8
CDMA System Info	Unknown	1.13
HDR System Info	Unknown	1.8
GSM System Info	Unknown	1.13
WCDMA System Info	Unknown	1.23
LTE System Info	Unknown	1.13
Additional CDMA System Info	Unknown	1.9
Additional HDR System Info	Unknown	1.9
Additional GSM System Info	Unknown	1.9
Additional WCDMA System Info	Unknown	1.9
Additional LTE System Info	Unknown	1.9
GSM Call Barring System Info	Unknown	1.9
WCDMA Call Barring System Info	Unknown	1.9
LTE Voice Support Sys Info	Unknown	1.11
GSM Cipher Domain Sys Info	Unknown	1.11
WCDMA Cipher Domain Sys Info	Unknown	1.11
TDSCDMA Service Status Info	Unknown	1.16
TDSCDMA System Info	Unknown	1.23
LTE eMBMS Coverage Info (Deprecated; use LTE eMBMS Coverage Info Extended)	Unknown	1.114 (Deprecated)
SIM Reject Information	Unknown	1.19
WCDMA EUTRA Status Information	Unknown	1.22
IMS Voice Support Status on LTE	1.25	1.25
LTE Voice Domain	1.27	1.27
CDMA Reg Zone ID	1.30	1.30
GSM RAC	1.30	1.30
WCDMA RAC	1.30	1.30
CDMA Resolved Mobile Country Code	1.33	1.33
Network Selection Registration Restriction	1.34	1.34
TDSCDMA Registration Domain	1.34	1.34
LTE Registration Domain	1.34	1.34
WCDMA Registration Domain	1.34	1.34
GSM Registration Domain	1.34	1.34
LTE eMBMS Coverage Info Trace ID	1.38	1.38
WCDMA CSG Information	1.41	1.41
HDR Voice Domain	1.52	1.52
HDR SMS Domain	1.52	1.52
LTE SMS Domain	1.52	1.52
LTE Emergency Bearer Support	1.56	1.71
GSM Voice Domain	1.68	1.68
GSM SMS Domain	1.68	1.68
WCDMA Voice Domain	1.68	1.68
WCDMA SMS Domain	1.68	1.68
LTE Emergency Access Barred	1.71	1.71
CDMA Voice Domain	1.74	1.74
CDMA SMS Domain	1.74	1.74
TDSCDMA Voice Domain	1.74	1.74

Name	Version introduced	Version last modified
TDSCDMA SMS Domain	1.74	1.74
LTE CSG Information	1.75	1.75
LTE Cell Access Status Info	1.77	1.77
HDR Subnet Mask Length	1.84	1.84
LTE eMBMS Coverage Info Extended	1.114	1.114

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Service Status Info
Length	2			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x11			1	HDR Service Status Info
Length	2			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x12			1	GSM Service Status Info
Length	3			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x13			1	WCDMA Service Status Info
Length	3			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x14			1	LTE Service Status Info
Length	3			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x15			1	CDMA System Info
Length	42			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	is_sys_prl_ match_valid	1	Indicates whether the system PRL match is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	is_sys_prl_ match	1	Indicates whether the system is in a PRL (only applies to CDMA/HDR). Values: • 0x00 – System is not in a PRL • 0x01 – System is in a PRL If the system is not in a PRL, roam_status carries the value from the default roaming indicator in the PRL. If the system is in a PRL, roam_status is set to the value based on the standard specification.
		boolean	p_rev_in_use_ valid	1	Indicates whether the P_Rev in use is valid.
		uint8	p_rev_in_use	1	The lesser of the base station P_Rev and mobile P_Rev (only applicable for CDMA).
		boolean	bs_p_rev_valid	1	Indicates whether the base station P_Rev is valid.
		uint8	bs_p_rev	1	Base station P_Rev (only applicable for CDMA).
		boolean	ccs_ supported_ valid	1	Indicates whether the supported concurrent service is valid.
		boolean	ccs_supported	1	Whether concurrent service is supported (only applicable for CDMA): • 0x00 – Not supported • 0x01 – Supported
		boolean	cdma_sys_id_ valid	1	Indicates whether the CDMA system ID is valid.
		uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
		boolean	bs_info_valid	1	Indicates whether the base station information is valid.
		uint16	base_id	2	Base station identification number.
		int32	base_lat	4	Base station latitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying North latitudes.
		int32	base_long	4	Base station longitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying East longitude.
		boolean	packet_zone_ valid	1	Indicates whether the packet zone is valid.
		uint16	packet_zone	2	Packet zone (8-bit). 0xFFFF indicates no packet zone. (Only applicable for CDMA.)
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.

Field	Field value	Field type	Parameter	Size (byte)	Description
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
Type	0x16			1	HDR System Info
Length	31			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	is_sys_prl_ match_valid	1	Indicates whether the system PRL match is valid.
		boolean	is_sys_prl_ match	1	Indicates whether the system is in a PRL (only applies to CDMA/HDR). Values: • 0x00 – System is not in a PRL • 0x01 – System is in a PRL If the system is not in a PRL, roam_status carries the value from the default roaming indicator in the PRL. If the system is in a PRL, roam_status is set to the value based on the standard specification.
		boolean	hdr_ personality_ valid	1	Indicates whether the HDR personality is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hdr_personality	1	HDR personality information (only applicable for HDR). Values: • 0x00 – SYS_PERSONALITY_NONE – None • 0x02 – SYS_PERSONALITY_HRPD – HRPD • 0x03 – SYS_PERSONALITY_EHRPD – eHRPD
		boolean	hdr_active_ prot_valid	1	Indicates whether the HDR active protocol revision information is valid.
		enum8	hdr_active_ prot	1	HDR active protocol revision information (only applicable for HDR). Values: • 0x00 – SYS_ACTIVE_PROT_NONE – None • 0x02 – SYS_ACTIVE_PROT_HDR_REL0 – HDR Rel 0 • 0x03 – SYS_ACTIVE_PROT_HDR_RELA – HDR Rel A • 0x04 – SYS_ACTIVE_PROT_HDR_RELB – HDR Rel B
		boolean	is856_sys_id_ valid	1	Indicates whether the IS-856 system ID is valid.
		uint8	is856_sys_id	16	IS-856 system ID (only applicable for HDR).
Type	0x17			1	GSM System Info
Length	30			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	reject_srv_domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	egprs_supp_valid	1	Indicates whether EGPRS support is valid.
		boolean	egprs_supp	1	EGPRS support indication (only applicable for GSM). Values: • 0x00 – SYS_EGPRS_SUPPORT_NOT_AVAIL – Not available • 0x01 – SYS_EGPRS_SUPPORT_AVAIL – Available
		boolean	dtm_supp_valid	1	Indicates whether Dual Transfer mode support is valid.
		boolean	dtm_supp	1	Dual Transfer mode support indication (only applicable for GSM). Values: • 0x00 – SYS_DTM_SUPPORT_NOT_AVAIL – Not available • 0x01 – SYS_DTM_SUPPORT_AVAIL – Available
Type	0x18			1	WCDMA System Info
Length	33			2	
Value	→	boolean	srv_domain_valid	1	Indicates whether the service domain is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	reject_srv_domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	hs_call_status_valid	1	Indicates whether the high-speed call status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	hs_ind_valid	1	Indicates whether the high-speed service indication is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_ind	1	High-speed service indication (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	psc_valid	1	Indicates whether the primary scrambling code is valid.
		uint16	psc	2	Primary scrambling code.
Type	0x19			1	LTE System Info
Length	29			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.
		enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	tac_valid	1	Indicates whether the tracking area code is valid.
		uint16	tac	2	Tracking area code (only applicable for LTE).
Type	0x1A			1	Additional CDMA System Info
Length	4			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	reg_prd	2	Registration period after the CDMA system is acquired. When the CDMA registration period is not valid, 0xFFFF is used.
Type	0x1B			1	Additional HDR System Info
Length	2			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
Type	0x1C			1	Additional GSM System Info
Length	6			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
Type	0x1D			1	Additional WCDMA System Info
Length	6			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
Type	0x1E			1	Additional LTE System Info
Length	2			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
Type	0x1F			1	GSM Call Barring System Info
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x20			1	WCDMA Call Barring System Info
Length	8			2	
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x21			1	LTE Voice Support Sys Info
Length	1			2	
Value	→	boolean	voice_ support_on_ lte	1	Indicates voice support status on LTE. Values: • 0x00 – Voice is not supported • 1x01 – Voice is supported
Type	0x22			1	GSM Cipher Domain Sys Info
Length	1			2	
Value	→	enum8	gsm_cipher_ domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x23			1	WCDMA Cipher Domain Sys Info
Length	1			2	
Value	→	enum8	wcdma_ cipher_ domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x24			1	TDSCDMA Service Status Info
Length	3			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x25			1	TDSCDMA System Info
Length	50			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_forbidden_valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.
		enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	hs_call_ status_valid	1	Indicates whether the high-speed call status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	hs_ind_valid	1	Indicates whether the high-speed service indication is valid.

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Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_ind	1	High-speed service indication (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	cell_ parameter_id_ valid	1	Indicates whether the cell parameter ID is valid.
		uint16	cell_ parameter_id	2	Cell parameter ID.
		boolean	cell_ broadcast_ cap_valid	1	Indicates whether the cell broadcast capability is valid.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
		boolean	cs_bar_ status_valid	1	Indicates whether the circuit-switched call barring status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		boolean	ps_bar_ status_valid	1	Indicates whether the packet-switched call barring status is valid.
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		boolean	cipher_ domain_valid	1	Indicates whether the cipher domain is valid.
		enum8	cipher_domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x26			1	LTE eMBMS Coverage Info (Deprecated; use LTE eMBMS Coverage Info Extended)
Length	1			2	
Value	→	boolean	lte_embms_ coverage	1	Values: • TRUE – Current LTE system supports eMBMS • FALSE – Current LTE system does not support eMBMS
Type	0x27			1	SIM Reject Information
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	sim_rej_info	4	Current reject state information of the SIM. Values: • 0 – NAS_SIM_NOT_AVAILABLE – SIM is not available • 1 – NAS_SIM_AVAILABLE – SIM is available • 2 – NAS_SIM_CS_INVALID – SIM has been marked by the network as invalid for circuit-switched services • 3 – NAS_SIM_PS_INVALID – SIM has been marked by the network as invalid for packet-switched services • 4 – NAS_SIM_CS_PS_INVALID – SIM has been marked by the network as invalid for circuit-switched and packet-switched services
Type	0x28			1	WCDMA EUTRA Status Information
Length	1			2	
Value	→	enum8	wcdma_eutra_ status	1	E-UTRA detection status. Values: • 0 – NAS_EUTRA_CELL_PRESENT – E-UTRA cell is detected • 1 – NAS_EUTRA_CELL_NOT_PRESENT – E-UTRA cell is not detected • 2 – NAS_EUTRA_CELL_PRESENCE_ UNKNOWN – E-UTRA cell information is unknown due to a state transition • 3 – NAS_EUTRA_CELL_DETECTION_ UNSUPPORTED – E-UTRA detection is not supported
Type	0x29			1	IMS Voice Support Status on LTE
Length	1			2	
Value	→	boolean	lte_ims_ voice_avail	1	Values: • 0x00 – Support is not available • 0x01 – Support is available
Type	0x2A			1	LTE Voice Domain
Length	4			2	
Value	→	enum	lte_voice_ status	4	LTE voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on LTE • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network • 3 – NAS_DOMAIN_SEL_DOMAIN_3GPP – Voice is supported over the 3GPP network
Type	0x2B			1	CDMA Reg Zone ID
Length	2			2	
Value	→	uint16	cdma_reg_zone	2	CDMA registration zone ID.
Type	0x2C			1	GSM RAC
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	gsm_rac	1	GSM routing area code.
Type	0x2D			1	WCDMA RAC
Length	1			2	
Value	→	uint8	wcdma_rac	1	WCDMA routing area code.
Type	0x2E			1	CDMA Resolved Mobile Country Code
Length	2			2	
Value	→	uint16	cdma_mcc_ resolved_via_ sid_lookup	2	MCC derived by looking up the IFAST SID conflict table and configured SID-MCC table (static and NV) with the SID received from the network as the key. If the lookup is not successful, 0xFFFF is used. **Note:** This MCC value is determined solely from the SID and may differ from the MCC value sent by the network.
Type	0x2F			1	Network Selection Registration Restriction
Length	4			2	
Value	→	enum	srv_reg_ restriction	4	Registration restriction. Values: • 0x00 – NAS_SRV_REG_RESTRICTION_ UNRESTRICTED – Device follows the normal registration process • 0x01 – NAS_SRV_REG_RESTRICTION_ CAMPED_ONLY – Device follows the camp-only registration process All other values are reserved.
Type	0x30			1	TDSCDMA Registration Domain
Length	4			2	
Value	→	enum	tdscdma_reg_ domain	4	TD-SCDMA registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service
Type	0x31			1	LTE Registration Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	lte_reg_domain	4	LTE registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service
Type	0x32			1	WCDMA Registration Domain
Length	4			2	
Value	→	enum	wcdma_reg_ domain	4	WCDMA registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service
Type	0x33			1	GSM Registration Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	gsm_reg_domain	4	GSM registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service
Type	0x34			1	LTE eMBMS Coverage Info Trace ID
Length	2			2	
Value	→	int16	lte_embms_coverage_trace_id	2	LTE eMBMS coverage information trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used
Type	0x35			1	WCDMA CSG Information
Length	Var			2	
Value	→	uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.
Type	0x36			1	HDR Voice Domain
Length	4			2	
Value	→	enum	hdr_voice_status	4	HDR voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on HDR • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x37			1	HDR SMS Domain
Length	4			2	
Value	→	enum	hdr_sms_status	4	HDR SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on HDR • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x38			1	LTE SMS Domain
Length	4			2	
Value	→	enum	lte_sms_status	4	LTE SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on LTE • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network • 3 – NAS_SMS_STATUS_3GPP – SMS is supported over the 3GPP network
Type	0x39			1	LTE Emergency Bearer Support
Length	4			2	
Value	→	enum	lte_is_eb_ supported	4	Whether LTE emergency bearer is supported. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown The TLV status is NAS_TRI_UNKNOWN for scenarios where information is not available from the lower layers; e.g., if the UE powers up while acquiring service or in the middle of an attach procedure.
Type	0x3A			1	GSM Voice Domain
Length	4			2	
Value	→	enum	gsm_voice_ status	4	GSM voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on GSM • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x3B			1	GSM SMS Domain
Length	4			2	
Value	→	enum	gsm_sms_ status	4	GSM SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on GSM • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x3C			1	WCDMA Voice Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	wcdma_voice_ status	4	WCDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on WCDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x3D			1	WCDMA SMS Domain
Length	4			2	
Value	→	enum	wcdma_sms_ status	4	WCDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on WCDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x3E			1	LTE Emergency Access Barred
Length	4			2	
Value	→	enum	emergency_ access_barred	4	Whether LTE emergency access is barred on the current system. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown The TLV status is NAS_TRI_UNKNOWN for scenarios where information is not available from the lower layers; e.g., if the UE powers up while acquiring service or in the middle of an attach procedure.
Type	0x3F			1	CDMA Voice Domain
Length	4			2	
Value	→	enum	cdma_voice_ status	4	CDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on CDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x40			1	CDMA SMS Domain
Length	4			2	
Value	→	enum	cdma_sms_ status	4	CDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on CDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x41			1	TDSCDMA Voice Domain

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	4			2	
Value	→	enum	tdscdma_ voice_status	4	TD-SCDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on TD-SCDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x42			1	TDSCDMA SMS Domain
Length	4			2	
Value	→	enum	tdscdma_sms_ status	4	TD-SCDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on TD-SCDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x43			1	LTE CSG Information
Length	Var			2	
Value	→	uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.
Type	0x44			1	LTE Cell Access Status Info
Length	4			2	
Value	→	enum	lte_cell_status	4	Cell access status for LTE calls. Values: • NAS_CELL_ACCESS_NORMAL_ ONLY (0x00) – Cell access is allowed for normal calls only • NAS_CELL_ACCESS_EMERGENCY_ ONLY (0x01) – Cell access is allowed for emergency calls only • NAS_CELL_ACCESS_NO_CALLS (0x02) – Cell access is not allowed for any call type • NAS_CELL_ACCESS_ALL_CALLS (0x03) – Cell access is allowed for all call types • NAS_CELL_ACCESS_UNKNOWN (-1) – Cell access type is unknown
Type	0x45			1	HDR Subnet Mask Length
Length	1			2	
Value	→	uint8	hdr_subnet_ mask_len	1	HDR subnet mask length.
Type	0x46			1	LTE eMBMS Coverage Info Extended
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	embms_ coverage_ status	4	eMBMS coverage status. Values: • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAILABLE (0) – Not available • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_AVAILABLE (1) – Available • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAIL_DUE_TO_UEMODE (2) – Not available due to the UE mode • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAIL_DUE_TO_EMERGENCY (3) – Not available due to an emergency • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_UNKNOWN (4) – Unknown

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_INFO_UNAVAILABLE	Information is not available at this time

3.51.3   Description of QMI_NAS_GET_SYS_INFO REQ/RESP

This command queries current serving system information, including registration information and system property. The registration information TLVs (i.e., TLVs 0x10 through 0x14) for all RATs specified in the mode capability setting are included regardless of registration status.

The RAT-specific system property TLVs (i.e., TLV 0x15 and above) are included only for RATs that are specified in the mode capability setting and which are not in either No Service or Power Save modes.

The optional WCDMA EUTRA Status Information TLV (0x28) is included when WCDMA is in service and contains LTE detection information.

3.52   QMI_NAS_SYS_INFO_IND

Indicates a change in the system information.

NAS message ID

0x004E

Version introduced

Major - 1, Minor - 8

3.52.1   Indication - QMI_NAS_SYS_INFO_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
CDMA Service Status Info	Unknown	1.8
HDR Service Status Info	Unknown	1.8
GSM Service Status Info	Unknown	1.8
WCDMA Service Status Info	Unknown	1.8
LTE Service Status Info	Unknown	1.8
CDMA System Info	Unknown	1.13
HDR System Info	Unknown	1.8
GSM System Info	Unknown	1.13
WCDMA System Info	Unknown	1.13
LTE System Info	Unknown	1.13
Additional CDMA System Info	Unknown	1.9
Additional HDR System Info	Unknown	1.9
Additional GSM System Info	Unknown	1.9
Additional WCDMA System Info	Unknown	1.9
Additional LTE System Info	Unknown	1.9
GSM Call Barring System Info	Unknown	1.9
WCDMA Call Barring System Info	Unknown	1.9

Name	Version introduced	Version last modified
LTE Voice Support Sys Info	Unknown	1.11
GSM Cipher Domain Sys Info	Unknown	1.11
WCDMA Cipher Domain Sys Info	Unknown	1.11
System Info No Change	Unknown	1.12
TDSCDMA Service Status Info	Unknown	1.16
TDSCDMA System Info	Unknown	1.16
LTE eMBMS Coverage Info (Deprecated; use LTE eMBMS Coverage Info Extended)	Unknown	1.114 (Deprecated)
SIM Reject information	Unknown	1.19
WCDMA EUTRA Status Information	Unknown	1.22
IMS Voice Support Status on LTE	1.25	1.25
LTE Voice Domain	1.27	1.27
CDMA Reg Zone ID	1.35	1.35
GSM RAC	1.35	1.35
WCDMA RAC	1.35	1.35
CDMA Resolved Mobile Country Code	1.33	1.35
Network Selection Registration Restriction	1.34	1.35
TDSCDMA Registration Domain	1.34	1.35
LTE Registration Domain	1.34	1.35
WCDMA Registration Domain	1.34	1.35
GSM Registration Domain	1.34	1.35
LTE eMBMS Coverage Info Trace ID	1.38	1.38
WCDMA CSG Information	1.41	1.41
HDR Voice Domain	1.52	1.52
HDR SMS Domain	1.52	1.52
LTE SMS Domain	1.52	1.52
LTE Emergency Bearer Support	1.56	1.71
GSM Voice Domain	1.68	1.68
GSM SMS Domain	1.68	1.68
WCDMA Voice Domain	1.68	1.68
WCDMA SMS Domain	1.68	1.68
LTE Emergency Access Barred	1.71	1.71
CDMA Voice Domain	1.74	1.74
CDMA SMS Domain	1.74	1.74
TDSCDMA Voice Domain	1.74	1.74
TDSCDMA SMS Domain	1.74	1.74
LTE CSG Information	1.75	1.75
LTE Cell Access Status Info	1.77	1.77
HDR Subnet Mask Length	1.84	1.84
LTE eMBMS Coverage Info Extended	1.114	1.114

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Service Status Info
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x11			1	HDR Service Status Info
Length	2			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x12			1	GSM Service Status Info
Length	3			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x13			1	WCDMA Service Status Info
Length	3			2	
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x14			1	LTE Service Status Info
Length	3			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x15			1	CDMA System Info
Length	42			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	is_sys_prl_ match_valid	1	Indicates whether the system PRL match is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	is_sys_prl_ match	1	Indicates whether the system is in a PRL (only applies to CDMA/HDR). Values: • 0x00 – System is not in a PRL • 0x01 – System is in a PRL If the system is not in a PRL, roam_status carries the value from the default roaming indicator in the PRL. If the system is in a PRL, roam_status is set to the value based on the standard specification.
		boolean	p_rev_in_use_ valid	1	Indicates whether the P_Rev in use is valid.
		uint8	p_rev_in_use	1	The lesser of the base station P_Rev and mobile P_Rev (only applicable for CDMA).
		boolean	bs_p_rev_valid	1	Indicates whether the base station P_Rev is valid.
		uint8	bs_p_rev	1	Base station P_Rev (only applicable for CDMA).
		boolean	ccs_ supported_ valid	1	Indicates whether the supported concurrent service is valid.
		boolean	ccs_supported	1	Whether concurrent service is supported (only applicable for CDMA): • 0x00 – Not supported • 0x01 – Supported
		boolean	cdma_sys_id_ valid	1	Indicates whether the CDMA system ID is valid.
		uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
		boolean	bs_info_valid	1	Indicates whether the base station information is valid.
		uint16	base_id	2	Base station identification number.
		int32	base_lat	4	Base station latitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying North latitudes.
		int32	base_long	4	Base station longitude in units of 0.25 sec, expressed as a two's complement signed number with positive numbers signifying East longitude.
		boolean	packet_zone_ valid	1	Indicates whether the packet zone is valid.
		uint16	packet_zone	2	Packet zone (8-bit). 0xFFFF indicates no packet zone. (Only applicable for CDMA.)
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.

Field	Field value	Field type	Parameter	Size (byte)	Description
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
Type	0x16			1	HDR System Info
Length	31			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_forbidden_valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	is_sys_prl_match_valid	1	Indicates whether the system PRL match is valid.
		boolean	is_sys_prl_match	1	Indicates whether the system is in a PRL (only applies to CDMA/HDR). Values: • 0x00 – System is not in a PRL • 0x01 – System is in a PRL If the system is not in a PRL, roam_status carries the value from the default roaming indicator in the PRL. If the system is in a PRL, roam_status is set to the value based on the standard specification.
		boolean	hdr_personality_valid	1	Indicates whether the HDR personality is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hdr_personality	1	HDR personality information (only applicable for HDR). Values: • 0x00 – SYS_PERSONALITY_NONE – None • 0x02 – SYS_PERSONALITY_HRPD – HRPD • 0x03 – SYS_PERSONALITY_EHRPD – eHRPD
		boolean	hdr_active_ prot_valid	1	Indicates whether the HDR active protocol revision information is valid.
		enum8	hdr_active_ prot	1	HDR active protocol revision information (only applicable for HDR). Values: • 0x00 – SYS_ACTIVE_PROT_NONE – None • 0x02 – SYS_ACTIVE_PROT_HDR_REL0 – HDR Rel 0 • 0x03 – SYS_ACTIVE_PROT_HDR_RELA – HDR Rel A • 0x04 – SYS_ACTIVE_PROT_HDR_RELB – HDR Rel B
		boolean	is856_sys_id_ valid	1	Indicates whether the IS-856 system ID is valid.
		uint8	is856_sys_id	16	IS-856 system ID (only applicable for HDR).
Type	0x17			1	GSM System Info
Length	30			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	reject_srv_domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	egprs_supp_valid	1	Indicates whether EGPRS support is valid.
		boolean	egprs_supp	1	EGPRS support indication (only applicable for GSM). Values: • 0x00 – SYS_EGPRS_SUPPORT_NOT_AVAIL – Not available • 0x01 – SYS_EGPRS_SUPPORT_AVAIL – Available
		boolean	dtm_supp_valid	1	Indicates whether Dual Transfer mode support is valid.
		boolean	dtm_supp	1	Dual Transfer mode support indication (only applicable for GSM). Values: • 0x00 – SYS_DTM_SUPPORT_NOT_AVAIL – Not available • 0x01 – SYS_DTM_SUPPORT_AVAIL – Available
Type	0x18			1	WCDMA System Info
Length	33			2	
Value	→	boolean	srv_domain_valid	1	Indicates whether the service domain is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_forbidden_valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_info_valid	1	Indicates whether the registration reject information is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	hs_call_ status_valid	1	Indicates whether the high-speed call status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	hs_ind_valid	1	Indicates whether the high-speed service indication is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_ind	1	High-speed service indication (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	psc_valid	1	Indicates whether the primary scrambling code is valid.
		uint16	psc	2	Primary scrambling code.
Type	0x19			1	LTE System Info
Length	29			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_ valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_ NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_ PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_ PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_ forbidden_ valid	1	Indicates whether the forbidden system is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	is_sys_ forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.
		enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	tac_valid	1	Indicates whether the tracking area code is valid.
		uint16	tac	2	Tracking area code (only applicable for LTE).
Type	0x1A			1	Additional CDMA System Info
Length	4			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	reg_prd	2	Registration period after the CDMA system is acquired. When the CDMA registration period is not valid, 0xFFFF is used.
Type	0x1B			1	Additional HDR System Info
Length	2			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
Type	0x1C			1	Additional GSM System Info
Length	6			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
Type	0x1D			1	Additional WCDMA System Info
Length	6			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
Type	0x1E			1	Additional LTE System Info
Length	2			2	
Value	→	uint16	geo_sys_idx	2	System table index referencing the beginning of the geo in which the current serving system is present. When the system index is not known, 0xFFFF is used.
Type	0x1F			1	GSM Call Barring System Info
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x20			1	WCDMA Call Barring System Info
Length	8			2	
Value	→	enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
Type	0x21			1	LTE Voice Support Sys Info
Length	1			2	
Value	→	boolean	voice_ support_on_ lte	1	Indicates voice support status on LTE. Values: • 0x00 – Voice is not supported • 1x01 – Voice is supported
Type	0x22			1	GSM Cipher Domain Sys Info
Length	1			2	
Value	→	enum8	gsm_cipher_ domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x23			1	WCDMA Cipher Domain Sys Info
Length	1			2	
Value	→	enum8	wcdma_ cipher_ domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x24			1	System Info No Change
Length	1			2	
Value	→	boolean	sys_info_no_ change	1	Flag used to notify clients that a request to select a network ended with no change in the PLMN. Values: • 0x01 – No change in system information
Type	0x25			1	TDSCDMA Service Status Info
Length	3			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	srv_status	1	Service status of the system. Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		enum8	true_srv_status	1	True service status of the system (not applicable to CDMA/HDR). Values: • 0x00 – SYS_SRV_STATUS_NO_SRV – No service • 0x01 – SYS_SRV_STATUS_LIMITED – Limited service • 0x02 – SYS_SRV_STATUS_SRV – Service • 0x03 – SYS_SRV_STATUS_LIMITED_ REGIONAL – Limited regional service • 0x04 – SYS_SRV_STATUS_PWR_SAVE – Power save
		boolean	is_pref_data_ path	1	Whether the RAT is the preferred data path: • 0x00 – Not preferred • 0x01 – Preferred
Type	0x26			1	TDSCDMA System Info
Length	50			2	
Value	→	boolean	srv_domain_ valid	1	Indicates whether the service domain is valid.
		enum8	srv_domain	1	Service domain registered on the system. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	srv_ capability_ valid	1	Indicates whether the service capability is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	srv_capability	1	Current system's service capability. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		boolean	roam_status_valid	1	Indicates whether the roaming status is valid.
		uenum8	roam_status	1	Current roaming status. Values: • 0x00 – SYS_ROAM_STATUS_OFF – Off • 0x01 – SYS_ROAM_STATUS_ON – On • 0x02 – SYS_ROAM_STATUS_BLINK – Blinking • 0x03 – SYS_ROAM_STATUS_OUT_OF_NEIGHBORHOOD – Out of the neighborhood • 0x04 – SYS_ROAM_STATUS_OUT_OF_BLDG – Out of the building • 0x05 – SYS_ROAM_STATUS_PREF_SYS – Preferred system • 0x06 – SYS_ROAM_STATUS_AVAIL_SYS – Available system • 0x07 – SYS_ROAM_STATUS_ALLIANCE_PARTNER – Alliance partner • 0x08 – SYS_ROAM_STATUS_PREMIUM_PARTNER – Premium partner • 0x09 – SYS_ROAM_STATUS_FULL_SVC – Full service • 0x0A – SYS_ROAM_STATUS_PARTIAL_SVC – Partial service • 0x0B – SYS_ROAM_STATUS_BANNER_ON – Banner is on • 0x0C – SYS_ROAM_STATUS_BANNER_OFF – Banner is off Remainder of the values are per 3GPP2 C.R1001-F. Values from 0x02 onward are only applicable for 3GPP2.
		boolean	is_sys_forbidden_valid	1	Indicates whether the forbidden system is valid.
		boolean	is_sys_forbidden	1	Whether the system is forbidden: • 0x00 – Not forbidden • 0x01 – Forbidden
		boolean	lac_valid	1	Indicates whether the location area code is valid.
		uint16	lac	2	Location area code (only applicable for 3GPP).

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	cell_id_valid	1	Indicates whether the cell ID is valid.
		uint32	cell_id	4	Cell ID.
		boolean	reg_reject_ info_valid	1	Indicates whether the registration reject information is valid.
		enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
		uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.
		boolean	network_id_ valid	1	Indicates whether the network ID is valid.
		char	mcc	3	MCC digits in ASCII characters. For CDMA, the MCC wildcard value is returned as {'3', 0xFF, 0xFF}.
		char	mnc	3	MNC digits in ASCII characters. For this field: • Unused byte is set to 0xFF • In the case of two-digit MNC values, the third (unused) digit is set to 0xFF. For example, 15 (a two-digit MNC) is reported using the byte stream 0x35 0x31 0xFF. For CDMA, the MNC wildcard value is returned as {'7', 0xFF, 0xFF}.
		boolean	hs_call_ status_valid	1	Indicates whether the high-speed call status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_call_status	1	Call status on high speed (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	hs_ind_valid	1	Indicates whether the high-speed service indication is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	hs_ind	1	High-speed service indication (only applicable for WCDMA). Values: • 0x00 – SYS_HS_IND_HSDPA_HSUPA_ UNSUPP_CELL – HSDPA and HSUPA are unsupported • 0x01 – SYS_HS_IND_HSDPA_SUPP_CELL – HSDPA is supported • 0x02 – SYS_HS_IND_HSUPA_SUPP_CELL – HSUPA is supported • 0x03 – SYS_HS_IND_HSDPA_HSUPA_SUPP_ CELL – HSDPA and HSUPA are supported • 0x04 – SYS_HS_IND_HSDPAPLUS_SUPP_ CELL – HSDPA+ is supported • 0x05 – SYS_HS_IND_HSDPAPLUS_HSUPA_ SUPP_CELL – HSDPA+ and HSUPA are supported • 0x06 – SYS_HS_IND_DC_HSDPAPLUS_SUPP_ CELL – Dual-cell HSDPA+ is supported • 0x07 – SYS_HS_IND_DC_HSDPAPLUS_ HSUPA_SUPP_CELL – Dual-cell HSDPA+ and HSUPA are supported • 0x08 – SYS_HS_IND_HSDPAPLUS_64QAM_ HSUPA_SUPP_CELL – Dual-cell HSDPA+, 64 QAM, and HSUPA are supported • 0x09 – SYS_HS_IND_HSDPAPLUS_64QAM_ SUPP_CELL – Dual-cell HSDPA+ and 64 QAM are supported • 0x0A – SYS_HS_IND_DC_HSDPAPLUS_ DC_HSUPA_SUPP_CELL – Dual-cell HSUPA is supported
		boolean	cell_ parameter_id_ valid	1	Indicates whether the cell parameter ID is valid.
		uint16	cell_ parameter_id	2	Cell parameter ID.
		boolean	cell_ broadcast_ cap_valid	1	Indicates whether the cell broadcast capability is valid.
		enum	cell_ broadcast_cap	4	Cell broadcast capability of the serving system. Values: • 0x00 – NAS_CELL_BROADCAST_CAP_ UNKNOWN – Cell broadcast support is unknown • 0x01 – NAS_CELL_BROADCAST_CAP_OFF – Cell broadcast is not supported • 0x02 – NAS_CELL_BROADCAST_CAP_ON – Cell broadcast is supported
		boolean	cs_bar_ status_valid	1	Indicates whether the circuit-switched call barring status is valid.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	cs_bar_status	4	Call barring status for circuit-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		boolean	ps_bar_ status_valid	1	Indicates whether the packet-switched call barring status is valid.
		enum	ps_bar_status	4	Call barring status for packet-switched calls. Values: • 0x00 – NAS_CELL_ACCESS_NORMAL_ONLY – Cell access is allowed for normal calls only • 0x01 – NAS_CELL_ACCESS_EMERGENCY_ ONLY – Cell access is allowed for emergency calls only • 0x02 – NAS_CELL_ACCESS_NO_CALLS – Cell access is not allowed for any call type • 0x03 – NAS_CELL_ACCESS_ALL_CALLS – Cell access is allowed for all call types • -1 – NAS_CELL_ACCESS_UNKNOWN – Cell access type is unknown
		boolean	cipher_ domain_valid	1	Indicates whether the cipher domain is valid.
		enum8	cipher_domain	1	Ciphering on the service domain. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched
Type	0x27			1	LTE eMBMS Coverage Info (Deprecated; use LTE eMBMS Coverage Info Extended)
Length	1			2	
Value	→	boolean	lte_embms_ coverage	1	Values: • TRUE – Current LTE system supports eMBMBS • FALSE – Current LTE system does not support eMBMBS
Type	0x28			1	SIM Reject information
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	sim_rej_info	4	Current reject state information of the SIM. Values: • 0 – NAS_SIM_NOT_AVAILABLE – SIM is not available • 1 – NAS_SIM_AVAILABLE – SIM is available • 2 – NAS_SIM_CS_INVALID – SIM has been marked by the network as invalid for circuit-switched services • 3 – NAS_SIM_PS_INVALID – SIM has been marked by the network as invalid for packet-switched services • 4 – NAS_SIM_CS_PS_INVALID – SIM has been marked by the network as invalid for circuit-switched and packet-switched services
Type	0x29			1	WCDMA EUTRA Status Information
Length	1			2	
Value	→	enum8	wcdma_eutra_ status	1	E-UTRA detection status. Values: • 0 – NAS_EUTRA_CELL_PRESENT – E-UTRA cell is detected • 1 – NAS_EUTRA_CELL_NOT_PRESENT – E-UTRA cell is not detected • 2 – NAS_EUTRA_CELL_PRESENCE_ UNKNOWN – E-UTRA cell information is unknown due to a state transition • 3 – NAS_EUTRA_CELL_DETECTION_ UNSUPPORTED – E-UTRA detection is not supported
Type	0x2A			1	IMS Voice Support Status on LTE
Length	1			2	
Value	→	boolean	lte_ims_ voice_avail	1	Values: • 0x00 – Support is not available • 0x01 – Support is available
Type	0x2B			1	LTE Voice Domain
Length	4			2	
Value	→	enum	lte_voice_ status	4	LTE voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on LTE • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network • 3 – NAS_DOMAIN_SEL_DOMAIN_3GPP – Voice is supported over the 3GPP network
Type	0x2C			1	CDMA Reg Zone ID
Length	2			2	
Value	→	uint16	cdma_reg_zone	2	CDMA registration zone ID.
Type	0x2D			1	GSM RAC
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	gsm_rac	1	GSM routing area code.
Type	0x2E			1	WCDMA RAC
Length	1			2	
Value	→	uint8	wcdma_rac	1	WCDMA routing area code.
Type	0x2F			1	CDMA Resolved Mobile Country Code
Length	2			2	
Value	→	uint16	cdma_mcc_ resolved_via_ sid_lookup	2	MCC derived by looking up the IFAST SID conflict table and configured SID-MCC table (static and NV) with the SID received from the network as the key. If the lookup is not successful, 0xFFFF is used. **Note:** This MCC value is determined solely from the SID and may differ from the MCC value sent by the network. (This field requires version 1.35 or later.)
Type	0x30			1	Network Selection Registration Restriction
Length	4			2	
Value	→	enum	srv_reg_ restriction	4	Registration restriction. Values: • 0x00 – NAS_SRV_REG_RESTRICTION_ UNRESTRICTED – Device follows the normal registration process • 0x01 – NAS_SRV_REG_RESTRICTION_ CAMPED_ONLY – Device follows the camp-only registration process All other values are reserved. (This field requires version 1.35 or later.)
Type	0x31			1	TDSCDMA Registration Domain
Length	4			2	
Value	→	enum	tdscdma_reg_ domain	4	TD-SCDMA registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service (This field requires version 1.35 or later.)
Type	0x32			1	LTE Registration Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	lte_reg_domain	4	LTE registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service (This field requires version 1.35 or later.)
Type	0x33			1	WCDMA Registration Domain
Length	4			2	
Value	→	enum	wcdma_reg_ domain	4	WCDMA registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service (This field requires version 1.35 or later.)
Type	0x34			1	GSM Registration Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	gsm_reg_ domain	4	GSM registration domain. Values: • 0 – NAS_POSSIBLE_REG_DOMAIN_NA – Not applicable because the UE is not in Camp Only mode • 1 – NAS_POSSIBLE_REG_DOMAIN_CS_ONLY – UE is in Camp Only mode and the PLMN can provide CS service only • 2 – NAS_POSSIBLE_REG_DOMAIN_PS_ONLY – UE is in Camp Only mode and the PLMN can provide PS service only • 3 – NAS_POSSIBLE_REG_DOMAIN_CS_PS – UE is in Camp Only mode and the PLMN can provide CS and PS service • 4 – NAS_POSSIBLE_REG_DOMAIN_ LIMITED_SERVICE – UE is in Camp Only mode, but the PLMN cannot provide any service (This field requires version 1.35 or later.)
Type	0x35			1	LTE eMBMS Coverage Info Trace ID
Length	2			2	
Value	→	int16	lte_embms_ coverage_ trace_id	2	LTE eMBMS coverage information trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used
Type	0x36			1	WCDMA CSG Information
Length	Var			2	
Value	→	uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.
Type	0x37			1	HDR Voice Domain
Length	4			2	
Value	→	enum	hdr_voice_ status	4	HDR voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on HDR • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x38			1	HDR SMS Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	hdr_sms_status	4	HDR SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on HDR • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x39			1	LTE SMS Domain
Length	4			2	
Value	→	enum	lte_sms_status	4	LTE SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on LTE • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network • 3 – NAS_SMS_STATUS_3GPP – SMS is supported over the 3GPP network
Type	0x3A			1	LTE Emergency Bearer Support
Length	4			2	
Value	→	enum	lte_is_eb_ supported	4	Whether LTE emergency bearer is supported. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown The TLV status is NAS_TRI_UNKNOWN for scenarios where information is not available from the lower layers; e.g., if the UE powers up while acquiring service or in the middle of an attach procedure.
Type	0x3B			1	GSM Voice Domain
Length	4			2	
Value	→	enum	gsm_voice_ status	4	GSM voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on GSM • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x3C			1	GSM SMS Domain
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	gsm_sms_ status	4	GSM SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on GSM • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x3D			1	WCDMA Voice Domain
Length	4			2	
Value	→	enum	wcdma_voice_ status	4	WCDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on WCDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x3E			1	WCDMA SMS Domain
Length	4			2	
Value	→	enum	wcdma_sms_ status	4	WCDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on WCDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x3F			1	LTE Emergency Access Barred
Length	4			2	
Value	→	enum	emergency_ access_barred	4	Whether LTE emergency access is barred on the current system. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown The TLV status is NAS_TRI_UNKNOWN for scenarios where information is not available from the lower layers; e.g., if the UE powers up while acquiring service or in the middle of an attach procedure.
Type	0x40			1	CDMA Voice Domain
Length	4			2	
Value	→	enum	cdma_voice_ status	4	CDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on CDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x41			1	CDMA SMS Domain

Field	Field value	Field type	Parameter	Size (byte)	Description
Length	4			2	
Value	→	enum	cdma_sms_ status	4	CDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on CDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x42			1	TDSCDMA Voice Domain
Length	4			2	
Value	→	enum	tdscdma_ voice_status	4	TD-SCDMA voice domain. Values: • 0 – NAS_DOMAIN_SEL_DOMAIN_NO_VOICE – Data-centric devices: No voice, stay on TD-SCDMA • 1 – NAS_DOMAIN_SEL_DOMAIN_IMS – Voice is supported over the IMS network • 2 – NAS_DOMAIN_SEL_DOMAIN_1X – Voice is supported over the 1X network
Type	0x43			1	TDSCDMA SMS Domain
Length	4			2	
Value	→	enum	tdscdma_ sms_status	4	TD-SCDMA SMS domain. Values: • 0 – NAS_SMS_STATUS_NO_SMS – Data-centric devices: No SMS, stay on TD-SCDMA • 1 – NAS_SMS_STATUS_IMS – SMS is supported over the IMS network • 2 – NAS_SMS_STATUS_1X – SMS is supported over the 1X network
Type	0x44			1	LTE CSG Information
Length	Var			2	
Value	→	uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.
Type	0x45			1	LTE Cell Access Status Info
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	lte_cell_status	4	Cell access status for LTE calls. Values: • NAS_CELL_ACCESS_NORMAL_ ONLY (0x00) – Cell access is allowed for normal calls only • NAS_CELL_ACCESS_EMERGENCY_ ONLY (0x01) – Cell access is allowed for emergency calls only • NAS_CELL_ACCESS_NO_CALLS (0x02) – Cell access is not allowed for any call type • NAS_CELL_ACCESS_ALL_CALLS (0x03) – Cell access is allowed for all call types • NAS_CELL_ACCESS_UNKNOWN (-1) – Cell access type is unknown
Type	0x46			1	HDR Subnet Mask Length
Length	1			2	
Value	→	uint8	hdr_subnet_ mask_len	1	HDR subnet mask length.
Type	0x47			1	LTE eMBMS Coverage Info Extended
Length	4			2	
Value	→	enum	embms_ coverage_ status	4	eMBMS coverage status. Values: • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAILABLE (0) – Not available • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_AVAILABLE (1) – Available • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAIL_DUE_TO_UEMODE (2) – Not available due to the UE mode • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_NOT_AVAIL_DUE_TO_EMERGENCY (3) – Not available due to an emergency • NAS_LTE_RRC_EMBMS_COVERAGE_ STATUS_UNKNOWN (4) – Unknown

3.52.2 Description of QMI_NAS_SYS_INFO_IND

This indication provides current serving system information, including registration information and system property. The serving system information of the radio interfaces specified in mode_pref are included in the response message. When any value in the sys_info message changes, an indication message is sent. Indications contain all the values for all active RATs.

The registration information TLVs (i.e., TLVs 0x10 through 0x14) for all RATs specified in the mode capability setting are included regardless of registration status.

The RAT-specific system property TLVs (i.e., TLV 0x15 and above) are included only for RATs that are specified in the mode capability setting and which are not in either No Service or Power Save modes.

The indication message is sent when any field in any TLV changes, and all TLVs that comply with the previously described criteria are sent as part of the indication.

The optional WCDMA EUTRA Status Information TLV (0x29) is included when WCDMA is in service and contains LTE detection information.

3.53 QMI_NAS_GET_SIG_INFO

Queries information regarding the signal strength.

NAS message ID

0x004F

Version introduced

Major - 1, Minor - 8

3.53.1 Request - QMI_NAS_GET_SIG_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.53.2 Response - QMI_NAS_GET_SIG_INFO_RESP_MSG

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 introduced	Version last modified
CDMA Signal Strength Info	Unknown	1.16
HDR Signal Strength Info	Unknown	1.16
GSM Signal Strength Info	Unknown	1.8
WCDMA Signal Strength Info	Unknown	1.16

Name	Version introduced	Version last modified
LTE Signal Strength Info	Unknown	1.16
TDSCDMA Signal Strength Info	Unknown	1.16
TDSCDMA Signal Strength Info Extended	1.43	1.43

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Signal Strength Info
Length	3			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
Type	0x11			1	HDR Signal Strength Info
Length	8			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
		enum8	sinr	1	SINR level. SINR is only applicable for 1xEV-DO. Valid levels are 0 to 8, where the maximum value for: • 0x00 – SINR_LEVEL_0 is -9 dB • 0x01 – SINR_LEVEL_1 is -6 dB • 0x02 – SINR_LEVEL_2 is -4.5 dB • 0x03 – SINR_LEVEL_3 is -3 dB • 0x04 – SINR_LEVEL_4 is -2 dB • 0x05 – SINR_LEVEL_5 is +1 dB • 0x06 – SINR_LEVEL_6 is +3 dB • 0x07 – SINR_LEVEL_7 is +6 dB • 0x08 – SINR_LEVEL_8 is +9 dB
		int32	io	4	Received IO in dBm. IO is only applicable for 1xEV-DO.
Type	0x12			1	GSM Signal Strength Info
Length	1			2	
Value	→	int8	gsm_sig_info	1	GSM signal strength is the RSSI in dBm (signed value). A value of -125 dBm or lower is used to indicate No Signal.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x13			1	WCDMA Signal Strength Info
Length	3			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
Type	0x14			1	LTE Signal Strength Info
Length	6			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int8	rsrq	1	RSRQ value in dB (signed integer value) as measured by L1. Range: -3 to -20 (-3 means -3 dB, -20 means -20 dB).
		int16	rsrp	2	Current RSRP in dBm as measured by L1. Range: -44 to -140 (-44 means -44 dBm, -140 means -140 dBm).
		int16	snr	2	SNR level as a scaled integer in units of 0.1 dB; e.g., -16 dB has a value of -160 and 24.6 dB has a value of 246.
Type	0x15			1	TDSCDMA Signal Strength Info
Length	1			2	
Value	→	int8	rscp	1	RSCP of the Primary Common Control Physical Channel (PCCPCH) in dBm. Measurement range: -120 dBm to -25 dBm.
Type	0x16			1	TDSCDMA Signal Strength Info Extended
Length	16			2	
Value	→	float	rssi	4	Measured RSSI in dBm.
		float	rscp	4	Measured RSCP in dBm.
		float	ecio	4	Measured ECIO in dB.
		float	sinr	4	Measured SINR in dB. -15 dB is sent to clients if the actual SINR is less than -15 dB.

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_INFO_UNAVAILABLE	Information is not available at this time

3.53.3 Description of QMI_NAS_GET_SIG_INFO REQ/RESP

This command queries the signal strength information for currently active RATs. TLVs 0x10 through 0x14 are reported only if the corresponding RATs have signal strength values to be reported.

If no signal strength information is available for any RAT, the response message contains only the mandatory response message (TLV 0x02).

3.54   QMI_NAS_CONFIG_SIG_INFO

Sets the signal strength reporting thresholds. (Deprecated)

NAS message ID

0x0050

Version introduced

Major - 1, Minor - 8

Version deprecated

Major - 1, Minor - 30

3.54.1   Request - QMI_NAS_CONFIG_SIG_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
RSSI Threshold List	Unknown	1.8
ECIO Threshold List	Unknown	1.8
HDR SINR Threshold List	Unknown	1.8
LTE SNR Threshold List	Unknown	1.8
IO Threshold List	Unknown	1.8
RSRQ Threshold List	Unknown	1.8
RSRP Threshold List	Unknown	1.8
LTE Signal Report Config	Unknown	1.18
RSCP Threshold List	Unknown	1.16
TDSCDMA SINR Threshold List	1.43	1.43

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	RSSI Threshold List
Length	Var			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	rssi_ threshold_ list_len	1	Number of sets of the following elements: • rssi_threshold_list
		int8	rssi_ threshold_list	Var	RSSI in 1 dBm. A value of -125 dBm or lower is used to indicate No Signal. RSSI values have the following ranges (in dBm): • CDMA: -105 to -21 • HDR: -118 to -13 • GSM: -111 to -48 • WCDMA: -121 to 0 • LTE: -120 to 0 The threshold values specified here are used for all RATs. The maximum number of threshold values is 16, each a signed byte value.
					For CDMA and UMTS, this threshold setting results in the forward link pilot Ec values to be reported as part of the rssi field in TLV corresponding to the RAT in the QMI_NAS_SIG_INFO_IND indication.
					For GSM, this threshold setting results in the received signal strength to be reported as part of the GSM Signal Strength Info TLV in the QMI_NAS_SIG_INFO_IND indication.
					The range is based on the latest releases and may change over time.
Type	0x11			1	ECIO Threshold List
Length	Var			2	
Value	→	uint8	ecio_ threshold_ list_len	1	Number of sets of the following elements: • ecio_threshold_list
		int16	ecio_ threshold_list	Var	A sequence of thresholds delimiting ECIO event reporting bands. Every time a new ECIO value crosses a threshold value, an event report indication message with the new ECIO value is sent to the requesting control point. For this field: • Each ECIO threshold value is a signed 2 byte value • Each ECIO threshold value increments in negative 0.5 dB, e.g., an ECIO threshold value of 2 means -1 dB. • Maximum number of threshold values is 16 • At least one value must be specified (if report_ecio is set) • Threshold values specified here are used for all RATs
Type	0x12			1	HDR SINR Threshold List
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	hdr_sinr_ threshold_ list_len	1	Number of sets of the following elements: • hdr_sinr_threshold_list
		uint8	hdr_sinr_ threshold_list	Var	A sequence of thresholds delimiting SINR event reporting bands. Every time a new SINR value crosses a threshold value, an event report indication message with the new SINR value is sent to the requesting control point. For this field: • SINR is reported only for HDR • Each SINR threshold value is an unsigned 1 byte value • Maximum number of threshold values is 16 • At least one value must be specified (if report_sinr is set)
Type	0x13			1	LTE SNR Threshold List
Length	Var			2	
Value	→	uint8	lte_snr_ threshold_ list_len	1	Number of sets of the following elements: • lte_snr_threshold_list
		int16	lte_snr_ threshold_list	Var	A sequence of thresholds delimiting SNR event reporting bands. Every time a new SNR value crosses a threshold value, an event report indication message with the new snr value is sent to the requesting control point. For this field: • For LTE, each SNR threshold value is a signed 2 byte value • Maximum number of threshold values is 16 • At least one value must be specified (if report_snr is set) • SNR level as a scaled integer in units of 0.1 dB; e.g., -16 dB has a value of -160 and 24.6 dB has a value of 246
Type	0x14			1	IO Threshold List
Length	Var			2	
Value	→	uint8	io_threshold_ list_len	1	Number of sets of the following elements: • io_threshold_list
		int32	io_threshold_ list	Var	A sequence of thresholds delimiting IO event reporting bands. Every time a new IO value crosses a threshold value, an event report indication message with the new IO value is sent to the requesting control point. For this field: • IO is applicable only for HDR • Each IO threshold value is a signed 4 byte value • Maximum number of threshold values is 16 • At least one value must be specified
Type	0x15			1	RSRQ Threshold List
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	lte_rsrq_ threshold_ list_len	1	Number of sets of the following elements: • lte_rsrq_threshold_list
		int8	lte_rsrq_ threshold_list	Var	A sequence of thresholds delimiting current RSRQ event reporting bands. Every time a new RSRQ value crosses a specified threshold value, an event report indication message with the new RSRQ value is sent to the requesting control point. For this field: • RSRQ values are applicable only for LTE • RSRQ values are measured in dBm, with a range of -20 dBm to -3 dBm • Each RSRQ threshold value is a signed byte value • Maximum number of threshold values is 16 • At least one value must be specified
Type	0x16			1	RSRP Threshold List
Length	Var			2	
Value	→	uint8	lte_rsrp_ threshold_ list_len	1	Number of sets of the following elements: • lte_rsrp_threshold_list
		int16	lte_rsrp_ threshold_list	Var	A sequence of thresholds delimiting current RSRP event reporting bands. Every time a new RSRP value crosses a specified threshold value, an event report indication message with the new RSRP value is sent to the requesting control point. For this field: • RSRP values are applicable only for LTE • RSRP values are measured in dBm, with a range of -44 dBm to -140 dBm • Each RSRP threshold value is a signed 2 byte value • Maximum number of threshold values is 16 • At least one value must be specified
Type	0x17			1	LTE Signal Report Config
Length	2			2	
Value	→	enum8	rpt_rate	1	Rate on how often the LTE signal must be checked for reporting. Values: • 0 – Report using the default configuration • 1 – Report every 1 sec • 2 – Report every 2 sec • 3 – Report every 3 sec • 4 – Report every 4 sec • 5 – Report every 5 sec

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	avg_period	1	Averaging period to be used for the LTE signal. Values: • 0 – Average using the default configuration • 1 – Average over 1 sec • 2 – Average over 2 sec • 3 – Average over 3 sec • 4 – Average over 4 sec • 5 – Average over 5 sec • 6 – Average over 6 sec • 7 – Average over 7 sec • 8 – Average over 8 sec • 9 – Average over 9 sec • 10 – Average over 10 sec
Type	0x18			1	RSCP Threshold List
Length	Var			2	
Value	→	uint8	rscp_ threshold_ list_len	1	Number of sets of the following elements: • rscp_threshold_list
		int8	rscp_ threshold_list	Var	RSCP in 1 dBm. The threshold values specified here are used for all RATs.
Type	0x19			1	TDSCDMA SINR Threshold List
Length	Var			2	
Value	→	uint8	tds_sinr_ threshold_ list_len	1	Number of sets of the following elements: • tds_sinr_threshold_list
		float	tds_sinr_ threshold_list	Var	Array of SINR thresholds (in dB) used by TD-SCDMA; maximum of 16 values.

3.54.2   Response - QMI_NAS_CONFIG_SIG_INFO_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_NO_THRESHOLDS	No thresholds were specified in an enable signal strength request

3.54.3   Description of QMI_NAS_CONFIG_SIG_INFO REQ/RESP

This command allows clients to set the thresholds for reporting signal strength values for the QMI_NAS_SIG_INFO_IND indication.

Note: This command must not be used with QMI_NAS_CONFIG_SIG_INFO2.

This command has been deprecated. Use QMI_NAS_CONFIG_SIG_INFO2 (Section 3.82).

3.55   QMI_NAS_SIG_INFO_IND

Provides any change in signal strength status.

NAS message ID

0x0051

Version introduced

Major - 1, Minor - 8

3.55.1   Indication - QMI_NAS_SIG_INFO_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
CDMA Signal Strength Info	Unknown	1.16
HDR Signal Strength Info	Unknown	1.16
GSM Signal Strength Info	Unknown	1.8
WCDMA Signal Strength Info	Unknown	1.16
LTE Signal Strength Info	Unknown	1.16
TDSCDMA Signal Strength Info	Unknown	1.16
TDSCDMA Signal Strength Info Extended	1.43	1.43

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Signal Strength Info
Length	3			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
Type	0x11			1	HDR Signal Strength Info
Length	8			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
		enum8	sinr	1	SINR level. SINR is only applicable for 1xEV-DO. Valid levels are 0 to 8, where the maximum value for: • 0x00 – SINR_LEVEL_0 is -9 dB • 0x01 – SINR_LEVEL_1 is -6 dB • 0x02 – SINR_LEVEL_2 is -4.5 dB • 0x03 – SINR_LEVEL_3 is -3 dB • 0x04 – SINR_LEVEL_4 is -2 dB • 0x05 – SINR_LEVEL_5 is +1 dB • 0x06 – SINR_LEVEL_6 is +3 dB • 0x07 – SINR_LEVEL_7 is +6 dB • 0x08 – SINR_LEVEL_8 is +9 dB
		int32	io	4	Received IO in dBm. IO is only applicable for 1xEV-DO.
Type	0x12			1	GSM Signal Strength Info
Length	1			2	
Value	→	int8	gsm_sig_info	1	GSM signal strength is the RSSI in dBm (signed value). A value of -125 dBm or lower is used to indicate No Signal.
Type	0x13			1	WCDMA Signal Strength Info
Length	3			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA, this indicates forward link pilot Power (AGC) + Ec/Io • For UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength

Field	Field value	Field type	Parameter	Size (byte)	Description
		int16	ecio	2	ECIO value representing negative 0.5 dB increments, i.e., 2 means -1 dB (14 means -7 dB, 63 means -31.5 dB).
Type	0x14			1	LTE Signal Strength Info
Length	6			2	
Value	→	int8	rssi	1	RSSI in dBm (signed value); a value of -125 dBm or lower is used to indicate No Signal: • For CDMA and UMTS, this indicates forward link pilot Ec • For GSM, this indicates received signal strength
		int8	rsrq	1	RSRQ value in dB (signed integer value) as measured by L1. Range: -3 to -20 (-3 means -3 dB, -20 means -20 dB).
		int16	rsrp	2	Current RSRP in dBm as measured by L1. Range: -44 to -140 (-44 means -44 dBm, -140 means -140 dBm).
		int16	snr	2	SNR level as a scaled integer in units of 0.1 dB; e.g., -16 dB has a value of -160 and 24.6 dB has a value of 246.
Type	0x15			1	TDSCDMA Signal Strength Info
Length	1			2	
Value	→	int8	rscp	1	RSCP of the PCCPCH in dBm. Measurement range: -120 dBm to -25 dBm.
Type	0x16			1	TDSCDMA Signal Strength Info Extended
Length	16			2	
Value	→	float	rssi	4	Measured RSSI in dBm.
		float	rscp	4	Measured RSCP in dBm.
		float	ecio	4	Measured ECIO in dB.
		float	sinr	4	Measured SINR in dB. -15 dB is sent to clients if the actual SINR is less than -15 dB.

3.55.2 Description of QMI_NAS_SIG_INFO_IND

This indication provides the signal strength information for RATs. This indication is sent if any of the signal strength values cross the thresholds set using the QMI_NAS_CONFIG_SIG_INFO2 command.

To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command. Also, thresholds values for at least one of the values applicable for a specific RAT must be specified using the QMI_NAS_CONFIG_SIG_INFO2 command.

3.56 QMI_NAS_GET_ERR_RATE

Queries the current error rate information.

NAS message ID

0x0052

Version introduced

Major - 1, Minor - 8

3.56.1 Request - QMI_NAS_GET_ERR_RATE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.56.2 Response - QMI_NAS_GET_ERR_RATE_RESP_MSG

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 introduced	Version last modified
CDMA Frame Error Rate	Unknown	1.8
HDR Packet Error Rate	Unknown	1.8
GSM Bit Error Rate	Unknown	1.16
WCDMA Block Error Rate	Unknown	1.8
TDSCDMA Block Error Rate	Unknown	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Frame Error Rate
Length	2			2	
Value	→	uint16	cdma_frame_err_rate	2	Valid error rate values between 1 and 10000 are returned to indicate the percentage, e.g., a value of 300 means the error rate is 3%. A value of 0xFFFF indicates that the error rate is unknown/unavailable.
Type	0x11			1	HDR Packet Error Rate
Length	2			2	
Value	→	uint16	hdr_packet_err_rate	2	Valid error rate values between 1 and 10000 are returned to indicate the percentage, e.g., a value of 300 means the error rate is 3%. A value of 0xFFFF indicates that the error rate is unknown/unavailable.
Type	0x12			1	GSM Bit Error Rate
Length	1			2	
Value	→	uint8	gsm_bit_err_rate	1	GSM bit error rate represented as an RxQual metric as defined in 3GPP TS 45.008 Section 8.2.4. Valid values: 0 to 7. A value of 0xFF indicates No Data.
Type	0x13			1	WCDMA Block Error Rate
Length	1			2	
Value	→	uint8	wcdma_block_err_rate	1	Valid error rate values between 1 and 100 are returned to indicate the percentage value. A value of 0xFF indicates that the error rate is unknown/unavailable.
Type	0x14			1	TDSCDMA Block Error Rate
Length	1			2	
Value	→	uint8	tdscdma_block_err_rate	1	Percentage of blocks that had errors. A value of 0xFF indicates that the error rate is unknown/unavailable.

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_INFO_UNAVAILABLE	Information is not available at this time

3.56.3   Description of QMI_NAS_GET_ERR_RATE REQ/RESP

This command queries the error rate information for currently active RATs. If no error rate information is available for any RAT, the response message contains only the mandatory response message (TLV 0x02).

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3.57   QMI_NAS_ERR_RATE_IND

Provides RAT-specific error rate information.

NAS message ID

0x0053

Version introduced

Major - 1, Minor - 8

3.57.1   Indication - QMI_NAS_ERR_RATE_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
CDMA Frame Error Rate	Unknown	1.8
HDR Packet Error Rate	Unknown	1.8
GSM Bit Error Rate	Unknown	1.8
WCDMA Block Error Rate	Unknown	1.8
TDSCDMA Block Error Rate	Unknown	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Frame Error Rate
Length	2			2	
Value	→	uint16	cdma_frame_ err_rate	2	Valid error rate values between 1 and 10000 are returned to indicate the percentage, e.g., a value of 300 means the error rate is 3%. A value of 0xFFFF indicates that the error rate is unknown/unavailable.
Type	0x11			1	HDR Packet Error Rate
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	hdr_packet_ err_rate	2	Valid error rate values between 1 and 10000 are returned to indicate the percentage, e.g., a value of 300 means the error rate is 3%. A value of 0xFFFF indicates that the error rate is unknown/unavailable.
Type	0x12			1	GSM Bit Error Rate
Length	1			2	
Value	→	uint8	gsm_bit_err_ rate	1	GSM bit error rate represented as an RxQual metric as defined in 3GPP TS 45.008 Section 8.2.4. Valid values: 0 to 7. A value of 0xFF indicates No Data.
Type	0x13			1	WCDMA Block Error Rate
Length	1			2	
Value	→	uint8	wcdma_ block_err_rate	1	Valid error rate values between 1 and 100 are returned to indicate the percentage value. A value of 0xFF indicates that the error rate is unknown/unavailable.
Type	0x14			1	TDSCDMA Block Error Rate
Length	1			2	
Value	→	uint8	tdscdma_ block_err_rate	1	Percentage of blocks that had errors. A value of 0xFF indicates that the error rate is unknown/unavailable.

3.57.2   Description of QMI_NAS_ERR_RATE_IND

This indication provides the error rate information for active RATs. The indication is sent if the error rate information changes.

To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.58   QMI_NAS_HDR_SESSION_CLOSE_IND

Indicates when an HDR session has closed and returns a close reason.

NAS message ID

0x0054

Version introduced

Major - 1, Minor - 9

3.58.1   Indication - QMI_NAS_HDR_SESSION_CLOSE_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
HDR Session Close Reason	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	HDR Session Close Reason
Length	4			2	
Value	→	enum	close_reason	4	HDR session close reason (see Table A-4 for details).

Optional TLVs

None

3.58.2 Description of QMI_NAS_HDR_SESSION_CLOSE_IND

This indication communicates when an HDR session has closed and returns a close reason.

3.59   QMI_NAS_HDR_UATI_UPDATE_IND

Indicates when an HDR unique access terminal identifier has been updated and returns its new value.

NAS message ID

0x0055

Version introduced

Major - 1, Minor - 9

3.59.1   Indication - QMI_NAS_HDR_UATI_UPDATE_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
HDR UATI	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	HDR UATI
Length	16			2	
Value	→	uint8	uati	16	A 128-bit address that includes the access terminal identifier and subnet ID.

Optional TLVs

None

3.59.2 Description of QMI_NAS_HDR_UATI_UPDATE_IND

This indication is sent whenever a new HDR UATI is assigned to the AT.

3.60   QMI_NAS_GET_HDR_SUBTYPE

Retrieves the current HDR protocol subtype.

NAS message ID

0x0056

Version introduced

Major - 1, Minor - 9

3.60.1   Request - QMI_NAS_GET_HDR_SUBTYPE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Protocol	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Protocol
Length	4			2	
Value	→	uint32	protocol	4	HDR protocol for which the subtype is requested (refer to 3GPP2 C.S0024-B Table 2.5.4-1).

Optional TLVs

None

3.60.2   Response - QMI_NAS_GET_HDR_SUBTYPE_RESP_MSG

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 introduced	Version last modified
Protocol Subtype	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Protocol Subtype
Length	2			2	
Value	→	uint16	subtype	2	Current HDR protocol subtype (refer to 3GPP2 C.S0024-B Table 6.4.7.1-1). Values: • 0x0000 – Default • 0x0000 to 0XFFFD – Protocol subtypes • 0xFFFE – Hardlink • 0xFFFF – Indicates that the input protocol ID is not valid

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.60.3 Description of QMI_NAS_GET_HDR_SUBTYPE REQ/RESP

This command retrieves the current HDR protocol subtype.

3.61 QMI_NAS_GET_HDR_COLOR_CODE

Retrieves the HDR color code value.

NAS message ID

0x0057

Version introduced

Major - 1, Minor - 9

3.61.1 Request - QMI_NAS_GET_HDR_COLOR_CODE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.61.2 Response - QMI_NAS_GET_HDR_COLOR_CODE_RESP_MSG

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 introduced	Version last modified
Color Code Value	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Color Code Value
Length	1			2	
Value	→	uint8	color_code	1	Color code corresponding to the sector to which the AT is sending the access probe (refer to 3GPP2 C.S0024-B Section 7.11.6.2.1).

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.61.3   Description of QMI_NAS_GET_HDR_COLOR_CODE REQ/RESP

This command retrieves the current HDR color code.

3.62   QMI_NAS_GET_CURRENT_ACQ_SYS_MODE

Retrieves the current acquisition system mode. (Deprecated)

NAS message ID

0x0058

Version introduced

Major - 1, Minor - 9

Version deprecated

Major - 1, Minor - 24

3.62.1   Request - QMI_NAS_GET_CURRENT_ACQ_SYS_MODE_REQ_-MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.62.2   Response - QMI_NAS_GET_CURRENT_ACQ_SYS_MODE_RESP_-MSG

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 introduced	Version last modified
Current System Mode for CDMA 1X	Unknown	1.9
Current System Mode for CDMA 1xEV-DO	Unknown	1.9
Current System Mode for GSM	Unknown	1.9
Current System Mode for UMTS	Unknown	1.9
Current System Mode for LTE	Unknown	1.9
Current System Mode for TDSCDMA	Unknown	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Current System Mode for CDMA 1X
Length	4			2	
Value	→	enum	cdma	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service
Type	0x11			1	Current System Mode for CDMA 1xEV-DO
Length	4			2	
Value	→	enum	cdma_evdo	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service
Type	0x12			1	Current System Mode for GSM
Length	4			2	
Value	→	enum	gsm	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service
Type	0x13			1	Current System Mode for UMTS
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	umts	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service
Type	0x14			1	Current System Mode for LTE
Length	4			2	
Value	→	enum	lte	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service
Type	0x15			1	Current System Mode for TDSCDMA
Length	4			2	
Value	→	enum	tdscdma	4	Radio interface system mode. Values: • 0x00 – NAS_SYS_MODE_NO_SERVICE – No service • 0x01 – NAS_SYS_MODE_ACQUIRING – Acquiring service • 0x02 – NAS_SYS_MODE_INSERVICE – In service

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.62.3   Description of QMI_NAS_GET_CURRENT_ACQ_SYS_MODE REQ/RESP

This command retrieves the current acquisition system mode. A mode value is optionally returned for all supported RATs. No mode value returned for a specific RAT indicates that the RAT has no service and is not currently attempting to acquire service.

This command is deprecated. There is no replacement.

3.63 QMI_NAS_SET_RX_DIVERSITY

Sets the Rx diversity.

NAS message ID

0x0059

Version introduced

Major - 1, Minor - 9

3.63.1 Request - QMI_NAS_SET_RX_DIVERSITY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Rx Diversity Setting	Unknown	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Rx Diversity Setting
Length	2			2	
Value	→	enum8	radio_if	1	Radio interface for which to set the Rx diversity. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE
		uint8	rx_chain_ bitmask	1	Rx chain setting bitmask. Values: • Bit 0 – Rx chain 0 setting; 0 is disable, 1 is enable • Bit 1 – Rx chain 1 setting; 0 is disable, 1 is enable • All other bits are set to zero

Optional TLVs

None

3.63.2   Response - QMI_NAS_SET_RX_DIVERSITY_RESP_MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_NO_RADIO	Specified radio interface is not in service
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.63.3   Description of QMI_NAS_SET_RX_DIVERSITY REQ/RESP

This command sets the Rx diversity setting in the modem. The control point must specify in the request message which radio interface it wants to configure along with the settings for both Rx chains 0 and 1. If the specified radio interface is not in service, a QMI_ERR_NO_RADIO error is returned. If the modem does not support the requested Rx chain configuration, a QMI_ERR_INVALID_OPERATION error is returned.

3.64   QMI_NAS_GET_TX_RX_INFO

Retrieves the detailed Tx/Rx information.

NAS message ID

0x005A

Version introduced

Major - 1, Minor - 9

3.64.1   Request - QMI_NAS_GET_TX_RX_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Radio Interface	1.9	1.106

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Radio Interface
Length	1			2	
Value	→	enum8	radio_if	1	Radio interface from which to get the information. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA

Optional TLVs

None

3.64.2   Response - QMI_NAS_GET_TX_RX_INFO_RESP_MSG

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 introduced	Version last modified
Rx Chain 0 Info	Unknown	1.9
Rx Chain 1 Info	Unknown	1.9
Tx Info	Unknown	1.9
LTE Downlink Modulation	1.107	1.107
LTE Uplink Modulation	1.107	1.107
Rx Chain 2 Info	1.115	1.115
Rx Chain 3 Info	1.115	1.115

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Rx Chain 0 Info
Length	21			2	
Value	→	boolean	is_radio_tuned	1	Whether Rx is tuned to a channel: • 0x00 – Not tuned • 0x01 – Tuned If the radio is tuned, instantaneous values are set for the signal information fields below. If the radio is not tuned, or is delayed or invalid, the values are set depending on each technology.
		int32	rx_pwr	4	Rx power value in 1/10 dbm resolution.
		int32	ecio	4	ECIO in 1/10 dB; valid for CDMA, HDR, GSM, WCDMA, and LTE.
		int32	rscp	4	Received signal code power in 1/10 dbm; valid for WCDMA.
		int32	rsrp	4	Current reference signal received power in 1/10 dbm; valid for LTE.
		uint32	phase	4	Phase in 1/100 degrees; valid for LTE. When the phase is unknown, 0xFFFFFFFF is used.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	Rx Chain 1 Info
Length	21			2	
Value	→	boolean	is_radio_tuned	1	Whether Rx is tuned to a channel: • 0x00 – Not tuned • 0x01 – Tuned If the radio is tuned, instantaneous values are set for the signal information fields below. If the radio is not tuned, or is delayed or invalid, the values are set depending on each technology.
		int32	rx_pwr	4	Rx power value in 1/10 dbm resolution.
		int32	ecio	4	ECIO in 1/10 dB; valid for CDMA, HDR, GSM, WCDMA, and LTE.
		int32	rscp	4	Received signal code power in 1/10 dbm; valid for WCDMA.
		int32	rsrp	4	Current reference signal received power in 1/10 dbm; valid for LTE.
		uint32	phase	4	Phase in 1/100 degrees; valid for LTE. When the phase is unknown, 0xFFFFFFFF is used.
Type	0x12			1	Tx Info
Length	5			2	
Value	→	boolean	is_in_traffic	1	Whether the device is in traffic. The tx_pwr field is only meaningful when in the device is in traffic. If it is not in traffic, tx_pwr is invalid.
		int32	tx_pwr	4	Tx power value in 1/10 dbm.
Type	0x13			1	LTE Downlink Modulation
Length	Var			2	
Value	→	uint8	downlink_ mod_len	1	Number of sets of the following elements: • downlink_mod
		enum	downlink_mod	Var	LTE downlink modulation. Values: • CMAPI_LTE_API_MODULATION_ BPSK (0x00) – BPSK • CMAPI_LTE_API_MODULATION_ QPSK (0x01) – QPSK • CMAPI_LTE_API_MODULATION_ 16QAM (0x02) – 16-QAM • CMAPI_LTE_API_MODULATION_ 64QAM (0x03) – 64-QAM
Type	0x14			1	LTE Uplink Modulation
Length	Var			2	
Value	→	uint8	uplink_mod_ len	1	Number of sets of the following elements: • uplink_mod

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	uplink_mod	Var	LTE uplink modulation. Values: • CMAPI_LTE_API_MODULATION_ BPSK (0x00) – BPSK • CMAPI_LTE_API_MODULATION_ QPSK (0x01) – QPSK • CMAPI_LTE_API_MODULATION_ 16QAM (0x02) – 16-QAM • CMAPI_LTE_API_MODULATION_ 64QAM (0x03) – 64-QAM
Type	0x15			1	Rx Chain 2 Info
Length	21			2	
Value	→	boolean	is_radio_tuned	1	Whether Rx is tuned to a channel: • 0x00 – Not tuned • 0x01 – Tuned If the radio is tuned, instantaneous values are set for the signal information fields below. If the radio is not tuned, or is delayed or invalid, the values are set depending on each technology.
		int32	rx_pwr	4	Rx power value in 1/10 dbm resolution.
		int32	ecio	4	ECIO in 1/10 dB; valid for CDMA, HDR, GSM, WCDMA, and LTE.
		int32	rscp	4	Received signal code power in 1/10 dbm; valid for WCDMA.
		int32	rsrp	4	Current reference signal received power in 1/10 dbm; valid for LTE.
		uint32	phase	4	Phase in 1/100 degrees; valid for LTE. When the phase is unknown, 0xFFFFFFFF is used.
Type	0x16			1	Rx Chain 3 Info
Length	21			2	
Value	→	boolean	is_radio_tuned	1	Whether Rx is tuned to a channel: • 0x00 – Not tuned • 0x01 – Tuned If the radio is tuned, instantaneous values are set for the signal information fields below. If the radio is not tuned, or is delayed or invalid, the values are set depending on each technology.
		int32	rx_pwr	4	Rx power value in 1/10 dbm resolution.
		int32	ecio	4	ECIO in 1/10 dB; valid for CDMA, HDR, GSM, WCDMA, and LTE.
		int32	rscp	4	Received signal code power in 1/10 dbm; valid for WCDMA.
		int32	rsrp	4	Current reference signal received power in 1/10 dbm; valid for LTE.
		uint32	phase	4	Phase in 1/100 degrees; valid for LTE. When the phase is unknown, 0xFFFFFFFF is used.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_NO_RADIO	Specified radio interface is not in service

3.64.3   Description of QMI_NAS_GET_TX_RX_INFO REQ/RESP

This command retrieves Tx/Rx information for a radio interface. The Rx chain TLVs (i.e., 0x10 and 0x11) are included in the response message only if they are enabled. If the radio interface is not in service, a QMI_ERR_NO_RADIO error is returned. If the modem does not support the requested radio interface, a QMI_ERR_OP_DEVICE_UNSUPPORTED error is returned.

3.65   QMI_NAS_UPDATE_AKEY_EXT

Updates the A-KEY (extended).

NAS message ID

0x005B

Version introduced

Major - 1, Minor - 10

3.65.1   Request - QMI_NAS_UPDATE_AKEY_EXT_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
AKEY with SPC	Unknown	1.10

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	AKEY with SPC
Length	32			2	
Value	→	char	spc	6	Service programming code in ASCII format (digits 0 to 9 only).
		uint8	akey	26	AKEY value + checksum value in ASCII (first 20 bytes are the AKEY value, last 6 bytes are the checksum).

Optional TLVs

None

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3.65.2   Response - QMI_NAS_UPDATE_AKEY_EXT_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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_AUTHENTICATION_ FAILED	Authentication of supplied SPC failed
QMI_ERR_AUTHENTICATION_LOCK	Maximum number of authentication failures has been reached

3.65.3   Description of QMI_NAS_UPDATE_AKEY_EXT REQ/RESP

This command updates AKEY. The modem runs authentication on the presented AKEY before updating AKEY. An authentication failure of the supplied SPC results in a QMI_ERR_AUTHENTICATION_FAILED error. If too many requests are made with an invalid SPC by any control point, the device enters an Authentication Lock state and elicits a QMI_ERR_AUTHENTICATION_LOCK error. When the Authentication Lock state is reached, the device automatically issues a power-down procedure and shuts down. Upon rebooting, the Authentication Lock state is removed and the device will again process service programming requests. On successful operation, the command updates the NV_A_KEY_I NV item.

3.66   QMI_NAS_GET_DUAL_STANDBY_PREF

Retrieves dual standby preference.

NAS message ID

0x005C

Version introduced

Major - 1, Minor - 11

3.66.1   Request - QMI_NAS_GET_DUAL_STANDBY_PREF_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.66.2   Response - QMI_NAS_GET_DUAL_STANDBY_PREF_RESP_MSG

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 introduced	Version last modified
Standby Preference	1.11	1.55
Priority Subs	1.11	1.93
Active Subs	1.11	1.93
Default Data Subs	1.11	1.93
Default Voice Subs	1.60	1.93
Active Subs Mask	1.80	1.80

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Standby Preference
Length	1			2	
Value	→	enum8	standby_pref	1	Values: • 0x01 – Single standby • 0x02 – Dual standby with tune away • 0x04 – Dual standby without tune away • 0x05 – Automatic mode with tune away where applicable • 0x06 – Automatic mode without tune away • 0x07 – Triple standby
Type	0x11			1	Priority Subs
Length	1			2	
Value	→	enum8	priority_subs	1	Subscription to give priority when listening to the paging channel during dual standby. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription
Type	0x12			1	Active Subs
Length	1			2	
Value	→	enum8	active_subs	1	Subscription to enable when "standby_pref is 0x01 – Single standby". Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription
Type	0x13			1	Default Data Subs
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	default_data_ subs	1	Default data subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription
Type	0x14			1	Default Voice Subs
Length	1			2	
Value	→	enum8	default_voice_ subs	1	Default voice subscription. Values: • NAS_PRIMARY_SUBSCRIPTION (0x00) – Primary subscription • NAS_SECONDARY_SUBSCRIPTION (0x01) – Secondary subscription • NAS_TERTIARY_SUBSCRIPTION (0x02) – Tertiary subscription All other values are reserved.
Type	0x15			1	Active Subs Mask
Length	8			2	
Value	→	mask	active_subs_ mask	8	Bitmask representing the active subscriptions in the device. If a value of 0 is sent, there are no active subscriptions. Values: • Bit 0 (0x01) – QMI_NAS_ACTIVE_SUB_ PRIMARY – Primary subscription • Bit 1 (0x02) – QMI_NAS_ACTIVE_SUB_ SECONDARY – Secondary subscription • Bit 2 (0x04) – QMI_NAS_ACTIVE_SUB_ TERTIARY – Tertiary subscription All unlisted bits are reserved for future use and the service point ignores them if used.

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_INFO_UNAVAILABLE	Dual standby preference information is not available at this time

3.66.3 Description of QMI_NAS_GET_DUAL_STANDBY_PREF REQ/RESP

This message retrieves dual standby preference information. It returns the current standby preference, priority subscription, active subscription, and default data subscription.

3.67   QMI_NAS_DETACH_LTE

Detaches the current LTE system.

NAS message ID

0x005D

Version introduced

Major - 1, Minor - 13

3.67.1   Request - QMI_NAS_DETACH_LTE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.67.2   Response - QMI_NAS_DETACH_LTE_RESP_MSG

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_NO_MEMORY	Device could not allocate memory to formulate

3.67.3 Description of QMI_NAS_DETACH_LTE REQ/RESP

This command allows clients to detach from LTE.

The control point must always process the QMI_NAS_SYS_INFO_IND indication to learn the current registration state of the device. A QMI_NAS_DETACH_LTE_RESP message with a QMI_ERR_NONE error indicates that the request has been successfully queued. It does not mean that LTE has been detached.

3.68   QMI_NAS_BLOCK_LTE_PLMN

Blocks the LTE PLMN.

NAS message ID

0x005E

Version introduced

Major - 1, Minor - 13

3.68.1   Request - QMI_NAS_BLOCK_LTE_PLMN_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
PLMN	Unknown	1.13

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

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Optional TLVs

Name	Version introduced	Version last modified
Blocking Interval Absolute Time	Unknown	1.13
Blocking Interval T3204 Multiplier	Unknown	1.13

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Blocking Interval Absolute Time
Length	4			2	
Value	→	uint32	blocking_ interval_abs	4	Blocking interval in absolute time (in milliseconds).
Type	0x11			1	Blocking Interval T3204 Multiplier
Length	4			2	
Value	→	float	blocking_ interval_mult	4	Blocking time as a multiplier of T3204.

3.68.2   Response - QMI_NAS_BLOCK_LTE_PLMN_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.68.3   Description of QMI_NAS_BLOCK_LTE_PLMN REQ/RESP

This command allows clients to block a specific LTE PLMN for a specified amount of time.

Either blocking_interval_abs or blocking_interval_mult must be sent; a QMI_ERR_MALFORMED_MSG error is returned if both are sent.

3.69   QMI_NAS_UNBLOCK_LTE_PLMN

Unblocks the LTE PLMN.

NAS message ID

0x005F

Version introduced

Major - 1, Minor - 13

3.69.1   Request - QMI_NAS_UNBLOCK_LTE_PLMN_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
PLMN	Unknown	1.13

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

Optional TLVs

None

3.69.2   Response - QMI_NAS_UNBLOCK_LTE_PLMN_RESP_MSG

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.69.3   Description of QMI_NAS_UNBLOCK_LTE_PLMN REQ/RESP

This command allows clients to unblock a specific LTE PLMN.

3.70 QMI_NAS_RESET_LTE_PLMN_BLOCKING

Resets all previous LTE PLMN blocking operations.

NAS message ID

0x0060

Version introduced

Major - 1, Minor - 13

3.70.1 Request - QMI_NAS_RESET_LTE_PLMN_BLOCKING_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.70.2 Response - QMI_NAS_RESET_LTE_PLMN_BLOCKING_RESP_- MSG

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_NO_MEMORY	Device could not allocate memory to formulate

3.70.3 Description of QMI_NAS_RESET_LTE_PLMN_BLOCKING REQ/RESP

This command allows clients to reset all previous blocking of the LTE PLMNs.

3.71   QMI_NAS_CURRENT_PLMN_NAME_IND

Indicates the current SPN and PLMN name information.

NAS message ID

0x0061

Version introduced

Major - 1, Minor - 14

3.71.1   Indication - QMI_NAS_CURRENT_PLMN_NAME_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
PLMN ID	Unknown	1.14
Service Provider Name (Deprecated; use Service Provider Name Ext)	Unknown	1.117 (Deprecated)
Short Name for Network	Unknown	1.14
Long Name for Network	Unknown	1.14
CSG ID for Network	1.41	1.41
Display Bit Information	1.57	1.57
Network Information	1.57	1.57
Radio Access Technology	1.86	1.86
3GPP EONS PLMN Name with Language ID	1.89	1.89
Additional Information	1.95	1.95
Network Name Source	1.106	1.106
Service Provider Name Ext	1.117	1.117

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	PLMN ID
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x11			1	Service Provider Name (Deprecated; use Service Provider Name Ext)
Length	Var			2	
Value	→	enum8	spn_enc	1	Coding scheme for the service provider name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if spn_len is zero.
		uint8	spn_len	1	Number of sets of the following elements: • spn
		opaque	spn	Var	Service provider name string.
Type	0x12			1	Short Name for Network
Length	Var			2	
Value	→	enum8	plmn_name_enc	1	Coding scheme for plmn_name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if plmn_name_len is zero.
		enum8	plmn_name_ci	1	Indicates whether the country initials are to be added to the plmn_name. Values: • 0x00 – Do not add the letters for the country's initials to the name • 0x01 – Add the country's initials and a text string to the name • 0xFF – Not specified **Note:** This value is ignored if plmn_name_len is zero.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	plmn_spare_ bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n **Note:** This value is ignored if plmn_name_len is zero.
		uint8	plmn_name_ len	1	Number of sets of the following elements: • plmn_name
		opaque	plmn_name	Var	PLMN name.
Type	0x13			1	Long Name for Network
Length	Var			2	
Value	→	enum8	plmn_name_ enc	1	Coding scheme for plmn_name. Values: • 0x00 – NAS_CODING_SCHEME_ CELL_BROADCAST_GSM – SMS default 7-bit coded alphabet as defined in 3GPP TS 23.038 with bit 8 set to 0 • 0x01 – NAS_CODING_SCHEME_ UCS2 – UCS2 (16 bit, little-endian) 3GPP TS 23.038 **Note:** This value is ignored if plmn_name_len is zero.
		enum8	plmn_name_ci	1	Indicates whether the country initials are to be added to the plmn_name. Values: • 0x00 – Do not add the letters for the country's initials to the name • 0x01 – Add the country's initials and a text string to the name • 0xFF – Not specified **Note:** This value is ignored if plmn_name_len is zero.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	plmn_spare_bits	1	Values: • 0x01 – SPARE_BITS_8 – Bit 8 is spare and set to 0 in octet n • 0x02 – SPARE_BITS_7_TO_8 – Bits 7 and 8 are spare and set to 0 in octet n • 0x03 – SPARE_BITS_6_TO_8 – Bits 6 to 8 (inclusive) are spare and set to 0 in octet n • 0x04 – SPARE_BITS_5_TO_8 – Bits 5 to 8 (inclusive) are spare and set to 0 in octet n • 0x05 – SPARE_BITS_4_TO_8 – Bits 4 to 8 (inclusive) are spare and set to 0 in octet n • 0x06 – SPARE_BITS_3_TO_8 – Bits 3 to 8 (inclusive) are spare and set to 0 in octet n • 0x07 – SPARE_BITS_2_TO_8 – Bits 2 to 8 (inclusive) are spare and set to 0 in octet n • 0x00 – SPARE_BITS_UNKNOWN – Carries no information about the number of spare bits in octet n **Note:** This value is ignored if plmn_name_len is zero.
		uint8	plmn_name_len	1	Number of sets of the following elements: • plmn_name
		opaque	plmn_name	Var	PLMN name.
Type	0x14			1	CSG ID for Network
Length	4			2	
Value	→	uint32	csg_id	4	Closed subscriber group identifier; included only when the network is a CSG network.
Type	0x15			1	Display Bit Information
Length	8			2	
Value	→	enum	is_spn_set	4	Whether the SPN display bit is set. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
		enum	is_plmn_set	4	Whether the PLMN display bit is set. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x16			1	Network Information
Length	4			2	
Value	→	enum	is_home_network	4	Whether the network is the home network. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x17			1	Radio Access Technology
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	rat	1	Radio access technology. Values: • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x18			1	3GPP EONS PLMN Name with Language ID
Length	Var			2	
Value	→	uint8	lang_plmn_names_len	1	Number of sets of the following elements: • plmn_long_name_len • plmn_long_name • plmn_short_name_len • plmn_short_name • lang_id
		uint8	plmn_long_name_len	1	Number of sets of the following elements: • plmn_long_name
		uint16	plmn_long_name	Var	PLMN long name, in UCS2 (16 bit, little-endian) encoded format.
		uint8	plmn_short_name_len	1	Number of sets of the following elements: • plmn_short_name
		uint16	plmn_short_name	Var	PLMN short name, in UCS2 (16 bit, little-endian) encoded format.
		enum	lang_id	4	Language ID for the PLMN long and short names. Values: • NAS_LANG_ID_UNKNOWN (0x00) – Unknown language ID • NAS_LANG_ID_ZH_TRAD (0x01) – Traditional Chinese • NAS_LANG_ID_ZH_SIMP (0x02) – Simplified Chinese
Type	0x19			1	Additional Information
Length	Var			2	
Value	→	uint8	addl_info_len	1	Number of sets of the following elements: • addl_info
		uint16	addl_info	Var	Additional information provided for the PLMN, in UCS2 (16 bit little-endian) encoded format.
Type	0x1A			1	Network Name Source
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	nw_name_ source	4	Network name source. Values: • NAS_NW_NAME_SOURCE_UNKNOWN (0x00) – Unknown • NAS_NW_NAME_SOURCE_OPL_PNN (0x01) – Operator PLMN list and PLMN network name • NAS_NW_NAME_SOURCE_CPHS_ONS (0x02) – Common PCN handset specification and operator name string • NAS_NW_NAME_SOURCE_NITZ (0x03) – Network identity and time zone • NAS_NW_NAME_SOURCE_SE13 (0x04) – GSMA SE13 table • NAS_NW_NAME_SOURCE_MCC_MNC (0x05) – Mobile country code and mobile network code • NAS_NW_NAME_SOURCE_SPN (0x06) – Service provider name
Type	0x1B			1	Service Provider Name Ext
Length	Var			2	
Value	→	string16	spn_ext	Var	Service provider name.

3.71.2   Description of QMI_NAS_CURRENT_PLMN_NAME_IND

This indication communicates the current PLMN name information. The EF_SPN information may or may not be included based on the SPN display bit information. The indication is sent when the PLMN name information changes.

If the network name is for a CSG network, the CSG ID for Network TLV is included.

In the case of SGLTE devices, if device is camped on two networks there may be two indications sent, one for each RAT. The RAT TLV will indicate the network for this PLMN name.

The Service Provider Name Ext TLV is introduced to give the complete SPN information; clients are expected to refer to this TLV for the SPN information. The Service Provider Name TLV is deprecated.

3.72   QMI_NAS_CONFIG_EMBMS

Requests the UE to enable or disable eMBMS.

NAS message ID

0x0062

Version introduced

Major - 1, Minor - 16

3.72.1   Request - QMI_NAS_CONFIG_EMBMS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Config Request	Unknown	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Config Request
Length	1			2	
Value	→	boolean	enable	1	Enable or disable eMBMS. Values: • TRUE – Enable • FALSE – Disable

Optional TLVs

Name	Version introduced	Version last modified
Trace ID	1.38	1.38

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

3.72.2   Response - QMI_NAS_CONFIG_EMBMS_RESP_MSG

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 introduced	Version last modified
Trace ID	1.38	1.38

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

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_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.72.3   Description of QMI_NAS_CONFIG_EMBMS REQ/RESP

This command requests the modem to enable or disable the Evolved Multimedia Broadcast/Multicast Services (eMBMS). A QMI_NAS_CONFIG_EMBMS_RESP message with a QMI_ERR_NONE error indicates that the request has been successfully sent to the modem. The control point must process the QMI_NAS_EMBMS_STATUS_IND indication to learn whether eMBMS is enabled or disabled.

3.73   QMI_NAS_GET_EMBMS_STATUS

Queries the eMBMS status.

NAS message ID

0x0063

Version introduced

Major - 1, Minor - 16

3.73.1   Request - QMI_NAS_GET_EMBMS_STATUS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.73.2   Response - QMI_NAS_GET_EMBMS_STATUS_RESP_MSG

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 introduced	Version last modified
eMBMS Status	Unknown	1.16
Trace ID	1.38	1.38

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	eMBMS Status
Length	1			2	
Value	→	boolean	enabled	1	eMBMS status. Values: • TRUE – Enabled • FALSE – Disabled
Type	0x11			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

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

3.73.3   Description of QMI_NAS_GET_EMBMS_STATUS REQ/RESP

This command queries the eMBMS status.

3.74   QMI_NAS_EMBMS_STATUS_IND

Reports the UE's current eMBMS status change.

NAS message ID

0x0064

Version introduced

Major - 1, Minor - 16

3.74.1   Indication - QMI_NAS_EMBMS_STATUS_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
eMBMS Status	Unknown	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	eMBMS Status
Length	1			2	
Value	→	boolean	enabled	1	eMBMS status. Values: • TRUE – Enabled • FALSE – Disabled

Optional TLVs

Name	Version introduced	Version last modified
Trace ID	1.38	1.38

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

3.74.2 Description of QMI_NAS_EMBMS_STATUS_IND

This indication communicates the current eMBMS status and whether eMBMS is enabled. It is sent when the eMBMS status changes. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.75   QMI_NAS_GET_CDMA_POSITION_INFO

Queries the current CDMA base station position information for active and neighbor's position information.

NAS message ID

0x0065

Version introduced

Major - 1, Minor - 16

3.75.1   Request - QMI_NAS_GET_CDMA_POSITION_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.75.2   Response - QMI_NAS_GET_CDMA_POSITION_INFO_RESP_MSG

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 introduced	Version last modified
CDMA Position Info	1.16	1.16

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA Position Info
Length	Var			2	
Value	→	boolean	ue_in_idle	1	CDMA Idle state. TRUE if the UE is in Idle mode; otherwise FALSE.
		uint8	bs_len	1	Number of sets of the following elements: • pilot_type • sid • nid • base_id • pilot_pn • pilot_strength • base_lat • base_long • time_stamp
		enum	pilot_type	4	Pilot information type. Values: • 0x00 – NAS_CDMA_PILOT_CURR_ACT_PLT – Current active pilot information • 0x01 – NAS_CDMA_PILOT_NEIGHBOR_PLT – Neighbor pilot information
		uint16	sid	2	System ID. Range: 0 to 32767.
		uint16	nid	2	Network ID. Range: 0 to 65535.
		uint16	base_id	2	Base station ID.
		uint16	pilot_pn	2	Pilot PN sequence offset index. Range: 0 to 511.
		uint16	pilot_strength	2	Strength of the pilot (in dB). Range: 0 to 64.
		uint32	base_lat	4	Latitude of the current base station in units of 0.25 sec.
		uint32	base_long	4	Longitude of the current base station in units of 0.25 sec.
		uint64	time_stamp	8	Time (in milliseconds) from the start of GPS time when the measurement was taken.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.75.3   Description of QMI_NAS_GET_CDMA_POSITION_INFO REQ/RESP

This command queries the current CDMA base station position information for active and neighbor's position information.

When both the base_lat and base_long fields of a base station in the CDMA Position Info TLV are 0, this indicates the latitude and longitude are unknown.

3.76   QMI_NAS_RF_BAND_INFO_IND

Reports current RF band information.

NAS message ID

0x0066

Version introduced

Major - 1, Minor - 19

3.76.1   Indication - QMI_NAS_RF_BAND_INFO_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
RF Band Information	Unknown	1.142

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	RF Band Information
Length	5			2	
Value	→	enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		enum16	active_band	2	Active band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	active_channel	2	Active channel. If the channel is not relevant to the technology, a value of 0 is returned.

Optional TLVs

Name	Version introduced	Version last modified
RF Dedicated Band Information List	1.102	1.142
RF Band Information List, Extended Format	1.112	1.142

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	RF Dedicated Band Information List
Length	3			2	
Value	→	enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		enum16	dedicated_band	2	Dedicated band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes • 0xFFFF is invalid; indicates that the UE moved out from the dedicated band
Type	0x11			1	RF Band Information List, Extended Format (Extended sizes to accommodate LTE.)
Length	7			2	
Value	→	enum8	radio_if	1	Radio interface currently in use. Values: • 0x01 – cdma2000® 1X • 0x02 – cdma2000® HRPD (1xEV-DO) • 0x03 – AMPS • 0x04 – GSM • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum16	active_band	2	Active band class (see Table A-1 for details). Values: • 00 to 39 – CDMA band classes • 40 to 79 – GSM band classes • 80 to 91 – WCDMA band classes • 120 to 161 – LTE band classes • 200 to 205 – TD-SCDMA band classes
		uint32	active_channel	4	Active channel. If the channel is not relevant to the technology, a value of 0 is returned.

3.76.2   Description of QMI_NAS_RF_BAND_INFO_IND

This indication communicates changes in the current RF band information and also indicates dedicated band information. The information is for a single RAT. If multiple RATs have changes, multiple indications are sent.

3.77 QMI_NAS_FORCE_NETWORK_SEARCH

Forces a network search procedure.

NAS message ID

0x0067

Version introduced

Major - 1, Minor - 21

3.77.1 Request - QMI_NAS_FORCE_NETWORK_SEARCH_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.77.2 Response - QMI_NAS_FORCE_NETWORK_SEARCH_RESP_MSG

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_DEVICE_NOT_READY	Device is not ready
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response

3.77.3   Description of QMI_NAS_FORCE_NETWORK_SEARCH REQ/RESP

This command forces the modem to immediately initiate a network search if the modem is out of service. If the request is received when the modem is in service, the response returns QMI_RESULT_SUCCESS and the command does nothing.

The modem's operating mode must be Online or a QMI_ERR_DEVICE_NOT_READY error is returned.

This command affects all available subscriptions on the UE. For example, if one subscription is in service and another is not, or if EV-DO is in service and 1xRTT not, this command forces the out-of-service subscription to initiate a network search.

Important note: Use of this command is discouraged. The modem has an optimized algorithm designed to minimize power consumption when out of service, while still finding available networks quickly when they appear. This algorithm has been determined to be acceptable by most operators. Sending this command defeats the algorithm and results in increased power consumption.

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3.78 QMI_NAS_NETWORK_REJECT_IND

Reports network reject information.

NAS message ID

0x0068

Version introduced

Major - 1, Minor - 22

3.78.1 Indication - QMI_NAS_NETWORK_REJECT_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Radio Interface	Unknown	1.22
Service Domain	Unknown	1.22
Registration Rejection Cause	Unknown	1.22

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Radio Interface
Length	1			2	
Value	→	enum8	radio_if	1	Radio interface from which to get the information. Values: • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x02			1	Service Domain
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	reject_srv_ domain	1	Type of service domain in which the registration is rejected. Values: • 0x00 – SYS_SRV_DOMAIN_NO_SRV – No service • 0x01 – SYS_SRV_DOMAIN_CS_ONLY – Circuit-switched only • 0x02 – SYS_SRV_DOMAIN_PS_ONLY – Packet-switched only • 0x03 – SYS_SRV_DOMAIN_CS_PS – Circuit-switched and packet-switched • 0x04 – SYS_SRV_DOMAIN_CAMPED – Camped
Type	0x03			1	Registration Rejection Cause
Length	1			2	
Value	→	uint8	rej_cause	1	Reject cause values sent are specified in 3GPP TS 24.008 Sections 10.5.3.6 and 10.5.5.14, and 3GPP TS 24.301 Section 9.9.3.9.

Optional TLVs

Name	Version introduced	Version last modified
PLMN ID	1.41	1.41
CSG ID	1.41	1.41

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	PLMN ID
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
Type	0x11			1	CSG ID
Length	4			2	
Value	→	uint32	csg_id	4	Closed subscriber group identifier.

3.78.2   Description of QMI_NAS_NETWORK_REJECT_IND

This indication provides reject cause information for 3GPP networks. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.79   QMI_NAS_GET_MANAGED_ROAMING_CONFIG

Queries the current managed roaming configuration information.

NAS message ID

0x0069

Version introduced

Major - 1, Minor - 25

3.79.1   Request - QMI_NAS_GET_MANAGED_ROAMING_CONFIG_REQ_- MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.79.2   Response - QMI_NAS_GET_MANAGED_ROAMING_CONFIG_RESP_- MSG

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 introduced	Version last modified
Managed Roaming Configuration	1.25	1.25

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Managed Roaming Configuration
Length	1			2	
Value	→	boolean	managed_ roaming_ supported	1	Managed roaming support status (corresponds to NV item NV_MGRF_SUPPORTED_I). Values: • 0 – Not supported • 1 – Supported

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Indicates that an unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Indicates that the device could not allocate memory to formulate a response

3.79.3   Description of QMI_NAS_GET_MANAGED_ROAMING_CONFIG REQ/RESP

This command queries the current managed roaming configuration status of the modem.

3.80   QMI_NAS_RTRE_CONFIG_IND

Reports a change in the RTRE configuration status.

NAS message ID

0x006A

Version introduced

Major - 1, Minor - 25

3.80.1   Indication - QMI_NAS_RTRE_CONFIG_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Current RTRE Configuration	1.25	1.25
RTRE Configuration Preference	1.25	1.25

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Current RTRE Configuration
Length	1			2	
Value	→	enum8	rtre_cfg	1	Values: • 0x01 – R-UIM only • 0x02 – Internal settings only • 0x04 – GSM on 1X
Type	0x11			1	RTRE Configuration Preference
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	rtre_cfg_pref	1	Values: • 0x01 – R-UIM only • 0x02 – Internal settings only • 0x03 – Use R-UIM if available • 0x04 – GSM on 1X

3.80.2   Description of QMI_NAS_RTRE_CONFIG_IND

This indication reports any change in the modem RTRE configuration or the RTRE configuration preference. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.81　QMI_NAS_GET_CENTRALIZED_EONS_SUPPORT_STATUS

Queries the modem support status for centralized EONS.

NAS message ID

0x006B

Version introduced

Major - 1, Minor - 27

3.81.1　Request - QMI_NAS_GET_CENTRALIZED_EONS_SUPPORT_-
STATUS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.81.2　Response - QMI_NAS_GET_CENTRALIZED_EONS_SUPPORT_-
STATUS_RESP_MSG

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 introduced	Version last modified
Centralized EONS Support Status	1.27	1.27

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Centralized EONS Support Status
Length	1			2	
Value	→	boolean	centralized_ eons_supported	1	Centralized EONS support status. Values: • 0 – Not supported • 1 – Supported

3.81.3 Description of QMI_NAS_GET_CENTRALIZED_EONS_SUPPORT_- STATUS REQ/RESP

This command queries the support for centralized EONS on the modem.

MAY CONTAIN U.S. AND INTERNATIONAL EXPORT CONTROLLED INFORMATION

3.82   QMI_NAS_CONFIG_SIG_INFO2

Sets the signal strength reporting thresholds.

NAS message ID

0x006C

Version introduced

Major - 1, Minor - 30

3.82.1   Request - QMI_NAS_CONFIG_SIG_INFO2_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
CDMA RSSI Threshold List	1.30	1.30
CDMA RSSI Delta	1.30	1.30
CDMA ECIO Threshold List	1.30	1.30
CDMA ECIO Delta	1.30	1.30
HDR RSSI Threshold List	1.30	1.30
HDR RSSI Delta	1.30	1.30
HDR ECIO Threshold List	1.30	1.30
HDR ECIO Delta	1.30	1.30
HDR SINR Threshold List	1.30	1.30
HDR SINR Delta	1.30	1.30
HDR IO Threshold List	1.30	1.30
HDR IO Delta	1.30	1.30
GSM RSSI Threshold List	1.30	1.30
GSM RSSI Delta	1.30	1.30
WCDMA RSSI Threshold List	1.30	1.30
WCDMA RSSI Delta	1.30	1.30
WCDMA ECIO Threshold List	1.30	1.30
WCDMA ECIO Delta	1.30	1.30
LTE RSSI Threshold List	1.30	1.30
LTE RSSI Delta	1.30	1.30
LTE SNR Threshold List	1.30	1.30

Name	Version introduced	Version last modified
LTE SNR Delta	1.30	1.30
LTE RSRQ Threshold List	1.30	1.30
LTE RSRQ Delta	1.30	1.30
LTE RSRP Threshold List	1.30	1.30
LTE RSRP Delta	1.30	1.30
LTE Signal Report Config	1.30	1.30
TDSCDMA RSCP Threshold List	1.30	1.30
TDSCDMA RSCP Delta	1.30	1.30
TDSCDMA RSSI Threshold List	1.43	1.43
TDSCDMA RSSI Delta	1.43	1.43
TDSCDMA ECIO Threshold List	1.43	1.43
TDSCDMA ECIO Delta	1.43	1.43
TDSCDMA SINR Threshold List	1.43	1.43
TDSCDMA SINR Delta	1.43	1.43

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CDMA RSSI Threshold List
Length	Var			2	
Value	→	uint8	cdma_rssi_ threshold_ list_len	1	Number of sets of the following elements: • cdma_rssi_threshold_list
		int16	cdma_rssi_ threshold_list	Var	Array of RSSI thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSSI values: -105 to -21 (in dBm). For example, to set thresholds at -95 dBm and -80 dBm, the threshold list values are -950, -800. The range is based on the latest releases and may change over time.
Type	0x11			1	CDMA RSSI Delta
Length	2			2	
Value	→	uint16	cdma_rssi_ delta	2	RSSI delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x12			1	CDMA ECIO Threshold List
Length	Var			2	
Value	→	uint8	cdma_ecio_ threshold_ list_len	1	Number of sets of the following elements: • cdma_ecio_threshold_list
		int16	cdma_ecio_ threshold_list	Var	Array of ECIO thresholds (in units of 0.1 dB); maximum of 32 values. Range for ECIO values: -31.5 to 0 (in dB). For example, to set thresholds at -20 dB and -15.5 dB, the threshold list values are -400, -310. The range is based on the latest releases and may change over time.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x13			1	CDMA ECIO Delta
Length	2			2	
Value	→	uint16	cdma_ecio_ delta	2	ECIO delta (in units of 0.1 dB). For example, to set a delta of 10 dB, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x14			1	HDR RSSI Threshold List
Length	Var			2	
Value	→	uint8	hdr_rssi_ threshold_ list_len	1	Number of sets of the following elements: • hdr_rssi_threshold_list
		int16	hdr_rssi_ threshold_list	Var	Array of RSSI thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSSI values: -118 to -13 (in dBm). For example, to set thresholds at -20 dBm and -15 dBm, the threshold list values are -200, -150. The range is based on the latest releases and may change over time.
Type	0x15			1	HDR RSSI Delta
Length	2			2	
Value	→	uint16	hdr_rssi_delta	2	RSSI delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x16			1	HDR ECIO Threshold List
Length	Var			2	
Value	→	uint8	hdr_ecio_ threshold_ list_len	1	Number of sets of the following elements: • hdr_ecio_threshold_list
		int16	hdr_ecio_ threshold_list	Var	Array of ECIO thresholds (in units of 0.1 dB); maximum of 32 values. Range for ECIO values: -31.5 to 0 (in dB). For example, to set thresholds at -20 dB and -15.5 dB, the threshold list values are -400, -310. The range is based on the latest releases and may change over time.
Type	0x17			1	HDR ECIO Delta
Length	2			2	
Value	→	uint16	hdr_ecio_delta	2	ECIO delta (in units of 0.1 dB). For example, to set a delta of 10 dB, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x18			1	HDR SINR Threshold List
Length	Var			2	
Value	→	uint8	hdr_sinr_ threshold_ list_len	1	Number of sets of the following elements: • hdr_sinr_threshold_list

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	hdr_sinr_ threshold_list	Var	Array of SINR level thresholds (in units of 1); maximum of 32 values. Valid levels are 0 to 8, where the maximum value for: • 0x00 – SINR_LEVEL_0 is -9 dB • 0x01 – SINR_LEVEL_1 is -6 dB • 0x02 – SINR_LEVEL_2 is -4.5 dB • 0x03 – SINR_LEVEL_3 is -3 dB • 0x04 – SINR_LEVEL_4 is -2 dB • 0x05 – SINR_LEVEL_5 is +1 dB • 0x06 – SINR_LEVEL_6 is +3 dB • 0x07 – SINR_LEVEL_7 is +6 dB • 0x08 – SINR_LEVEL_8 is +9 dB
Type	0x19			1	HDR SINR Delta
Length	2			2	
Value	→	uint16	hdr_sinr_delta	2	SINR delta (in units of 1 SINR level). For example, to set a delta of 1 SINR level, the delta value must be set to 1. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x1A			1	HDR IO Threshold List
Length	Var			2	
Value	→	uint8	hdr_io_ threshold_ list_len	1	Number of sets of the following elements: • hdr_io_threshold_list
		int16	hdr_io_ threshold_list	Var	Array of IO thresholds (in units of 0.1 dBm); maximum of 32 values. Range for IO values: -128 to -13 (in dBm). For example, to set thresholds at -111 dBm and -73 dBm, the threshold list values are -1110, -730. The range is based on the latest releases and may change over time.
Type	0x1B			1	HDR IO Delta
Length	2			2	
Value	→	uint16	hdr_io_delta	2	IO delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x1C			1	GSM RSSI Threshold List
Length	Var			2	
Value	→	uint8	gsm_rssi_ threshold_ list_len	1	Number of sets of the following elements: • gsm_rssi_threshold_list

Field	Field value	Field type	Parameter	Size (byte)	Description
		int16	gsm_rssi_ threshold_list	Var	Array of RSSI thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSSI values: -111 to -48 (in dBm). For example, to set thresholds at -95 dBm and -80 dBm, the threshold list values are -950, -800. The range is based on the latest releases and may change over time.
Type	0x1D			1	GSM RSSI Delta
Length	2			2	
Value	→	uint16	gsm_rssi_delta	2	RSSI delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x1E			1	WCDMA RSSI Threshold List
Length	Var			2	
Value	→	uint8	wcdma_rssi_ threshold_ list_len	1	Number of sets of the following elements: • wcdma_rssi_threshold_list
		int16	wcdma_rssi_ threshold_list	Var	Array of RSSI thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSSI values: -121 to 0 (in dBm). For example, to set thresholds at -20 dBm and -15 dBm, the threshold list values are -200, -150. The range is based on the latest releases and may change over time.
Type	0x1F			1	WCDMA RSSI Delta
Length	2			2	
Value	→	uint16	wcdma_rssi_ delta	2	RSSI delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x20			1	WCDMA ECIO Threshold List
Length	Var			2	
Value	→	uint8	wcdma_ecio_ threshold_ list_len	1	Number of sets of the following elements: • wcdma_ecio_threshold_list
		int16	wcdma_ecio_ threshold_list	Var	Array of ECIO thresholds (in units of 0.1 dB); maximum of 32 values. Range for ECIO values: -31.5 to 0 (in dB). For example, to set thresholds at -20 dB and -15.5 dB, the threshold list values are -400, -310. The range is based on the latest releases and may change over time.
Type	0x21			1	WCDMA ECIO Delta
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	wcdma_ecio_ delta	2	ECIO delta (in units of 0.1 dB). For example, to set a delta of 10 dB, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x22			1	LTE RSSI Threshold List
Length	Var			2	
Value	→	uint8	lte_rssi_ threshold_ list_len	1	Number of sets of the following elements: • lte_rssi_threshold_list
		int16	lte_rssi_ threshold_list	Var	Array of RSSI thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSSI values: -120 to 0 (in dBm). For example, to set thresholds at -20 dBm and -15 dBm, the threshold list values are -200, -150. The range is based on the latest releases and may change over time.
Type	0x23			1	LTE RSSI Delta
Length	2			2	
Value	→	uint16	lte_rssi_delta	2	RSSI delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x24			1	LTE SNR Threshold List
Length	Var			2	
Value	→	uint8	lte_snr_ threshold_ list_len	1	Number of sets of the following elements: • lte_snr_threshold_list
		int16	lte_snr_ threshold_list	Var	Array of SNR thresholds (in units of 0.1 dB); maximum of 32 values. Range for SNR values: -20 to 30 (in dB). For example, to set thresholds at -19.8 dB and 23 dB, the threshold list values are -198, 230. The range is based on the latest releases and may change over time.
Type	0x25			1	LTE SNR Delta
Length	2			2	
Value	→	uint16	lte_snr_delta	2	SNR delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x26			1	LTE RSRQ Threshold List
Length	Var			2	
Value	→	uint8	lte_rsrq_ threshold_ list_len	1	Number of sets of the following elements: • lte_rsrq_threshold_list

Field	Field value	Field type	Parameter	Size (byte)	Description
		int16	lte_rsrq_ threshold_list	Var	Array of RSRQ thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSRQ values: -20 to -3 (in dBm). For example, to set thresholds at -11 dBm and -6 dBm, the threshold list values are -110, -60. The range is based on the latest releases and may change over time.
Type	0x27			1	LTE RSRQ Delta
Length	2			2	
Value	→	uint16	lte_rsrq_delta	2	RSRQ delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x28			1	LTE RSRP Threshold List
Length	Var			2	
Value	→	uint8	lte_rsrp_ threshold_ list_len	1	Number of sets of the following elements: • lte_rsrp_threshold_list
		int16	lte_rsrp_ threshold_list	Var	Array of RSRP thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSRP values: -140 to -44 (in dBm). For example, to set thresholds at -125 dBm and -64 dBm, the threshold list values are -1250, -640. The range is based on the latest releases and may change over time.
Type	0x29			1	LTE RSRP Delta
Length	2			2	
Value	→	uint16	lte_rsrp_delta	2	RSRP delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x2A			1	LTE Signal Report Config
Length	2			2	
Value	→	enum8	rpt_rate	1	Rate on how often the LTE signal must be checked for reporting. Values: • 0 – Report using the default configuration • 1 – Report every 1 sec • 2 – Report every 2 sec • 3 – Report every 3 sec • 4 – Report every 4 sec • 5 – Report every 5 sec

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	avg_period	1	Averaging period to be used for the LTE signal. Values: • 0 – Average using the default configuration • 1 – Average over 1 sec • 2 – Average over 2 sec • 3 – Average over 3 sec • 4 – Average over 4 sec • 5 – Average over 5 sec • 6 – Average over 6 sec • 7 – Average over 7 sec • 8 – Average over 8 sec • 9 – Average over 9 sec • 10 – Average over 10 sec
Type	0x2B			1	TDSCDMA RSCP Threshold List
Length	Var			2	
Value	→	uint8	tdscdma_rscp_ threshold_ list_len	1	Number of sets of the following elements: • tdscdma_rscp_threshold_list
		int16	tdscdma_rscp_ threshold_list	Var	Array of RSCP thresholds (in units of 0.1 dBm); maximum of 32 values. Range for RSCP values: -120 to -25 (in dBm). For example, to set thresholds at -95 dBm and -80 dBm, the threshold list values would be -950, -800. The range is based on the latest releases and may change over time.
Type	0x2C			1	TDSCDMA RSCP Delta
Length	2			2	
Value	→	uint16	tdscdma_rscp_ delta	2	RSCP delta (in units of 0.1 dBm). For example, to set a delta of 10 dBm, the delta value must be set to 100. A value of 0 is rejected with a QMI_ERR_INVALID_ARG error.
Type	0x2D			1	TDSCDMA RSSI Threshold List
Length	Var			2	
Value	→	uint8	tds_rssi_ threshold_ list_len	1	Number of sets of the following elements: • tds_rssi_threshold_list
		float	tds_rssi_ threshold_list	Var	Array of RSSI thresholds (in dBm) used by TD-SCDMA; maximum of 32 values.
Type	0x2E			1	TDSCDMA RSSI Delta
Length	4			2	
Value	→	float	tdscdma_rssi_ delta	4	RSSI delta (in dBm) used by TD-SCDMA.
Type	0x2F			1	TDSCDMA ECIO Threshold List
Length	Var			2	
Value	→	uint8	tds_ecio_ threshold_ list_len	1	Number of sets of the following elements: • tds_ecio_threshold_list

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Field	Field value	Field type	Parameter	Size (byte)	Description
		float	tds_ecio_ threshold_list	Var	Array of ECIO thresholds (in dB) used by TD-SCDMA; maximum of 32 values.
Type	0x30			1	TDSCDMA ECIO Delta
Length	4			2	
Value	→	float	tdscdma_ecio_ delta	4	ECIO delta (in dB) used by TD-SCDMA.
Type	0x31			1	TDSCDMA SINR Threshold List
Length	Var			2	
Value	→	uint8	tds_sinr_ threshold_ list_len	1	Number of sets of the following elements: • tds_sinr_threshold_list
		float	tds_sinr_ threshold_list	Var	Array of SINR thresholds (in dB) used by TD-SCDMA; maximum of 32 values.
Type	0x32			1	TDSCDMA SINR Delta
Length	4			2	
Value	→	float	tdscdma_sinr_ delta	4	SINR delta (in dB) used by TD-SCDMA.

3.82.2   Response - QMI_NAS_CONFIG_SIG_INFO2_RESP_MSG

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	Indicates that an unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Indicates that the message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_ARG_TOO_LONG	More than the maximum allowed thresholds were specified
QMI_ERR_NO_THRESHOLDS	No thresholds were specified in an enable signal strength request

3.82.3   Description of QMI_NAS_CONFIG_SIG_INFO2 REQ/RESP

This command allows clients to set the thresholds or deltas for reporting signal strength values for the QMI_NAS_SIG_INFO_IND indication.

A mixture of threshold and delta values can be provided in the request; however for each type and RAT, only one of threshold list or delta value is to be provided. For example, cdma_rssi_threshold_list and cdma_ecio_delta can be provided, but cdma_rssi_threshold_list and cdma_rssi_delta cannot co-exist.

Note: This command must not be used with QMI_NAS_CONFIG_SIG_INFO.

3.83   QMI_NAS_GET_TDS_CELL_AND_POSITION_INFO

Retrieves the cell information and neighbor cell information for TD-SCDMA.

NAS message ID

0x006D

Version introduced

Major - 1, Minor - 32

3.83.1   Request - QMI_NAS_GET_TDS_CELL_AND_POSITION_INFO_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.83.2   Response - QMI_NAS_GET_TDS_CELL_AND_POSITION_INFO_-RESP_MSG

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 introduced	Version last modified
TDSCDMA Cell Info	1.32	1.32
TDSCDMA Neighbor Cell Info	1.32	1.32

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	TDSCDMA Cell Info
Length	23			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90
		uint16	lac	2	Location area code. (This field is ignored when cell_id is not present.)
		uint16	uarfcn	2	Absolute RF channel number.
		uint32	cell_id	4	Cell ID (0xFFFFFFFF indicates cell ID information is not present).
		uint8	cell_parameter_id	1	Cell parameter ID.
		uint8	pathloss	1	Path loss in units of 1 dB.
		float	timing_advance	4	Measured delay (in seconds) of an access burst transmission on the RACH or PRACH to the expected signal from an MS at zero distance under static channel conditions.
		float	rscp	4	Received signal code power in dBm.
Type	0x11			1	TDSCDMA Neighbor Cell Info
Length	Var			2	
Value	→	uint8	tds_nbr_cell_info_len	1	Number of sets of the following elements: • uarfcn • cell_parameter_id • rscp
		uint16	uarfcn	2	Absolute RF channel number.
		uint8	cell_parameter_id	1	Cell parameter ID.
		float	rscp	4	Received signal code power in dBm.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Indicates that an unexpected error occurred during processing

3.83.3   Description of QMI_NAS_GET_TDS_CELL_AND_POSITION_INFO REQ/RESP

This command retrieves the TD-SCDMA cell and neighbor cell information.

3.84   QMI_NAS_SET_HPLMN_IRAT_SEARCH_TIMER

Sets the periodic search timer configuration for a home operator-specific BPLMN search to LTE.

NAS message ID

0x006E

Version introduced

Major - 1, Minor - 36

3.84.1   Request - QMI_NAS_SET_HPLMN_IRAT_SEARCH_TIMER_REQ_- MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
TDSCDMA Neighbor Cell Periodic Search Timer	1.36	1.36

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	TDSCDMA Neighbor Cell Periodic Search Timer
Length	2			2	
Value	→	uint16	timer_value	2	TD-SCDMA search timer value (in minutes). 0 indicates an immediate search and the timer is disabled. 0xFFFF is used to disable the timer without any search.

Optional TLVs

None

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3.84.2   Response - QMI_NAS_SET_HPLMN_IRAT_SEARCH_TIMER_RESP_- MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value

3.84.3   Description of QMI_NAS_SET_HPLMN_IRAT_SEARCH_TIMER REQ/RESP

This command provides the periodic search timer configuration for a home operator-specific background PLMN (BPLMN) search to LTE while the UE is camped on the home operator's TD-SCDMA/GERAN network.

3.85 QMI_NAS_GET_EMBMS_SIG

Retrieves the current signal quality at L1 for each MBSFN area.

NAS message ID

0x006F

Version introduced

Major - 1, Minor - 38

3.85.1 Request - QMI_NAS_GET_EMBMS_SIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Trace ID	1.38	1.38

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

3.85.2 Response - QMI_NAS_GET_EMBMS_SIG_RESP_MSG

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 introduced	Version last modified
Trace ID	1.38	1.38
Signal Quality	1.38	1.44

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used
Type	0x11			1	Signal Quality
Length	Var			2	
Value	→	uint8	sig_list_len	1	Number of sets of the following elements: • area_id • snr • signal_level
		uint8	area_id	1	Multicast Broadcast Single Frequency Network (MBSFN) area ID. Values: 0 to 255.
		float	snr	4	Average SNR of the serving cell over the last measurement period in decibels.
		int8	signal_level	1	Signal level of the serving cell over the last measurement period. Range: 0 to 5.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.85.3 Description of QMI_NAS_GET_EMBMS_SIG REQ/RESP

This command retrieves the current signal quality at L1 for each MBSFN area.

3.86   QMI_NAS_LIMIT_SYS_INFO_IND_REPORTING

Limits the reporting of QMI_NAS_SYS_INFO_IND to only when certain fields have changed.

NAS message ID

0x0070

Version introduced

Major - 1, Minor - 42

3.86.1   Request - QMI_NAS_LIMIT_SYS_INFO_IND_REPORTING_REQ_- MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Limit Sys Info Change Reporting	1.42	1.149

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Limit Sys Info Change Reporting
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask	limit_sys_ info_chg_rpt	8	Bitmasks included in this TLV limit the reporting of QMI_NAS_SYS_INFO_IND to when those values change. If a value of 0 is sent, QMI_NAS_SYS_INFO_IND reporting is as if no limit is set. Values: • 0x01 – NAS_LIMIT_BY_SRV_STATUS – Limit by srv_status changes • 0x02 – NAS_LIMIT_BY_SRV_DOMAIN – Limit by srv_domain changes • 0x04 – NAS_LIMIT_BY_PLMN_ID – Limit by mcc/mnc • 0x08 – NAS_LIMIT_BY_SID_NID – Limit by sid/nid • 0x10 – NAS_LIMIT_BY_ROAM_STATUS – Limit by roam_status • 0x20 – NAS_LIMIT_BY_SRV_CAPABILITY – Limit by srv_capability changes • 0x40 – NAS_LIMIT_BY_PACKET_ZONE – Limit by packet zone changes • 0x80 – NAS_LIMIT_BY_IS856_SYS_ID – Limit by IS856_sys_id changes • 0x100 – NAS_LIMIT_BY_CELL_ID – Limit by cell_id changes • 0x200 – NAS_LIMIT_BY_LAC – Limit by LAC changes • 0x400 – NAS_LIMIT_BY_RAC – Limit by RAC changes • 0x800 – NAS_LIMIT_BY_TAC – Limit by TAC changes • 0x1000 – NAS_LIMIT_BY_HS_CALL_STATUS – Limit by hs_call_status • 0x2000 – NAS_LIMIT_BY_HS_IND – Limit by hs_ind • 0x4000 – NAS_LIMIT_BY_HDR_ACTIVE_ PROTOCOL – Limit by hdr_active_prot • 0x8000 – NAS_LIMIT_BY_EGPRS_SUPPORT_ IND – Limit by Enhanced General Packet Radio Service (EGPRS) support • 0x10000 – NAS_LIMIT_BY_HDR_ PERSONALITY – Limit by hdr_personality • 0x20000 – NAS_LIMIT_BY_CCS_SUPPORTED – Limit by ccs_supported • 0x40000 – NAS_LIMIT_BY_DTM_SUPPORTED – Limit by Dual Transfer Mode (DTM) support • 0x80000 – NAS_LIMIT_BY_CS_BAR_STATUS – Limit by cs_bar_status

Field	Field value	Field type	Parameter	Size (byte)	Description
			limit_sys_ info_chg_rpt (cont.)		• 0x100000 – NAS_LIMIT_BY_PS_BAR_STATUS – Limit by ps_bar_status • 0x200000 – NAS_LIMIT_BY_VOICE_ SUPPORT_ON_LTE – Limit by LTE voice support • 0x400000 – NAS_LIMIT_BY_SYS_INFO_ NO_CHANGE – Limit by no change • 0x800000 – NAS_LIMIT_BY_IS_SYS_ FORBIDDEN – Limit by is_sys_forbidden • 0x1000000 – NAS_LIMIT_BY_LTE_EMBMS_ COVERAGE – Limit by lte_embms_coverage • 0x2000000 – NAS_LIMIT_BY_LTE_VOICE_ STATUS – Limit by lte_voice_status • 0x4000000 – NAS_LIMIT_BY_LTE_SMS_ STATUS – Limit by lte_sms_status • 0x8000000 – NAS_LIMIT_BY_IS_SYS_PRL_ MATCH – Limit by is_sys_prl_match • 0x10000000 – NAS_LIMIT_BY_P_REV_IN_USE – Limit by p_rev_in_use • 0x20000000 – NAS_LIMIT_BY_CDMA_SYS_ID – Limit by cdma_sys_id • 0x40000000 – NAS_LIMIT_BY_PSC – Limit by PSC • 0x80000000 – NAS_LIMIT_BY_SIM_REJ_INFO – Limit by SIM rejection information • 0x100000000 – NAS_LIMIT_BY_WCDMA_ EUTRA_STATUS – Limit by wcdma_eutra_status • 0x200000000 – NAS_LIMIT_BY_WCDMA_ CSG_INFO – Limit by wcdma_csg_info • 0x400000000 – NAS_LIMIT_BY_LTE_CSG_ INFO – Limit by lte_csg_info • 0x800000000 – NAS_LIMIT_BY_SRV_STATUS_ TOGGLE – Limit by service status toggle • 0x1000000000 – NAS_LIMIT_BY_SRV_RAT_TECH_ CHANGE – Limit by service RAT Technology change All other bits are reserved for future use.

Optional TLVs

None

3.86.2   Response - QMI_NAS_LIMIT_SYS_INFO_IND_REPORTING_RESP_-MSG

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

3.86.3   Description of QMI_NAS_LIMIT_SYS_INFO_IND_REPORTING REQ/RESP

When the QMI_NAS_SYS_INFO_IND indication is enabled, its reporting can be limited to only when certain fields have changed. A mask is used to indicate the fields on which to report.

The limitations set by this command remain, even if the QMI_NAS_SYS_INFO_IND indication is disabled and re-enabled using the QMI_NAS_INDICATION_REGISTER command.

3.87   QMI_NAS_GET_SYS_INFO_IND_REPORTING_LIMIT

Retrieves the limitations set on the reporting of QMI_NAS_SYS_INFO_IND.

NAS message ID

0x0071

Version introduced

Major - 1, Minor - 42

3.87.1   Request - QMI_NAS_GET_SYS_INFO_IND_REPORTING_LIMIT_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.87.2   Response - QMI_NAS_GET_SYS_INFO_IND_REPORTING_LIMIT_-RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Limit Sys Info Change Reporting	1.42	1.149

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Limit Sys Info Change Reporting
Length	8			2	
Value	→	mask	limit_sys_ info_chg_rpt	8	Bitmasks included in this TLV indicate the limits set on QMI_NAS_SYS_INFO_IND reporting. If a value of 0 is sent, QMI_NAS_SYS_INFO_IND is reporting with no limitations. Values: • 0x01 – NAS_LIMIT_BY_SRV_STATUS – Limit by srv_status changes • 0x02 – NAS_LIMIT_BY_SRV_DOMAIN – Limit by srv_domain changes • 0x04 – NAS_LIMIT_BY_PLMN_ID – Limit by mcc/mnc • 0x08 – NAS_LIMIT_BY_SID_NID – Limit by sid/nid • 0x10 – NAS_LIMIT_BY_ROAM_STATUS – Limit by roam_status • 0x20 – NAS_LIMIT_BY_SRV_CAPABILITY – Limit by srv_capability changes • 0x40 – NAS_LIMIT_BY_PACKET_ZONE – Limit by packet zone changes • 0x80 – NAS_LIMIT_BY_IS856_SYS_ID – Limit by IS856_sys_id changes • 0x100 – NAS_LIMIT_BY_CELL_ID – Limit by cell_id changes • 0x200 – NAS_LIMIT_BY_LAC – Limit by LAC changes • 0x400 – NAS_LIMIT_BY_RAC – Limit by RAC changes • 0x800 – NAS_LIMIT_BY_TAC – Limit by TAC changes • 0x1000 – NAS_LIMIT_BY_HS_CALL_STATUS – Limit by hs_call_status • 0x2000 – NAS_LIMIT_BY_HS_IND – Limit by hs_ind • 0x4000 – NAS_LIMIT_BY_HDR_ACTIVE_ PROTOCOL – Limit by hdr_active_prot • 0x8000 – NAS_LIMIT_BY_EGPRS_SUPPORT_ IND – Limit by EGPRS support • 0x10000 – NAS_LIMIT_BY_HDR_ PERSONALITY – Limit by hdr_personality • 0x20000 – NAS_LIMIT_BY_CCS_SUPPORTED – Limit by ccs_supported • 0x40000 – NAS_LIMIT_BY_DTM_SUPPORTED – Limit by DTM support • 0x80000 – NAS_LIMIT_BY_CS_BAR_STATUS – Limit by cs_bar_status

Field	Field value	Field type	Parameter	Size (byte)	Description
			limit_sys_ info_chg_rpt (cont.)		• 0x100000 – NAS_LIMIT_BY_PS_BAR_STATUS – Limit by ps_bar_status • 0x200000 – NAS_LIMIT_BY_VOICE_SUPPORT_ON_LTE – Limit by LTE voice support • 0x400000 – NAS_LIMIT_BY_SYS_INFO_NO_CHANGE – Limit by no change • 0x800000 – NAS_LIMIT_BY_IS_SYS_FORBIDDEN – Limit by is_sys_forbidden • 0x1000000 – NAS_LIMIT_BY_LTE_EMBMS_COVERAGE – Limit by lte_embms_coverage • 0x2000000 – NAS_LIMIT_BY_LTE_VOICE_STATUS – Limit by lte_voice_status • 0x4000000 – NAS_LIMIT_BY_LTE_SMS_STATUS – Limit by lte_sms_status • 0x8000000 – NAS_LIMIT_BY_IS_SYS_PRL_MATCH – Limit by is_sys_prl_match • 0x10000000 – NAS_LIMIT_BY_P_REV_IN_USE – Limit by p_rev_in_use • 0x20000000 – NAS_LIMIT_BY_CDMA_SYS_ID – Limit by cdma_sys_id • 0x40000000 – NAS_LIMIT_BY_PSC – Limit by PSC • 0x80000000 – NAS_LIMIT_BY_SIM_REJ_INFO – Limit by SIM rejection information • 0x100000000 – NAS_LIMIT_BY_WCDMA_ EUTRA_STATUS – Limit by wcdma_eutra_status • 0x200000000 – NAS_LIMIT_BY_WCDMA_ CSG_INFO – Limit by wcdma_csg_info • 0x400000000 – NAS_LIMIT_BY_LTE_CSG_ INFO – Limit by lte_csg_info • 0x800000000 – NAS_LIMIT_BY_SRV_STATUS_ TOGGLE – Limit by service status toggle • 0x1000000000 – NAS_LIMIT_BY_SRV_RAT_TECH_ CHANGE – Limit by service RAT Technology change All other bits are reserved for future use.

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

3.87.3 Description of QMI_NAS_GET_SYS_INFO_IND_REPORTING_LIMIT REQ/RESP

This command retrieves the list of limitations set on the reporting of the QMI_NAS_SYS_INFO_IND indication.

3.88   QMI_NAS_UPDATE_IMS_STATUS

Updates the IMS registration status.

NAS message ID

0x0072

Version introduced

Major - 1, Minor - 51

3.88.1   Request - QMI_NAS_UPDATE_IMS_STATUS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Radio Access Technology	1.51	1.139
IMS Registration State	1.51	1.51

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Radio Access Technology
Length	1			2	
Value	→	enum8	sys_mode	1	Radio interface system mode. Values: • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x06 – RADIO_IF_WLAN – WLAN • 0x08 – RADIO_IF_LTE – LTE
Type	0x02			1	IMS Registration State
Length	Var			2	
Value	→	uint8	registration_state_len	1	Number of sets of the following elements: • call_type • is_registered
		enum	call_type	4	Call type for which IMS is preferred. Values: • 0x00 – CALL_TYPE_E_VOICE – Voice • 0x01 – CALL_TYPE_E_SMS – SMS
		boolean	is_registered	1	Whether IMS is registered. Values: • 0 – Not registered • 1 – Registered

Optional TLVs

None

3.88.2   Response - QMI_NAS_UPDATE_IMS_STATUS_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.51	1.51

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

3.88.3   Description of QMI_NAS_UPDATE_IMS_STATUS REQ/RESP

This command updates the IMS registration status.

3.89   QMI_NAS_GET_IMS_PREF_STATUS

Retrieves the IMS preference status.

NAS message ID

0x0073

Version introduced

Major - 1, Minor - 51

3.89.1   Request - QMI_NAS_GET_IMS_PREF_STATUS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.89.2   Response - QMI_NAS_GET_IMS_PREF_STATUS_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.51	1.52

Optional TLVs

Name	Version introduced	Version last modified
IMS Preference Information	1.51	1.68

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	IMS Preference Information
Length	9			2	
Value	→	enum8	sys_mode	1	Radio interface system mode. Values: • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
		mask	ims_pref_call_type	8	Bitmask representing the IMS preferred call type. Bits for call types preferring IMS must be set to 1. Otherwise, the bits must be set to 0. Values: • Bit 0 (0x01) – NAS_CALL_TYPE_B_VOICE – Voice • Bit 1 (0x02) – NAS_CALL_TYPE_B_SMS – SMS

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_OP_NETWORK_ UNSUPPORTED	Current network does not support this operation.

3.89.3 Description of QMI_NAS_GET_IMS_PREF_STATUS REQ/RESP

This command retrieves the IMS preference status for voice and SMS call types.

3.90   QMI_NAS_IMS_PREF_STATUS_IND

Reports a change in the IMS preference.

NAS message ID

0x0074

Version introduced

Major - 1, Minor - 51

3.90.1   Indication - QMI_NAS_IMS_PREF_STATUS_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
IMS Preference Information	1.51	1.68

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	IMS Preference Information
Length	9			2	
Value	→	enum8	sys_mode	1	Radio interface system mode. Values: • 0x02 – RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE
		mask	ims_pref_call_type	8	Bitmask representing the IMS preferred call type. Bits for call types preferring IMS must be set to 1. Otherwise, the bits must be set to 0. Values: • Bit 0 (0x01) – NAS_CALL_TYPE_B_VOICE – Voice • Bit 1 (0x02) – NAS_CALL_TYPE_B_SMS – SMS

Optional TLVs

None

3.90.2 Description of QMI_NAS_IMS_PREF_STATUS_IND

This indication reports a change in the IMS preference for the indicated call type. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

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3.91 QMI_NAS_CONFIG_PLMN_NAME_IND_REPORTING

Configures whether QMI_NAS_CURRENT_PLMN_NAME_IND returns the modem-determined name or all available information.

NAS message ID

0x0075

Version introduced

Major - 1, Minor - 57

3.91.1 Request - QMI_NAS_CONFIG_PLMN_NAME_IND_REPORTING_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Current PLMN Name Ind Send All Information	1.57	1.57

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Current PLMN Name Ind Send All Information
Length	1			2	
Value	→	boolean	send_all_ information	1	Indicates that QMI_NAS_CURRENT_PLMN_NAME_IND is to contain all available names, regardless of display condition. Values: • 0x00 – FALSE (default value) • 0x01 – TRUE

Optional TLVs

None

3.91.2 Response - QMI_NAS_CONFIG_PLMN_NAME_IND_REPORTING_- RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.57	1.57

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

3.91.3 Description of QMI_NAS_CONFIG_PLMN_NAME_IND_REPORTING REQ/RESP

When the QMI_NAS_CURRENT_PLMN_NAME_IND indication is enabled, the name information can contain all available information or the modem-determined name information. The reporting can be modified by using this command.

The reporting set by this command remains, even if the QMI_NAS_CURRENT_PLMN_NAME_IND indication is disabled and re-enabled using the QMI_NAS_INDICATION_REGISTER command.

3.92   QMI_NAS_CDMA_AVOID_SYSTEM

Facilitates avoiding a CDMA system and clearing the avoided systems list.

NAS message ID

0x0076

Version introduced

Major - 1, Minor - 58

3.92.1   Request - QMI_NAS_CDMA_AVOID_SYSTEM_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Avoid System Information	1.58	1.58

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Avoid System Information
Length	4			2	
Value	→	enum	avoid_type	4	Avoid system type. Values: • NAS_AVOID_SYS_USERZONE (0x00) – Avoid an idle system if the mobile station has a user zone currently selected • NAS_AVOID_SYS_IDLE (0x01) – Avoid an idle system • NAS_AVOID_SYS_CLR_LIST (0x02) – Clear all avoid system lists

Optional TLVs

None

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3.92.2   Response - QMI_NAS_CDMA_AVOID_SYSTEM_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.58	1.58

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_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state
QMI_ERR_DEVICE_NOT_READY	Device is not ready, e.g., when the modem is not online

3.92.3   Description of QMI_NAS_CDMA_AVOID_SYSTEM REQ/RESP

This command avoids the current CDMA system if it meets the criteria described in the Avoid System Information TLV. Using this command, the client can also clear all the previously avoided systems.

3.93   QMI_NAS_GET_CDMA_AVOID_SYSTEM_LIST

Retrieves the list of previously avoided CDMA systems.

NAS message ID

0x0077

Version introduced

Major - 1, Minor - 63

3.93.1   Request - QMI_NAS_GET_CDMA_AVOID_SYSTEM_LIST_REQ_- MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.93.2   Response - QMI_NAS_GET_CDMA_AVOID_SYSTEM_LIST_RESP_- MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.63	1.63

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Optional TLVs

Name	Version introduced	Version last modified
Avoided Systems List	1.63	1.63

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Avoided Systems List
Length	Var			2	
Value	→	uint8	nam1_ systems_len	1	Number of sets of the following elements: • sid • nid • mnc • mcc
		uint16	sid	2	System ID.
		uint16	nid	2	Network ID.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing

3.93.3 Description of QMI_NAS_GET_CDMA_AVOID_SYSTEM_LIST REQ/RESP

This command returns the list of previously avoided CDMA systems present in persistent storage.

3.94 QMI_NAS_SET_HPLMN_SEARCH_TIMER

Sets the HPLMN search timer in the modem.

NAS message ID

0x0078

Version introduced

Major - 1, Minor - 65

3.94.1 Request - QMI_NAS_SET_HPLMN_SEARCH_TIME_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
HPLMN Search Timer	1.65	1.65

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	HPLMN Search Timer
Length	4			2	
Value	→	uint32	timer_value	4	HPLMN search timer (in minutes). A timer value of 0xFFFFFFFF means use the SIM-defined timer.

Optional TLVs

None

3.94.2 Response - QMI_NAS_SET_HPLMN_SEARCH_TIME_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.65	1.65

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

3.94.3   Description of QMI_NAS_SET_HPLMN_SEARCH_TIMER REQ/RESP

This command sets the HPLMN search timer.

3.95   QMI_NAS_GET_HPLMN_SEARCH_TIMER

Retrieves the HPLMN search timer.

NAS message ID

0x0079

Version introduced

Major - 1, Minor - 65

3.95.1   Request - QMI_NAS_GET_HPLMN_SEARCH_TIME_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.95.2   Response - QMI_NAS_GET_HPLMN_SEARCH_TIME_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.65	1.65

Optional TLVs

Name	Version introduced	Version last modified
HPLMN Search Timer	1.65	1.65

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	HPLMN Search Timer
Length	4			2	
Value	→	uint32	timer_value	4	HPLMN search timer (in minutes).

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_OP_NETWORK_ UNSUPPORTED	Current network does not support this operation

3.95.3   Description of QMI_NAS_GET_HPLMN_SEARCH_TIMER REQ/RESP

This command retrieves the HPLMN search timer value.

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3.96   QMI_NAS_GET_SUBSCRIPTION_INFO

Queries the current subscription information.

NAS message ID

0x007C

Version introduced

Major - 1, Minor - 66

3.96.1   Request - QMI_NAS_GET_SUBSCRIPTION_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.96.2   Response - QMI_NAS_GET_SUBSCRIPTION_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.66	1.66

Optional TLVs

Name	Version introduced	Version last modified
Priority Subscription Info	1.66	1.66
Active Subscription Info	1.66	1.66
Default Data Subscription Info	1.66	1.66
Voice System ID	1.66	1.66
LTE Voice System ID	1.114	1.114
WLAN Voice System ID	1.114	1.114
Default Data Subscription Type	1.156	1.156

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Priority Subscription Info
Length	1			2	
Value	→	enum8	is_priority_ subs	1	Information on whether the subscription is a priority subscription in cases of dual standby. Values: • 0x00 – Not a priority subscription • 0x01 – Priority subscription
Type	0x11			1	Active Subscription Info
Length	1			2	
Value	→	enum8	is_active	1	Information on whether the subscription is active. Values: • 0x00 – Not active • 0x01 – Active
Type	0x12			1	Default Data Subscription Info
Length	1			2	
Value	→	boolean	is_default_ data_subs	1	Information on whether the subscription is the default data subscription in cases of dual standby. Values: • 0x00 – FALSE; not a default data subscription • 0x01 – TRUE; default data subscription
Type	0x13			1	Voice System ID
Length	4			2	
Value	→	uint32	voice_system_ id	4	Voice system ID.
Type	0x14			1	LTE Voice System ID
Length	4			2	
Value	→	uint32	lte_voice_ system_id	4	LTE Voice system ID.
Type	0x15			1	WLAN Voice System ID
Length	4			2	
Value	→	uint32	wlan_voice_ system_id	4	WLAN Voice system ID.
Type	0x16			1	Default Data Subscription Type
Length	1			2	
Value	→	enum8	dds_type	1	This TLV is only sent when is_default_data_subs is set to TRUE.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing

3.96.3   Description of QMI_NAS_GET_SUBSCRIPTION_INFO REQ/RESP

This command retrieves the current subscription information to which the client is bound.

3.97 QMI_NAS_GET_NETWORK_TIME

Retrieves the latest time change reported by the network.

NAS message ID

0x007D

Version introduced

Major - 1, Minor - 72

3.97.1 Request - QMI_NAS_GET_NETWORK_TIME_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.97.2 Response - QMI_NAS_GET_NETWORK_TIME_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.72	1.72

Optional TLVs

Name	Version introduced	Version last modified
3GPP2 Time Information	1.72	1.72
3GPP Time Information	1.72	1.72

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP2 Time Information
Length	11			2	
Value	→	uint16	year	2	Year.
		uint8	month	1	Month. 1 is January and 12 is December.
		uint8	day	1	Day. Range: 1 to 31.
		uint8	hour	1	Hour. Range: 0 to 23.
		uint8	minute	1	Minute. Range: 0 to 59.
		uint8	second	1	Second. Range: 0 to 59.
		uint8	day_of_week	1	Day of the week. 0 is Monday and 6 is Sunday.
		int8	time_zone	1	Offset from Universal time, i.e., the difference between local time and Universal time, in increments of 15 min (signed value).
		uint8	daylt_sav_adj	1	Daylight saving adjustment in hours. Possible values: 0, 1, and 2. This field is ignored if radio_if is NAS_RADIO_IF_CDMA_1XEVDO.
		enum8	radio_if	1	Radio interface from which the information comes. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA
Type	0x11			1	3GPP Time Information
Length	11			2	
Value	→	uint16	year	2	Year.
		uint8	month	1	Month. 1 is January and 12 is December.
		uint8	day	1	Day. Range: 1 to 31.
		uint8	hour	1	Hour. Range: 0 to 23.
		uint8	minute	1	Minute. Range: 0 to 59.
		uint8	second	1	Second. Range: 0 to 59.
		uint8	day_of_week	1	Day of the week. 0 is Monday and 6 is Sunday.
		int8	time_zone	1	Offset from Universal time, i.e., the difference between local time and Universal time, in increments of 15 min (signed value).
		uint8	daylt_sav_adj	1	Daylight saving adjustment in hours. Possible values: 0, 1, and 2. This field is ignored if radio_if is NAS_RADIO_IF_CDMA_1XEVDO.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	radio_if	1	Radio interface from which the information comes. Values: • 0x01 – NAS_RADIO_IF_CDMA_1X – cdma2000® 1X • 0x02 – NAS_RADIO_IF_CDMA_1XEVDO – cdma2000® HRPD (1xEV-DO) • 0x04 – NAS_RADIO_IF_GSM – GSM • 0x05 – NAS_RADIO_IF_UMTS – UMTS • 0x08 – NAS_RADIO_IF_LTE – LTE • 0x09 – NAS_RADIO_IF_TDSCDMA – TD-SCDMA

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INFO_UNAVAILABLE	Time Information is not available at this time

3.97.3 Description of QMI_NAS_GET_NETWORK_TIME REQ/RESP

This command retrieves the last known network time information from the UE. Time reported from 3GPP is UTC and time reported from 3GPP2 is GPS time. If the last known time is not available, a QMI_ERR_INFO_UNAVAILABLE error is returned.

3.98   QMI_NAS_GET_LTE_SIB16_NETWORK_TIME

Retrieves the LTE network time from the UE.

NAS message ID

0x007E

Version introduced

Major - 1, Minor - 72

3.98.1   Request - QMI_NAS_GET_LTE_SIB16_NETWORK_TIME_REQ_- MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.98.2   Response - QMI_NAS_GET_LTE_SIB16_NETWORK_TIME_RESP_- MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.72	1.72

Optional TLVs

Name	Version introduced	Version last modified
LTE SIB16 Coverage Status	1.72	1.72
Universal Time	1.72	1.72
Absolute Time	1.72	1.72
Leap Second	1.72	1.72
Time Zone	1.72	1.72
Daylight Saving Adjustment	1.72	1.72

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	LTE SIB16 Coverage Status
Length	4			2	
Value	→	enum	lte_sib16_acquired	4	Whether LTE SIB16 is acquired. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x11			1	Universal Time
Length	10			2	
Value	→	uint16	year	2	Year.
		uint8	month	1	Month. 1 is January and 12 is December.
		uint8	day	1	Day. Range: 1 to 31.
		uint8	hour	1	Hour. Range: 0 to 23.
		uint8	minute	1	Minute. Range: 0 to 59.
		uint8	second	1	Second. Range: 0 to 59.
		uint16	millisecond	2	Millisecond. Range: 0 to 999.
		uint8	day_of_week	1	Day of the week. 0 is Monday and 6 is Sunday.
Type	0x12			1	Absolute Time
Length	8			2	
Value	→	uint64	abs_time	8	Absolute time in milliseconds since Jan 6, 1980 00:00:00 hr.
Type	0x13			1	Leap Second
Length	1			2	
Value	→	int8	leap_sec	1	Leap second.
Type	0x14			1	Time Zone
Length	1			2	
Value	→	int8	time_zone	1	Offset from Universal time, i.e., the difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x15			1	Daylight Saving Adjustment
Length	1			2	
Value	→	uint8	daylt_sav_adj	1	Daylight saving adjustment in hours. Possible values: 0, 1, and 2.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INFO_UNAVAILABLE	Time Information is not available at this time

3.98.3 Description of QMI_NAS_GET_LTE_SIB16_NETWORK_TIME REQ/RESP

This command retrieves the network time information from the UE for the specified radio interface. Time reported from 3GPP is UTC and time reported from 3GPP2 is GPS time.

3.99   QMI_NAS_LTE_SIB16_NETWORK_TIME_IND

Indicates an LTE time change reported by the network.

NAS message ID

0x007F

Version introduced

Major - 1, Minor - 72

3.99.1   Indication - QMI_NAS_LTE_SIB16_NETWORK_TIME_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
LTE SIB16 Coverage Status	1.72	1.72
Universal Time	1.72	1.72
Absolute Time	1.72	1.72
Leap Second	1.72	1.72
Time Zone	1.72	1.72
Daylight Saving Adjustment	1.72	1.72

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	LTE SIB16 Coverage Status
Length	4			2	
Value	→	enum	lte_sib16_ acquired	4	Whether LTE SIB16 is acquired. Values: • NAS_TRI_FALSE (0) – Status: FALSE • NAS_TRI_TRUE (1) – Status: TRUE • NAS_TRI_UNKNOWN (2) – Status: Unknown
Type	0x11			1	Universal Time
Length	10			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	year	2	Year.
		uint8	month	1	Month. 1 is January and 12 is December.
		uint8	day	1	Day. Range: 1 to 31.
		uint8	hour	1	Hour. Range: 0 to 23.
		uint8	minute	1	Minute. Range: 0 to 59.
		uint8	second	1	Second. Range: 0 to 59.
		uint16	millisecond	2	Millisecond. Range: 0 to 999.
		uint8	day_of_week	1	Day of the week. 0 is Monday and 6 is Sunday.
Type	0x12			1	Absolute Time
Length	8			2	
Value	→	uint64	abs_time	8	Absolute time in milliseconds since Jan 6, 1980 00:00:00 hr.
Type	0x13			1	Leap Second
Length	1			2	
Value	→	int8	leap_sec	1	Leap second.
Type	0x14			1	Time Zone
Length	1			2	
Value	→	int8	time_zone	1	Offset from Universal time, i.e., the difference between local time and Universal time, in increments of 15 min (signed value).
Type	0x15			1	Daylight Saving Adjustment
Length	1			2	
Value	→	uint8	daylt_sav_adj	1	Daylight saving adjustment in hours. Possible values: 0, 1, and 2.

3.99.2 Description of QMI_NAS_LTE_SIB16_NETWORK_TIME_IND

This indication is sent when the 3GPP LTE network sends time information to the UE. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command. Time reported from 3GPP is UTC.

3.100   QMI_NAS_SET_LTE_BAND_PRIORITY

Sets the priority for LTE bands.

NAS message ID

0x0080

Version introduced

Major - 1, Minor - 78

3.100.1   Request - QMI_NAS_SET_LTE_BAND_PRIORITY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
LTE Band Priority List	1.78	1.153

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	LTE Band Priority List
Length	Var			2	
Value	→	uint8	band_priority_list_len	1	Number of sets of the following elements: • band_priority_list
		enum16	band_priority_list	Var	Priority list for LTE bands (see Table A-1 for details). Values: • 120 to 161 – LTE band classes

Optional TLVs

None

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3.100.2 Response - QMI_NAS_SET_LTE_BAND_PRIORITY_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.78	1.78

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

3.100.3 Description of QMI_NAS_SET_LTE_BAND_PRIORITY REQ/RESP

This command sets the priority order for LTE bands. If successful, the new priority order takes effect for the next band scan.

3.101   QMI_NAS_GET_EMBMS_SIG_EXT

Retrieves the current signal quality at L1 for each MBSFN area.

NAS message ID

0x0081

Version introduced

Major - 1, Minor - 79

3.101.1   Request - QMI_NAS_GET_EMBMS_SIG_EXT_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Trace ID	1.79	1.79

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used

3.101.2   Response - QMI_NAS_GET_EMBMS_SIG_EXT_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.79	1.79

Optional TLVs

Name	Version introduced	Version last modified
Trace ID	1.79	1.79
Signal Quality and TMGI	1.79	1.79

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Trace ID
Length	2			2	
Value	→	int16	trace_id	2	Trace ID. Values: • 0 to 32768 – Valid trace ID • -1 – Trace ID is not used
Type	0x11			1	Signal Quality and TMGI
Length	Var			2	
Value	→	uint8	snr_and_tmgi_list_len	1	Number of sets of the following elements: • area_id • snr • excess_snr • mrb_id • session_id_valid • session_id • tmgi_identifier
		uint8	area_id	1	Multicast Broadcast Single Frequency Network (MBSFN) area ID. Values: 0 to 255.
		float	snr	4	Average SNR of the serving cell over the last measurement period in decibels.
		float	excess_snr	4	Excess SNR of the serving cell over the last measurement period in decibels.
		uint8	tmgi_info_len	1	Number of sets of the following elements: • mrb_id • session_id_valid • session_id • tmgi_identifier
		uint8	mrb_id	1	Multicast radio bearer ID for the session.
		boolean	session_id_valid	1	Indicates whether session ID information is available.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	session_id	1	Session ID for the session; valid only when session_id_valid is TRUE.
		uint8	tmgi_identifier	6	TMGI identifier, consisting of service ID + PLMN ID.

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.101.3   Description of QMI_NAS_GET_EMBMS_SIG_EXT REQ/RESP

This command retrieves the current signal quality at L1 for each MBSFN area, as well as TMGI information for that MBSFN area.

3.102   QMI_NAS_LTE_CPHY_CA_IND

Indicates a carrier aggregation event has occurred.

NAS message ID

0x0082

Version introduced

Major - 1, Minor - 81

3.102.1   Indication - QMI_NAS_LTE_CPHY_CA_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Physical Carrier Aggregation of Scell Indicator Type	1.81	1.81

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Physical Carrier Aggregation of Scell Indicator Type
Length	8			2	
Value	→	uint16	pci	2	Physical cell ID of the Scell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.
		enum	scell_state	4	Scell state. Values: • NAS_LTE_CPHY_SCELL_STATE_ DECONFIGURED (0x00) – Deconfigured • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_DEACTIVATED (0x01) – Configured and deactivated • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_ACTIVATED (0x02) – Configured and activated All other values are reserved.

Optional TLVs

Name	Version introduced	Version last modified
Physical Carrier Aggregation Downlink Bandwidth for Scell	1.120	1.122
Scell Information	1.122	1.142
Pcell Information	1.122	1.142
Scell Index	1.133	1.133

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Physical Carrier Aggregation Downlink Bandwidth for Scell
Length	4			2	
Value	→	enum	cphy_ca_dl_bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.
Type	0x11			1	Scell Information
Length	14			2	
Value	→	uint16	pci	2	Physical cell ID of the Scell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.
		enum	cphy_ca_dl_bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.
		enum16	band	2	Band. Values: • 120 to 161 – LTE band classes

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	scell_state	4	Scell state. Values: • NAS_LTE_CPHY_SCELL_STATE_ DECONFIGURED (0x00) – Deconfigured • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_DEACTIVATED (0x01) – Configured and deactivated • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_ACTIVATED (0x02) – Configured and activated All other values are reserved.
Type	0x12			1	Pcell Information
Length	10			2	
Value	→	uint16	pci	2	Physical cell ID of the Pcell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.
		enum	cphy_ca_dl_ bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.
		enum16	band	2	Band. Values: • 120 to 161 – LTE band classes
Type	0x13			1	Scell Index
Length	1			2	
Value	→	uint8	scell_idx	1	Scell index.

3.102.2 Description of QMI_NAS_LTE_CPHY_CA_IND

This indication is sent in the 3GPP LTE network indicating a carrier aggregation event has occurred.

Use QMI_NAS_GET_LTE_CPHY_CA_INFO (Section 3.137) to retrieve information from the previously sent indication.

3.103   QMI_NAS_GET_LTE_BAND_PRIORITY_LIST

Gets the list of priority LTE bands.

NAS message ID

0x0083

Version introduced

Major - 1, Minor - 85

3.103.1   Request - QMI_NAS_GET_LTE_BAND_PRIORITY_LIST_REQ_-MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.103.2   Response - QMI_NAS_GET_LTE_BAND_PRIORITY_LIST_RESP_-MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.85	1.85

Optional TLVs

Name	Version introduced	Version last modified
LTE Band Priority List	1.85	1.153
LTE Supported Band Priority List	1.85	1.153

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	LTE Band Priority List
Length	Var			2	
Value	→	uint8	configured_ band_priority_ list_len	1	Number of sets of the following elements: • configured_band_priority_list
		enum16	configured_ band_priority_ list	Var	List of the user-configured LTE bands, ordered by priority. The ordering of this list overrides the ordering of any bands it shares with supported_band_priority_list. Values: • 120 to 161 – LTE band classes (see Table A-1 for details)
Type	0x11			1	LTE Supported Band Priority List
Length	Var			2	
Value	→	uint8	supported_ band_priority_ list_len	1	Number of sets of the following elements: • supported_band_priority_list
		enum16	supported_ band_priority_ list	Var	List of the LTE bands supported by the device, ordered by priority. Values: • 120 to 161 – LTE band classes (see Table A-1 for details)

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

3.103.3 Description of QMI_NAS_GET_LTE_BAND_PRIORITY_LIST REQ/RESP

This command gets the list of prioritized and supported LTE bands.

3.104 QMI_NAS_SET_BUILTIN_PLMN_LIST

Sets the built-in PLMN list.

NAS message ID

0x0084

Version introduced

Major - 1, Minor - 87

3.104.1 Request - QMI_NAS_SET_BUILTIN_PLMN_LIST_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
OPLMN List	1.87	1.87
Indication Token	1.87	1.87

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	OPLMN List
Length	Var			2	
Value	→	uint32	list_id	4	Unique ID for the OPLMN list.
		uint32	total_list_ entries	4	Total number of OPLMN entries in the list. For example, if the list is a total of 500 entries and is sent in multiple requests, total_list_entries is set to 500 in all requests.
		uint16	oplmn_len	2	Number of sets of the following elements: • plmn • access_tech
		uint8	plmn	3	PLMN.
		uint16	access_tech	2	Access technology identifier.
Type	0x11			1	Indication Token
Length	4			2	
Value	→	uint32	ind_token	4	Token used to identify the indication sent when the request is complete.

3.104.2   Response - QMI_NAS_SET_BUILTIN_PLMN_LIST_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.87	1.87

Optional TLVs

None

3.104.3   Indication - QMI_NAS_SET_BUILTIN_PLMN_LIST_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Indication Error Code	1.87	1.87

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Indication Error Code
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum16	error	2	Error code. Values: • 0x0000 – QMI_ERR_NONE – Success • 0x0002 – QMI_ERR_NO_MEMORY – Insufficient memory to store the list • 0x0003 – QMI_ERR_INTERNAL – Internal error • 0x002D – QMI_ERR_INVALID_DATA_FORMAT – Invalid data format

Optional TLVs

Name	Version introduced	Version last modified
Indication Token	1.87	1.87
Received List Entry Count	1.87	1.87
Remaining List Entry Count	1.87	1.87

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Indication Token
Length	4			2	
Value	→	uint32	ind_token	4	Indication token.
Type	0x11			1	Received List Entry Count
Length	4			2	
Value	→	uint32	received_list_entry_count	4	Total number of PLMN entries received currently.
Type	0x12			1	Remaining List Entry Count
Length	4			2	
Value	→	uint32	remaining_list_entry_count	4	Total number of PLMN entries still expected to complete the list.

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_MISSING_ARG	OPLMN List TLV must be present in the request
QMI_ERR_ARG_TOO_LONG	Specified argument size is too large

3.104.4 Description of QMI_NAS_SET_BUILTIN_PLMN_LIST

This command sets the built-in OPLMN list and stores it in persistent memory. The list may be split into multiple requests that are issued sequentially. A maximum of 500 entries is allowed in a single request.

If the OPLMN List TLV is not present in the request, a QMI_ERR_MISSING_ARG error is returned in the response.

If QMI_RESULT_SUCCESS is returned in the Result Code TLV, an indication is sent when the operation is complete. The Indication Token TLV is included in the indication when it is specified in the request to link the request/response and indication.

If an error is returned, it indicates that the data received from the control point has been discarded. Following any error, clients must resend the PLMN list from the beginning.

Setting the total_list_entries field to a number greater than 500 results in a QMI_ERR_ARG_TOO_LONG error from the initial modem implementation. If larger lists are required, future modem implementations may be changed to accommodate larger lists. Requests that contain more entries than specified in the total_list_entries field also result in a QMI_ERR_ARG_TOO_LONG error. The control point must independently verify that the size of the entire request is not too large for the underlying transport being used. For example, if a control point sends a QMI_NAS_SET_BUILTIN_PLMN_LIST_REQ request with a frame that is too large for the underlying transport, the control point may not receive a QMI_NAS_SET_BUILTIN_PLMN_LIST_RESP response.

Description of QMI_NAS_SET_BUILTIN_PLMN_LIST_IND

When the Result Code TLV in the response returns QMI_RESULT_SUCCESS, a QMI_NAS_SET_BUILTIN_PLMN_LIST_IND indication is sent. The Indication Token TLV is included when specified in the request, regardless of the Indication Error Code TLV value. The remaining optional TLVs may be included if the Indication Error Code TLV is set to QMI_ERR_NONE.

QMI_ERR_INVALID_DATA_FORMAT is sent in Indication Error Code TLV when the client sends data in an incorrect format. The control point is not expected to retry with the same data when the error reported is QMI_ERR_INVALID_DATA_FORMAT.

When sending a PLMN list in multiple parts, the client must wait until receiving this indication before sending the next part of the list. In case of any error reported in this indication, clients must resend the PLMN list from the beginning.

This indication notifies the control point that the PLMN list entries in the request have been processed. The Received List Entry Count TLV specifies the sum of the entries received from the control point, and the Remaining List Entry Count TLV specifies the number of entries still pending. The sum of these values equals total_list_entries specified in the request.

The configuration may be split into multiple requests that are issued sequentially.

3.105   QMI_NAS_PERFORM_INCREMENTAL_NETWORK_SCAN

Performs the network scan and gives results incrementally.

NAS message ID

0x0085

Version introduced

Major - 1, Minor - 88

3.105.1   Request - QMI_NAS_PERFORM_INCREMENTAL_NETWORK_- SCAN_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Network Type	1.88	1.88
Scan Type	1.88	1.152
Band Preference	1.88	1.88
LTE Band Preference	1.88	1.146
TDSCDMA Band Preference	1.88	1.88

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Network Type
Length	1			2	
Value	→	mask8	network_type	1	Bitmask representing the network type to scan. Values: • Bit 0 – GSM • Bit 1 – UMTS • Bit 2 – LTE • Bit 3 – TD-SCDMA Any combination of the bit positions can be used. If the mask is sent with no bits set, the scan is performed using the currently set preference.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	Scan Type
Length	4			2	
Value	→	enum	scan_type	4	Network scan type. Values: • NAS_SCAN_TYPE_PLMN (0x00) – PLMN (default) • NAS_SCAN_TYPE_CSG (0x01) – Closed subscriber group • NAS_SCAN_TYPE_MODE_PREF (0x02) – Mode preference • NAS_SCAN_TYPE_PCI (0x03) – Physical cell ID
Type	0x12			1	Band Preference
Length	8			2	
Value	→	mask	band_pref	8	Bitmask representing the band preference to be scanned. See Table A-2 for details.
Type	0x13			1	LTE Band Preference
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be scanned. See Table A-3 for details.
Type	0x14			1	TDSCDMA Band Preference
Length	8			2	
Value	→	mask	tdscdma_band_pref	8	Bitmask representing the TD-SCDMA band preference to be scanned. Values: • NAS_TDSCDMA_BAND_A (0x01) – TD-SCDMA Band A • NAS_TDSCDMA_BAND_B (0x02) – TD-SCDMA Band B • NAS_TDSCDMA_BAND_C (0x04) – TD-SCDMA Band C • NAS_TDSCDMA_BAND_D (0x08) – TD-SCDMA Band D • NAS_TDSCDMA_BAND_E (0x10) – TD-SCDMA Band E • NAS_TDSCDMA_BAND_F (0x20) – TD-SCDMA Band F All other bits are reserved and must be set to 0.

3.105.2   Response - QMI_NAS_PERFORM_INCREMENTAL_NETWORK_-SCAN_RESP_MSG

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

3.105.3   Indication - QMI_NAS_PERFORM_INCREMENTAL_NETWORK_-SCAN_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Network Scan Status	1.88	1.88

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Network Scan Status
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	scan_status	4	Indicates the status of the network scan. Values: • NAS_SCAN_STATUS_COMPLETE (0x00) – Network scan was successful and complete • NAS_SCAN_STATUS_PARTIAL (0x01) – Network scan was partial • NAS_SCAN_STATUS_ABORT (0x02) – Network scan was aborted • NAS_SCAN_STATUS_REJ_IN_ RLF (0x03) – Network scan did not complete due to a radio link failure recovery in progress

Optional TLVs

Name	Version introduced	Version last modified
3GPP Network Scan Information	1.88	1.88
CSG Information	1.88	1.88

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	3GPP Network Scan Information
Length	Var			2	
Value	→	uint16	num_inst	2	Number of sets of the following elements: • mobile_country_code • mobile_network_code • network_status • rat • mnc_includes_pcs_digit • network_description_length • network_description
		uint16	mobile_ country_code	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mobile_ network_code	2	A 16-bit integer representation of MNC. Range: 0 to 999.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	network_status	1	Status of the network identified by MCC and MNC preceding it. The status is encoded in a bitmapped value as follows: Bits 0-1 – QMI_NAS_NETWORK_IN_USE_ STATUS_BITS – In-use status • 0 – QMI_NAS_NETWORK_IN_USE_STATUS_ UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_IN_USE_STATUS_ CURRENT_SERVING – Current serving • 2 – QMI_NAS_NETWORK_IN_USE_STATUS_ AVAILABLE – Available Bits 2-3 – QMI_NAS_NETWORK_ROAMING_ STATUS_BITS – Roaming status • 0 – QMI_NAS_NETWORK_ROAMING_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_ROAMING_ STATUS_HOME – Home • 2 – QMI_NAS_NETWORK_ROAMING_ STATUS_ROAM – Roam Bits 4-5 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_BITS – Forbidden status • 0 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_FORBIDDEN – Forbidden • 2 – QMI_NAS_NETWORK_FORBIDDEN_ STATUS_NOT_FORBIDDEN – Not forbidden Bits 6-7 – QMI_NAS_NETWORK_PREFERRED_ STATUS_BITS – Preferred status • 0 – QMI_NAS_NETWORK_PREFERRED_ STATUS_UNKNOWN – Unknown • 1 – QMI_NAS_NETWORK_PREFERRED_ STATUS_PREFERRED – Preferred • 2 – QMI_NAS_NETWORK_PREFERRED_ STATUS_NOT_PREFERRED – Not preferred
		uint8	rat	1	Radio access technology. Values: • 0x04 – GERAN • 0x05 – UMTS • 0x08 – LTE • 0x09 – TD-SCDMA
		boolean	mnc_includes_ pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in the TLVs (in this table) with an mnc or mobile_network_code field. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	network_ description_ length	1	Number of sets of the following elements: • network_description
		string	network_ description	Var	An optional string containing the network name or description.
Type	0x11			1	CSG Information
Length	Var			2	
Value	→	uint8	csg_info_len	1	Number of sets of the following elements: • mcc • mnc • csg_list_cat • id • name_len • name
		uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		enum	csg_list_cat	4	Closed subscriber group category. Values: • 0 – NAS_CSG_LIST_CAT_UNKNOWN – Unknown CSG list • 1 – NAS_CSG_LIST_CAT_ALLOWED – Allowed CSG list • 2 – NAS_CSG_LIST_CAT_OPERATOR – Operator CSG list
		uint32	id	4	Closed subscriber group identifier.
		uint8	name_len	1	Number of sets of the following elements: • name
		uint16	name	Var	Home Node B (HNB) or Home eNode B (HeNB) name in UTF-16. The network name is not guaranteed to be NULL terminated.

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_IN_USE	Operation cannot be performed; radio is currently in use or a request is already in progress
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.105.4   Description of QMI_NAS_PERFORM_INCREMENTAL_- NETWORK_SCAN

This command performs a network scan and returns a list of visible networks incrementally and periodically. The periodicity of the incremental scan reports is configurable through timers that are maintained in the persistent storage of the baseband.

If the Network Type TLV is not included in the request, the scan is performed on GSM, WCDMA, and LTE. If the Network Type TLV is included in the request, the scan is performed on the specified networks. In the Network Type TLV, if the RAT bitmask is not valid, a QMI_ERR_INVALID_OPERATION error is returned.

If the Band Preference, LTE Band Preference, or TDSCDMA Band Preference TLVs are provided, only the bands specified are scanned. If these TLVs are not included, all bands applicable to the RAT are scanned.

This operation is not supported on CDMA.

Description of QMI_NAS_PERFORM_INCREMENTAL_NETWORK_SCAN_IND

When the Network Scan Status TLV in the indication returns NAS_SCAN_STATUS_COMPLETE, it is to be treated as if the scan completed successfully, and no more indications will follow. When the Network Scan Status TLV in the indication returns NAS_SCAN_STATUS_PARTIAL, more indications will follow. The control point is to treat an indication as the last in the series when the Network Scan Status TLV returns values other than NAS_SCAN_STATUS_PARTIAL.

The 3GPP Network Scan Information TLV includes zero or more sets of parameters; each set describes a single visible network detected during the scan.

The information sent in the 3GPP Network Scan Information TLV or the CSG Information TLV in each of the indications is cumulative (i.e., it includes the list from the response and any previous indications).

The control point is expected to wait for an incremental network scan request to complete before sending a new request. If an incremental network scan request is received when there is already one in progress, a QMI_ERR_DEVICE_IN_USE error is returned.

The control point can abort the ongoing network scan using the QMI_NAS_ABORT command.

3.106   QMI_NAS_SET_DRX

Sets the DRX for the device.

NAS message ID

0x0088

Version introduced

Major - 1, Minor - 96

3.106.1   Request - QMI_NAS_SET_DRX_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
DRX	1.96	1.96

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	DRX
Length	4			2	
Value	→	enum	drx	4	DRX setting for the device. Values: • NAS_DRX_UNKNOWN (0x00) – DRX is not specified • NAS_DRX_CN6_T32 (0x06) – CN = 6, T = 32 • NAS_DRX_CN7_T64 (0x07) – CN = 7, T = 64 • NAS_DRX_CN8_T128 (0x08) – CN = 8, T = 128 • NAS_DRX_CN9_T256 (0x09) – CN = 9, T = 256

Optional TLVs

None

3.106.2   Response - QMI_NAS_SET_DRX_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.96	1.96

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_MISSING_ARG	DRX TLV must be present in the request

3.106.3   Description of QMI_NAS_SET_DRX REQ/RESP

This command sets the DRX for the device.

3.107   QMI_NAS_GET_DRX

Retrieves the DRX for the device.

NAS message ID

0x0089

Version introduced

Major - 1, Minor - 96

3.107.1   Request - QMI_NAS_GET_DRX_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.107.2   Response - QMI_NAS_GET_DRX_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.96	1.96

Optional TLVs

Name	Version introduced	Version last modified
DRX	1.96	1.96

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	DRX
Length	4			2	
Value	→	enum	drx	4	DRX setting for the device. Values: • NAS_DRX_UNKNOWN (0x00) – DRX is not specified • NAS_DRX_CN6_T32 (0x06) – CN = 6, T = 32 • NAS_DRX_CN7_T64 (0x07) – CN = 7, T = 64 • NAS_DRX_CN8_T128 (0x08) – CN = 8, T = 128 • NAS_DRX_CN9_T256 (0x09) – CN = 9, T = 256

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing

3.107.3 Description of QMI_NAS_GET_DRX REQ/RESP

This command retrieves the DRX for the device.

3.108   QMI_NAS_CSG_SEARCH_SELECTION_CONFIG

Configures the CSG search and selection parameters, and triggers an immediate periodic search and selection based on the configured parameters.

NAS message ID

0x008A

Version introduced

Major - 1, Minor - 98

3.108.1   Request - QMI_NAS_CSG_SEARCH_SELECTION_CONFIG_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
CSG Search RAT	1.98	1.136 (Unused/Ignored)
Periodic Search Timer	1.98	1.98
Periodic Search is Performed When in Home/Home and Roaming	1.98	1.136 (Unused/Ignored)
CSG Search UMTS Band Preference	1.98	1.98
CSG Search LTE Band Preference	1.98	1.146
CSG Selection Category List	1.99	1.136 (Unused/Ignored)
CSG Sort Preference Type	1.98	1.136 (Unused/Ignored)
Sort CSG Search Results Based on RAT List	1.98	1.136 (Unused/Ignored)
Sort CSG Search Results Based on Signal Type	1.98	1.136 (Unused/Ignored)
Operator-Specific CSG Selection Configuration	1.104	1.104
Network Type	1.104	1.104

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSG Search RAT (Unused/Ignored)
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum8	rat	1	Radio access technology. Values: • NAS_RADIO_IF_UMTS (0x05) – UMTS • NAS_RADIO_IF_LTE (0x08) – LTE
Type	0x11			1	Periodic Search Timer
Length	4			2	
Value	→	uint32	search_timer	4	Periodic search timer in minutes. Timer value 0 means the periodic search is disabled and no immediate search is performed.
Type	0x12			1	Periodic Search is Performed When in Home/Home and Roaming (Unused/Ignored)
Length	4			2	
Value	→	enum	search_type	4	Periodic search type. Values: • NAS_CSG_SEARCH_TYPE_HOME_ONLY (0) – Home only • NAS_CSG_SEARCH_TYPE_ALL (1) – All
Type	0x13			1	CSG Search UMTS Band Preference
Length	8			2	
Value	→	mask	umts_band_pref	8	Bitmask representing the band preference to be scanned. Values: • Bit 22 to Bit 59 – See Table A-2 for details.
Type	0x14			1	CSG Search LTE Band Preference
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be scanned. See Table A-3 for details.
Type	0x15			1	CSG Selection Category List (Unused/Ignored)
Length	8			2	
Value	→	mask	csg_cat_list	8	Bitmask representing Operator CSG List (OCSGL), Allowed CSG List (ACSGL), or others. Values: • NAS_CSG_LIST_CAT_OPERATOR_MASK (0x01) – Operator • NAS_CSG_LIST_CAT_ALLOWED_MASK (0x02) – Allowed • NAS_CSG_LIST_CAT_OTHERS_MASK (0x04) – Others
Type	0x16			1	CSG Sort Preference Type (Unused/Ignored)
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	sort_type	4	CSG sort preference type. Values: • NAS_CSG_SORT_PREF_RAT_ONLY (0) – RAT only • NAS_CSG_SORT_PREF_SIGNAL_ONLY (1) – Signal only • NAS_CSG_SORT_PREF_RAT_THEN_SIGNAL (2) – RAT then signal • NAS_CSG_SORT_PREF_SIGNAL_THEN_RAT (3) – Signal then RAT
Type	0x17			1	Sort CSG Search Results Based on RAT List (Unused/Ignored)
Length	Var			2	
Value	→	uint8	rat_list_len	1	Number of sets of the following elements: • rat_list
		enum8	rat_list	Var	Sort based on the RAT priority list. Values: • NAS_RADIO_IF_UMTS (0x05) – UMTS • NAS_RADIO_IF_LTE (0x08) – LTE
Type	0x18			1	Sort CSG Search Results Based on Signal Type (Unused/Ignored)
Length	4			2	
Value	→	enum	sort_signal_type	4	Sort signal type. Values: • NAS_CSG_SORT_SIGNAL_DEC_STRENGTH (0) – Decreasing strength • NAS_CSG_SORT_SIGNAL_RANDOM (1) – Random
Type	0x19			1	Operator-Specific CSG Selection Configuration
Length	4			2	
Value	→	enum	selection_config_type	4	CSG selection configuration type. Values: • NAS_CSG_SELECTION_CONFIG_1 (0) – Configuration 1
Type	0x1A			1	Network Type
Length	1			2	
Value	→	mask8	network_type	1	Bitmask representing the network type to scan. Values: • Bit 1 – UMTS • Bit 2 – LTE

3.108.2   Response - QMI_NAS_CSG_SEARCH_SELECTION_CONFIG_-RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.98	1.98

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_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use or a request is already in progress
QMI_ERR_OP_DEVICE_UNSUPPORTED	Operation is not supported by the device
QMI_ERR_MISSING_ARG	One or more required TLVs were missing in the request
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.108.3   Description of QMI_NAS_CSG_SEARCH_SELECTION_CONFIG REQ/RESP

This command configures the search and selection parameters and performs a periodic CSG search based on the search timer. If the Periodic Search Timer TLV is set to zero or not included, this command just configures the search and selection parameters on the modem.

For successful processing of the request, the following TLVs must be sent:

- TLV 0x19 (CSG Selection Configuration Type)

- TLV 0x1A (Network Type)

Without sending these TLVs, a QMI_ERR_MISSING_ARG error is returned in the response.

The following TLVs, if sent in the request, are ignored:

- TLV 0x10 (CSG Search RAT)

- TLV 0x12 (Periodic Search is Performed When in Home/Home and Roaming)

- TLV 0x15 (CSG Selection Category List)

- TLV 0x16 (CSG Sort Preference Type)

- TLV 0x17 (Sort CSG Search Results Based on RAT List)

- TLV 0x18 (Sort CSG Search Results Based on Signal Type)

3.109   QMI_NAS_CSG_IMMEDIATE_SEARCH_SELECTION

Triggers an immediate CSG search and selection based on already configured parameters.

NAS message ID

0x008B

Version introduced

Major - 1, Minor - 98

3.109.1   Request - QMI_NAS_CSG_IMMEDIATE_SEARCH_SELECTION_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.109.2   Response - QMI_NAS_CSG_IMMEDIATE_SEARCH_SELECTION_-RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.98	1.98

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_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use or a request is already in progress
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.109.3   Description of QMI_NAS_CSG_IMMEDIATE_SEARCH_- SELECTION REQ/RESP

This command triggers an immediate CSG search and selection with already configured parameters. Prior to calling this request, the control point must configure the valid CSG search and selection parameters at least once with the QMI_NAS_CSG_SEARCH_SELECTION_CONFIG_REQ request.

3.110 QMI_NAS_GET_CSG_SEARCH_SELECTION_-CONFIGURATION

Retrieves configured CSG search and selection parameters.

NAS message ID

0x008C

Version introduced

Major - 1, Minor - 98

3.110.1 Request - QMI_NAS_GET_CSG_SEARCH_SELECTION_-CONFIGURATION_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.110.2 Response - QMI_NAS_GET_CSG_SEARCH_SELECTION_-CONFIGURATION_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.98	1.98

Optional TLVs

Name	Version introduced	Version last modified
CSG Search RAT	1.98	1.136 (Unused/Ignored)
Periodic Search Timer	1.98	1.98
Periodic Search is Performed When in Home/Home and Roaming	1.98	1.136 (Unused/Ignored)
CSG Search UMTS Band Preference	1.98	1.98
CSG Search LTE Band Preference	1.98	1.146
CSG Selection Category List	1.99	1.136 (Unused/Ignored)
CSG Sort Preference Type	1.98	1.136 (Unused/Ignored)
Sort CSG Search Results Based on RAT List	1.98	1.136 (Unused/Ignored)
Sort CSG Search Results Based on Signal Type	1.98	1.136 (Unused/Ignored)
Operator-Specific CSG Selection Configuration	1.104	1.104
Network Type	1.104	1.104

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSG Search RAT (Unused/Ignored)
Length	1			2	
Value	→	enum8	rat	1	Radio access technology. Values: • NAS_RADIO_IF_UMTS (0x05) – UMTS • NAS_RADIO_IF_LTE (0x08) – LTE
Type	0x11			1	Periodic Search Timer
Length	4			2	
Value	→	uint32	search_timer	4	Periodic search timer in minutes. Timer value 0 means the periodic search is disabled and no immediate search is performed.
Type	0x12			1	Periodic Search is Performed When in Home/Home and Roaming (Unused/Ignored)
Length	4			2	
Value	→	enum	search_type	4	Periodic search type. Values: • NAS_CSG_SEARCH_TYPE_HOME_ONLY (0) – Home only • NAS_CSG_SEARCH_TYPE_ALL (1) – All
Type	0x13			1	CSG Search UMTS Band Preference
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	mask	umts_band_pref	8	Bitmask representing the band preference to be scanned. Values: • Bit 22 to Bit 59 – See Table A-2 for details.
Type	0x14			1	CSG Search LTE Band Preference
Length	8			2	
Value	→	mask	lte_band_pref	8	Bitmask representing the LTE band preference to be scanned. See Table A-3 for details.
Type	0x15			1	CSG Selection Category List (Unused/Ignored)
Length	8			2	
Value	→	mask	csg_cat_list	8	Bitmask representing OCSGL, ACSGL, or others. Values: • NAS_CSG_LIST_CAT_OPERATOR_ MASK (0x01) – Operator • NAS_CSG_LIST_CAT_ALLOWED_ MASK (0x02) – Allowed • NAS_CSG_LIST_CAT_OTHERS_ MASK (0x04) – Others
Type	0x16			1	CSG Sort Preference Type (Unused/Ignored)
Length	4			2	
Value	→	enum	sort_type	4	Sort type. Values: • NAS_CSG_SORT_PREF_RAT_ ONLY (0) – RAT only • NAS_CSG_SORT_PREF_SIGNAL_ ONLY (1) – Signal only • NAS_CSG_SORT_PREF_RAT_ THEN_SIGNAL (2) – RAT then signal • NAS_CSG_SORT_PREF_SIGNAL_ THEN_RAT (3) – Signal then RAT
Type	0x17			1	Sort CSG Search Results Based on RAT List (Unused/Ignored)
Length	Var			2	
Value	→	uint8	rat_list_len	1	Number of sets of the following elements: • rat_list
		enum8	rat_list	Var	Sort based on the RAT priority list. Values: • NAS_RADIO_IF_UMTS (0x05) – UMTS • NAS_RADIO_IF_LTE (0x08) – LTE
Type	0x18			1	Sort CSG Search Results Based on Signal Type (Unused/Ignored)
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	sort_signal_type	4	Sort signal type. Values: • NAS_CSG_SORT_SIGNAL_DEC_STRENGTH (0) – Decreasing strength • NAS_CSG_SORT_SIGNAL_RANDOM (1) – Random
Type	0x19			1	Operator-Specific CSG Selection Configuration
Length	4			2	
Value	→	enum	selection_config_type	4	CSG selection configuration type. Values: • NAS_CSG_SELECTION_CONFIG_1 (0) – Configuration 1
Type	0x1A			1	Network Type
Length	1			2	
Value	→	mask8	network_type	1	Bitmask representing the network type to scan. Values: • Bit 1 – UMTS • Bit 2 – LTE

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_IN_USE	Operation cannot be performed; radio is currently in use or a request is already in progress
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.110.3 Description of QMI_NAS_GET_CSG_SEARCH_SELECTION_- CONFIGURATION REQ/RESP

This command retrieves configured search and selection parameters.

TLVs 0x10, 0x12, 0x15, 0x16, 0x17, and 0x18 are unused; they are not sent.

3.111   QMI_NAS_SSAC_INFO_IND

Indicates Service-Specific Access Class (SSAC) barring information for MMTEL voice/video originating calls. (Deprecated)

NAS message ID

0x008D

Version introduced

Major - 1, Minor - 98

3.111.1   Indication - QMI_NAS_SSAC_INFO_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Service-Specific Access Class Barring Information	1.98	1.98

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service-Specific Access Class Barring Information
Length	6			2	
Value	→	uint8	barring_factor_voice	1	Access barring factor for voice calls. Range: 0 to 100. Value 100 indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_voice	2	Access barring time in seconds for voice calls. Range: 0 to 512.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	barring_factor_video	1	Access barring factor for video calls. Range: 0 to 100. Value 100 indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_video	2	Access barring time in seconds for video calls. Range: 0 to 512.

3.111.2   Description of QMI_NAS_SSAC_INFO_IND

This indication is sent when the LTE network sends SSAC barring information to the UE. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

This command is deprecated. Use QMI_NAS_SSAC_CHANGE_INFO_IND (Section 3.114).

3.112   QMI_NAS_GET_LTE_EMBMS_INFO

Retrieves the LTE eMBMS statistics.

NAS message ID

0x008E

Version introduced

Major - 1, Minor - 107

3.112.1   Request - QMI_NAS_GET_LTE_EMBMS_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.112.2   Response - QMI_NAS_GET_LTE_EMBMS_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.107	1.107

Optional TLVs

Name	Version introduced	Version last modified
eMBMS Coverage Status	1.107	1.107
Physical Multicast Channel Data MCS Information	1.107	1.107
Temporary Mobile Group Identity Active Status	1.107	1.107
Signal Quality Information	1.107	1.107
Physical Multicast Channel BLER Information	1.107	1.107
Multicast Traffic Channel Information	1.107	1.107

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	eMBMS Coverage Status
Length	1			2	
Value	→	boolean	coverage_status	1	eMBMS coverage status. Values: • TRUE – Enabled • FALSE – Disabled
Type	0x11			1	Physical Multicast Channel Data MCS Information (PMCH data modulation and coding scheme of all PMCHs actively monitored)
Length	Var			2	
Value	→	uint8	pmch_data_mcs_len	1	Number of sets of the following elements: • mbsfn_area_id • pmch_id • data_mcs
		uint8	mbsfn_area_id	1	Multicast broadcast single frequency network area ID from SIB13. Values: 0 to 255.
		uint8	pmch_id	1	Physical multicast channel ID. Values: 1 to 15.
		uint8	data_mcs	1	Data modulation and coding scheme for the physical multicast channel.
Type	0x12			1	Temporary Mobile Group Identity Active Status
Length	1			2	
Value	→	boolean	is_active_tmgi_valid	1	Indicates whether there is any activated temporary mobile group identity. Values: • TRUE – Enabled • FALSE – Disabled
Type	0x13			1	Signal Quality Information
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	mbsfn_area_signal_data_len	1	Number of sets of the following elements: • area_id • snr • excess_snr • signal_level
		uint8	area_id	1	Multicast broadcast single frequency network area ID. Values: 0 to 255.
		int16	snr	2	Average SNR of the serving cell over the last measurement period in dB Q3[2^3] format. Values: -10 to 30.
		int16	excess_snr	2	Excess SNR of the serving cell over the last measurement period in dB Q3[2^3] format. Values: -10 to 30
		int8	signal_level	1	Signal level of the serving cell over the last measurement period. Range: 0 to 5.
Type	0x14			1	Physical Multicast Channel BLER Information
Length	Var			2	
Value	→	uint8	pmch_bler_info_len	1	Number of sets of the following elements: • area_id • pmch_id • num_crc_pass • num_crc_fail
		uint16	area_id	2	Area ID.
		uint8	pmch_bler_len	1	Number of sets of the following elements: • pmch_id • num_crc_pass • num_crc_fail
		uint32	pmch_id	4	Physical multicast channel ID.
		uint32	num_crc_pass	4	Number of CRC passes.
		uint32	num_crc_fail	4	Number of CRC failures.
Type	0x15			1	Multicast Traffic Channel Information
Length	Var			2	
Value	→	uint8	mtch_info_len	1	Number of sets of the following elements: • area_id • pmch_id • lc_id • num_mtch_tb_bytes
		uint8	area_id	1	Multicast broadcast single frequency network area ID.
		uint8	pmch_id	1	Physical multicast channel ID.
		uint8	lc_id	1	Logical channel ID.
		uint64	num_mtch_tb_bytes	8	Number of received bytes for the multicast traffic channel transport block.

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_IN_USE	Operation cannot be performed; radio is currently in use or a request is already in progress
QMI_ERR_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device
QMI_ERR_INVALID_OPERATION	Value or configuration is not supported

3.112.3 Description of QMI_NAS_GET_LTE_EMBMS_INFO REQ/RESP

This command retrieves the LTE eMBMS statistics.

3.113   QMI_NAS_GET_SERV_CELL_SIB

Gets the serving cell SIB.

NAS message ID

0x008F

Version introduced

Major - 1, Minor - 109

3.113.1   Request - QMI_NAS_GET_SERV_CELL_SIB_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
SIB Number	1.108	1.109

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	SIB Number
Length	1			2	
Value	→	uint8	sib_num	1	Serving cell SIB number for which to interrogate. Valid values may range from 1 to 16.

Optional TLVs

None

3.113.2   Response - QMI_NAS_GET_SERV_CELL_SIB_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.109	1.109

Optional TLVs

Name	Version introduced	Version last modified
SIB Length	1.109	1.109

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	SIB Length
Length	2			2	
Value	→	uint16	total_size	2	Total length (in bytes) of the interrogated serving cell SIB.

3.113.3   Indication - QMI_NAS_GET_SERV_CELL_SIB_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Sequence Number	1.109	1.109
SIB Packet	1.109	1.109

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Sequence Number
Length	1			2	

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Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	sequence	1	Sequence number of this indication. Sequence number 0 indicates that this indication is the start of a new sequence. The sequence number increments for each successive indication of a sequence.
Type	0x02			1	SIB Packet
Length	Var			2	
Value	→	uint16	sib_pkt_len	2	Number of sets of the following elements: • sib_pkt
		uint8	sib_pkt	Var	Packet of SIB data; may contain up to 4000 characters.

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_INVALID_ARG	Provided SIB number was invalid

3.113.4 Description of QMI_NAS_GET_SERV_CELL_SIB

This command gets the serving cell SIB and passes it on to the upper layers.

If the SIB number provided in the request is not within the valid range, a QMI_ERR_INVALID_ARG error is returned.

If QMI_RESULT_SUCCESS is returned in the Result Code TLV, the SIB Length TLV contains the total length (in bytes) of the SIB information, and the indications are sent afterward.

Description of QMI_NAS_GET_SERV_CELL_SIB_IND

When the Result Code TLV in the response returns QMI_RESULT_SUCCESS, QMI_NAS_GET_SERV_CELL_SIB_IND indications are sent. The information may be passed as multiple indications if it is greater than 4096 characters. The Sequence Number TLV indicates the order of the packets sent. The first indication in a sequence has the Sequence Number TLV set to zero. Each successive indication has the sequence number incremented by one.

When sending the SIB data in multiple packets, the SIB Packet TLV indicates the number of characters sent through the current indication. The last indication has a packet length ranging from 1 to 4000; all other packets have 4000 bytes of data. The sequence is to be considered ended when the total size of the received packets is equal to the value indicated by the SIB Length TLV in the response.

The SIB Packet TLV contains the SIB data received sequentially from LTE RRC.

3.114   QMI_NAS_SSAC_CHANGE_INFO_IND

Indicates a change in SSAC class barring information for MMTEL voice/video originating calls.

NAS message ID

0x0090

Version introduced

Major - 1, Minor - 110

3.114.1   Indication - QMI_NAS_SSAC_CHANGE_INFO_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Service-Specific Access Class Barring Information for Voice Calls	1.110	1.110
Service-Specific Access Class Barring Information for Video Calls	1.110	1.110
Service-Specific Access Class Barring Information for Voice Calls – SIB2	1.130	1.130
Service-Specific Access Class Barring Information for Video Calls – SIB2	1.130	1.130

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service-Specific Access Class Barring Information for Voice Calls
Length	3			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	barring_factor_voice	1	Access barring factor for voice calls. Range: 0 to 100. Value 100 is used when the UE goes to the LTE Connected state. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_voice	2	Access barring time (in seconds) for voice calls. Range: 0 to 512. Value 0 is used when the UE goes to the LTE Connected state. Value 0xFFFF indicates Invalid.
Type	0x11			1	Service-Specific Access Class Barring Information for Video Calls
Length	3			2	
Value	→	uint8	barring_factor_video	1	Access barring factor for video calls. Range: 0 to 100. Value 100 is used when the UE goes to the LTE Connected state. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_video	2	Access barring time (in seconds) for video calls. Range: 0 to 512. Value 0 is used when the UE goes to the LTE Connected state. Value 0xFFFF indicates Invalid.
Type	0x12			1	Service-Specific Access Class Barring Information for Voice Calls – SIB2
Length	3			2	
Value	→	uint8	sib2_barring_factor_voice	1	Access barring factor for voice calls. Range: 0 to 100. Indicates the network-sent barring factor received from the SIB2 RRC message. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	sib2_barring_time_voice	2	Access barring time (in seconds) for voice calls. Range: 0 to 512. Indicates the network-sent barring time received from the SIB2 RRC message. Value 0xFFFF indicates Invalid.
Type	0x13			1	Service-Specific Access Class Barring Information for Video Calls – SIB2
Length	3			2	
Value	→	uint8	sib2_barring_factor_video	1	Access barring factor for video calls. Range: 0 to 100. Indicates the network-sent barring factor received from the SIB2 RRC message. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	sib2_barring_time_video	2	Access barring time (in seconds) for video calls. Range: 0 to 512. Indicates the network-sent barring time received from the SIB2 RRC message. Value 0xFFFF indicates Invalid.

3.114.2 Description of QMI_NAS_SSAC_CHANGE_INFO_IND

This indication is sent when the LTE network sends SSAC barring information to the UE. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

This enhanced indication covers all cases of an SSAC change. The following paragraph is an example.

The LTE network sends SSAC barring information to the UE. This information has an SSAC parameter from LTE SIB2. When the SSAC information is sent to the control point and the UE moves from the LTE Idle to the LTE Connected state, the information has an SSAC parameter with a barring factor of 100 and a barring time of 0 sec.

3.115   QMI_NAS_GET_SSAC_INFO

Retrieves the SSAC barring information for MMTEL voice/video originating calls.

NAS message ID

0x0091

Version introduced

Major - 1, Minor - 110

3.115.1   Request - QMI_NAS_GET_SSAC_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.115.2   Response - QMI_NAS_GET_SSAC_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.110	1.110

Optional TLVs

Name	Version introduced	Version last modified
Service-Specific Access Class Barring Information for Voice Calls	1.110	1.110
Service-Specific Access Class Barring Information for Video Calls	1.110	1.110
Service-Specific Access Class Barring Information for Voice Calls – SIB2	1.130	1.130
Service-Specific Access Class Barring Information for Video Calls – SIB2	1.130	1.130

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Service-Specific Access Class Barring Information for Voice Calls
Length	3			2	
Value	→	uint8	barring_factor_voice	1	Access barring factor for voice calls. Range: 0 to 100. Value 100 is used when the UE goes to the LTE Connected state. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_voice	2	Access barring time (in seconds) for voice calls. Range: 0 to 512. Value 0 is used when the UE goes to the LTE Connected state. Value 0xFFFF indicates Invalid.
Type	0x11			1	Service-Specific Access Class Barring Information for Video Calls
Length	3			2	
Value	→	uint8	barring_factor_video	1	Access barring factor for video calls. Range: 0 to 100. Value 100 is used when the UE goes to the LTE Connected state. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	barring_time_video	2	Access barring time (in seconds) for video calls. Range: 0 to 512. Value 0 is used when the UE goes to the LTE Connected state. Value 0xFFFF indicates Invalid.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x12			1	Service-Specific Access Class Barring Information for Voice Calls – SIB2
Length	3			2	
Value	→	uint8	sib2_barring_factor_voice	1	Access barring factor for voice calls. Range: 0 to 100. Indicates the network-sent barring factor received from the SIB2 RRC message. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	sib2_barring_time_voice	2	Access barring time (in seconds) for voice calls. Range: 0 to 512. Indicates the network-sent barring time received from the SIB2 RRC message. Value 0xFFFF indicates Invalid.
Type	0x13			1	Service-Specific Access Class Barring Information for Video Calls – SIB2
Length	3			2	
Value	→	uint8	sib2_barring_factor_video	1	Access barring factor for video calls. Range: 0 to 100. Indicates the network-sent barring factor received from the SIB2 RRC message. Value 0xFF indicates Invalid. All values are per 3GPP TS 36.331.
		uint16	sib2_barring_time_video	2	Access barring time (in seconds) for video calls. Range: 0 to 512. Indicates the network-sent barring time received from the SIB2 RRC message. Value 0xFFFF indicates Invalid.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INFO_UNAVAILABLE	Time information is not currently available

3.115.3 Description of QMI_NAS_GET_SSAC_INFO REQ/RESP

This command retrieves the last known SSAC information from the UE. If the last known time is not available, a QMI_ERR_INFO_UNAVAILABLE error is returned.

3.116   QMI_NAS_SET_PERIODIC_SEARCH_ALLOWED

Enables or disables a periodic search.

NAS message ID

0x0092

Version introduced

Major - 1, Minor - 111

3.116.1   Request - QMI_NAS_SET_PERIODIC_SEARCH_ALLOWED_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Periodic Search Allowed	1.111	1.111

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Periodic Search Allowed
Length	1			2	
Value	→	boolean	allowed	1	Whether a periodic search is allowed. Values: • TRUE – Enabled • FALSE – Disabled

Optional TLVs

None

3.116.2 Response - QMI_NAS_SET_PERIODIC_SEARCH_ALLOWED_-RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.111	1.111

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response

3.116.3 Description of QMI_NAS_SET_PERIODIC_SEARCH_ALLOWED REQ/RESP

This command sets the periodic search preference.

3.117   QMI_NAS_EMM_T3402_CHANGED_IND

Indicates a change in the T3402 timer value.

NAS message ID

0x0093

Version introduced

Major - 1, Minor - 114

3.117.1   Indication - QMI_NAS_EMM_T3402_CHANGED_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
T3402 Timer Value	1.114	1.114

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	T3402 Timer Value
Length	4			2	
Value	→	uint32	t3402_timer_val	4	T3402 timer value (in milliseconds).

3.117.2 Description of QMI_NAS_EMM_T3402_CHANGED_IND

This indication is sent when the T3402 timer value changes. Clients must register for it using the QMI_NAS_INDICATION_REGISTER command. T3402 is a UE-side backoff timer when registration fails on LTE.

3.118   QMI_NAS_GET_ACB_INFO

Retrieves the Access Class Barring (ACB) information.

NAS message ID

0x0094

Version introduced

Major - 1, Minor - 119

3.118.1   Request - QMI_NAS_GET_ACB_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.118.2   Response - QMI_NAS_GET_ACB_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.119	1.119

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Optional TLVs

Name	Version introduced	Version last modified
Access Barring for Emergency	1.119	1.119
Access Barring Info for MO Signaling	1.119	1.119
Access Barring Info for MO Data	1.119	1.119

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Access Barring for Emergency
Length	1			2	
Value	→	boolean	ac_barring_for_emergency	1	Whether access barring for an emergency is present. Values: • TRUE – Present • FALSE – Not present
Type	0x11			1	Access Barring Info for MO Signaling
Length	4			2	
Value	→	uint8	ac_barring_factor	1	Access control barring factor multiplied by 100, i.e., 5 means 0.05 (50 means 0.50, 95 means 0.95). 0xFF indicates an invalid barring factor.
		uint16	ac_barring_time	2	Access barring time value (in seconds).
		uint8	ac_barring_for_special_ac	1	Access control barring factor for special access control. Ignore this if the value is 0xFF, which indicates special barring information is not available.
Type	0x12			1	Access Barring Info for MO Data
Length	4			2	
Value	→	uint8	ac_barring_factor	1	Access control barring factor multiplied by 100, i.e., 5 means 0.05 (50 means 0.50, 95 means 0.95). 0xFF indicates an invalid barring factor.
		uint16	ac_barring_time	2	Access barring time value (in seconds).
		uint8	ac_barring_for_special_ac	1	Access control barring factor for special access control. Ignore this if the value is 0xFF, which indicates special barring information is not available.

3.118.3   Indication - QMI_NAS_ACB_INFO_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Access Barring for Emergency	1.119	1.119
Access Barring Info for MO Signaling	1.119	1.119
Access Barring Info for MO Data	1.119	1.119

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Access Barring for Emergency
Length	1			2	
Value	→	boolean	ac_barring_for_emergency	1	Whether access barring for an emergency is present. Values: • TRUE – Present • FALSE – Not present
Type	0x11			1	Access Barring Info for MO Signaling
Length	4			2	
Value	→	uint8	ac_barring_factor	1	Access control barring factor multiplied by 100, i.e., 5 means 0.05 (50 means 0.50, 95 means 0.95). 0xFF indicates an invalid barring factor.
		uint16	ac_barring_time	2	Access barring time value (in seconds).
		uint8	ac_barring_for_special_ac	1	Access control barring factor for special access control. Ignore this if the value is 0xFF, which indicates special barring information is not available.
Type	0x12			1	Access Barring Info for MO Data
Length	4			2	
Value	→	uint8	ac_barring_factor	1	Access control barring factor multiplied by 100, i.e., 5 means 0.05 (50 means 0.50, 95 means 0.95). 0xFF indicates an invalid barring factor.
		uint16	ac_barring_time	2	Access barring time value (in seconds).
		uint8	ac_barring_for_special_ac	1	Access control barring factor for special access control. Ignore this if the value is 0xFF, which indicates special barring information is not available.

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

3.118.4   Description of QMI_NAS_GET_ACB_INFO

This command gets the access control barring information and passes it on to the upper layers.

Description of QMI_NAS_ACB_INFO_IND

This indication is sent when the LTE network sends ACB information to the UE. To receive this indication, the client must register for it using the QMI_NAS_INDICATION_REGISTER command.

3.119   QMI_NAS_SET_DATA_SUBS_PRIORITY

Configures the data priority for a bound subscription.

NAS message ID

0x0095

Version introduced

Major - 1, Minor - 121

3.119.1   Request - QMI_NAS_SET_DATA_SUBS_PRIORITY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Data Subscription Priority	1.121	1.121

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Data Subscription Priority
Length	4			2	
Value	→	enum	data_subs_priority	4	Data priority of the bound subscription. Values: • NAS_DATA_SUBS_PRIORITY_ LOW (0x00) – Low • NAS_DATA_SUBS_PRIORITY_ HIGH (0x01) – High All other values are reserved.

Optional TLVs

None

3.119.2   Response - QMI_NAS_SET_DATA_SUBS_PRIORITY_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.121	1.121

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.119.3   Description of QMI_NAS_SET_DATA_SUBS_PRIORITY REQ/RESP

This command requests a data subscription priority configuration change. The change request takes effect globally for the client's bound subscription that is set in a QMI_NAS_BIND_SUBSCRIPTION_REQ request and is overwritten by a subsequent QMI_NAS_SET_DATA_SUBS_PRIORITY_REQ request sent by any QMI_NAS client bound to the same subscription.

A QMI_NAS_SET_DATA_SUBS_PRIORITY_RESP response with a QMI_ERR_NONE error indicates that the request has been successfully sent to the modem. The control point must process a QMI_NAS_DATA_SUBS_PRIORITY_IND indication or a QMI_NAS_GET_DATA_SUBS_PRIORITY_ RESP response to learn the current data subscription priority. By default, all subscription priorities are set to NAS_DATA_SUBS_PRIORITY_LOW (0x00).

3.120   QMI_NAS_GET_DATA_SUBS_PRIORITY

Retrieves the current data priority status of a subscription.

NAS message ID

0x0096

Version introduced

Major - 1, Minor - 121

3.120.1   Request - QMI_NAS_GET_DATA_SUBS_PRIORITY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.120.2   Response - QMI_NAS_GET_DATA_SUBS_PRIORITY_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.121	1.121

Optional TLVs

Name	Version introduced	Version last modified
Data Subscription Priority	1.121	1.121

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Data Subscription Priority
Length	4			2	
Value	→	enum	data_subs_priority	4	Data priority of the requested subscription. Values: • NAS_DATA_SUBS_PRIORITY_LOW (0x00) – Low • NAS_DATA_SUBS_PRIORITY_HIGH (0x01) – High All other values are reserved.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.120.3 Description of QMI_NAS_GET_DATA_SUBS_PRIORITY REQ/RESP

This command requests a data subscription priority of the client's bound subscription.

3.121   QMI_NAS_DATA_SUBS_PRIORITY_IND

Informs the control point of any changes in the data subscription priority.

NAS message ID

0x0097

Version introduced

Major - 1, Minor - 121

3.121.1   Indication - QMI_NAS_DATA_SUBS_PRIORITY_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
Data Priority	1.121	1.121

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Data Priority
Length	4			2	
Value	→	enum	data_subs_priority	4	Data priority for the bound subscription. Values: • NAS_DATA_SUBS_PRIORITY_ LOW (0x00) – Low • NAS_DATA_SUBS_PRIORITY_ HIGH (0x01) – High All other values are reserved.

3.121.2   Description of QMI_NAS_DATA_SUBS_PRIORITY_IND

This indication communicates any change in the data priority of the subscription to which the client is bound.

3.122   QMI_NAS_AVOID_TUNEAWAY

Raises or drops the Transceiver Resource Manager (TRM) priority to block or unblock tune-aways.

NAS message ID

0x0098

Version introduced

Major - 1, Minor - 123

3.122.1   Request - QMI_NAS_AVOID_TUNEAWAY_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
TRM Priority	1.123	1.123

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	TRM Priority
Length	1			2	
Value	→	uint8	trm_priority	1	TRM priority to be set. Values: • 0 – TRM low priority; unblock the tune-away • 1 – TRM high priority; block the tune-away All other values are reserved.

Optional TLVs

None

3.122.2   Response - QMI_NAS_AVOID_TUNEAWAY_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.123	1.123

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_INVALID_OPERATION	Operation is not supported by the device

3.122.3   Description of QMI_NAS_AVOID_TUNEAWAY REQ/RESP

This command bumps the TRM priority up or down to block or unblock tune-aways.

3.123   QMI_NAS_SET_MCC

Informs the modem of an MCC discovered by the client.

NAS message ID

0x0099

Version introduced

Major - 1, Minor - 125

3.123.1   Request - QMI_NAS_SET_MCC_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
MCC	1.125	1.125
Confidence	1.125	1.125
MCC Detection Status	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	MCC
Length	2			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
Type	0x11			1	Confidence
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	confidence	4	Confidence level. Values: • NAS_MCC_CONFIDENCE_LOW (0x00) – Low • NAS_MCC_CONFIDENCE_ MEDIUM_LOW (0x01) – Medium low • NAS_MCC_CONFIDENCE_MEDIUM (0x02) – Medium • NAS_MCC_CONFIDENCE_ MEDIUM_HIGH (0x03) – Medium high • NAS_MCC_CONFIDENCE_HIGH (0x04) – High All other values are reserved.
Type	0x12			1	MCC Detection Status
Length	4			2	
Value	→	enum	mcc_status	4	MCC detection status. Values: • NAS_SET_MCC_STATUS_SUCCESS (0x00) – Valid MCC was passed in the request • NAS_SET_MCC_STATUS_ DETECTION_DISABLED (0x01) – All mechanisms used to detect the MCC (Wi-Fi®, GPS, etc.) are disabled by the user or control points • NAS_SET_MCC_STATUS_NOT_ DETECTED (0x02) – MCC detection is enabled but no MCC was found All other values are reserved.

3.123.2   Response - QMI_NAS_SET_MCC_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.123.3 Description of QMI_NAS_SET_MCC REQ/RESP

This command informs the modem of an MCC discovered by the client that, otherwise, might not be known by the modem. The modem can use this value to influence its system scanning priorities.

Also included is the confidence level of the provided MCC value.

3.124   QMI_NAS_SET_DATA_ROAMING

Informs the modem about a change in the data roaming status.

NAS message ID

0x009A

Version introduced

Major - 1, Minor - 125

3.124.1   Request - QMI_NAS_SET_DATA_ROAMING_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Data Roaming Status	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Data Roaming Status
Length	4			2	
Value	→	enum	data_roam_status	4	Configures the data roaming status. Values: • NAS_DATA_ROAMING_ON (0x00) – Roaming is on • NAS_DATA_ROAMING_ INTERNATIONAL_OFF (0x01) – Roaming for international is off • NAS_DATA_ROAMING_OFF (0x02) – Roaming is off All other values are reserved.

Optional TLVs

None

3.124.2   Response - QMI_NAS_SET_DATA_ROAMING_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

Name	Version introduced	Version last modified
Device Reset Pending	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Device Reset Pending
Length	1			2	
Value	→	boolean	pending_device_reset	1	Indicates whether a device reset is required for the configured values to take effect. Values: • TRUE – Reset is required • FALSE – Reset is not required

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.124.3   Description of QMI_NAS_SET_DATA_ROAMING REQ/RESP

This command informs the modem about a change in the data roaming status.

A device reset might be required for the configured values to take effect.

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3.125   QMI_NAS_GET_DATA_ROAMING

Retrieves the data roaming status from the modem.

NAS message ID

0x009B

Version introduced

Major - 1, Minor - 125

3.125.1   Request - QMI_NAS_GET_DATA_ROAMING_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.125.2   Response - QMI_NAS_GET_DATA_ROAMING_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

Name	Version introduced	Version last modified
Data Roaming Status	1.125	1.125
Device Reset	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Data Roaming Status
Length	4			2	
Value	→	enum	data_roam_status	4	Data roaming status. Values: • NAS_DATA_ROAMING_ON (0x00) – Roaming is on • NAS_DATA_ROAMING_ INTERNATIONAL_OFF (0x01) – Roaming for international is off • NAS_DATA_ROAMING_OFF (0x02) – Roaming is off All other values are reserved.
Type	0x11			1	Device Reset
Length	1			2	
Value	→	boolean	pending_device_reset	1	Indicates whether a device reset was required for the configured values to take effect. Values: • TRUE – Reset was required • FALSE – Reset was not required

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.125.3   Description of QMI_NAS_GET_DATA_ROAMING REQ/RESP

This command retrieves the current data roaming status settings from the modem.

3.126   QMI_NAS_SET_SRVCC

Informs the modem about a change in the Single Radio Voice Call Continuity (SRVCC) status.

NAS message ID

0x009C

Version introduced

Major - 1, Minor - 125

3.126.1   Request - QMI_NAS_SET_SRVCC_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Single Radio Voice Call Continuity Status	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Single Radio Voice Call Continuity Status
Length	1			2	
Value	→	boolean	srvcc_status	1	Configure the state of SRVCC. Values: • TRUE – Enable • FALSE – Disable

Optional TLVs

None

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3.126.2   Response - QMI_NAS_SET_SRVCC_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.126.3   Description of QMI_NAS_SET_SRVCC REQ/RESP

This command informs the modem whether to enable or disable the SRVCC settings.

3.127   QMI_NAS_SET_BSR_TIMER

Informs the modem about a change in the Better System Reselection (BSR) timer value.

NAS message ID

0x009D

Version introduced

Major - 1, Minor - 125

3.127.1   Request - QMI_NAS_SET_BSR_TIMER_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Better System Reselection Timer	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Better System Reselection Timer
Length	4			2	
Value	→	uint32	bsr_value	4	BSR timer value (in seconds) written to NV_SD_CFG_ITEMS_I. Range: 180 to 600.

Optional TLVs

None

3.127.2   Response - QMI_NAS_SET_BSR_TIMER_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

Name	Version introduced	Version last modified
Delayed Until Reset	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Delayed Until Reset
Length	1			2	
Value	→	boolean	delayed_until_reset	1	Indicates whether a device reset is required for the configured values to take effect. Values: • TRUE – Reset is required • FALSE – Reset is not required

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.127.3 Description of QMI_NAS_SET_BSR_TIMER REQ/RESP

The command informs the modem about a change in the BSR timer value.

A device reset might be required for the configured values to take effect.

3.128   QMI_NAS_GET_BSR_TIMER

Retrieves the BSR timer value from the modem.

NAS message ID

0x009E

Version introduced

Major - 1, Minor - 125

3.128.1   Request - QMI_NAS_GET_BSR_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.128.2   Response - QMI_NAS_GET_BSR_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.125	1.125

Optional TLVs

Name	Version introduced	Version last modified
Better System Reselection Timer	1.125	1.125
Delayed Until Reset	1.125	1.125

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Better System Reselection Timer
Length	4			2	
Value	→	uint32	bsr_value	4	BSR timer value (in seconds) from NV_SD_CFG_ITEMS_I. Range: 180 to 600.
Type	0x11			1	Delayed Until Reset
Length	1			2	
Value	→	boolean	delayed_until_reset	1	Indicates whether a device reset was required for the configured values to take effect. Values: • TRUE – Reset was required • FALSE – Reset was not required

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.128.3 Description of QMI_NAS_GET_BSR_TIMER REQ/RESP

This command retrieves the BSR timer value settings from the modem.

3.129   QMI_NAS_SET_DRX_SCALING_FACTOR

Scales the wake-up duration by controlling the idle DRX cycle; also used to skip the Idle mode measurements.

NAS message ID

0x009F

Version introduced

Major - 1, Minor - 127

3.129.1   Request - QMI_NAS_SET_DRX_SCALING_FACTOR_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Radio Access Technology	1.127	1.127

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Radio Access Technology
Length	1			2	
Value	→	enum8	radio_access_technology	1	Radio access technology for which to register. Values: • 0x04 – RADIO_IF_GSM – GSM • 0x05 – RADIO_IF_UMTS – UMTS • 0x08 – RADIO_IF_LTE – LTE

Optional TLVs

Name	Version introduced	Version last modified
DRX Scaling Factor	1.127	1.127
Skip Idle Mode Measurements	1.127	1.127

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	DRX Scaling Factor
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	drx_scaling_factor	1	Sets the DRX scaling factor. Range: 1 (default) to 10.
Type	0x11			1	Skip Idle Mode Measurements
Length	1			2	
Value	→	boolean	skip_idle_meas	1	Whether to skip the Idle mode measurements. Values: • 0x00 – FALSE • 0x01 – TRUE

3.129.2   Response - QMI_NAS_SET_DRX_SCALING_FACTOR_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.127	1.127

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.129.3 Description of QMI_NAS_SET_DRX_SCALING_FACTOR REQ/RESP

This command scales the wake-up duration by controlling idle the DRX cycle. The command can also be used to skip the Idle mode measurements.

3.130   QMI_NAS_SET_SSAC_HYSTERESIS_TIMER

Sets the SSAC hysteresis timer.

NAS message ID

0x00A5

Version introduced

Major - 1, Minor - 131

3.130.1   Request - QMI_NAS_SET_SSAC_HYSTERESIS_TIMER_- REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Hysteresis Timer Value	1.131	1.131

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Hysteresis Timer Value
Length	2			2	
Value	→	uint16	hysteresis_timer	2	Hysteresis timer value (in seconds).

Optional TLVs

None

3.130.2   Response - QMI_NAS_SET_SSAC_HYSTERESIS_TIMER_- RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.131	1.131

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.130.3   Description of QMI_NAS_SET_SSAC_HYSTERESIS_TIMER REQ/RESP

This command sets the SSAC hysteresis timer. When the UE moves from a non-voice area to a voice area, the device starts a hysteresis timer and domain selection does not notify IMS about the voice preference until this timer expires.

3.131   QMI_NAS_GET_SSAC_HYSTERESIS_TIMER

Retrieves the last known SSAC hysteresis timer.

NAS message ID

0x00A6

Version introduced

Major - 1, Minor - 131

3.131.1   Request - QMI_NAS_GET_SSAC_HYSTERESIS_TIMER_-REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.131.2   Response - QMI_NAS_GET_SSAC_HYSTERESIS_TIMER_-RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.131	1.131

Optional TLVs

Name	Version introduced	Version last modified
Hysteresis Timer Value	1.131	1.131

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Hysteresis Timer Value
Length	2			2	
Value	→	uint16	hysteresis_timer	2	Hysteresis timer value (in seconds).

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.131.3   Description of QMI_NAS_GET_SSAC_HYSTERESIS_TIMER REQ/RESP

This command retrieves the last known SSAC hysteresis timer value.

3.132   QMI_NAS_GET_HDR_INFO

Retrieves the HDR sector ID, pilot pseudorandom noise, and MAC index.

NAS message ID

0x00A7

Version introduced

Major - 1, Minor - 133

3.132.1   Request - QMI_NAS_GET_HDR_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.132.2   Response - QMI_NAS_GET_HDR_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.133	1.133

Optional TLVs

Name	Version introduced	Version last modified
Sector ID	1.133	1.133
Pilot PN	1.133	1.133
MAC Index	1.133	1.133

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Sector ID
Length	16			2	
Value	→	uint8	sector_id	16	Sector ID value, as a 128-bit address.
Type	0x11			1	Pilot PN
Length	2			2	
Value	→	uint16	pilot_pn	2	Pilot PN value.
Type	0x12			1	MAC Index
Length	2			2	
Value	→	uint16	mac_index	2	MAC index value.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.132.3   Description of QMI_NAS_GET_HDR_INFO REQ/RESP

This command retrieves the HDR Sector ID, pilot pseudorandom noise, and MAC index.

3.133   QMI_NAS_GET_HDR_DRC_RATE

Retrieves the HDR data rate control.

NAS message ID

0x00A8

Version introduced

Major - 1, Minor - 133

3.133.1   Request - QMI_NAS_GET_HDR_DRC_RATE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.133.2   Response - QMI_NAS_GET_HDR_DRC_RATE_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.133	1.133

Optional TLVs

Name	Version introduced	Version last modified
DRC Rate	1.133	1.133

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	DRC Rate
Length	1			2	
Value	→	uint8	drc_rate	1	DRC rate value.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.133.3   Description of QMI_NAS_GET_HDR_DRC_RATE REQ/RESP

This command retrieves the HDR data rate control.

3.134 QMI_NAS_SET_RPM_PARAMETERS

Sets the Radio Policy Manager (RPM) details if RPM is active.

NAS message ID

0x00A9

Version introduced

Major - 1, Minor - 135

3.134.1 Request - QMI_NAS_SET_RPM_PARAMETERS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Maximum Application Resets	1.135	1.135
Average Rejection Time	1.135	1.135

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Maximum Application Resets
Length	1			2	
Value	→	uint8	max_resets	1	Maximum number of allowed application resets. Range: 1 to 16 (default is 3).
Type	0x02			1	Average Rejection Time
Length	2			2	
Value	→	uint16	avg_reject_time	2	Average rejection time (in seconds). Range: 0 to 360 (default is 120).

Optional TLVs

None

3.134.2   Response - QMI_NAS_SET_RPM_PARAMETERS_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.135	1.135

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.134.3   Description of QMI_NAS_SET_RPM_PARAMETERS REQ/RESP

This command sets the maximum number of application resets and the average rejection time if RPM is enabled.

3.135   QMI_NAS_GET_RPM_PARAMETERS

Retrieves the RPM details if RPM is active.

NAS message ID

0x00AA

Version introduced

Major - 1, Minor - 136

3.135.1   Request - QMI_NAS_GET_RPM_PARAMETERS_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.135.2   Response - QMI_NAS_GET_RPM_PARAMETERS_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.136	1.136

Optional TLVs

Name	Version introduced	Version last modified
Maximum Application Resets	1.136	1.136
Average Rejection Time	1.136	1.136
RPM State	1.136	1.136

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Maximum Application Resets
Length	1			2	
Value	→	uint8	max_resets	1	Maximum number of application resets. Range: 1 to 16 (default is 3).
Type	0x11			1	Average Rejection Time
Length	2			2	
Value	→	uint16	avg_reject_time	2	Average rejection time (in seconds). Range 0 to 360 (default is 120).
Type	0x12			1	RPM State
Length	1			2	
Value	→	boolean	rpm_state	1	Status of the RPM. Values: • 0x00 – Disabled • 0x01 – Enabled

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.135.3 Description of QMI_NAS_GET_RPM_PARAMETERS REQ/RESP

This command retrieves the maximum number of application resets and the average rejection time if RPM is enabled.

3.136 QMI_NAS_SET_RPM_STATE

Enables and disables RPM.

NAS message ID

0x00AB

Version introduced

Major - 1, Minor - 136

3.136.1 Request - QMI_NAS_SET_RPM_STATE_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
RPM State	1.136	1.136

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	RPM State
Length	1			2	
Value	→	boolean	rpm_state	1	RPM preferred status. Values: • 0x00 – Disabled • 0x01 – Enabled

Optional TLVs

None

3.136.2 Response - QMI_NAS_SET_RPM_STATE_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.136	1.136

Optional TLVs

None

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission

3.136.3   Description of QMI_NAS_SET_RPM_STATE REQ/RESP

This command enables and disables RPM functionality.

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3.137   QMI_NAS_GET_LTE_CPHY_CA_INFO

Retrieves the previous carrier aggregation event information.

NAS message ID

0x00AC

Version introduced

Major - 1, Minor - 138

3.137.1   Request - QMI_NAS_GET_LTE_CPHY_CA_INFO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.137.2   Response - QMI_NAS_GET_LTE_CPHY_CA_INFO_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.138	1.138

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Optional TLVs

Name	Version introduced	Version last modified
Physical Carrier Aggregation of Scell Indicator Type	1.138	1.138
Physical Carrier Aggregation Downlink Bandwidth for Scell	1.138	1.138
Scell Information	1.138	1.138
Pcell Information	1.138	1.138
Scell Index	1.138	1.138

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Physical Carrier Aggregation of Scell Indicator Type
Length	8			2	
Value	→	uint16	pci	2	Physical cell ID of the Scell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.
		enum	scell_state	4	Scell state. Values: • NAS_LTE_CPHY_SCELL_STATE_ DECONFIGURED (0x00) – Deconfigured • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_DEACTIVATED (0x01) – Configured and deactivated • NAS_LTE_CPHY_SCELL_STATE_ CONFIGURED_ACTIVATED (0x02) – Configured and activated All other values are reserved.
Type	0x11			1	Physical Carrier Aggregation Downlink Bandwidth for Scell
Length	4			2	
Value	→	enum	cphy_ca_dl_bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x12			1	Scell Information
Length	14			2	
Value	→	uint16	pci	2	Physical cell ID of the Scell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.
		enum	cphy_ca_dl_bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.
		enum16	band	2	Band. Values: • 120 to 161 – LTE band classes
		enum	scell_state	4	Scell state. Values: • NAS_LTE_CPHY_SCELL_STATE_DECONFIGURED (0x00) – Deconfigured • NAS_LTE_CPHY_SCELL_STATE_CONFIGURED_DEACTIVATED (0x01) – Configured and deactivated • NAS_LTE_CPHY_SCELL_STATE_CONFIGURED_ACTIVATED (0x02) – Configured and activated All other values are reserved.
Type	0x13			1	Pcell Information
Length	10			2	
Value	→	uint16	pci	2	Physical cell ID of the Pcell. Range: 0 to 503.
		uint16	freq	2	Absolute cell's frequency. Range: 0 to 65535.

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Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	cphy_ca_dl_bandwidth	4	Downlink bandwidth. Values: • NAS_LTE_CPHY_CA_BW_NRB_6 (0x00) – 1.4 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_15 (0x01) – 3 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_25 (0x02) – 5 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_50 (0x03) – 10 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_75 (0x04) – 15 MHz bandwidth • NAS_LTE_CPHY_CA_BW_NRB_100 (0x05) – 20 MHz bandwidth All other values are reserved.
		enum16	band	2	Band. Values: • 120 to 161 – LTE band classes
Type	0x14			1	Scell Index
Length	1			2	
Value	→	uint8	scell_idx	1	Scell index.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_INVALID_ARG	Value field of one or more TLVs in the request message contains an invalid value
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point or the message was corrupted during transmission
QMI_ERR_INFO_UNAVAILABLE	Information is not available at this time

3.137.3   Description of QMI_NAS_GET_LTE_CPHY_CA_INFO REQ/RESP

This command retrieves the information from the previous QMI_NAS_LTE_CPHY_CA_IND indication sent in response to a carrier aggregation event in the 3GPP LTE network.

3.138   QMI_NAS_MANUAL_SCAN_FAIL_IND

Informs the control point that the manual network search could not find any networks with the specified parameters.

NAS message ID

0x00AD

Version introduced

Major - 1, Minor - 139

3.138.1   Indication - QMI_NAS_MANUAL_SCAN_FAIL_IND_MSG

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

None

Optional TLVs

None

3.138.2   Description of QMI_NAS_MANUAL_SCAN_FAIL_IND

This indication is sent when the first round in a manual network search did not produce any results and NV item 73671 (Disable Modem Centric solution) is enabled (1).

3.139   QMI_NAS_GET_NEGOTIATED_DRX

Retrieves the network negotiated DRX level.

NAS message ID

0x00AE

Version introduced

Major - 1, Minor - 143

3.139.1   Request - QMI_NAS_GET_NEGOTIATED_DRX_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.139.2   Response - QMI_NAS_GET_NEGOTIATED_DRX_RESP_MSG

Message type

Response

Sender

Service

Mandatory TLVs

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

Name	Version introduced	Version last modified
Result Code	1.143	1.143

Optional TLVs

Name	Version introduced	Version last modified
DRX Level	1.143	1.143

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	DRX Level
Length	1			2	
Value	→	uint8	drx_level	1	DRX level.

Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_NO_NETWORK_FOUND	No service
QMI_ERR_DEVICE_IN_USE	Operation cannot be performed; radio is currently in use, e.g., in a call
QMI_ERR_INTERNAL	Unexpected error occurred during processing

3.139.3   Description of QMI_NAS_GET_NEGOTIATED_DRX REQ/RESP

This command retrieves the network negotiated DRX level.

3.140   QMI_NAS_SET_CELL_LOCK_CONFIG

Configures the cell list so that service acquisition is limited only to the listed cells.

NAS message ID

0x00AF

Version introduced

Major - 1, Minor - 145

3.140.1   Request - QMI_NAS_SET_CELL_LOCK_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Cell List	1.145	1.145

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Cell List
Length	Var			2	
Value	→	uint8	cell_list_len	1	Number of sets of the following elements: • pci • freq
		uint16	pci	2	Physical cell ID.
		uint16	freq	2	Cell frequency.

Optional TLVs

None

3.140.2   Response - QMI_NAS_SET_CELL_LOCK_CONFIG_RESP_MSG

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_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_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.140.3   Description of QMI_NAS_SET_CELL_LOCK_CONFIG REQ/RESP

This command limits the cells on which service must be acquired. Sending a zero-length list disables limiting the cells and a previously configured list is ignored.

3.141   QMI_NAS_LTE_UE_CONFIG_MSG

Dynamically upgrades or downgrades an LTE UE category, enables or disables carrier aggregation, or both.

NAS message ID

0x00B0

Version introduced

Major - 1, Minor - 146

3.141.1   Request - QMI_NAS_LTE_UE_CONFIG_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

Name	Version introduced	Version last modified
LTE UE Category	1.146	1.146
Disable CA	1.146	1.146

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	LTE UE Category
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	lte_ue_category	4	LTE UE category. • LTE_UE_CATEGORY_DEFAULT (0) – Default; return to power-up configuration • LTE_UE_CATEGORY_1 (1) – Type 1 • LTE_UE_CATEGORY_2 (2) – Type 2 • LTE_UE_CATEGORY_3 (3) – Type 3 • LTE_UE_CATEGORY_4 (4) – Type 4 • LTE_UE_CATEGORY_5 (5) – Type 5 • LTE_UE_CATEGORY_6 (6) – Type 6 • LTE_UE_CATEGORY_7 (7) – Type 7 • LTE_UE_CATEGORY_8 (8) – Type 8 • LTE_UE_CATEGORY_9 (9) – Type 9 • LTE_UE_CATEGORY_10 (10) – Type 10 • LTE_UE_CATEGORY_11 (11) – Type 11 • LTE_UE_CATEGORY_12 (12) – Type 12 • LTE_UE_CATEGORY_13 (13) – Type 13 • LTE_UE_CATEGORY_INVALID (14) – Invalid type
Type	0x11			1	Disable CA
Length	1			2	
Value	→	boolean	disable_ca	1	Indicates whether carrier aggregation is disabled. Values: • TRUE – Disabled • FALSE – Enabled

3.141.2   Response - QMI_NAS_LTE_UE_CONFIG_RESP_MSG

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_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_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.141.3   Description of QMI_NAS_LTE_UE_CONFIG_MSG REQ/RESP

This command allows the OEM to dynamically upgrade or downgrade an LTE UE category and to enable or disable carrier aggregation. Both the TLVs are optional. To return to the power-up configuration, set the LTE UE Category TLV to LTE_UE_CATEGORY_DEFAULT.

3.142   QMI_NAS_TIMER_EXPIRY_IND

Indicates the ID for the timer that has expired.

NAS message ID

0x00B1

Version introduced

Major - 1, Minor - 147

3.142.1   Indication - QMI_NAS_TIMER_EXPIRY_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Expired Timer ID	1.147	1.147

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Expired Timer ID
Length	4			2	
Value	→	enum	timer_id	4	Timer expired. Values: • NAS_ECALL_T3242_TIMER_ EXPIRED (0x01) – ECall timer T3242 has expired • NAS_ECALL_T3243_TIMER_ EXPIRED (0x02) – ECall timer T3243 has expired

Optional TLVs

None

3.142.2   Description of QMI_NAS_TIMER_EXPIRY_IND

This indication communicates when one of the ECall-related timers, T3242 or T3243, has expired.

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3.143   QMI_NAS_EMERGENCY_MODE_STATUS_IND

Indicates the Emergency mode status.

NAS message ID

0x00B2

Version introduced

Major - 1, Minor - 148

3.143.1   Indication - QMI_NAS_EMERGENCY_MODE_STATUS_IND

Message type

Indication

Sender

Service

Scope

Per control point (unicast)

Mandatory TLVs

Name	Version introduced	Version last modified
Emergency Mode	1.148	1.148

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Emergency Mode
Length	4			2	
Value	→	enum	emergency_mode	4	Emergency mode. Values: • NAS_EMERGENCY_MODE_STARTED (0x01) – Emergency mode has started • NAS_EMERGENCY_MODE_ENDED (0x02) – Emergency mode has ended

Optional TLVs

Name	Version introduced	Version last modified
ECBM Required on LTE	1.148	1.148

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	ECBM Required on LTE
Length	1			2	
Value	→	boolean	is_ecbm_required	1	Indicates whether LTE ECBM is required by an NV setting. Values: • TRUE – LTE ECBM is required • FALSE – LTE ECBM is not required

3.143.2   Description of QMI_NAS_EMERGENCY_MODE_STATUS_IND

This indication is sent when the UE starts or ends Emergency mode.

3.144   QMI_NAS_ECALL_DEREGISTRATION

Triggers a deregistration operation for an ECall.

NAS message ID

0x00B3

Version introduced

Major - 1, Minor - 150

3.144.1   Request - QMI_NAS_ECALL_DEREGISTRATION_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

None

Optional TLVs

None

3.144.2   Response - QMI_NAS_ECALL_DEREGISTRATION_RESP_MSG

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_OP_DEVICE_ UNSUPPORTED	Operation is not supported by the device

3.144.3   Description of QMI_NAS_ECALL_DEREGISTRATION REQ/RESP

The request triggers the deregistration of an ECall at lower layers. The response is sent when a confirmation is received.

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3.145   QMI_NAS_UPDATE_CA_BAND_COMBO_MSG

Updates the specified carrier aggregation band combination string for a PLMN.

NAS message ID

0x00B4

Version introduced

Major - 1, Minor - 151

3.145.1   Request - QMI_NAS_UPDATE_CA_BAND_COMBO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
PLMN	1.151	1.151

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

Optional TLVs

Name	Version introduced	Version last modified
CA Band Combo String	1.151	1.151

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CA Band Combo String
Length	Var			2	
Value	→	uint16	ca_band_combo_len	2	Number of sets of the following elements: • ca_band_combo
		char	ca_band_combo	Var	CA band combination

3.145.2   Response - QMI_NAS_UPDATE_CA_BAND_COMBO_RESP_MSG

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_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

3.145.3 Description of QMI_NAS_UPDATE_CA_BAND_COMBO_MSG REQ/RESP

This command allows the OEM to update the specified carrier aggregation band combination string for a specific PLMN. If the CA Band Combo String TLV is not sent in the request, it removes the CA band combination string.

3.146   QMI_NAS_GET_CA_BAND_COMBO_MSG

Retrieves the specified carrier aggregation band combination string for a specific PLMN.

NAS message ID

0x00B5

Version introduced

Major - 1, Minor - 151

3.146.1   Request - QMI_NAS_GET_CA_BAND_COMBO_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
PLMN	1.151	1.151

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	PLMN
Length	5			2	
Value	→	uint16	mcc	2	A 16-bit integer representation of MCC. Range: 0 to 999.
		uint16	mnc	2	A 16-bit integer representation of MNC. Range: 0 to 999.
		boolean	mnc_includes_pcs_digit	1	This field is used to interpret the length of the corresponding MNC reported in this TLV. Values: • TRUE – MNC is a three-digit value; e.g., a reported value of 90 corresponds to an MNC value of 090 • FALSE – MNC is a two-digit value; e.g., a reported value of 90 corresponds to an MNC value of 90

Optional TLVs

None

3.146.2   Response - QMI_NAS_GET_CA_BAND_COMBO_RESP_MSG

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 introduced	Version last modified
CA band combo string	1.151	1.151

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CA band combo string
Length	Var			2	
Value	→	uint16	ca_band_combo_len	2	Number of sets of the following elements: • ca_band_combo
		char	ca_band_combo	Var	CA band combination

Error codes

QMI_ERR_NONE	No error in the request
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_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.146.3 Description of QMI_NAS_GET_CA_BAND_COMBO_MSG REQ/RESP

This command allows the OEM to retrieve the specified carrier aggregation band combination string for a specific PLMN.

3.147   QMI_NAS_ECALL_TIMER_RESTART_MSG

Allows APPS to request the timer restart and give the remaining time for the timer to run.

NAS message ID

0x00B6

Version introduced

Major - 1, Minor - 154

3.147.1   Request - QMI_NAS_ECALL_TIMER_RESTART_REQ_MSG

Message type

Request

Sender

Control point

Mandatory TLVs

Name	Version introduced	Version last modified
Timer ID	1.154	1.154
Duration	1.154	1.154

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Timer ID
Length	4			2	
Value	→	enum	timer_id	4	Timer ID. Values: • NAS_ECALL_T3242_TIMER (0x01) – ECall Timer T3242 • NAS_ECALL_T3243_TIMER (0x02) – ECall Timer T3243
Type	0x02			1	Duration
Length	4			2	
Value	→	uint32	duration	4	Number of seconds for the timer to run.

Optional TLVs

None

3.147.2   Response - QMI_NAS_ECALL_TIMER_RESTART_RESP_MSG

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_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_INCOMPATIBLE_STATE	Operation is not supported in the current state

3.147.3   Description of QMI_NAS_ECALL_TIMER_RESTART_MSG REQ/RESP

This command allows APPS to request the ECall timer restart after a modem reset. If any timer was running when the modem reset occurred, APPS gives the timer ID and the remaining time for the timer to run. This request goes to the lower layer and APPS receives a success/error response depending on the response sent by the lower layers.

A   Additional Information

A.1   Active Band Class

Table A-1 lists the access technology and band class enum values used in this document.

Table A-1 Band class access technology and enum values

Enum value	Name	Access technology	Band class
0	NAS_ACTIVE_BAND_BC_0	CDMA	BC_0
1	NAS_ACTIVE_BAND_BC_1	CDMA	BC_1
2	–	CDMA	Reserved
3	NAS_ACTIVE_BAND_BC_3	CDMA	BC_3
4	NAS_ACTIVE_BAND_BC_4	CDMA	BC_4
5	NAS_ACTIVE_BAND_BC_5	CDMA	BC_5
6	NAS_ACTIVE_BAND_BC_6	CDMA	BC_6
7	NAS_ACTIVE_BAND_BC_7	CDMA	BC_7
8	NAS_ACTIVE_BAND_BC_8	CDMA	BC_8
9	NAS_ACTIVE_BAND_BC_9	CDMA	BC_9
10	NAS_ACTIVE_BAND_BC_10	CDMA	BC_10
11	NAS_ACTIVE_BAND_BC_11	CDMA	BC_11
12	NAS_ACTIVE_BAND_BC_12	CDMA	BC_12
13	NAS_ACTIVE_BAND_BC_13	CDMA	BC_13
14	NAS_ACTIVE_BAND_BC_14	CDMA	BC_14
15	NAS_ACTIVE_BAND_BC_15	CDMA	BC_15
16	NAS_ACTIVE_BAND_BC_16	CDMA	BC_16
17	NAS_ACTIVE_BAND_BC_17	CDMA	BC_17
18	NAS_ACTIVE_BAND_BC_18	CDMA	BC_18
19	NAS_ACTIVE_BAND_BC_19	CDMA	BC_19
20 to 39	–	–	Reserved
40	NAS_ACTIVE_BAND_GSM_450	GSM	GSM 450
41	NAS_ACTIVE_BAND_GSM_480	GSM	GSM 480
42	NAS_ACTIVE_BAND_GSM_750	GSM	GSM 750
43	NAS_ACTIVE_BAND_GSM_850	GSM	GSM 850
44	NAS_ACTIVE_BAND_GSM_900_EXTENDED	GSM	GSM 900 (Extended)
45	NAS_ACTIVE_BAND_GSM_900_PRIMARY	GSM	GSM 900 (Primary)
46	NAS_ACTIVE_BAND_GSM_900_RAILWAYS	GSM	GSM 900 (Railways)

Table A-1 Band class access technology and enum values (cont.)

Enum value	Name	Access technology	Band class
47	NAS_ACTIVE_BAND_GSM_1800	GSM	GSM 1800
48	NAS_ACTIVE_BAND_GSM_1900	GSM	GSM 1900
49 to 79	–	–	Reserved
80	NAS_ACTIVE_BAND_WCDMA_2100	WCDMA	WCDMA 2100
81	NAS_ACTIVE_BAND_WCDMA_PCS_ 1900	WCDMA	WCDMA PCS 1900
82	NAS_ACTIVE_BAND_WCDMA_DCS_ 1800	WCDMA	WCDMA DCS 1800
83	NAS_ACTIVE_BAND_WCDMA_1700_US	WCDMA	WCDMA 1700 (U.S.)
84	NAS_ACTIVE_BAND_WCDMA_850	WCDMA	WCDMA 850
85	NAS_ACTIVE_BAND_WCDMA_800	WCDMA	WCDMA 800
86	NAS_ACTIVE_BAND_WCDMA_2600	WCDMA	WCDMA 2600
87	NAS_ACTIVE_BAND_WCDMA_900	WCDMA	WCDMA 900
88	NAS_ACTIVE_BAND_WCDMA_1700_ JAPAN	WCDMA	WCDMA 1700 (Japan)
89	–	–	Reserved
90	NAS_ACTIVE_BAND_WCDMA_1500_ JAPAN	WCDMA	WCDMA 1500 (Japan)
91	NAS_ACTIVE_BAND_WCDMA_850_ JAPAN	WCDMA	WCDMA 850 (Japan)
92 to 119	–	–	Reserved
120	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_1	LTE	E-UTRA Operating Band 1
121	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_2	LTE	E-UTRA Operating Band 2
122	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_3	LTE	E-UTRA Operating Band 3
123	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_4	LTE	E-UTRA Operating Band 4
124	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_5	LTE	E-UTRA Operating Band 5
125	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_6	LTE	E-UTRA Operating Band 6
126	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_7	LTE	E-UTRA Operating Band 7
127	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_8	LTE	E-UTRA Operating Band 8
128	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_9	LTE	E-UTRA Operating Band 9
129	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_10	LTE	E-UTRA Operating Band 10
130	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_11	LTE	E-UTRA Operating Band 11
131	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_12	LTE	E-UTRA Operating Band 12

Table A-1 Band class access technology and enum values (cont.)

Enum value	Name	Access technology	Band class
132	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_13	LTE	E-UTRA Operating Band 13
133	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_14	LTE	E-UTRA Operating Band 14
134	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_17	LTE	E-UTRA Operating Band 17
135	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_33	LTE	E-UTRA Operating Band 33
136	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_34	LTE	E-UTRA Operating Band 34
137	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_35	LTE	E-UTRA Operating Band 35
138	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_36	LTE	E-UTRA Operating Band 36
139	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_37	LTE	E-UTRA Operating Band 37
140	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_38	LTE	E-UTRA Operating Band 38
141	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_39	LTE	E-UTRA Operating Band 39
142	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_40	LTE	E-UTRA Operating Band 40
143	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_18	LTE	E-UTRA Operating Band 18
144	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_19	LTE	E-UTRA Operating Band 19
145	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_20	LTE	E-UTRA Operating Band 20
146	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_21	LTE	E-UTRA Operating Band 21
147	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_24	LTE	E-UTRA Operating Band 24
148	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_25	LTE	E-UTRA Operating Band 25
149	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_41	LTE	E-UTRA Operating Band 41
150	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_42	LTE	E-UTRA Operating Band 42
151	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_43	LTE	E-UTRA Operating Band 43
152	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_23	LTE	E-UTRA Operating Band 23
153	NAS_ACTIVE_BAND_E_UTRA_ OPERATING_BAND_26	LTE	E-UTRA Operating Band 26

Table A-1 Band class access technology and enum values (cont.)

Enum value	Name	Access technology	Band class
154	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_32	LTE	E-UTRA Operating Band 32
155	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_125	LTE	E-UTRA Operating Band 125
156	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_126	LTE	E-UTRA Operating Band 126
157	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_127	LTE	E-UTRA Operating Band 127
158	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_28	LTE	E-UTRA Operating Band 28
159	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_29	LTE	E-UTRA Operating Band 29
160	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_30	LTE	E-UTRA Operating Band 30
161	NAS_ACTIVE_BAND_E_UTRA_OPERATING_BAND_66	LTE	E-UTRA Operating Band 66
200	NAS_ACTIVE_BAND_TDSCDMA_BAND_A	TD-SCDMA	TD-SCDMA Band A
201	NAS_ACTIVE_BAND_TDSCDMA_BAND_B	TD-SCDMA	TD-SCDMA Band B
202	NAS_ACTIVE_BAND_TDSCDMA_BAND_C	TD-SCDMA	TD-SCDMA Band C
203	NAS_ACTIVE_BAND_TDSCDMA_BAND_D	TD-SCDMA	TD-SCDMA Band D
204	NAS_ACTIVE_BAND_TDSCDMA_BAND_E	TD-SCDMA	TD-SCDMA Band E
205	NAS_ACTIVE_BAND_TDSCDMA_BAND_F	TD-SCDMA	TD-SCDMA Band F

A.2 Band Preference

Table A-2 lists the bits representing the band preference to be set. All unused bits are reserved.

Table A-2 Band preference bit values

Bit value	Name	Description
Bit 0 (0x000000000000001)	QMI_NAS_BAND_CLASS_0_A_SYSTEM	Band Class 0, A-System
Bit 1 (0x000000000000002)	QMI_NAS_BAND_CLASS_0_B_AB_GSM850	Band Class 0, B-System, Band Class 0 AB , GSM 850 band
Bit 2 (0x000000000000004)	QMI_NAS_BAND_CLASS_1_ALL_BLOCKS	Band Class 1, all blocks
Bit 3 (0x000000000000008)	QMI_NAS_BAND_CLASS_2_PLACEHOLDER	Band Class 2 placeholder
Bit 4 (0x000000000000010)	QMI_NAS_BAND_CLASS_3_A_SYSTEM	Band Class 3, A-System
Bit 5 (0x000000000000020)	QMI_NAS_BAND_CLASS_4_ALL_BLOCKS	Band Class 4, all blocks
Bit 6 (0x000000000000040)	QMI_NAS_BAND_CLASS_5_ALL_BLOCKS	Band Class 5, all blocks
Bit 7 (0x000000000000080)	QMI_NAS_GSM_DCS_1800_BAND	GSM DCS 1800 band
Bit 8 (0x000000000000100)	QMI_NAS_E_GSM_900_BAND	GSM Extended GSM (E-GSM) 900 band
Bit 9 (0x000000000000200)	QMI_NAS_P_GSM_900_BAND	GSM Primary GSM (P-GSM) 900 band
Bit 10 (0x000000000000400)	QMI_NAS_BAND_CLASS_6	Band Class 6
Bit 11 (0x000000000000800)	QMI_NAS_BAND_CLASS_7	Band Class 7
Bit 12 (0x000000000001000)	QMI_NAS_BAND_CLASS_8	Band Class 8
Bit 13 (0x000000000002000)	QMI_NAS_BAND_CLASS_9	Band Class 9
Bit 14 (0x000000000004000)	QMI_NAS_BAND_CLASS_10	Band Class 10
Bit 15 (0x000000000008000)	QMI_NAS_BAND_CLASS_11	Band Class 11
Bit 16 (0x000000000010000)	QMI_NAS_GSM_BAND_450	GSM 450 band
Bit 17 (0x000000000020000)	QMI_NAS_GSM_BAND_480	GSM 480 band
Bit 18 (0x000000000040000)	QMI_NAS_GSM_BAND_750	GSM 750 band
Bit 19 (0x000000000080000)	QMI_NAS_GSM_BAND_850	GSM 850 band
Bit 20 (0x000000000100000)	QMI_NAS_GSM_BAND_RAILWAYS_900_BAND	GSM Railways GSM 900 band
Bit 21 (0x000000000200000)	QMI_NAS_GSM_BAND_PCS_1900_BAND	GSM PCS 1900 band
Bit 22 (0x000000000400000)	QMI_NAS_WCDMA_EU_J_CH_IMT_2100_BAND	WCDMA Europe, Japan, and China IMT 2100 band
Bit 23 (0x000000000800000)	QMI_NAS_WCDMA_US_PCS_1900_BAND	WCDMA U.S. PCS 1900 band
Bit 24 (0x000000001000000)	QMI_NAS_EU_CH_DCS_1800_BAND	WCDMA Europe and China DCS 1800 band
Bit 25 (0x000000002000000)	QMI_NAS_WCDMA_US_1700_BAND	WCDMA U.S. 1700 band
Bit 26 (0x000000004000000)	QMI_NAS_WCDMA_US_850_BAND	WCDMA U.S. 850 band

Table A-2 Band preference bit values (cont.)

Bit value	Name	Description
Bit 27 (0x000000008000000)	QMI_NAS_WCDMA_JAPAN_800_BAND	WCDMA Japan 800 band
Bit 28 (0x000000010000000)	QMI_NAS_BAND_CLASS_12	Band Class 12
Bit 29 (0x000000020000000)	QMI_NAS_BAND_CLASS_14	Band Class 14
Bit 30 (0x000000040000000)	QMI_NAS_RESERVED	Reserved
Bit 31 (0x000000080000000)	QMI_NAS_BAND_CLASS_15	Band Class 15
Bit 48 (0x001000000000000)	QMI_NAS_WCDMA_EU_2600_BAND	WCDMA Europe 2600 band
Bit 49 (0x002000000000000)	QMI_NAS_WCDMA_EU_J_900_BAND	WCDMA Europe and Japan 900 band
Bit 50 (0x004000000000000)	QMI_NAS_WCDMA_J_1700_BAND	WCDMA Japan 1700 band
Bit 56 (0x100000000000000)	QMI_NAS_BAND_CLASS_16	Band Class 16
Bit 57 (0x200000000000000)	QMI_NAS_BAND_CLASS_17	Band Class 17
Bit 58 (0x400000000000000)	QMI_NAS_BAND_CLASS_18	Band Class 18
Bit 59 (0x800000000000000)	QMI_NAS_BAND_CLASS_19	Band Class 19

A.3   LTE Band Preference

Table A-3 lists the bits representing the LTE band preference to be set. All unused bits are reserved.

Table A-3 LTE band preference bit values

Bit value	Name	Description
Bit 0 (0x000000000000001)	E_UTRA_OPERATING_BAND_1	E-UTRA Operating Band 1
Bit 1 (0x000000000000002)	E_UTRA_OPERATING_BAND_2	E-UTRA Operating Band 2
Bit 2 (0x000000000000004)	E_UTRA_OPERATING_BAND_3	E-UTRA Operating Band 3
Bit 3 (0x000000000000008)	E_UTRA_OPERATING_BAND_4	E-UTRA Operating Band 4
Bit 4 (0x000000000000010)	E_UTRA_OPERATING_BAND_5	E-UTRA Operating Band 5
Bit 5 (0x000000000000020)	E_UTRA_OPERATING_BAND_6	E-UTRA Operating Band 6
Bit 6 (0x000000000000040)	E_UTRA_OPERATING_BAND_7	E-UTRA Operating Band 7
Bit 7 (0x000000000000080)	E_UTRA_OPERATING_BAND_8	E-UTRA Operating Band 8
Bit 8 (0x000000000000100)	E_UTRA_OPERATING_BAND_9	E-UTRA Operating Band 9
Bit 9 (0x000000000000200)	E_UTRA_OPERATING_BAND_10	E-UTRA Operating Band 10
Bit 10 (0x000000000000400)	E_UTRA_OPERATING_BAND_11	E-UTRA Operating Band 11
Bit 11 (0x000000000000800)	E_UTRA_OPERATING_BAND_12	E-UTRA Operating Band 12
Bit 12 (0x000000000001000)	E_UTRA_OPERATING_BAND_13	E-UTRA Operating Band 13
Bit 13 (0x000000000002000)	E_UTRA_OPERATING_BAND_14	E-UTRA Operating Band 14
Bit 16 (0x000000000010000)	E_UTRA_OPERATING_BAND_17	E-UTRA Operating Band 17
Bit 17 (0x000000000020000)	E_UTRA_OPERATING_BAND_18	E-UTRA Operating Band 18
Bit 18 (0x000000000040000)	E_UTRA_OPERATING_BAND_19	E-UTRA Operating Band 19
Bit 19 (0x000000000080000)	E_UTRA_OPERATING_BAND_20	E-UTRA Operating Band 20
Bit 20 (0x000000000100000)	E_UTRA_OPERATING_BAND_21	E-UTRA Operating Band 21
Bit 22 (0x000000000400000)	E_UTRA_OPERATING_BAND_23	E-UTRA Operating Band 23
Bit 23 (0x000000000800000)	E_UTRA_OPERATING_BAND_24	E-UTRA Operating Band 24
Bit 24 (0x000000001000000)	E_UTRA_OPERATING_BAND_25	E-UTRA Operating Band 25
Bit 25 (0x000000002000000)	E_UTRA_OPERATING_BAND_26	E-UTRA Operating Band 26
Bit 27 (0x000000008000000)	E_UTRA_OPERATING_BAND_28	E-UTRA Operating Band 28
Bit 28 (0x000000010000000)	E_UTRA_OPERATING_BAND_29	E-UTRA Operating Band 29
Bit 29 (0x000000020000000)	E_UTRA_OPERATING_BAND_32	E-UTRA Operating Band 32
Bit 31 (0x000000080000000)	E_UTRA_OPERATING_BAND_30	E-UTRA Operating Band 30
Bit 32 (0x000000100000000)	E_UTRA_OPERATING_BAND_33	E-UTRA Operating Band 33
Bit 33 (0x000000200000000)	E_UTRA_OPERATING_BAND_34	E-UTRA Operating Band 34
Bit 34 (0x000000400000000)	E_UTRA_OPERATING_BAND_35	E-UTRA Operating Band 35
Bit 35 (0x000000800000000)	E_UTRA_OPERATING_BAND_36	E-UTRA Operating Band 36
Bit 36 (0x000001000000000)	E_UTRA_OPERATING_BAND_37	E-UTRA Operating Band 37
Bit 37 (0x000002000000000)	E_UTRA_OPERATING_BAND_38	E-UTRA Operating Band 38
Bit 38 (0x000004000000000)	E_UTRA_OPERATING_BAND_39	E-UTRA Operating Band 39
Bit 39 (0x000008000000000)	E_UTRA_OPERATING_BAND_40	E-UTRA Operating Band 40
Bit 40 (0x000010000000000)	E_UTRA_OPERATING_BAND_41	E-UTRA Operating Band 41
Bit 41 (0x000020000000000)	E_UTRA_OPERATING_BAND_42	E-UTRA Operating Band 42
Bit 42 (0x000040000000000)	E_UTRA_OPERATING_BAND_43	E-UTRA Operating Band 43

Table A-3 LTE band preference bit values (cont.)

Bit value	Name	Description
Bit 60 (0x1000000000000000)	E_UTRA_OPERATING_BAND_125	E-UTRA Operating Band 125
Bit 61 (0x2000000000000000)	E_UTRA_OPERATING_BAND_126	E-UTRA Operating Band 126
Bit 62 (0x4000000000000000)	E_UTRA_OPERATING_BAND_127	E-UTRA Operating Band 127

A.4   HDR Session Close Reason

Table A-4 lists the HDR session close reasons.

Table A-4 HDR session close reasons

Enum value	Name	Description
0x00	NAS_HDR_CLOSE_REASON_NEW_NETWORK	AMP failure: reacquired on a new network.
0x01	NAS_HDR_CLOSE_REASON_UATI_FAIL	AMP failure: timed out five times waiting for a UATI response.
0x02	NAS_HDR_CLOSE_REASON_KA_EXP	KeepAliveTimer was not reset for TsmpClose minutes.
0x03	NAS_HDR_CLOSE_REASON_DEACTIVATE	Internal deactivation.
0x04	NAS_HDR_CLOSE_REASON_REPLY	Received a session close message from the AN.
0x05	NAS_HDR_CLOSE_REASON_CONN_OPEN_FAIL	Failed to establish a connection five times to send a session configuration message.
0x06	NAS_HDR_CLOSE_REASON_CFG_MSG_FAIL	In ATInit: could not send a configuration message.
0x07	NAS_HDR_CLOSE_REASON_CFG_RSP_EXP	In ATInit: timed out waiting for a configuration response.
0x08	NAS_HDR_CLOSE_REASON_PROT_NEG_FAIL	In ATInit: bad configuration response from the AN.
0x09	NAS_HDR_CLOSE_REASON_AN_INIT_EXP	In ATInit: AN initialization setup timer expired.
0x0A	NAS_HDR_CLOSE_REASON_QUICK_FAILURE	In ATInit: connection closed in the AN initialization.
0x0B	NAS_HDR_CLOSE_REASON_CONN_OPEN_DENY	Failed to establish a connection five times for sending a configuration message; received a connection deny at least once from the network.
0x0C	NAS_HDR_CLOSE_REASON_SILENT_DEACTIVATE	Internal silent deactivation.
0x0D	NAS_HDR_CLOSE_REASON_NEW_ESN	AMP failure: phone ESN is different from the ESN associated with the current session.
0x0E	NAS_HDR_CLOSE_REASON_AN_GAUP_FAIL	AT rejected an AN GAUP message.
0x0F	NAS_HDR_CLOSE_REASON_PERSONALITY_INDEX_INVALID	AN included an invalid personality index in the SoftCC message.
0x10	NAS_HDR_CLOSE_REASON_NOT_MAINT_UATI	AMP: session was closed due to not maintaining the UATI.
0x11	NAS_HDR_CLOSE_REASON_NEW_NAI	Phone NAI is different from the NAI associated with the current session.
0x12	NAS_HDR_CLOSE_REASON_EHRPD_CREDENTIALS_CHANGED	eHRPD credentials (IMSI, EAP-AKA, or OP) have changed.

B   Call Flows

B.1   Scenario 1 – Switching Mode Preference to Connect to a Network

This scenario is an example of using QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE to switch the mode preference from GSM to WCDMA and connect to the available WCDMA network. The client must use QMI_NAS_INDICATION_REGISTER to register for SYSTEM_SELECTION_PREFERENCE_IND, SYS_INFO_IND, and SIG_INFO_IND. The client then sends QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE with the desired mode preference. SYSTEM_SELECTION_PREFERENCE_IND is sent when the mode preference changes. QMI_NAS_GET_SYSTEM_SELECTION_PREFERENCE can be used to see the current system selection preferences.

Figure B-1 illustrates the call flow for switching the mode preference to connect to a network.
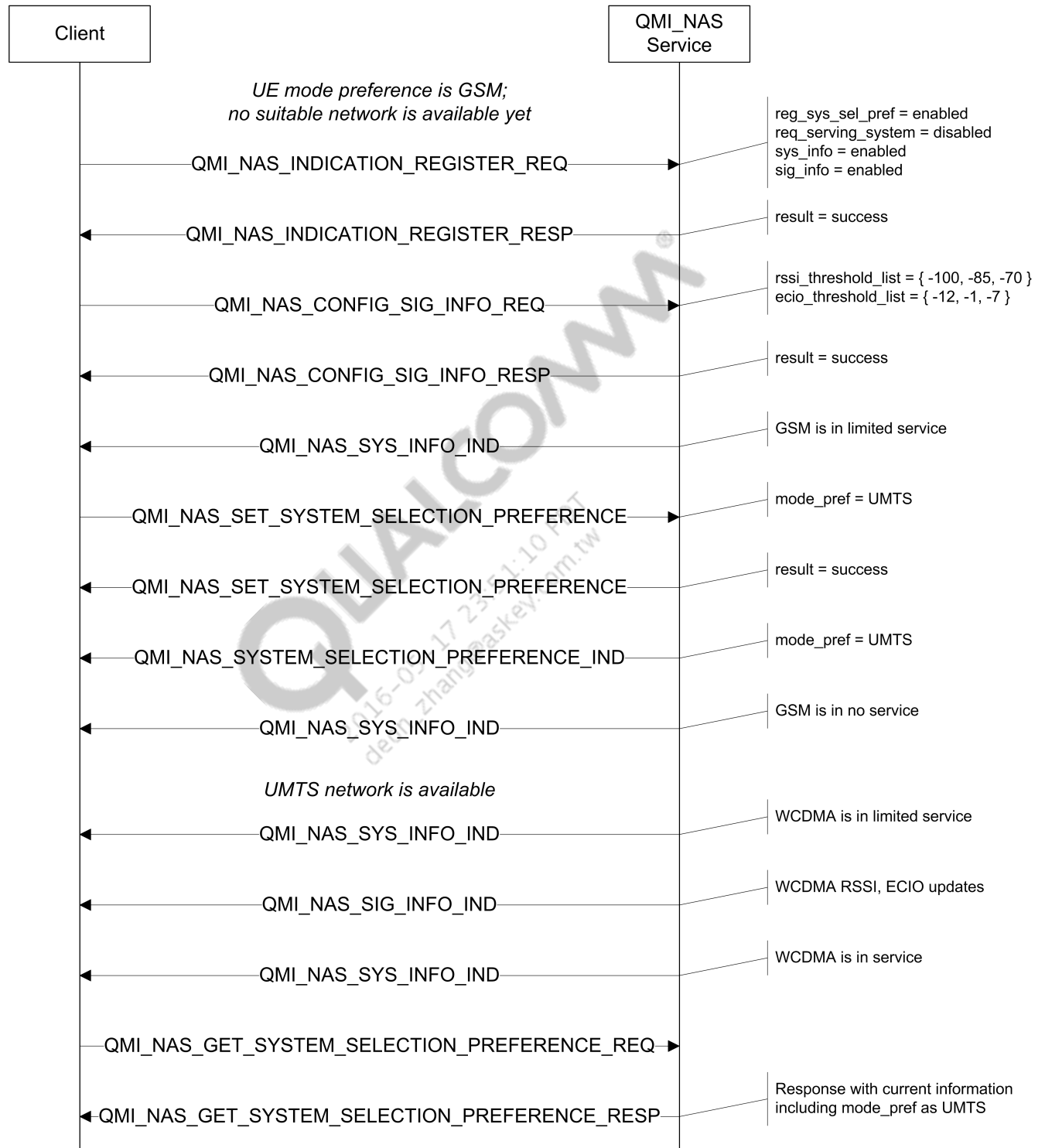
Figure B-1 Switching mode preference to connect to a network

B.2   Scenario 2 – System Information and Signal Information

This scenario is an example of using QMI_NAS_GET_SYS_INFO, QMI_NAS_SYS_INFO_IND, QMI_NAS_SIG_INFO_IND, and QMI_NAS_GET_SIG_INFO to get phone system and signal information. Figure B-2 illustrates the call flow for the scenario.
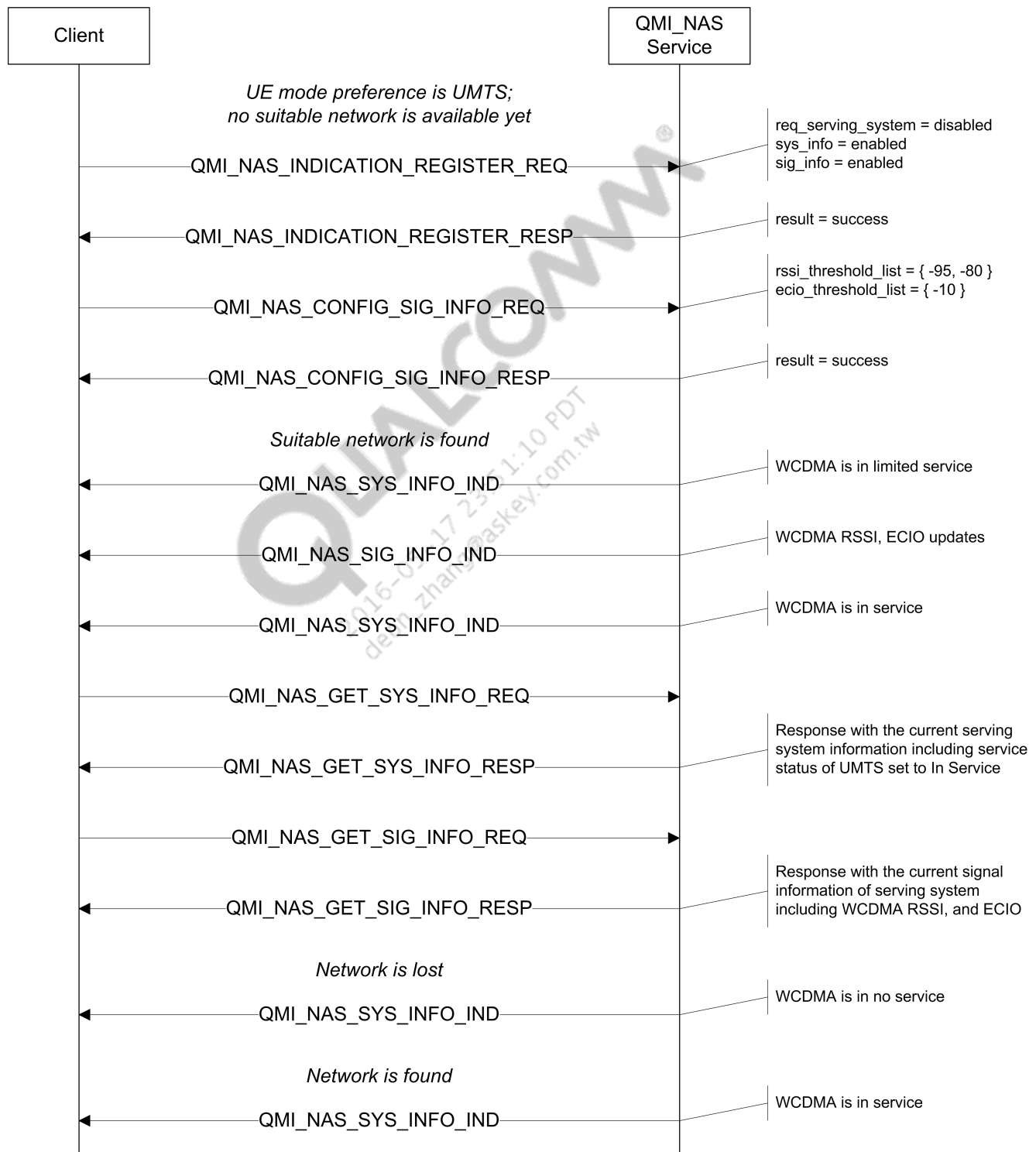

Figure B-2 System information and signal information

B.3   Scenario 3 – Perform Network Scan

This scenario is an example of using QMI_NAS_PERFORM_NETWORK_SCAN to scan for available networks. It also shows an example of aborting a network scan by using QMI_NAS_ABORT. Figure B-3 illustrates the call flow for the scenario.
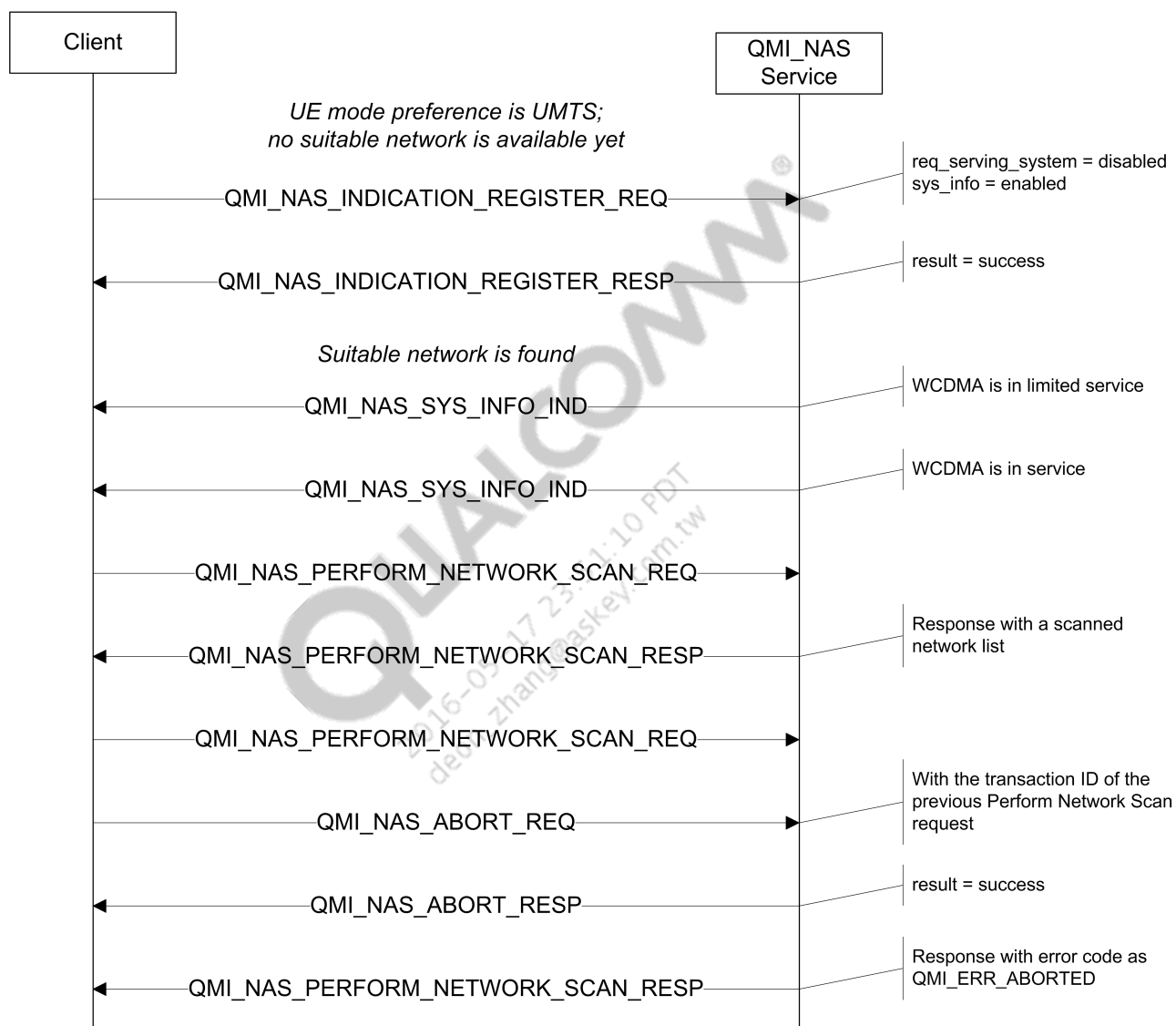
Figure B-3 Perform a network scan

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B.4   Scenario 4 – Initiate Attach

This scenario is an example of using QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE to modify the CS/PS attach state for phone. Figure B-4 illustrates the call flow for the scenario.
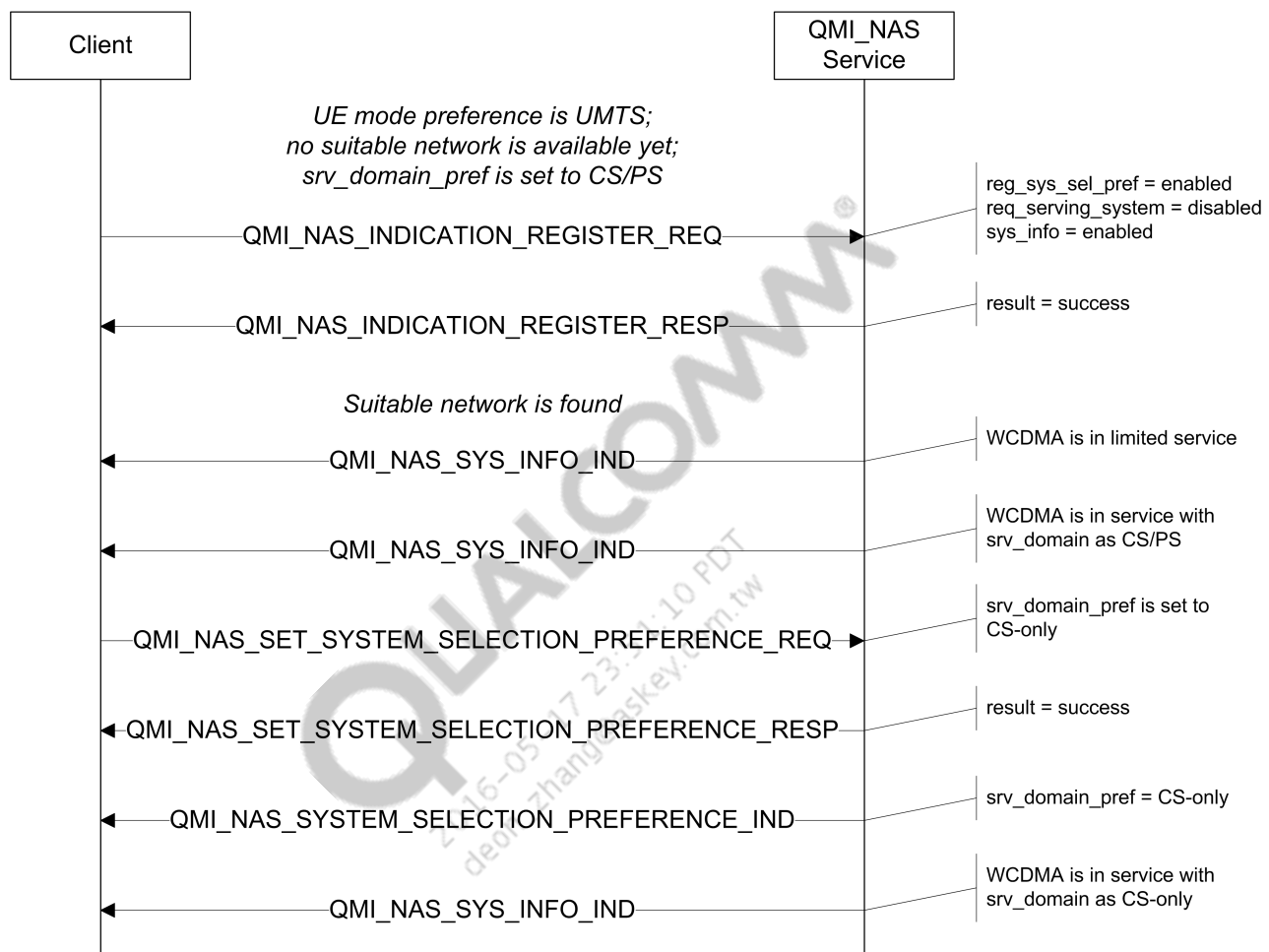
Figure B-4 Initiate attach

B.5   Scenario 5 – Initiate Network Registration

This scenario is an example of manual network registration using QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE. It shows an attempt at manual network registration on a network that is not available, which is followed by registration on the available network.

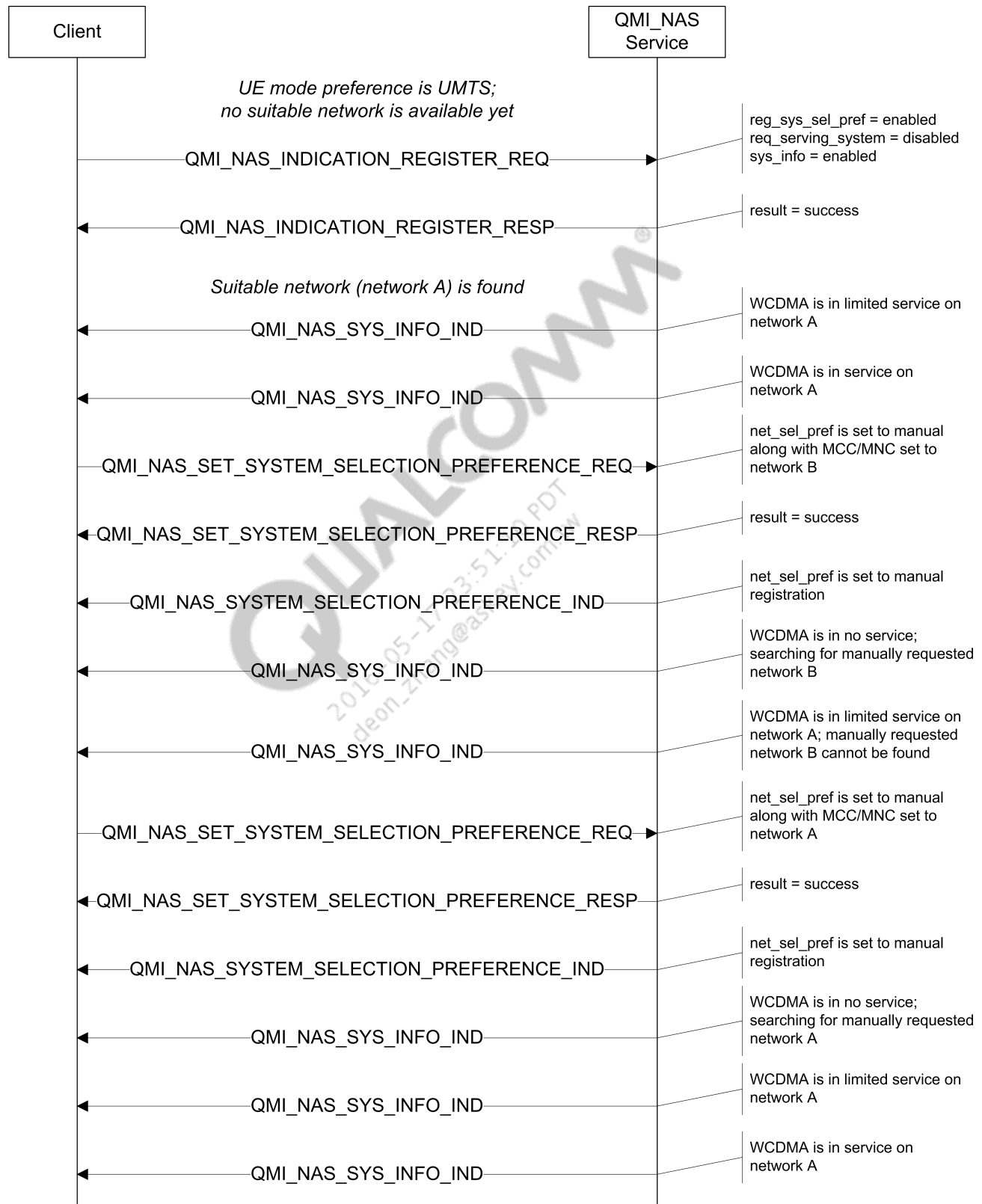Figure B-5 illustrates the call flow for initiating network registration.

Figure B-5 Initiate network registration

B.6   Scenario 6 – Get PLMN Name

This scenario is an example of retrieving a PLMN name for a network. Any network information can be retrieved by providing the MCC/MNC. Figure B-6 illustrates the call flow for the scenario.
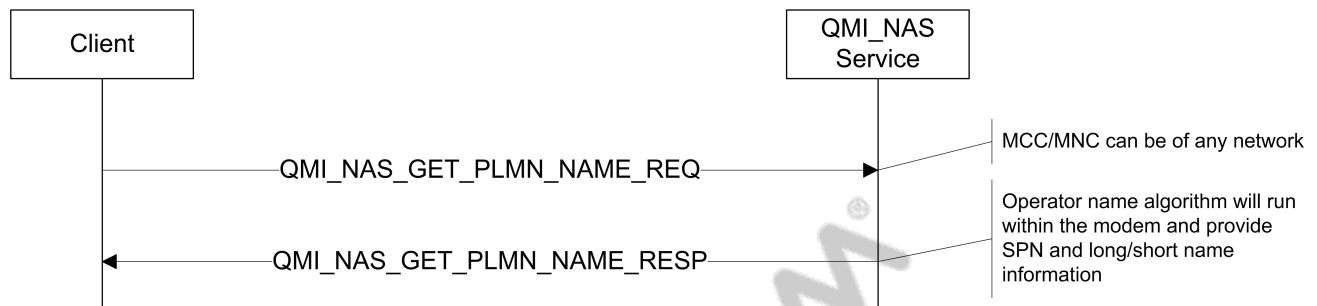

Figure B-6 Get PLMN name

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C Deprecated QMI_NAS Messages

Table C-1 lists the deprecated QMI_NAS messages and their replacements.

Table C-1 Deprecated QMI_NAS messages

Message	Replacement
QMI_NAS_SET_EVENT_REPORT	Use: • QMI_NAS_CONFIG_SIG_INFO2 – Sets the signal strength reporting thresholds • QMI_NAS_INDICATION_REGISTER – Registers for QMI_NAS_SIG_INFO_IND, QMI_NAS_ERR_RATE_IND, and/or QMI_NAS_RF_BAND_INFO_IND messages
QMI_NAS_EVENT_REPORT_IND	Use: • QMI_NAS_SIG_INFO_IND – Communicates signal strength-related information • QMI_NAS_ERR_RATE_IND – Communicates error rate-related information
QMI_NAS_GET_SIGNAL_STRENGTH	QMI_NAS_GET_SIG_INFO – Queries information regarding the signal strength.
QMI_NAS_INITIATE_NETWORK_REGISTER	QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE – Sets the different system selection preferences of the device.
QMI_NAS_INITIATE_ATTACH	QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE – Sets the different system selection preferences of the device.
QMI_NAS_GET_SERVING_SYSTEM	QMI_NAS_GET_SYS_INFO – Provides the system information.
QMI_NAS_SERVING_SYSTEM_IND	QMI_NAS_SYS_INFO_IND – Indicates a change in the system information.
QMI_NAS_GET_OPERATOR_NAME_DATA	QMI_NAS_GET_PLMN_NAME – Queries the operator name for a specified network.
QMI_NAS_OPERATOR_NAME_DATA_IND	QMI_NAS_CURRENT_PLMN_NAME_IND – Indicates the current SPN and PLMN name information.
QMI_NAS_SET_TECHNOLOGY_PREFERENCE	QMI_NAS_SET_SYSTEM_SELECTION_PREFERENCE – Sets the different system selection preferences of the device.
QMI_NAS_GET_TECHNOLOGY_PREFERENCE	QMI_NAS_GET_SYSTEM_SELECTION_PREFERENCE – Queries the different system selection preferences of the device.

Table C-1 Deprecated QMI_NAS messages (cont.)

Message	Replacement
QMI_NAS_GET_CURRENT_ACQ_SYS_MODE	None.
QMI_NAS_CONFIG_SIG_INFO	QMI_NAS_CONFIG_SIG_INFO2 – Sets the signal strength reporting thresholds.
QMI_NAS_SSAC_INFO_IND	QMI_NAS_SSAC_CHANGE_INFO_IND – Indicates a change in service-specific access class barring information for MMTEL voice/video originating calls.

D   References

D.1   Related Documents

Title	Number
Qualcomm Technologies	
QMI Client API Interface Specification	80-N1123-1
QMI Common Service Interface API Interface Specification	80-N1123-2
Qualcomm Messaging Interface (QMI) Architecture	80-VB816-1
Standards	
3rd Generation Partnership Project; Technical Specification Group Terminals Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (Rel 1999)	3GPP TS 11.11
3rd Generation Partnership Project; Technical Specification Group Services and System Aspects Service aspects; Service principles (Release 9)	3GPP TS 22.101
3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Alphabets and language-specific information (Rel 8)	3GPP TS 23.038
3rd Generation Partnership Project; Technical Specification Group Core Network; Mobile Radio Interface Layer 3 Specification; Core Network Protocols; Stage 3 (Release 1999)	3GPP TS 24.008
3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3 (Release 9)	3GPP TS 24.301 V9.4.0
3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Physical channels and mapping of transport channels onto physical channels (FDD) (Release 9)	3GPP TS 25.211
3rd Generation Partnership Project; Technical Specification Group Radio Access Network; User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode (Rel 9)	3GPP TS 25.304
3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol specification (Release 9)	3GPP TS 25.331
3rd Generation Partnership Project; Technical Specification Group Terminals; AT command set for User Equipment (UE) (Release 1999)	3GPP TS 27.007
3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Characteristics of the Universal Subscriber Identity Module (USIM) application (Rel 8)	3GPP TS 31.102
3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation (Release 10)	3GPP TS 36.211

Title	Number
3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC); Protocol specification (Release 8)	3GPP TS 36.331
3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network; Radio transmission and reception (Release 9)	3GPP TS 45.005
3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network; Radio subsystem link control (Rel 8)	3GPP TS 45.008
Administration of Parameter Value Assignments for cdma2000® Spread Spectrum Standards Version 1.0	3GPP2 C.R1001-F (Dec 8, 2006)
Data Service Options for Spread Spectrum Systems: AT Command Processing and the Rm Interface	3GPP2 C.S0017-003-A
cdma2000® High Rate Packet Data Air Interface Specification	3GPP2 C.S0024-B V3.0
Common PCN Handset Specification (CPHS) Phase 2 (Rel 4.2)	CPHS4_2.WW6 (Feb 27, 1997)
Information Technology - Universal Multiple-Octet Coded Character Set (UCS)	ISO/IEC 10646
Mobile Station-Base Station Compatibility Standard for Wideband Spread Spectrum Cellular Systems	TIA/EIA/IS-95
Data Transmission Systems and Equipment - Extensions to Serial Asynchronous Dialing and Control	TIA/EIA/IS-131

D.2   Acronyms and Terms

Acronym or term	Definition
ACB	access class barring
ACCOLC	access overload class
ACSGL	allowed CSG list
AMP	Address Management Protocol
AN	access network
AT	access terminal
ATCOP	AT command processor
ARFCN	absolute radio frequency channel number
BPLMN	background public land mobile network
BSR	better system reselection
CPICH	common pilot channel
CS	circuit-switched
CSG	closed subscriber group
CSP	customer service profile
DDS	designated data subscription
DDTM	Data Dedicated Transmission mode
DRX	discontinuous reception
DSDS	dual SIM dual standby
DTM	dual transfer mode
EARFCN	E-UTRA absolute radio frequency channel number

Acronym or term	Definition
ECBM	Emergency Callback mode
EF	elementary file
EGPRS	enhanced general packet radio service
eMBMS	evolved multimedia broadcast/multicast services
EMM	Extended Mobility Management
EONS	enhanced operator name string
FDD	frequency division duplex
GAUP	Generic Attribute Update Protocol
GSMA	GSM Association
IMS	IP multimedia subsystem
IMSI	international mobile subscriber identity
LAC	location area code
MBSFN	multicast broadcast single frequency network
MCC	mobile country code
MCS	modulation and coding scheme
MDN	mobile directory number
MNC	mobile network code
MMTEL	multimedia telephony
MS	mobile station
MTCH	multicast traffic channel
NAI	network access identifier
NAS	Network Access Service
NITZ	network identity and time zone
NV	nonvolatile
OCSGL	operator CSG list
PCCPCH	primary common control physical channel
PCI	physical cell ID
PCS	personal communications service
PMCH	physical multicast channel
PN	pseudorandom noise
PRACH	packet random access channel
PRL	preferred roaming list
PS	packet-switched
QMI	Qualcomm messaging interface
RAC	routing area code
RACH	random access channel
RPM	radio policy manager
RSCP	received signal code power
RSRP	reference signal received power
RSRQ	reference signal received quality
RSSI	received signal strength indicator
RTRE	runtime R-UIM enable
R-UIM	removable user identity module
SIB	system information block
SIM	subscriber identity module
SINR	signal-to-interface plus noise ratio
SNR	signal-to-noise ratio

Acronym or term	Definition
SPC	service programming code
SPN	service provider name
SRVCC	single radio voice call continuity
SSAC	service-specific access class
TD-SCDMA	time division synchronous code division multiple access
TDD	time division duplex
TE	terminal equipment
TLV	type-length-value
TMGI	temporary mobile group identity
UATI	unique access terminal identifier
UE	user equipment
UIM	user identity module

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