NXP Semiconductors
User's Guide

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Framework Serial Connectivity Interface (FSCI) for Bluetooth® Low Energy Host Stack

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Chapter 1
Introduction

This reference manual provides a detailed description of the Bluetooth ® Low Energy Host Stack serial commands, communication packet structure, and usage of the Framework Serial Communication Interface (FSCI).

1.1 Scope and objective

This document describes the Bluetooth® LE Host Stack functionality through a serial communication interface to a host system. The typical serial interfaces are UART, SPI, and I2C. The typical applications employing the Bluetooth LE Host Stack FSCI functionality can be desktop applications, such as the NXP Test Tool for Connectivity Products, or embedded systems that have Bluetooth LE applications using Bluetooth LE stack services via FSCI.

1.2 Audience description

This reference manual is intended for profile designers, application designers, and users of the BLE Host Stack FSCI.

1.3 References

Table 1. References Table

Title	Reference	Version	Location
Specification of the Bluetooth System	Core v5.0	2013	www.bluetooth.org/en-us/specification/adopted-specifications
Bluetooth® Low Energy Host Stack API Reference Manual	BLEHSAPIRM	2015	Included in package

1.4 Definitions, acronyms, and abbreviations

Table 2. Acronyms Table

Term/Acronym	Definition
ATT	Attribute Protocol
BLE	Bluetooth Low Energy
FSCI	Framework Serial Communication Interface
GATT	Generic Attribute Profile
GATTDB	Generic Attribute Profile Database
GAP	Generic Access Profile
HCI	Host Controller Interface
L2CAP	Logical Link Control and Adaptation
L2CAP CB	Logical Link Control and Adaptation Credit Based
SM	Security Manager

Chapter 2
Overview

The FSCI (Framework Serial Communication Interface) module supports interfacing the BLE Host Stack with a host or a PC tool (TestTool for Connectivity Products) using a serial communication line. If the FSCI is used with the NXP Test Tool for Connectivity products, this tool can use an XML file which contains a detailed meta-description for serial commands and events. This XML file is provided in software packages which include this document.

2.1 Bluetooth LE Host Stack interface set

The Buetooth LE Host Stack layers that offer access using FSCI are GATT, GATTDB, L2CAP CB, and GAP. Each layer provides primitives that an upper layer (profile/application) uses to access services of that layer. This document includes a detailed list of the provided primitives.

2.2 Basic requirements

• IAR Embedded Workbench for ARM® architecture

• NXP development boards (to be loaded with the “ble_fsci_app” application)

• Optional Bluetooth LE sniffer for testing

• PC tool (TestTool for Connectivity Products) or another host processor capable of communicating through UART, USB, SPI, or I^2C

2.2.1 Interface description

The FSCI module uses the Serial Manager and needs one of the following interfaces for communication:

• A 2-wire UART connection

• A 3-wire I^2C connection

• A 5-wire SPI connection

• A USB connection

2.3 Overview and packet structure

The FSCI module sends and receives messages as shown in the below figure. This structure is not specific to a serial interface and is designed to offer the best communication reliability. The device is expecting messages in little-endian format and responds with messages in little-endian format.

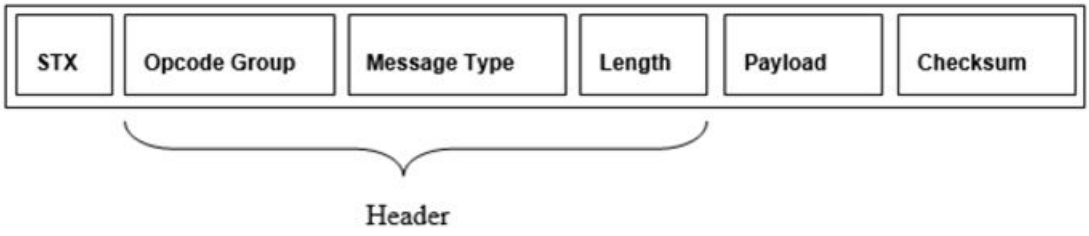

Figure 1. Packet Structure

Table 3. Packet Field Description

Field Name	Length (bytes)	Description
STX	1	Used for synchronization over the serial interface. The value is always 0x02.
Opcode Group	1	Distinguishes between different layers (for example, GAP, GATT, and GATTDB).
Message Type	1	Specifies the exact message opcode that is contained in the packet.
Length	2	The length of the packet payload, excluding the header and the checksum. The length field content shall be provided in little endian format.
Payload	Variable	Payload of the actual message.
Checksum	1	Checksum field used to check the data integrity of the packet.

Chapter 3
FSCI Messages Description

This chapter describes all L2CAP CB, GAP, GATT, and GATTDB commands (requests) and events (confirms and indications) in detail. The “BLE.xml” document found in the ble_fsci_app subfolder, and provides an XML representation of all these commands and events.

3.1 L2CAP Credit Based Messages

3.1.1 L2CAPCB.Confirm

Description

Status of the L2CAP request.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Status	2	The status of the L2CAP request Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBle TimeError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.1.2 L2CAPCB-CancelConnection.Request

Description

Termination of an L2CAP channel.

Parameters

Table 4. L2CAPCB-CancelConnection.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x06
Length	1	Length in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM
DeviceId	1	The DeviceId for which the command is intended
RefuseReason	2	Refuse reason Possible values: 0x0000: gSuccessful_c 0x0002: gLePsmNotSupported_c 0x0004: gNoResourcesAvailable_c 0x0005: gInsufficientAuthentication_c 0x0006: gInsufficientAuthorization_c 0x0007: gInsufficientEncryptionKeySize_c 0x0008: gInsufficientEncryption_c 0x0009: gInvalidSourceCid_c 0x000A: gSourceCidAlreadyAllocated_c 0x000B: gTimerError_c 0x0100: gCommandRejected_c 0xFFFE: gResponseTimeout_c

3.1.3 L2CAPCB-ConnectLePsm.Request

Description

L2CAP connect.

Parameters

Table 5. L2CAPCB-ConnectLePsm.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x04
Length	1	Le gth in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM

Table continues on the next page...

Table 5. L2CAPCB-ConnectLePsm.Request Parameters (continued)

Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
InitialCredits	2	Initial credits

3.1.4 L2CAPCB-DeregisterLePsm.Request

Description

Deregister LePsm.

Parameters

Table 6. L2CAPCB-DeregisterLePsm.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x03
Length	1	Length in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM

3.1.5 L2CAPCB-DisconnectLeCbChannel.Request

Description

L2CAP disconnect.

Parameters

Table 7. L2CAPCB-DisconnectLeCbChannel.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x05
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator

3.1.6 L2CAPCB-LeCbData.Indication

Description

Data packet received through Credit-Based Channel.

Parameters

Table 8. L2CAPCB-LeCbData.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceId from which data packet is received
LePsm	2	Bluetooth SIG or Vendor LE_PSM
PacketLength	2	Length of the received data packet
Packet	PacketLength	The received data packet

3.1.7 L2CAPCB-LePsmConnectionComplete.Indication

Description

Credit Based - Connection complete event.

Parameters

Table 9. L2CAPCB-LePsmConnectionComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbConnectionComplete	Variable	Connection complete event data Structure type parameter. See the detailed table below for parameter structure.

Table 10. LeCbConnectionComplete Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator
PeerMtu	2	Peer's MTU
PeerMps	2	Peer's MPS
InitialCredits	2	Initial credits

Table continues on the next page...

Table 10. LeCbConnectionComplete Parameter Structure (continued)

Result	2	Connection result Possible values: 0x0000: gSuccessful_c 0x0002: gLePsmNotSupported_c 0x0004: gNoResourcesAvailable_c 0x0005: gInsufficientAuthentication_c 0x0006: gInsufficientAuthorization_c 0x0007: gInsufficientEncryptionKeySize_c 0x0008: gInsufficientEncryption_c 0x0009: gInvalidSourceCid_c 0x000A: gSourceCidAlreadyAllocated_c 0x0100: gCommandRejected_c 0x000B: gTimerError_c 0xFFFE: gResponseTimeout_c

3.1.8 L2CAPCB-LePsmConnectionRequest.Indication

Description

Credit Based - Connection request event.

Parameters

Table 11. L2CAPCB-LePsmConnectionRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbConnectionRequest	Variable	Connection request event data Structure type parameter. See the detailed table below for parameter structure.

Table 12. LeCbConnectionRequest Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended

Table continues on the next page...

Table 12. LeCbConnectionRequest Parameter Structure (continued)

LePsm	2	Bluetooth SIG or Vendor LE_PSM
PeerMtu	2	Peer MTU
PeerMps	2	Peer MPS
InitialCredits	2	Initial credits

3.1.9 L2CAPCB-LePsmDisconnectNotification.Indication

Description

Credit Based - Disconnection notification event.

Parameters

Table 13. L2CAPCB-LePsmDisconnectNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbDisconnection	Variable	Disconnection event data Structure type parameter. See the detailed table below for parameter structure.

Table 14. LeCbDisconnection Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator

3.1.10 L2CAPCB-LocalCreditsNotification.Indication

Description

Credit Based - Local credits notification event.

Parameters

Table 15. L2CAPCB-LocalCreditsNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x85

Table continues on the next page...

Table 15. L2CAPCB-LocalCreditsNotification.Indication Parameters (continued)

Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbLocalCreditsNotification	Variable	Local credits notification event data Structure type parameter. See the detailed table below for parameter structure.

Table 16. LeCbLocalCreditsNotification Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator
LocalCredits	2	Local credits

3.1.11 L2CAPCB-NoPeerCredits.Indication

Description

Credit Based - No peer credits event.

Parameters

Table 17. L2CAPCB-NoPeerCredits.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbNoPeerCredits	Variable	No peer credits event data Structure type parameter. See the detailed table below for parameter structure.

Table 18. LeCbNoPeerCredits Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator

3.1.12 L2CAPCB-RegisterLePsm.Request

Description

Register LePsm.

Parameters

Table 19. L2CAPCB-RegisterLeCbCallbacks.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x02
Length	1	Length in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM
LePsmMtu	2	MTU value

3.1.13 L2CAPCB-SendLeCbData.Request

Description

Sends a data packet through a Credit Based Channel.

Parameters

Table 20. L2CAPCB-SendLeCredit.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x07
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceId for which the command is intended
Channel Id	2	The L2CAP Channel Id assigned on the initiator
PacketLength	2	Length of the data packet to be sent
Packet	PacketLength	The data packet to be transmitted

3.1.14 L2CAPCB-SendLeCredit.Request

Description

Sends credits to a device when capable of receiving additional LE-frames.

Parameters

Table 21. L2CAPCB-SendLeCredit.Request Parameters

Parameters	Size (bytes)	Comments
OpGroup	1	0x42

Table continues on the next page...

Table 21. L2CAPCB-SendLeCredit.Request Parameters (continued)

Parameters	Size (bytes)	Comments
OpCode	1	0x08
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID to which credits are given
Channel Id	2	The L2CAP Channel Id assigned on the initiator
Credits	2	Number of credits to be given

3.1.15 L2CAPCB-RegisterLeCbCallbacks.Request

Description

Registers callbacks for credit based data and control events on L2CAP.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x01
Length	2	0x00 - This message does not have any parameters

3.1.16 L2CAPCB-Error.Indication

Description

Credit Based - Internal error event.

Parameters

Table 22. L2CAPCB-Error.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x42
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
InformationIncluded	1	Information is included or not
LeCbError	Variable	Internal error event data Structure type parameter. See detailed table below for parameter structure.

Table 23. LeCbError Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
Error	2	Internal error reported by the L2CAP layer Possible values: 0x0000: gBleSuccess_c 0x0001: gBleInvalidParameter_c 0x0002: gBleOverflow_c 0x0003: gBleUnavailable_c 0x0004: gBleFeatureNotSupported_c 0x0005: gBleOutOfMemory_c 0x0006: gBleAlreadyInitialized_c 0x0007: gBleOsError_c 0x0008: gBleUnexpectedError_c 0x0009: gBleInvalidState_c 0x000A: gBleTimerError_c 0x0101: gHciUnknownHciCommand_c 0x0102: gHciUnknownConnectionIdentifier_c 0x0103: gHciHardwareFailure_c 0x0104: gHciPageTimeout_c 0x0105: gHciAuthenticationFailure_c 0x0106: gHciPinOrKeyMissing_c 0x0107: gHciMemoryCapacityExceeded_c 0x0108: gHciConnectionTimeout_c 0x0109: gHciConnectionLimitExceeded_c 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c 0x010B: gHciAclConnectionAlreadyExists_c 0x010C: gHciCommandDisallowed_c 0x010D: gHciConnectionRejectedDueToLimitedResources_c 0x010E: gHciConnectionRejectedDueToSecurityReasons_c 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c 0x0110: gHciConnectionAcceptTimeoutExceeded_c 0x0111: gHciUnsupportedFeatureOrParameterValue_c 0x0112: gHciInvalidHciCommandParameters_c 0x0113: gHciRemoteUserTerminatedConnection_c 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c

Table continues on the next page...

Table 23. LeCbError Parameter Structure (continued)

		0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c 0x0116: gHciConnectionTerminatedByLocalHost_c 0x0117: gHciRepeatedAttempts_c 0x0118: gHciPairingNotAllowed_c 0x0119: gHciUnknownLpmPdu_c 0x011A: gHciUnsupportedRemoteFeature_c 0x011B: gHciScoOffsetRejected_c 0x011C: gHciScoIntervalRejected_c 0x011D: gHciScoAirModeRejected_c 0x011E: gHciInvalidLpmParameters_c 0x011F: gHciUnspecifiedError_c 0x0120: gHciUnsupportedLpmParameterValue_c 0x0121: gHciRoleChangeNotAllowed_c 0x0122: gHciLLResponseTimeout_c 0x0123: gHciLmpErrorTransactionCollision_c 0x0124: gHciLmpPduNotAllowed_c 0x0125: gHciEncryptionModeNotAcceptable_c 0x0126: gHciLinkKeyCannotBeChanged_c 0x0127: gHciRequestedQosNotSupported_c 0x0128: gHciInstantPassed_c 0x0129: gHciPairingWithUnitKeyNotSupported_c 0x012A: gHciDifferentTransactionCollision_c 0x012B: gHciReserved_0x2B_c 0x012C: gHciQosNotAcceptableParameter_c 0x012D: gHciQosRejected_c 0x012E: gHciChannelClassificationNotSupported_c 0x012F: gHciInsufficientSecurity_c 0x0130: gHciParameterOutOfMandatoryRange_c 0x0131: gHciReserved_0x31_c 0x0132: gHciRoleSwitchPending_c 0x0133: gHciReserved_0x33_c 0x0134: gHciReservedSlotViolation_c 0x0135: gHciRoleSwitchFailed_c 0x0136: gHciExtendedInquiryResponseTooLarge_c 0x0137: gHciSecureSimplePairingNotSupportedByHost_c

Table continues on the next page...

Table 23. LeCbError Parameter Structure (continued)

		0x0138: gHciHostBusyPairing_c 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c 0x013A: gHciControllerBusy_c 0x013B: gHciUnacceptableConnectionParameters_c 0x013C: gHciDirectedAdvertisingTimeout_c 0x013D: gHciConnectionTerminatedDueToMicFailure_c 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c 0x013F: gHciMacConnectionFailed_c 0x0140: gHciCoarseClockAdjustmentRejected_c 0x0141: gHciType0SubmapNotDefined_c 0x0142: gHciUnknownAdvertisingIdentifier_c 0x0143: gHciLimitReached_c 0x0144: gHciOperationCancelledByHost_c 0x01A0: gHciAlreadyInit_c 0x01A1: gHciInvalidParameter_c 0x01A2: gHciCallbackNotInstalled_c 0x01A3: gHciCallbackAlreadyInstalled_c 0x01A4: gHciCommandNotSupported_c 0x01A5: gHciEventNotSupported_c 0x01A6: gHciTransportError_c 0x03F0: gL2caAlreadyInit_c 0x03F1: gL2caInsufficientResources_c 0x03F2: gL2caCallbackNotInstalled_c 0x03F3: gL2caCallbackAlreadyInstalled_c 0x03F4: gL2caLePsmInvalid_c 0x03F5: gL2caLePsmAlreadyRegistered_c 0x03F6: gL2caLePsmNotRegistered_c 0x03F7: gL2caLePsmInsufficientResources_c 0x03F8: gL2caChannelInvalid_c 0x03F9: gL2caChannelClosed_c 0x03FA: gL2caChannelAlreadyConnected_c 0x03FB: gL2caConnectionParametersRejected_c 0x03FC: gL2caChannelBusy_c 0x03FE: gL2caInvalidParameter_c 0x03FF: gL2caError_c

Table continues on the next page...

Table 23. LeCbError Parameter Structure (continued)

		0x0401: gSmNullCBFunction_c 0x0402: gSmCommandNotSupported_c 0x0403: gSmUnexpectedCommand_c 0x0404: gSmInvalidCommandCode_c 0x0405: gSmInvalidCommandLength_c 0x0406: gSmInvalidCommandParameter_c 0x0407: gSmInvalidDeviceId_c 0x0408: gSmInvalidInternalOperation_c 0x0409: gSmInvalidConnectionHandle_c 0x040A: gSmInproperKeyDistributionField_c 0x040B: gSmUnexpectedKeyType_c 0x040C: gSmUnexpectedPairingTerminationReason_c 0x040D: gSmUnexpectedKeyset_c 0x040E: gSmSmpTimeoutOccurred_c 0x040F: gSmUnknownSmpPacketType_c 0x0410: gSmInvalidSmpPacketLength_c 0x0411: gSmInvalidSmpPacketParameter_c 0x0412: gSmReceivedUnexpectedSmpPacket_c 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c 0x0414: gSmReceivedUnexpectedHciEvent_c 0x0415: gSmReceivedHciEventFromUnknownDevice_c 0x0416: gSmInvalidHciEventParameter_c 0x0417: gSmLlConnectionEncryptionInProgress_c 0x0418: gSmLlConnectionEncryptionFailure_c 0x0419: gSmInsufficientResources_c 0x041A: gSmOobDataAddressMismatch_c 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c 0x041C: gSmReceivedTimerEventForUnknownDevice_c 0x041D: gSmUnattainableLocalDeviceSecRequirements_c 0x041E: gSmUnattainableLocalDeviceMinKeySize_c 0x041F: gSmUnattainableSlaveSecReqRequirements_c 0x0431: gSmPairingErrorPasskeyEntryFailed_c 0x0432: gSmPairingErrorConfirmValueFailed_c 0x0433: gSmPairingErrorCommandNotSupported_c 0x0434: gSmPairingErrorInvalidParameters_c

Table continues on the next page...

Table 23. LeCbError Parameter Structure (continued)

		0x0435: gSmPairingErrorUnknownReason_c 0x0436: gSmPairingErrorTimeout_c 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c 0x0461: gSmTbInvalidDataSignature_c 0x0501: gAttInvalidHandle_c 0x0502: gAttReadNotPermitted_c 0x0503: gAttWriteNotPermitted_c 0x0504: gAttInvalidPdu_c 0x0505: gAttInsufficientAuthentication_c 0x0506: gAttRequestNotSupported_c 0x0507: gAttInvalidOffset_c 0x0508: gAttInsufficientAuthorization_c 0x0509: gAttPrepareQueueFull_c 0x050A: gAttAttributeNotFound_c 0x050B: gAttAttributeNotLong_c 0x050C: gAttInsufficientEncryptionKeySize_c 0x050D: gAttInvalidAttributeValueLength_c 0x050E: gAttUnlikelyor_c 0x050F: gAttInsufficientEncryption_c 0x0510: gAttUnsupportedGroupType_c 0x0511: gAttInsufficientResources_c 0x0601: gGattAnotherProcedureInProgress_c 0x0602: gGattLongAttributePacketsCorrupted_c 0x0603: gGattMultipleAttributesOverflow_c 0x0604: gGattUnexpectedReadMultipleResponseLength_c 0x0605: gGattInvalidValueLength_c 0x0606: gGattServerTimeout_c 0x0607: gGattIndicationAlreadyInProgress_c 0x0608: gGattClientConfirmationTimeout_c 0x0701: gGapAdvDataTooLong_c 0x0702: gGapScanRspDataTooLong_c 0x0703: gGapDeviceNotBonded_c 0x0704: gGapAnotherProcedureInProgress_c 0x0801: gDevDbCccdLimitReached_c 0x0802: gDevDbCccdNotFound_c

Table continues on the next page...

Table 23. LeCbError Parameter Structure (continued)

		0x0901: gGattDbInvalidHandle_c 0x0902: gGattDbCharacteristicNotFound_c 0x0903: gGattDbCccdNotFound_c 0x0904: gGattDbServiceNotFound_c 0x0905: gGattDbDescriptorNotFound_c

3.2 GATT Messages

3.2.1 GATT.Confirm

Description

Status of the GATT request.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Status	2	The status of the GATT request Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.2.2 GATTClient-DiscoverAllCharacteristicDescriptors.Request

Description

Initializes the Characteristic Descriptor Discovery procedure for a given Characteristic.

Parameters

Table 24. GATTClient-DiscoverAllCharacteristicDescriptors.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0E
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 24. GATTClient-DiscoverAllCharacteristicDescriptors.Request Parameters (continued)

DeviceId	1	Device ID of the connected peer
Characteristic	Variable	The characteristic within which descriptors should be searched Structure type parameter. See the detailed table below for parameter structure.
EndingHandle	2	The last handle of the Characteristic
MaxNbOfDescriptors	1	Maximum number of descriptors to be filled

Table 25. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array

Table continues on the next page...

Table 25. Characteristic Parameter Structure (continued)

Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 26. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 27. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter

Table continues on the next page...

Table 27. Descriptors Parameter Structure (continued)

		UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 28. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 29. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.3 GATTClient-DiscoverAllCharacteristicsOfService.Request

Description

Initializes the Characteristic Discovery procedure for a given Service.

Parameters

Table 30. GATTClient-DiscoverAllCharacteristicsOfService.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0C
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Service	Variable	The service within which characteristics should be searched Structure type parameter. See the detailed table below for parameter structure.

Table continues on the next page...

Table 30. GATTClient-DiscoverAllCharacteristicsOfService.Request Parameters (continued)

MaxNbOfCharacteristics	1	Maximum number of characteristics to be filled

Table 31. Service Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 32. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 33. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 34. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute

Table continues on the next page...

Table 34. IncludedServices Parameter Structure (continued)

EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 35. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 36. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 37. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 38. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 39. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.4 GATTClient-DiscoverAllPrimaryServices.Request

Description

Initializes the Primary Service Discovery procedure.

Parameters

Table 40. GATTClient-DiscoverAllPrimaryServices.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x09
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
MaxNbOfServices	1	Maximum number of services to be filled

3.2.5 GATTClient-DiscoverCharacteristicOfServiceByUuid.Request

Description

Initializes the Characteristic Discovery procedure for a given Service, with a given UUID.

Parameters

Table 41. GATTClient-DiscoverCharacteristicOfServiceByUuid.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0D
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
Service	Variable	The service within which characteristics should be searched

Table continues on the next page...

Table 41. GATTClient-DiscoverCharacteristicOfServiceByUuid.Request Parameters (continued)

		Structure type parameter. See the detailed table below for parameter structure.
MaxNbOfCharacteristics	1	Maximum number of characteristics to be filled

Table 42. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 43. Service Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 44. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 45. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute

Table continues on the next page...

Table 45. IncludedServices Parameter Structure (continued)

EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 46. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 47. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 48. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 49. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 50. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.6 GATTClient-DiscoverPrimaryServicesByUuid.Request

Description

Initializes the Primary Service Discovery by UUID procedure.

Parameters

Table 51. GATTClient-DiscoverPrimaryServicesByUuid.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0A
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
MaxNbOfServices	1	Maximum number of services to be filled

Table 52. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.7 GATTClient-ExchangeMtu.Request

Description

Initializes the MTU Exchange procedure.

Parameters

Table 53. GATTClient-ExchangeMtu.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45

Table continues on the next page...

Table 53. GATTClient-ExchangeMtu.Request Parameters (continued)

OpCode	1	0x08
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
MTU	2	Desired MTU size for the connected peer

3.2.8 GATTClient-FindIncludedServices.Request

Description

Initializes the Find Included Services procedure.

Parameters

Table 54. GATTClient-FindIncludedServices.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0B
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Service	Variable	The service within which inclusions should be searched Structure type parameter. See the detailed table below for parameter structure.
MaxNbOfIncludedServices	1	Maximum number of included services to be filled

Table 55. Service Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits

Table continues on the next page...

Table 55. Service Parameter Structure (continued)

Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 56. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 57. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response)

Table continues on the next page...

Table 57. Characteristics Parameter Structure (continued)

		0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 58. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 59. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 60. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 61. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 62. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 63. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.9 GATTClient-Indication.Indication

Description

GATT Client indication.

Parameters

Table 64. GATTClient-Indication.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x90
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
CharacteristicValueHandle	2	Handle of the Characteristic Value attribute to be indicated
ValueLength	2	Value array size
Value	ValueLength	The Characteristic value array

3.2.10 GATTClient-Init.Request

Description

Initializes the GATT Client functionality.

Parameters

Table 65. GATTClient-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x03
Length	1	0x00 - This message does not have any parameters

3.2.11 GATTClient-Notification.Indication

Description

GATT Client notification.

Parameters

Table 66. GATTClient-Notification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8F
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
CharacteristicValueHandle	2	Handle of the Characteristic Value attribute to be notified
ValueLength	2	Value array size
Value	ValueLength	The Characteristic value array

3.2.12 GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication

Description

Specifies that the Characteristic Descriptor Discovery procedure for a given characteristic ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x88
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure

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Parameter	Size (bytes)	Comments
		Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure. Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F:gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A:gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

Table 67. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read)

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Table 67. Characteristics Parameter Structure (continued)

		0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 68. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table continues on the next page...

Table 68. Value Parameter Structure (continued)

ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 69. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 70. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 71. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.13 GATTClient-ProcedureDiscoverAllCharacteristics.Indication

Description

Specifies that the Characteristic Discovery procedure for a given service ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c

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Parameter	Size (bytes)	Comments
		• 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c

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Parameter	Size (bytes)	Comments
		• 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c

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Parameter	Size (bytes)	Comments
		• 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c

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Parameter	Size (bytes)	Comments
		• 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

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Parameter	Size (bytes)	Comments
		• 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c

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Parameter	**Size (bytes)**	**Comments**
		• 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
Service	Variable	The service within which characteristics were searched Structure type parameter. See the detailed table below for parameter structure.

Table 72. Service Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 73. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 74. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 75. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 76. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 77. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 78. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 79. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 80. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.14 GATTClient-ProcedureDiscoverAllPrimaryServices.Indication

Description

Specifies that the Primary Service Discovery procedure ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure. Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c

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Parameter	Size (bytes)	Comments
		• 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c

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Parameter	Size (bytes)	Comments
		• 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c

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Parameter	Size (bytes)	Comments
		• 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c

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Parameter	Size (bytes)	Comments
		• 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c

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Parameter	Size (bytes)	Comments
		• 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c

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Parameter	Size (bytes)	Comments
		• 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c

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Parameter	Size (bytes)	Comments
		• 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c

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Parameter	Size (bytes)	Comments
		• 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c

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Parameter	Size (bytes)	Comments
		• 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
NbOfDiscoveredServices	1	Number of discovered services
DiscoveredServices	Variable	Discovered services Structure type parameter. See the detailed table below for parameter structure.

Table 81. DiscoveredServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.

Table continues on the next page...

Table 81. DiscoveredServices Parameter Structure (continued)

NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 82. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 83. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute

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Table 83. Characteristics Parameter Structure (continued)

		Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 84. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 85. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits

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Table 85. Value Parameter Structure (continued)

		0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 86. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 87. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 88. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 89. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.15 GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication

Description

Specifies that the Characteristic Discovery procedure for a given service (with a given UUID) ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure. Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c

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Parameter	Size (bytes)	Comments
		• 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c

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Parameter	Size (bytes)	Comments
		• 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c

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Parameter	Size (bytes)	Comments
		• 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c

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Parameter	Size (bytes)	Comments
		• 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c

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Parameter	Size (bytes)	Comments
		• 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c

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Parameter	Size (bytes)	Comments
		• 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

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Parameter	Size (bytes)	Comments
		• 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c

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Parameter	Size (bytes)	Comments
		• 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
NbOfDiscoveredServices	1	Number of discovered services
DiscoveredServices	Variable	Discovered services Structure type parameter. See the detailed table below for parameter structure.

Table 90. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast)

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Table 90. Characteristic Parameter Structure (continued)

		0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 91. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter

Table continues on the next page...

Table 91. Value Parameter Structure (continued)

		UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 92. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 93. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 94. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments

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Table 94. Uuid Parameter Structure (continued)

0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.16 GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication

Description

Specifies that the Primary Service Discovery by UUID procedure ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure. Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c

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Parameter	Size (bytes)	Comments
		• 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c

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Parameter	Size (bytes)	Comments
		• 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c

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Parameter	Size (bytes)	Comments
		• 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c

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Parameter	Size (bytes)	Comments
		• 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c

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Parameter	Size (bytes)	Comments
		• 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c

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Parameter	Size (bytes)	Comments
		• 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c

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Parameter	Size (bytes)	Comments
		• 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c

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Parameter	Size (bytes)	Comments
		• 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c

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Parameter	Size (bytes)	Comments
		• 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
NbOfDiscoveredServices	1	Number of discovered services
DiscoveredServices	Variable	Discovered services Structure type parameter. See the detailed table below for parameter structure.

Table 95. DiscoveredServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

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Table 95. DiscoveredServices Parameter Structure (continued)

NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array
IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 96. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 97. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data)

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Table 97. Characteristics Parameter Structure (continued)

		0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 98. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 99. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type

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Table 99. Value Parameter Structure (continued)

		Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 100. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 101. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 102. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 103. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.17 GATTClient-ProcedureExchangeMtu.Indication

Description

Specifies that the MTU exchange period ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)

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Parameter	Size (bytes)	Comments
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure. Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c

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Parameter	Size (bytes)	Comments
		• 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c

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Parameter	Size (bytes)	Comments
		• 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c

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Parameter	Size (bytes)	Comments
		• 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c

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Parameter	Size (bytes)	Comments
		• 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c

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Parameter	Size (bytes)	Comments
		• 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c

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Parameter	Size (bytes)	Comments
		• 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c

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Parameter	Size (bytes)	Comments
		• 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c

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Parameter	Size (bytes)	Comments
		• 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
NbOfDiscoveredServices	1	Number of discovered services
DiscoveredServices	Variable	Discovered services Structure type parameter. See the detailed table below for parameter structure.

3.2.18 GATTClient-ProcedureFindIncludedServices.Indication

Description

Specifies that the Find Included Services procedure ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x85
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c

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Parameter	Size (bytes)	Comments
		• 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c

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Parameter	Size (bytes)	Comments
		• 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c

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Parameter	Size (bytes)	Comments
		• 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c

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Parameter	Size (bytes)	Comments
		• 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c

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Parameter	Size (bytes)	Comments
		• 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c

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Parameter	Size (bytes)	Comments
		• 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c

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Parameter	Size (bytes)	Comments
		• 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c

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Parameter	Size (bytes)	Comments
		• 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c

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Parameter	Size (bytes)	Comments
		• 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
Service	Variable	The service within which inclusions were searched Structure type parameter. See the detailed table below for parameter structure.

Table 104. Service Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
Characteristics	Variable	Characteristic array Structure type parameter. See the detailed table below for parameter structure.
NbOfIncludedServices	1	Size of the Included Services array

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Table 104. Service Parameter Structure (continued)

IncludedServices	Variable	Included Services array Structure type parameter. See the detailed table below for parameter structure.

Table 105. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 106. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.

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Table 106. Characteristics Parameter Structure (continued)

NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 107. IncludedServices Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	The handle of the Service Declaration attribute
EndHandle	2	The last handle belonging to this Service (followed by another Service declaration of the end of the database)
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
NbOfCharacteristics	1	Size of the Characteristic array
NbOfIncludedServices	1	Size of the Included Services array

Table 108. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value

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Table 108. Value Parameter Structure (continued)

		"Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 109. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 110. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 111. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 112. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.19 GATTClient-ProcedureReadCharacteristicDescriptor.Indication

Description

Specifies that the Characteristic Descriptor Read procedure for a given characteristic's descriptor ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8D
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c

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Parameter	Size (bytes)	Comments
		• 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c

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Parameter	Size (bytes)	Comments
		• 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c

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Parameter	Size (bytes)	Comments
		• 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c

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Parameter	Size (bytes)	Comments
		• 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c

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Parameter	Size (bytes)	Comments
		• 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c

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Parameter	Size (bytes)	Comments
		• 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c

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Parameter	Size (bytes)	Comments
		• 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c

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Parameter	Size (bytes)	Comments
		• 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
Descriptor	Variable	The characteristic descriptor whose value was read Structure type parameter. See the detailed table below for parameter structure.

Table 113. Descriptor Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values:

Table continues on the next page...

Table 113. Descriptor Parameter Structure (continued)

		0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 114. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.20 GATTClient-ProcedureReadCharacteristicValue.Indication

Description

Specifies that the Characteristic Read procedure for a given characteristic ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x89
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully)

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_ • 0x0006: gBleAlreadyInitialized_ • 0x0007: gBleOsError_ • 0x0008: gBleUnexpectedError_ • 0x0009: gBleInvalidState_ • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_ • 0x0102: gHciUnknownConnectionIdentifier_ • 0x0103: gHciHardwareFailure_ • 0x0104: gHciPageTimeout_ • 0x0105: gHciAuthenticationFailure_ • 0x0106: gHciPinOrKeyMissing_ • 0x0107: gHciMemoryCapacityExceeded_ • 0x0108: gHciConnectionTimeout_ • 0x0109: gHciConnectionLimitExceeded_ • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x010B: gHciAclConnectionAlreadyExists_ • 0x010C: gHciCommandDisallowed_ • 0x010D: gHciConnectionRejectedDueToLimitedResources_ • 0x010E: gHciConnectionRejectedDueToSecurityReasons_ • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_ • 0x0110: gHciConnectionAcceptTimeoutExceeded_ • 0x0111: gHciUnsupportedFeatureOrParameterValue_ • 0x0112: gHciInvalidHciCommandParameters_ • 0x0113: gHciRemoteUserTerminatedConnection_ • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_ • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_ • 0x0116: gHciConnectionTerminatedByLocalHost_ • 0x0117: gHciRepeatedAttempts_ • 0x0118: gHciPairingNotAllowed_ • 0x0119: gHciUnknownLpmPdu_ • 0x011A: gHciUnsupportedRemoteFeature_ • 0x011B: gHciScoOffsetRejected_ • 0x011C: gHciScoIntervalRejected_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x011D: gHciScoAirModeRejected_ • 0x011E: gHciInvalidLpmParameters_ • 0x011F: gHciUnspecifiedError_ • 0x0120: gHciUnsupportedLpmParameterValue_ • 0x0121: gHciRoleChangeNotAllowed_ • 0x0122: gHciLLResponseTimeout_ • 0x0123: gHciLmpErrorTransactionCollision_ • 0x0124: gHciLmpPduNotAllowed_ • 0x0125: gHciEncryptionModeNotAcceptable_ • 0x0126: gHciLinkKeyCannotBeChanged_ • 0x0127: gHciRequestedQosNotSupported_ • 0x0128: gHciInstantPassed_ • 0x0129: gHciPairingWithUnitKeyNotSupported_ • 0x012A: gHciDifferentTransactionCollision_ • 0x012B: gHciReserved_0x2B_ • 0x012C: gHciQosNotAcceptableParameter_ • 0x012D: gHciQosRejected_ • 0x012E: gHciChannelClassificationNotSupported_ • 0x012F: gHciInsufficientSecurity_ • 0x0130: gHciParameterOutOfMandatoryRange_ • 0x0131: gHciReserved_0x31_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x0132: gHciRoleSwitchPending_ • 0x0133: gHciReserved_0x33_ • 0x0134: gHciReservedSlotViolation_ • 0x0135: gHciRoleSwitchFailed_ • 0x0136: gHciExtendedInquiryResponseTooLarge_ • 0x0137: gHciSecureSimplePairingNotSupportedByHost_ • 0x0138: gHciHostBusyPairing_ • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_ • 0x013A: gHciControllerBusy_ • 0x013B: gHciUnacceptableConnectionParameters_ • 0x013C: gHciDirectedAdvertisingTimeout_ • 0x013D: gHciConnectionTerminatedDueToMicFailure_ • 0x013E: gHciConnectionFailedToBeEstablished_ • 0x013F: gHciMacConnectionFailed_ • 0x0140: gHciCoarseClockAdjustmentRejected_ • 0x01A0: gHciAlreadyInit_ • 0x01A1: gHciInvalidParameter_ • 0x01A2: gHciCallbackNotInstalled_ • 0x01A3: gHciCallbackAlreadyInstalled_ • 0x01A4: gHciCommandNotSupported_ • 0x01A5: gHciEventNotSupported_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x01A6: gHciTransportError_ • 0x03F0: gL2caAlreadyInit_ • 0x03F1: gL2caInsufficientResources_ • 0x03F2: gL2caCallbackNotInstalled_ • 0x03F3: gL2caCallbackAlreadyInstalled_ • 0x03F4: gL2caLePsmInvalid_ • 0x03F5: gL2caLePsmAlreadyRegistered_ • 0x03F6: gL2caLePsmNotRegistered_ • 0x03F7: gL2caLePsmInsufficientResources_ • 0x03F8: gL2caChannelInvalid_ • 0x03F9: gL2caChannelClosed_ • 0x03FA: gL2caChannelAlreadyConnected_ • 0x03FB: gL2caConnectionParametersRejected_ • 0x03FC: gL2caChannelBusy_ • 0x03FE: gL2caInvalidParameter_ • 0x03FF: gL2caError_ • 0x0401: gSmNullCBFunction_ • 0x0402: gSmCommandNotSupported_ • 0x0403: gSmUnexpectedCommand_ • 0x0404: gSmInvalidCommandCode_ • 0x0405: gSmInvalidCommandLength_ • 0x0406: gSmInvalidCommandParameter_ • 0x0407: gSmInvalidDeviceId_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x0408: gSmInvalidInternalOperation_ • 0x0409: gSmInvalidConnectionHandle_ • 0x040A: gSmInproperKeyDistributionField_ • 0x040B: gSmUnexpectedKeyType_ • 0x040C: gSmUnexpectedPairingTerminationReason_ • 0x040D: gSmUnexpectedKeyset_ • 0x040E: gSmSmpTimeoutOccurred_ • 0x040F: gSmUnknownSmpPacketType_ • 0x0410: gSmInvalidSmpPacketLength_ • 0x0411: gSmInvalidSmpPacketParameter_ • 0x0412: gSmReceivedUnexpectedSmpPacket_ • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_ • 0x0414: gSmReceivedUnexpectedHciEvent_ • 0x0415: gSmReceivedHciEventFromUnknownDevice_ • 0x0416: gSmInvalidHciEventParameter_ • 0x0417: gSmLlConnectionEncryptionInProgress_ • 0x0418: gSmLlConnectionEncryptionFailure_ • 0x0419: gSmInsufficientResources_

Table continues on the next page...

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x041A: gSmOobDataAddressMismatch_ • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_ • 0x041C: gSmReceivedTimerEventForUnknownDevice_ • 0x041D: gSmUnattainableLocalDeviceSecRequirements_ • 0x041E: gSmUnattainableLocalDeviceMinKeySize_ • 0x041F: gSmUnattainableSlaveSecReqRequirements_ • 0x0431: gSmPairingErrorPasskeyEntryFailed_ • 0x0432: gSmPairingErrorConfirmValueFailed_ • 0x0433: gSmPairingErrorCommandNotSupported_ • 0x0434: gSmPairingErrorInvalidParameters_ • 0x0435: gSmPairingErrorUnknownReason_ • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_ • 0x0461: gSmTbInvalidDataSignature_ • 0x0501: gAttInvalidHandle_ • 0x0502: gAttReadNotPermitted_ • 0x0503: gAttWriteNotPermitted_ • 0x0504: gAttInvalidPdu_

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x0505: gAttInsufficientAuthentication_ • 0x0506: gAttRequestNotSupported_ • 0x0507: gAttInvalidOffset_ • 0x0508: gAttInsufficientAuthorization_ • 0x0509: gAttPrepareQueueFull_ • 0x050A: gAttAttributeNotFound_ • 0x050B: gAttAttributeNotLong_ • 0x050C: gAttInsufficientEncryptionKeySize_ • 0x050D: gAttInvalidAttributeValueLength_ • 0x050E: gAttUnlikelyor_ • 0x050F: gAttInsufficientEncryption_ • 0x0510: gAttUnsupportedGroupType_ • 0x0511: gAttInsufficientResources_ • 0x0601: gGattAnotherProcedureInProgress_ • 0x0602: gGattLongAttributePacketsCorrupted_ • 0x0603: gGattMultipleAttributesOverflow_ • 0x0604: gGattUnexpectedReadMultipleResponseLength_ • 0x0605: gGattInvalidValueLength_ • 0x0606: gGattServerTimeout_ • 0x0607: gGattIndicationAlreadyInProgress_ • 0x0608: gGattClientConfirmationTimeout_ • 0x0701: gGapAdvDataTooLong_ • 0x0702: gGapScanRspDataTooLong_

Table continues on the next page...

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0703: gGapDeviceNotBonded_ • 0x0801: gDevDbCccdLimitReached_ • 0x0802: gDevDbCccdNotFound_ • 0x0901: gGattDbInvalidHandle_ • 0x0902: gGattDbCharacteristicNotFound_ • 0x0903: gGattDbCccdNotFound_ • 0x0904: gGattDbServiceNotFound_ • 0x0905: gGattDbDescriptorNotFound_c
Characteristic	Variable	The characteristic whose value was read Structure type parameter. See the detailed table below for parameter structure.

Table 115. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data)

Table continues on the next page...

Table 115. Characteristic Parameter Structure (continued)

		0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 116. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 117. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type

Table continues on the next page...

Table 117. Descriptors Parameter Structure (continued)

		Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 118. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 119. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.21 GATTClient-ProcedureReadMultipleCharacteristicValues.Indication

Description

Specifies that the Characteristic Read Multiple procedure ended.

Parameters

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8B

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Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: 0x0000: gBleSuccess_c 0x0001: gBleInvalidParameter_c 0x0002: gBleOverflow_c 0x0003: gBleUnavailable_c 0x0004: gBleFeatureNotSupported_c 0x0005: gBleOutOfMemory_c 0x0006: gBleAlreadyInitialized_c 0x0007: gBleOsError_c 0x0008: gBleUnexpectedError_c 0x0009: gBleInvalidState_c 0x000A: gBleTimerError_c 0x0101: gHciUnknownHciCommand_c 0x0102: gHciUnknownConnectionIdentifier_c 0x0103: gHciHardwareFailure_c 0x0104: gHciPageTimeout_c 0x0105: gHciAuthenticationFailure_c 0x0106: gHciPinOrKeyMissing_c 0x0107: gHciMemoryCapacityExceeded_c 0x0108: gHciConnectionTimeout_c 0x0109: gHciConnectionLimitExceeded_c

Table continues on the next page...

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c 0x010B: gHciAclConnectionAlreadyExists_c 0x010C: gHciCommandDisallowed_c 0x010D: gHciConnectionRejectedDueToLimitedResources_c 0x010E: gHciConnectionRejectedDueToSecurityReasons_c 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c 0x0110: gHciConnectionAcceptTimeoutExceeded_c 0x0111: gHciUnsupportedFeatureOrParameterValue_c 0x0112: gHciInvalidHciCommandParameters_c 0x0113: gHciRemoteUserTerminatedConnection_c 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c 0x0116: gHciConnectionTerminatedByLocalHost_c 0x0117: gHciRepeatedAttempts_c 0x0118: gHciPairingNotAllowed_c 0x0119: gHciUnknownLpmPdu_c 0x011A: gHciUnsupportedRemoteFeature_c 0x011B: gHciScoOffsetRejected_c 0x011C: gHciScoIntervalRejected_c

Table continues on the next page...

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x011D: gHciScoAirModeRejected_c 0x011E: gHciInvalidLpmParameters_c 0x011F: gHciUnspecifiedError_c 0x0120: gHciUnsupportedLpmParameterValue_c 0x0121: gHciRoleChangeNotAllowed_c 0x0122: gHciLLResponseTimeout_c 0x0123: gHciLmpErrorTransactionCollision_c 0x0124: gHciLmpPduNotAllowed_c 0x0125: gHciEncryptionModeNotAcceptable_c 0x0126: gHciLinkKeyCannotBeChanged_c 0x0127: gHciRequestedQosNotSupported_c 0x0128: gHciInstantPassed_c 0x0129: gHciPairingWithUnitKeyNotSupported_c 0x012A: gHciDifferentTransactionCollision_c 0x012B: gHciReserved_0x2B_c 0x012C: gHciQosNotAcceptableParameter_c 0x012D: gHciQosRejected_c 0x012E: gHciChannelClassificationNotSupported_c 0x012F: gHciInsufficientSecurity_c 0x0130: gHciParameterOutOfMandatoryRange_c 0x0131: gHciReserved_0x31_c 0x0132: gHciRoleSwitchPending_c 0x0133: gHciReserved_0x33_c 0x0134: gHciReservedSlotViolation_c 0x0135: gHciRoleSwitchFailed_c 0x0136: gHciExtendedInquiryResponseTooLarge_c

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Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x0137: gHciSecureSimplePairingNotSupportedByHost_c 0x0138: gHciHostBusyPairing_c 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c 0x013A: gHciControllerBusy_c 0x013B: gHciUnacceptableConnectionParameters_c 0x013C: gHciDirectedAdvertisingTimeout_c 0x013D: gHciConnectionTerminatedDueToMicFailure_c 0x013E: gHciConnectionFailedToBeEstablished_c 0x013F: gHciMacConnectionFailed_c 0x0140: gHciCoarseClockAdjustmentRejected_c 0x01A0: gHciAlreadyInit_c 0x01A1: gHciInvalidParameter_c 0x01A2: gHciCallbackNotInstalled_c 0x01A3: gHciCallbackAlreadyInstalled_c 0x01A4: gHciCommandNotSupported_c 0x01A5: gHciEventNotSupported_c 0x01A6: gHciTransportError_c 0x03F0: gL2caAlreadyInit_c 0x03F1: gL2caInsufficientResources_c 0x03F2: gL2caCallbackNotInstalled_c 0x03F3: gL2caCallbackAlreadyInstalled_c 0x03F4: gL2caLePsmInvalid_c 0x03F5: gL2caLePsmAlreadyRegistered_c 0x03F6: gL2caLePsmNotRegistered_c 0x03F7: gL2caLePsmInsufficientResources_c

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Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x03F8: gL2caChannelInvalid_c 0x03F9: gL2caChannelClosed_c 0x03FA: gL2caChannelAlreadyConnected_c 0x03FB: gL2caConnectionParametersRejected_c 0x03FC: gL2caChannelBusy_c 0x03FE: gL2caInvalidParameter_c 0x03FF: gL2caError_c 0x0401: gSmNullCBFunction_c 0x0402: gSmCommandNotSupported_c 0x0403: gSmUnexpectedCommand_c 0x0404: gSmInvalidCommandCode_c 0x0405: gSmInvalidCommandLength_c 0x0406: gSmInvalidCommandParameter_c 0x0407: gSmInvalidDeviceId_c 0x0408: gSmInvalidInternalOperation_c 0x0409: gSmInvalidConnectionHandle_c 0x040A: gSmInproperKeyDistributionField_c 0x040B: gSmUnexpectedKeyType_c 0x040C: gSmUnexpectedPairingTerminationReason_c 0x040D: gSmUnexpectedKeyset_c 0x040E: gSmSmpTimeoutOccurred_c 0x040F: gSmUnknownSmpPacketType_c 0x0410: gSmInvalidSmpPacketLength_c 0x0411: gSmInvalidSmpPacketParameter_c 0x0412: gSmReceivedUnexpectedSmpPacket_c 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c 0x0414: gSmReceivedUnexpectedHciEvent_c

Table continues on the next page...

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x0415: gSmReceivedHciEventFromUnknownDevice_c 0x0416: gSmInvalidHciEventParameter_c 0x0417: gSmLlConnectionEncryptionInProgress_c 0x0418: gSmLlConnectionEncryptionFailure_c 0x0419: gSmInsufficientResources_c 0x041A: gSmOobDataAddressMismatch_c 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c 0x041C: gSmReceivedTimerEventForUnknownDevice_c 0x041D: gSmUnattainableLocalDeviceSecRequirements_c 0x041E: gSmUnattainableLocalDeviceMinKeySize_c 0x041F: gSmUnattainableSlaveSecReqRequirements_c 0x0431: gSmPairingErrorPasskeyEntryFailed_c 0x0432: gSmPairingErrorConfirmValueFailed_c 0x0433: gSmPairingErrorCommandNotSupported_c 0x0434: gSmPairingErrorInvalidParameters_c 0x0435: gSmPairingErrorUnknownReason_c 0x436: gSmPairingErrorTimeout_c 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

Table continues on the next page...

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x0461: gSmTbInvalidDataSignature_c 0x0501: gAttInvalidHandle_c 0x0502: gAttReadNotPermitted_c 0x0503: gAttWriteNotPermitted_c 0x0504: gAttInvalidPdu_c 0x0505: gAttInsufficientAuthentication_c 0x0506: gAttRequestNotSupported_c 0x0507: gAttInvalidOffset_c 0x0508: gAttInsufficientAuthorization_c 0x0509: gAttPrepareQueueFull_c 0x050A: gAttAttributeNotFound_c 0x050B: gAttAttributeNotLong_c 0x050C: gAttInsufficientEncryptionKeySize_c 0x050D: gAttInvalidAttributeValueLength_c 0x050E: gAttUnlikelyor_c 0x050F: gAttInsufficientEncryption_c 0x0510: gAttUnsupportedGroupType_c 0x0511: gAttInsufficientResources_c 0x0601: gGattAnotherProcedureInProgress_c 0x0602: gGattLongAttributePacketsCorrupted_c 0x0603: gGattMultipleAttributesOverflow_c 0x0604: gGattUnexpectedReadMultipleResponseLength_c 0x0605: gGattInvalidValueLength_c 0x0606: gGattServerTimeout_c 0x0607: gGattIndicationAlreadyInProgress_c 0x0608: gGattClientConfirmationTimeout_c 0x0701: gGapAdvDataTooLong_c 0x0702: gGapScanRspDataTooLong_c 0x0703: gGapDeviceNotBonded_c

Table continues on the next page...

Table 120. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x0801: gDevDbCccdLimitReached_c 0x0802: gDevDbCccdNotFound_c 0x0901: gGattDbInvalidHandle_c 0x0902: gGattDbCharacteristicNotFound_c 0x0903: gGattDbCccdNotFound_c 0x0904: gGattDbServiceNotFound_c 0x0905: gGattDbDescriptorNotFound_c
NbOfCharacteristics	1	Number of characteristics whose values were read
Characteristics	Variable	Characteristics whose values were read Structure type parameter. See the detailed table below for parameter structure.

Table 121. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)

Table continues on the next page...

Table 121. Characteristics Parameter Structure (continued)

Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 122. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 123. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits

Table continues on the next page...

Table 123. Descriptors Parameter Structure (continued)

		0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 124. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 125. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.22 GATTClient-ProcedureReadUsingCharacteristicUuid.Indication

Description

Specifies that the Characteristic Read by UUID procedure ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8A
Length	1	Length in bytes of the following parameters

Table continues on the next page...

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Parameter	Size (bytes)	Comments
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: • 0x00: gGattProcSuccess_c (The procedure was completed successfully) • 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c

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Parameter	Size (bytes)	Comments
		• 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c

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Parameter	Size (bytes)	Comments
		• 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c

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Parameter	Size (bytes)	Comments
		• 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablished_c

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c

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Parameter	Size (bytes)	Comments
		• 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c

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Parameter	Size (bytes)	Comments
		• 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c

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Parameter	Size (bytes)	Comments
		• 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		• 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
NbOfReadBytes	2	The number of bytes that were read
ReadBytes	NbOfReadBytes	The bytes that were read

3.2.23 GATTClient-ProcedureWriteCharacteristicDescriptor.Indication

Description

Specifies that the Characteristic Descriptor Write procedure for a given characteristic's descriptor ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.2.24 GATTClient-ProcedureWriteCharacteristicValue.Indication

Description

Specifies that the Characteristic Write procedure for a given characteristic ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8C
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values: 0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)

Table continues on the next page...

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Parameter	Size (bytes)	Comments
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.2.25 GATTClient-ProcedureWriteCharacteristicValue.Indication

Description

Specifies that the Characteristic Write procedure for a given characteristic ended.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8C
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureResult	1	The result of the completed procedure Possible values:

Table continues on the next page...

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Parameter	Size (bytes)	Comments
		0x00: gGattProcSuccess_c (The procedure was completed successfully) 0x01: gProcedureError_c (The procedure was terminated due to an error)
Error	2	If procedureResult is not gSuccess_c, this contains the error that terminated the procedure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablished_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.2.26 GATTClient-ReadCharacteristicDescriptor.Request

Description

Initializes the Characteristic Descriptor Read procedure for a given Characteristic Descriptor.

Parameters

Table 126. GATTClient-ReadCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x13

Table continues on the next page...

Table 126. GATTClient-ReadCharacteristicDescriptor.Request Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Descriptor	Variable	The characteristic descriptor whose value must be read Structure type parameter. See the detailed table below for parameter structure.
MaxReadBytes	2	Maximum number of bytes to be read

Table 127. Descriptor Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 128. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.27 GATTClient-ReadCharacteristicValue.Request

Description

Initializes the Characteristic Read procedure for a given Characteristic.

Parameters

Table 129. GATTClient-ReadCharacteristicValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0F
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Characteristic	Variable	The characteristic whose value must be read Structure type parameter. See the detailed table below for parameter structure.
MaxReadBytes	2	Maximum number of bytes to be read

Table 130. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute

Table continues on the next page...

Table 130. Characteristic Parameter Structure (continued)

		Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 131. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 132. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits

Table continues on the next page...

Table 132. Descriptors Parameter Structure (continued)

		0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 133. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 134. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.28 GATTClient-ReadMultipleCharacteristicValues.Request

Description

Initializes the Characteristic Read Multiple procedure.

Parameters

Table 135. GATTClient-ReadMultipleCharacteristicValues.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x11
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer

Table continues on the next page...

Table 135. GATTClient-ReadMultipleCharacteristicValues.Request Parameters (continued)

NbOfCharacteristics	1	Number of characteristics in the array
Characteristics	Variable	Array of the characteristics whose values are to be read Structure type parameter. See the detailed table below for parameter structure.

Table 136. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 137. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 138. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 139. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 140. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.29 GATTClient-ReadUsingCharacteristicUuid.Request

Description

Initializes the Characteristic Read by Uuid procedure.

Parameters

Table 141. GATTClient-ReadUsingCharacteristicUUID.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x10
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
HandleRangeIncluded	1	Boolean value which indicates if handle range is included or not
HandleRange	Variable	Handle range for the search

Table continues on the next page...

Table 141. GATTClient-ReadUsingCharacteristicUUID.Request Parameters (continued)

		Structure type parameter. See the detailed table below for parameter structure.
MaxReadBytes	2	Maximum number of bytes to be read

Table 142. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 143. HandleRange Parameter Structure

Structure Parameter	Size (bytes)	Comments
StartHandle	2	Start handle
EndHandle	2	End handle

3.2.30 GATTClient-RegisterIndicationCallback.Request

Description

Installs the application callback for Server Indications.

Parameters

Table 144. GATTClient-RegisterIndicationCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x07
Length	1	0x00 - This message does not have any parameters

3.2.31 GATTClient-RegisterNotificationCallback.Request

Description

Installs the application callback for Server Notifications.

Parameters

Table 145. GATTClient-RegisterNotificationCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x06
Length	1	0x00 - This message does not have any parameters

3.2.32 GATTClient-RegisterProcedureCallback.Request

Description

Installs the application callback for the GATT Client module Procedures.

Parameters

Table 146. GATTClient-RegisterProcedureCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x05
Length	1	0x00 - This message does not have any parameters

3.2.33 GATTClient-ResetProcedure.Request

Description

Resets any ongoing GATT Client procedure.

Parameters

Table 147. GATTClient-ResetProcedure.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x04
Length	1	0x00 - This message does not have any parameters

3.2.34 GATTClient-WriteCharacteristicDescriptor.Request

Description

Initializes the Characteristic Descriptor Write procedure for a given Characteristic Descriptor.

Parameters

Table 148. GATTClient-WriteCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x14
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Descriptor	Variable	The characteristic descriptor whose value must be written

Table continues on the next page...

Table 148. GATTClient-WriteCharacteristicDescriptor.Request Parameters (continued)

		Structure type parameter. See the detailed table below for parameter structure.
ValueLength	2	Number of bytes to be written
Value	ValueLength	Array of bytes to be written

Table 149. Descriptor Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 150. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.35 GATTClient-WriteCharacteristicValue.Request

Description

Initializes the Characteristic Write procedure for a given Characteristic.

Parameters

Table 151. GATTClient-WriteCharacteristicValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x12
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
Characteristic	Variable	The characteristic whose value must be written Structure type parameter. See the detailed table below for parameter structure.
ValueLength	2	Number of bytes to be written
Value	ValueLength	Array of bytes to be written
WithoutResponse	1	Indicates if a Write Command will be used
SignedWrite	1	Indicates if a Signed Write will be performed
ReliableLongCharWrites	1	Indicates Reliable Long Writes
Csrk	16	The CSRK if signedWrite is TRUE, ignored otherwise

Table 152. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Properties	1	Characteristic Properties as defined by GATT Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified)

Table continues on the next page...

Table 152. Characteristic Parameter Structure (continued)

		0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
Value	Variable	Characteristic Value attribute Structure type parameter. See the detailed table below for parameter structure.
NbOfDescriptors	1	Size of the Characteristic Descriptors array
Descriptors	Variable	Characteristic Descriptors array Structure type parameter. See the detailed table below for parameter structure.

Table 153. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 154. Descriptors Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
ValueLength	2	Length of the attribute value array
MaxValueLength	2	Maximum length of the attribute value array; if this is set to 0, then the attribute's length is fixed and cannot be changed
Value	ValueLength	Attribute value array

Table 155. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

Table 156. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.2.36 GATT-GetMtu.Request

Description

Retrieves the MTU used with a given connected device.

Parameters

Table 157. GATT-GetMtu.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x02
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer

3.2.37 GATT-GetMtu.Indication

Description

Specifies the MTU used with a given connected device.

Parameters

Table 158. GATT-GetMtu.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
Mtu	2	MTU value

3.2.38 GATT-Init.Request

Description

Initializes the GATT module.

Parameters

Table 159. GATT-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x01
Length	1	0x00 - This message does not have any parameters

3.2.39 GATTServer-AttributeRead.Indication

Description

GATT Server attribute read.

Parameters

Table 160. GATTServer-AttributeRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x98
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
AttributeReadEvent	Variable	Attribute read event Structure type parameter. See the detailed table below for parameter structure.

Table 161. AttributeReadEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the attribute

3.2.40 GATTServer-AttributeWritten.Indication

Description

GATT Server attribute written.

Parameters

Table 162. GATTServer-AttributeWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x93
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
AttributeWrittenEvent	Variable	Attribute written event Structure type parameter. See the detailed table below for parameter structure.

Table 163. AttributeWrittenEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the attribute
ValueLength	2	Length of the attribute value array

Table continues on the next page...

Table 163. AttributeWrittenEvent Parameter Structure (continued)

Value	ValueLength	Attribute value array attempted to be written

3.2.41 GATTServer-AttributeWrittenWithoutResponse.Indication

Description

GATT Server attribute written without response.

Parameters

Table 164. GATTServer-AttributeWrittenWithoutResponse.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x95
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
AttributeWrittenEvent	Variable	Attribute written event Structure type parameter. See the detailed table below for parameter structure.

Table 165. AttributeWrittenEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the attribute
ValueLength	2	Length of the attribute value array
Value	ValueLength	Attribute value array attempted to be written

3.2.42 GATTServer-CharacteristicCccdWritten.Indication

Description

GATT Server characteristic cccd written.

Parameters

Table 166. GATTServer-CharacteristicCccdWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x94
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 166. GATTServer-CharacteristicCccdWritten.Indication Parameters (continued)

DeviceId	1	Device ID identifying the active connection
CharCccdWrittenEvent	Variable	Characteristic cccd written event Structure type parameter. See the detailed table below for parameter structure.

Table 167. CharCccdWrittenEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the CCCD attribute
NewCccd	1	New value of the CCCD Possible values: 0x00: gCccdEmpty_c 0x01: gCccdNotification_c 0x02: gCccdIndication_c

3.2.43 GATTServer-Error.Indication

Description

GATT Server error.

Parameters

Table 168. GATTServer-Error.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x96
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
ProcedureError	Variable	Procedure error Structure type parameter. See the detailed table below for parameter structure.

Procedure Error Structure Parameter	Size (bytes)	Comments
ProcedureType	1	Procedure that generated error Possible values:

Table continues on the next page...

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		0x00: gSendAttributeWrittenStatus_c (Procedure initiated by GattServer_SendAttributeWrittenStatus) 0x01: gSendAttributeReadStatus_c (Procedure initiated by GattServer_SendAttributeReadStatus) 0x02: gSendNotification_c (Procedure initiated by GattServer_SendNotification) 0x03: gSendIndication_c (Procedure initiated by GattServer_SendIndication)
Error	2	Error generated Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x013F: gHciMacConnectionFailed_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c

Table continued from the previous page...

Procedure Error Structure Parameter	Size (bytes)	Comments
		• 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0703: gGapDeviceNotBonded_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.2.44 GATTServer-HandleValueConfirmation.Indication

Description

GATT Server handle value confirmation.

Parameters

Table 169. GATTServer-HandleValueConfirmation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45

Table continues on the next page...

Table 169. GATTServer-HandleValueConfirmation.Indication Parameters (continued)

OpCode	1	0x92
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection

3.2.45 GATTServer-Init.Request

Description

Initializes the GATT Server module.

Parameters

Table 170. GATTServer-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x15
Length	1	0x00 - This message does not have any parameters

3.2.46 GATTServer-LongCharacteristicWritten.Indication

Description

GATT Server long characteristic written.

Parameters

Table 171. GATTServer-LongCharacteristicWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x97
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
LongCharacteristicWrittenEvent	Variable	Long characteristic written event Structure type parameter. See the detailed table below for parameter structure.

Table 172. LongCharacteristicWrittenEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the characteristic value

Table continues on the next page...

Table 172. LongCharacteristicWrittenEvent Parameter Structure (continued)

ValueLength	2	Length of the characteristic value
Value	ValueLength	Characteristic value array

3.2.47 GATTServer-MtuChanged.Indication

Description

GATT Server MTU changed indication.

Parameters

Table 173. GATTServer-MtuChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x91
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the active connection
MtuChangedEvent	Variable	Mtu changed event Structure type parameter. See the detailed table below for parameter structure.

Table 174. MtuChangedEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
NewMtu	2	Value of the agreed ATT_MTU for this connection

3.2.48 GATTServer-RegisterCallback.Request

Description

Installs an application callback for the GATT Server module.

Parameters

Table 175. GATTServer-RegisterCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x16
Length	1	0x00 - This message does not have any parameters

3.2.49 GATTServer-RegisterHandlesForReadNotifications.Request

Description

Registers the attribute handles that will be notified through the GATT Server callback when a GATT Client attempts to read the attributes' values.

Parameters

Table 176. GATTServer-RegisterHandlesForReadNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1D
Length	1	Length in bytes of the following parameters
HandleCount	1	Number of handles in array
AttributeHandles	Variable	Statically allocated array of handles Structure type parameter. See the detailed table below for parameter structure.

Table 177. AttributeHandles Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle

3.2.50 GATTServer-RegisterHandlesForWriteNotifications.Request

Description

Registers the attribute handles that will be notified through the GATT Server callback when a GATT Client attempts to modify the attributes' values.

Parameters

Table 178. GATTServer-RegisterHandlesForWriteNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x17
Length	1	Length in bytes of the following parameters
HandleCount	1	Number of handles in array
AttributeHandles	Variable	Statically allocated array of handles Structure type parameter. See the detailed table below for parameter structure.

Table 179. AttributeHandles Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle

3.2.51 GATTServer-SendAttributeReadStatus.Request

Description

Responds to an intercepted attribute read operation.

Parameters

Table 180. GATTServer-SendAttributeReadStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1E
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
AttributeHandle	2	The attribute handle that was read
Status	1	The status of the read operation

3.2.52 GATTServer-SendAttributeWrittenStatus.Request

Description

Responds to a Control Point write operation.

Parameters

Table 181. GATTServer-SendAttributeWrittenStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x18
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
AttributeHandle	2	The attribute handle that was written
Status	1	The status of the write operation

3.2.53 GATTServer-SendIndication.Request

Description

Sends an indication to a peer GATT Client.

Parameters

Table 182. GATTServer-SendIndication.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1A

Table continues on the next page...

Table 182. GATTServer-SendIndication.Request Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
Handle	2	Handle of the Value of the Characteristic to be indicated

3.2.54 GATTServer-SendInstantValueIndication.Request

Description

Sends an indication to a peer GATT Client with data given as parameter, ignoring the GATT Database.

Parameters

Table 183. GATTServer-SendInstantValueIndication.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1C
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
Handle	2	Handle of the Value of the Characteristic to be indicated
ValueLength	2	Length of data to be indicated
Value	ValueLength	Data to be indicated

3.2.55 GATTServer-SendInstantValueNotification.Request

Description

Sends a notification to a peer GATT Client with data given as parameter, ignoring the GATT Database.

Parameters

Table 184. GATTServer-SendInstantValueNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1B
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
Handle	2	Handle of the Value of the Characteristic to be notified
ValueLength	2	Length of data to be notified
Value	ValueLength	Data to be notified

3.2.56 GATTServer-SendNotification.Request

Description

Sends a notification to a peer GATT Client.

Parameters

Table 185. GATTServer-SendNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x19
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer
Handle	2	Handle of the Value of the Characteristic to be notified

3.2.57 GATTServer-UnregisterHandlesForReadNotifications.Request

Description

Unregisters the attribute handles that will be notified through the GATT Server callback when a GATT Client attempts to read the attributes' values.

Parameters

Table 186. GATTServer-UnregisterHandlesForReadNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x21
Length	1	Length in bytes of the following parameters
HandleCount	1	Number of handles in array
AttributeHandles	Variable	Statically allocated array of handles Structure type parameter. See detailed table below for parameter structure.

Table 187. AttributeHandles parameter structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle

3.2.58 GATTServer-UnregisterHandlesFor WriteNotifications.Request

Description

Unregisters the attribute handles that will be notified through the GATT Server callback when a GATT Client attempts to write the attributes' values.

Parameters

Table 188. GATTServer-UnregisterHandlesForWriteNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x20
Length	1	Length in bytes of the following parameters
HandleCount	1	Number of handles in array
AttributeHandles	Variable	Statically allocated array of handles Structure type parameter. See detailed table below for parameter structure.

Table 189. AttributeHandles parameter structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle

3.2.59 GATTServer-RegisterUniqueHandlesForNotifications.Request

Description

Registers all attribute handles with unique value buffers to be notified through the GATT Server callback when a GATT Client attempts to read/write the attributes' values.

Parameters

Table 190. GATTServer-RegisterUniqueHandlesForNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x1F
Length	1	Length in bytes of the following parameters
bWrite	1	Boolean value which indicates unique handles are notified for write or not
bRead	1	Boolean value which indicates unique handles are notified for read or not

3.3 GATTDB_App Messages

3.3.1 GATTDB.Confirm

Description

Status of the GATT Database (application) request.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Status	2	cid="1VACBF"> The status of the GATT Database request Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.3.2 GATTDBDynamic-AddCccd.Request

Description

Adds a CCCD in the database.

Parameters

Table 191. GATTDBDynamic-AddCccd.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0F
Length	1	0x00 - This message does not have any parameters

3.3.3 GATTDBDynamic-AddCccd.Indication

Description

Adds a CCCD in the database.

Parameters

Table 192. GATTDBDynamic-AddCccd.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x8B
Length	1	Length in bytes of the following parameters
CCCDHandle	2	Handle of the CCCD declaration

3.3.4 GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request

Description

Adds a Characteristic declaration and its Value into the database.

Parameters

Table 193. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0D
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
CharacteristicProperties	1	Characteristic properties Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read)

Table continues on the next page...

Table 193. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters (continued)

		0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
MaxValueLength	2	If the Characteristic Value length is variable, this is the maximum length; for fixed lengths this must be set to 0
InitialValueLength	2	Value length at initialization; remains fixed if maxValueLength is set to 0, otherwise cannot be greater than maxValueLength
InitialValue	InitialValueLength	Contains the initial value of the Characteristic
ValueAccessPermissions	1	Access permissions for the value attribute Possible values: 0x00: gPermissionNone_c (No permissions selected) 0x01: gPermissionFlagReadable_c (Attribute can be read) 0x02: gPermissionFlagReadWithEncryption_c (Attribute may be read only if link is encrypted) 0x04: gPermissionFlagReadWithAuthentication_c (Attribute may be read only by authenticated peers) 0x08: gPermissionFlagReadWithAuthorization_c (Attribute may be read only by authorized peers)

Table continues on the next page...

Table 193. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters (continued)

		0x10: gPermissionFlagWritable_c (Attribute can be written) 0x20: gPermissionFlagWriteWithEncryption_c (Attribute may be written only if link is encrypted) 0x40: gPermissionFlagWriteWithAuthentication_c (Attribute may be written only by authenticated peers) 0x80: gPermissionFlagWriteWithAuthorization_c (Attribute may be written only by authorized peers)

Table 194. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.5 GATTDBDynamic-AddCharacteristicDeclarationAndValue.Indication

Description

Adds a Characteristic declaration and its Value into the database.

Parameters

Table 195. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x89
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Handle of the Characteristic declaration

3.3.6 GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request

Description

Adds a Characteristic declaration with a Value contained in a universal value buffer.

Parameters

Table 196. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x10
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
CharacteristicProperties	1	Characteristic properties Possible values: 0x00: gNone_c (No Properties selected) 0x01: gBroadcast_c (Characteristic can be broadcast) 0x02: gRead_c (Characteristic can be read) 0x04: gWriteWithoutRsp_c (Characteristic can be written without response) 0x08: gWrite_c (Characteristic can be written with response) 0x10: gNotify_c (Characteristic can be notified) 0x20: gIndicate_c (Characteristic can be indicated) 0x40: gAuthSignedWrites_c (Characteristic can be written with signed data) 0x80: gExtendedProperties_c (Extended Characteristic properties)
ValueAccessPermissions	1	Access permissions for the value attribute

Table continues on the next page...

Table 196. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request Parameters (continued)

		Possible values: 0x00: gPermissionNone_c (No permissions selected) 0x01: gPermissionFlagReadable_c (Attribute can be read) 0x02: gPermissionFlagReadWithEncryption_c (Attribute may be read only if link is encrypted) 0x04: gPermissionFlagReadWithAuthentication_c (Attribute may be read only by authenticated peers) 0x08: gPermissionFlagReadWithAuthorization_c (Attribute may be read only by authorized peers) 0x10: gPermissionFlagWritable_c (Attribute can be written) 0x20: gPermissionFlagWriteWithEncryption_c (Attribute may be written only if link is encrypted) 0x40: gPermissionFlagWriteWithAuthentication_c (Attribute may be written only by authenticated peers) 0x80: gPermissionFlagWriteWithAuthorization_c (Attribute may be written only by authorized peers)

Table 197. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.7 GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Indication

Description

Adds a Characteristic declaration with a Value contained in a universal value buffer.

Parameters

Table 198. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x8C
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Handle of the Characteristic declaration

3.3.8 GATTDBDynamic-AddCharacteristicDescriptor.Request

Description

Adds a Characteristic descriptor into the database.

Parameters

Table 199. GATTDBDynamic-AddCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0E
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.
DescriptorValueLength	2	Fixed length of the descriptor attribute value
Value	DescriptorValueLength	Initial value of the descriptor attribute
DescriptorAccessPermissions	1	Access permissions for the descriptor attribute Possible values: 0x00: gPermissionNone_c (No permissions selected)

Table continues on the next page...

Table 199. GATTDBDynamic-AddCharacteristicDescriptor.Request Parameters (continued)

		0x01: gPermissionFlagReadable_c (Attribute can be read) 0x02: gPermissionFlagReadWithEncryption_c (Attribute may be read only if link is encrypted) 0x04: gPermissionFlagReadWithAuthentication_c (Attribute may be read only by authenticated peers) 0x08: gPermissionFlagReadWithAuthorization_c (Attribute may be read only by authorized peers) 0x10: gPermissionFlagWritable_c (Attribute can be written) 0x20: gPermissionFlagWriteWithEncryption_c (Attribute may be written only if link is encrypted) 0x40: gPermissionFlagWriteWithAuthentication_c (Attribute may be written only by authenticated peers) 0x80: gPermissionFlagWriteWithAuthorization_c (Attribute may be written only by authorized peers)

Table 200. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.9 GATTDBDynamic-AddCharacteristicDescriptor.Indication

Description

Adds a Characteristic descriptor into the database.

Parameters

Table 201. GATTDBDynamic-AddCharacteristicDescriptor.Indication Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 201. GATTDBDynamic-AddCharacteristicDescriptor.Indication Parameters (continued)

OpGroup	1	0x46
OpCode	1	0x8A
Length	1	Length in bytes of the following parameters
DescriptorHandle	2	Handle of the Descriptor declaration

3.3.10 GATTDBDynamic-AddIncludeDeclaration.Request

Description

Adds an Include declaration into the database.

Parameters

Table 202. GATTDBDynamic-AddIncludeDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0C
Length	1	Length in bytes of the following parameters
IncludedServiceHandle	2	Handle of the included Service declaration
EndGroupHandle	2	Last handle of the included Service
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 203. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.11 GATTDBDynamic-AddIncludeDeclaration.Indication

Description

Adds an Include declaration into the database.

Parameters

Table 204. GATTDBDynamic-AddIncludeDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x88
Length	1	Length in bytes of the following parameters
IncludeHandle	2	Handle of the Include declaration

3.3.12 GATTDBDynamic-AddPrimaryServiceDeclaration.Request

Description

Adds a Primary Service declaration into the database.

Parameters

Table 205. GATTDBDynamic-AddPrimaryServiceDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0A
Length	1	Length in bytes of the following parameters
DesiredHandle	2	The desired handle for the Primary Service declaration
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 206. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 206. Uuid Parameter Structure (continued)

0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.13 GATTDBDynamic-AddPrimaryServiceDeclaration.Indication

Description

Adds a Primary Service declaration into the database.

Parameters

Table 207. GATTDBDynamic-AddPrimaryServiceDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Handle of the Service declaration

3.3.14 GATTDBDynamic-AddSecondaryServiceDeclaration.Request

Description

Adds a Secondary Service declaration into the database.

Parameters

Table 208. GATTDBDynamic-AddSecondaryServiceDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x0B
Length	1	Length in bytes of the following parameters
DesiredHandle	2	The desired handle for the Secondary Service declaration
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value

Table continues on the next page...

Table 208. GATTDBDynamic-AddSecondaryServiceDeclaration.Request Parameters (continued)

		"Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 209. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.15 GATTDBDynamic-AddSecondaryServiceDeclaration.Indication

Description

Adds an Primary Service declaration into the database.

Parameters

Table 210. GATTDBDynamic-AddSecondaryServiceDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Handle of the Service declaration

3.3.16 GATTDBDynamic-Init.Request

Description

Allocates smallest possible buffers and initializes an empty database.

Parameters

Table 211. GATTDBDynamic-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x08
Length	1	0x00 - This message does not have any parameters

3.3.17 GATTDBDynamic-ReleaseDatabase.Request

Description

Releases the allocated buffers.

Parameters

Table 212. GATTDBDynamic-ReleaseDatabase.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x09
Length	1	0x00 - This message does not have any parameters

3.3.18 GATTDBDynamic-RemoveCharacteristic.Request

Description

Removes a Characteristic from the database.

Parameters

Table 213. GATTDBDynamic-RemoveCharacteristic.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x12
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Attribute handle of the Characteristic declaration

3.3.19 GATTDBDynamic-RemoveService.Request

Description

Removes a Service from the database.

Parameters

Table 214. GATTDBDynamic-RemoveService.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x11
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Attribute handle of the Service declaration

3.3.20 GATTDB-FindCccdHandleForCharValueHandle.Request

Description

Finds the handle of a Characteristic's CCCD given the Characteristic's Value handle.

Parameters

Table 215. GATTDB-FindCccdHandleForCharValueHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x06
Length	1	Length in bytes of the following parameters
CharValueHandle	2	The handle of the characteristic value

3.3.21 GATTDB-FindCccdHandleForCharValueHandle.Indication

Description

Finds the handle of a Characteristic's CCCD (giving the Characteristic's Value handle).

Parameters

Table 216. GATTDB-FindCccdHandleForCharValueHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
CccdHandle	2	CCCD handle

3.3.22 GATTDB-FindCharValueHandleInService.Request

Description

Finds the handle of a Characteristic Value with a given UUID inside a service.

Parameters

Table 217. GATTDB-FindCharValueHandleInService.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x05
Length	1	Length in bytes of the following parameters
ServiceHandle	2	The handle of the Service declaration
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits

Table continues on the next page...

Table 217. GATTDB-FindCharValueHandleInService.Request Parameters (continued)

Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 218. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.23 GATTDB-FindCharValueHandleInService.Indication

Description

Finds the handle of a characteristic value (with a given UUID) inside a service.

Parameters

Table 219. GATTDB-FindCharValueHandleInService.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
CharValueHandle	2	Characteristic value handle

3.3.24 GATTDB-FindDescriptorHandleForCharValueHandle.Request

Description

Finds the handle of a Characteristic Descriptor given the Characteristic's Value handle and Descriptor's UUID.

Parameters

Table 220. GATTDB-FindDescriptorHandleForCharValueHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x07
Length	1	Length in bytes of the following parameters
CharValueHandle	2	The handle of the characteristic value
UuidType	1	UUID type

Table continues on the next page...

Table 220. GATTDB-FindDescriptorHandleForCharValueHandle.Request Parameters (continued)

		Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 221. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.25 GATTDB-FindDescriptorHandleForCharValueHandle.Indication

Description

Finds the handle of a characteristic descriptor (giving the characteristic's value handle and descriptor's UUID).

Parameters

Table 222. GATTDB-FindDescriptorHandleForCharValueHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x85
Length	1	Length in bytes of the following parameters
DescriptorHandle	2	Descriptor handle

3.3.26 GATTDB-FindServiceHandle.Request

Description

Finds the handle of a Service Declaration with a given UUID inside the database.

Parameters

Table 223. GATTDB-FindServiceHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46

Table continues on the next page...

Table 223. GATTDB-FindServiceHandle.Request Parameters (continued)

OpCode	1	0x04
Length	1	Length in bytes of the following parameters
StartHandle	2	The handle to start the search. Should be 0x0001 on the first call
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See the detailed table below for parameter structure.

Table 224. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.27 GATTDB-FindServiceHandle.Indication

Description

Finds the handle of a Service Declaration with a given UUID inside the database.

Parameters

Table 225. GATTDB-FindServiceHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Service handle

3.3.28 GATTDB-ReadAttribute.Indication

Description

Reads an attribute value (from application level).

Parameters

Table 226. GATTDB-ReadAttribute.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
ValueLength	2	Attribute value length
Value	ValueLength	Attribute value

3.3.29 GATTDB-WriteAttribute.Request

Description

Writes an attribute from the application level.

Parameters

Table 227. GATTDB-WriteAttribute.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x02
Length	1	Length in bytes of the following parameters
Handle	2	The handle of the attribute to be written
ValueLength	2	The number of bytes to be written
Value	ValueLength	The value to be written

3.3.30 GATTDBDynamic-AddCharDescriptorWithUniqueValue.Request

Description

Adds a Characteristic descriptor into the database with an unique 512-byte value buffer.

Parameters

Table 228. GATTDBDynamic-AddCharDescriptorWithUniqueValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x13
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values:

Table continues on the next page...

Table 228. GATTDBDynamic-AddCharDescriptorWithUniqueValue.Request Parameters (continued)

		0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits
Uuid	Variable	UUID value "Union" type parameter. Its structure is based on the value of parameter UuidType. See detailed table below for parameter structure.
DescriptorAccessPermissions	1	Access permissions for the descriptor attribute Possible values: 0x00: gPermissionNone_c (No permissions selected) 0x01: gPermissionFlagReadable_c (Attribute can be read) 0x02: gPermissionFlagReadWithEncryption_c (Attribute may be read only if link is encrypted) 0x04: gPermissionFlagReadWithAuthentication_c (Attribute may be read only by authenticated peers) 0x08: gPermissionFlagReadWithAuthorization_c (Attribute may be read only by authorized peers) 0x10: gPermissionFlagWritable_c (Attribute can be written) 0x20: gPermissionFlagWriteWithEncryption_c (Attribute may be written only if link is encrypted) 0x40: gPermissionFlagWriteWithAuthentication_c (Attribute may be written only by authenticated peers) 0x80: gPermissionFlagWriteWithAuthorization_c (Attribute may be written only by authorized peers)

Table 229. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
0x02	Uuid128Bits	16	UUID 128 bits
0x03	Uuid32Bits	4	UUID 32 bits

3.3.31 GATTDBDynamic-AddCharDescriptorWithUniqueValue.Indication

Description

Adds a Characteristic descriptor with a Value contained in an universal value buffer.

Parameters

Table 230. GATTDBDynamic-AddCharDescriptorWithUniqueValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x46
OpCode	1	0x8D
Length	1	Length in bytes of the following parameters
DescriptorHandle	2	Handle of the Descriptor declaration

3.4 GAP Messages

3.4.1 BLE-HostInitialize.Request

Description

Performs master initialization of the BLE Host stack.

Parameters

Table 231. BLE-HostInitialize.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x01
Length	1	0x00 - This message does not have any parameters

3.4.2 GAP.Confirm

Description

Status of the GAP request.

Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

OpGroup	1	0x48
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Status	2	The status of the GAP request Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c

		• 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c

		• 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c

		• 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c

		• 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c

		• 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c

		• 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c

		• 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c

		• 0x0905: gGattDbDescriptorNotFound_c

3.4.3 GAP-AcceptPairingRequest.Request

Description

Accepts the pairing request from a peer.

Parameters

Table 232. GAP-AcceptPairingRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x0F
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer requesting authentication
PairingParameters	Variable	Pairing parameters as required by the SMP Structure type parameter. See the detailed table below for parameter structure.

Table 233. PairingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)

Table continues on the next page...

Table 233. PairingParameters Parameter Structure (continued)

MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values: 0x00: gIoDisplayOnly_c (May display a PIN, no input) 0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (for example, YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central
PeripheralKeys	1	SMP keys to be distributed by the Peripheral Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.4 GAP-AddDeviceToWhiteList.Request

Description

Adds a device address to the White List.

Parameters

Table 234. GAP-AddDeviceToWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x23
Length	1	Length in bytes of the following parameters
AddressType	1	The address type (public or random) Possible values: 0x00: gPublic_c 0x01: gRandom_c
Address	6	The address of the white-listed device

3.4.5 GAP-AdvertisingEventAdvertisingSetTerminated.Indication

Description

Controller event - advertising was terminated in a given advertising set.

Parameters

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC7
Length	1	Length in bytes of the following parameters
Status	2	The status of the request Possible values: 0x0000: gBleSuccess_c 0x0001: gBleInvalidParameter_c 0x0002: gBleOverflow_c 0x0003: gBleUnavailable_c 0x0004: gBleFeatureNotSupported_c 0x0005: gBleOutOfMemory_c 0x0006: gBleAlreadyInitialized_c 0x0007: gBleOsError_c 0x0008: gBleUnexpectedError_c 0x0009: gBleInvalidState_c 0x000A: gBleTimerError_c 0x0101: gHciUnknownHciCommand_c

Table continues on the next page...

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters (continued)

		0x0102: gHciUnknownConnectionIdentifier_c 0x0103: gHciHardwareFailure_c 0x0104: gHciPageTimeout_c 0x0105: gHciAuthenticationFailure_c 0x0106: gHciPinOrKeyMissing_c 0x0107: gHciMemoryCapacityExceeded_c 0x0108: gHciConnectionTimeout_c 0x0109: gHciConnectionLimitExceeded_c 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c 0x010B: gHciAclConnectionAlreadyExists_c 0x010C: gHciCommandDisallowed_c 0x010D: gHciConnectionRejectedDueToLimitedResources_c 0x010E: gHciConnectionRejectedDueToSecurityReasons_c 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c 0x0110: gHciConnectionAcceptTimeoutExceeded_c 0x0111: gHciUnsupportedFeatureOrParameterValue_c 0x0112: gHciInvalidHciCommandParameters_c 0x0113: gHciRemoteUserTerminatedConnection_c 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c 0x0116: gHciConnectionTerminatedByLocalHost_c 0x0117: gHciRepeatedAttempts_c 0x0118: gHciPairingNotAllowed_c 0x0119: gHciUnknownLpmPdu_c 0x011A: gHciUnsupportedRemoteFeature_c 0x011B: gHciScoOffsetRejected_c 0x011C: gHciScoIntervalRejected_c 0x011D: gHciScoAirModeRejected_c 0x011E: gHciInvalidLpmParameters_c 0x011F: gHciUnspecifiedError_c 0x0120: gHciUnsupportedLpmParameterValue_c 0x0121: gHciRoleChangeNotAllowed_c 0x0122: gHciLLResponseTimeout_c 0x0123: gHciLmpErrorTransactionCollision_c 0x0124: gHciLmpPduNotAllowed_c

Table continues on the next page...

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters (continued)

		0x0125: gHciEncryptionModeNotAcceptable_c 0x0126: gHciLinkKeyCannotBeChanged_c 0x0127: gHciRequestedQosNotSupported_c 0x0128: gHciInstantPassed_c 0x0129: gHciPairingWithUnitKeyNotSupported_c 0x012A: gHciDifferentTransactionCollision_c 0x012B: gHciReserved_0x2B_c 0x012C: gHciQosNotAcceptableParameter_c 0x012D: gHciQosRejected_c 0x012E: gHciChannelClassificationNotSupported_c 0x012F: gHciInsufficientSecurity_c 0x0130: gHciParameterOutOfMandatoryRange_c 0x0131: gHciReserved_0x31_c 0x0132: gHciRoleSwitchPending_c 0x0133: gHciReserved_0x33_c 0x0134: gHciReservedSlotViolation_c 0x0135: gHciRoleSwitchFailed_c 0x0136: gHciExtendedInquiryResponseTooLarge_c 0x0137: gHciSecureSimplePairingNotSupportedByHost_c 0x0138: gHciHostBusyPairing_c 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c 0x013A: gHciControllerBusy_c 0x013B: gHciUnacceptableConnectionParameters_c 0x013C: gHciDirectedAdvertisingTimeout_c 0x013D: gHciConnectionTerminatedDueToMicFailure_c 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c 0x013F: gHciMacConnectionFailed_c 0x0140: gHciCoarseClockAdjustmentRejected_c 0x0141: gHciType0SubmapNotDefined_c 0x0142: gHciUnknownAdvertisingIdentifier_c 0x0143: gHciLimitReached_c 0x0144: gHciOperationCancelledByHost_c 0x01A0: gHciAlreadyInit_c 0x01A1: gHciInvalidParameter_c 0x01A2: gHciCallbackNotInstalled_c

Table continues on the next page...

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters (continued)

		0x01A3: gHciCallbackAlreadyInstalled_c 0x01A4: gHciCommandNotSupported_c 0x01A5: gHciEventNotSupported_c 0x01A6: gHciTransportError_c 0x03F0: gL2caAlreadyInit_c 0x03F1: gL2caInsufficientResources_c 0x03F2: gL2caCallbackNotInstalled_c 0x03F3: gL2caCallbackAlreadyInstalled_c 0x03F4: gL2caLePsmInvalid_c 0x03F5: gL2caLePsmAlreadyRegistered_c 0x03F6: gL2caLePsmNotRegistered_c 0x03F7: gL2caLePsmInsufficientResources_c 0x03F8: gL2caChannelInvalid_c 0x03F9: gL2caChannelClosed_c 0x03FA: gL2caChannelAlreadyConnected_c 0x03FB: gL2caConnectionParametersRejected_c 0x03FC: gL2caChannelBusy_c 0x03FE: gL2caInvalidParameter_c 0x03FF: gL2caError_c 0x0401: gSmNullCBFunction_c 0x0402: gSmCommandNotSupported_c 0x0403: gSmUnexpectedCommand_c 0x0404: gSmInvalidCommandCode_c 0x0405: gSmInvalidCommandLength_c 0x0406: gSmInvalidCommandParameter_c 0x0407: gSmInvalidDeviceId_c 0x0408: gSmInvalidInternalOperation_c 0x0409: gSmInvalidConnectionHandle_c 0x040A: gSmInproperKeyDistributionField_c 0x040B: gSmUnexpectedKeyType_c 0x040C: gSmUnexpectedPairingTerminationReason_c 0x040D: gSmUnexpectedKeyset_c 0x040E: gSmSmpTimeoutOccurred_c 0x040F: gSmUnknownSmpPacketType_c 0x0410: gSmInvalidSmpPacketLength_c

Table continues on the next page...

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters (continued)

		0x0411: gSmInvalidSmpPacketParameter_c 0x0412: gSmReceivedUnexpectedSmpPacket_c 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c 0x0414: gSmReceivedUnexpectedHciEvent_c 0x0415: gSmReceivedHciEventFromUnknownDevice_c 0x0416: gSmInvalidHciEventParameter_c 0x0417: gSmLlConnectionEncryptionInProgress_c 0x0418: gSmLlConnectionEncryptionFailure_c 0x0419: gSmInsufficientResources_c 0x041A: gSmOobDataAddressMismatch_c 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c 0x041C: gSmReceivedTimerEventForUnknownDevice_c 0x041D: gSmUnattainableLocalDeviceSecRequirements_c 0x041E: gSmUnattainableLocalDeviceMinKeySize_c 0x041F: gSmUnattainableSlaveSecReqRequirements_c 0x0431: gSmPairingErrorPasskeyEntryFailed_c 0x0432: gSmPairingErrorConfirmValueFailed_c 0x0433: gSmPairingErrorCommandNotSupported_c 0x0434: gSmPairingErrorInvalidParameters_c 0x0435: gSmPairingErrorUnknownReason_c 0x0436: gSmPairingErrorTimeout_c 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c 0x0461: gSmTbInvalidDataSignature_c 0x0501: gAttInvalidHandle_c 0x0502: gAttReadNotPermitted_c 0x0503: gAttWriteNotPermitted_c 0x0504: gAttInvalidPdu_c 0x0505: gAttInsufficientAuthentication_c 0x0506: gAttRequestNotSupported_c 0x0507: gAttInvalidOffset_c 0x0508: gAttInsufficientAuthorization_c 0x0509: gAttPrepareQueueFull_c 0x050A: gAttAttributeNotFound_c 0x050B: gAttAttributeNotLong_c 0x050C: gAttInsufficientEncryptionKeySize_c

Table continues on the next page...

Table 235. GAP-AdvertisingEventAdvertisingSetTerminated.Indication Parameters (continued)

		0x050D: gAttInvalidAttributeValueLength_c 0x050E: gAttUnlikelyor_c 0x050F: gAttInsufficientEncryption_c 0x0510: gAttUnsupportedGroupType_c 0x0511: gAttInsufficientResources_c 0x0601: gGattAnotherProcedureInProgress_c 0x0602: gGattLongAttributePacketsCorrupted_c 0x0603: gGattMultipleAttributesOverflow_c 0x0604: gGattUnexpectedReadMultipleResponseLength_c 0x0605: gGattInvalidValueLength_c 0x0606: gGattServerTimeout_c 0x0607: gGattIndicationAlreadyInProgress_c 0x0608: gGattClientConfirmationTimeout_c 0x0701: gGapAdvDataTooLong_c 0x0702: gGapScanRspDataTooLong_c 0x0703: gGapDeviceNotBonded_c 0x0704: gGapAnotherProcedureInProgress_c 0x0801: gDevDbCccdLimitReached_c 0x0802: gDevDbCccdNotFound_c 0x0901: gGattDbInvalidHandle_c 0x0902: gGattDbCharacteristicNotFound_c 0x0903: gGattDbCccdNotFound_c 0x0904: gGattDbServiceNotFound_c 0x0905: gGattDbDescriptorNotFound_c
Handle	1	Advertising set identifier

3.4.6 GAP-AdvertisingEventCommandFailed.Indication

Description

Event received when advertising could not be enabled or disabled.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x99

Table continues on the next page...

Table continued from the previous page...

Parameter	Size (bytes)	Comments
Length	1	Length in bytes of the following parameters
FailReason	2	The reason of failure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.7 GAP-AdvertisingEventExtAdvertisingSetRemoveCompleted.Indication

Description

Controller event - advertising set(s) removed successfully from the controller.

Parameters

Table 236. GAP-AdvertisingEventExtAdvertisingSetRemoveCompleted.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC8
Length	1	0x00 - This message does not have any parameters

3.4.8 GAP-AdvertisingEventExtAdvertisingStateChanged.Indication

Description

Controller event - extended advertising state changed indication.

Parameters

Table 237. GAP-AdvertisingEventExtAdvertisingStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC6
Length	1	0x00 - This message does not have any parameters

3.4.9 GAP-AdvertisingEventExtScanReqReceived.Indication

Description

Controller event - a SCAN_REQ PDU or an AUX_SCAN_REQ PDU has been received.

Parameters

Table 238. GAP-AdvertisingEventExtScanReqReceived.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC9
Length	1	Length in bytes of the following parameters
Handle	1	Advertising set identifier
ScannerAddressType	1	The type of the address of the scanner device Possible values: 0x00: gPublic_c 0x01: gRandom_c
ScannerAddress	6	The address of the scanner device
ScannerAddressResolved	1	TRUE if the address contained in the ScannerAddressType and ScannerAddress fields corresponds to a Resolved Private Address

3.4.10 GAP-AdvertisingEventPeriodicAdvertisingStateChanged.Indication

Description

Controller event - Periodic advertising state changed indication.

Parameters

Table 239. GAP-AdvertisingEventPeriodicAdvertisingStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48

Table continues on the next page...

Table 239. GAP-AdvertisingEventPeriodicAdvertisingStateChanged.Indication Parameters (continued)

Parameter	Size (bytes)	Comments
OpCode	1	0xCA
Length	1	0x00 - This message does not have any parameters

3.4.11 GAP-AdvertisingEventStateChanged.Indication

Description

Event received when advertising was successfully enabled or disabled.

Parameters

Table 240. GAP-AdvertisingEventStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x98
Length	1	0x00 - This message does not have any parameters

3.4.12 GAP-Authorize.Request

Description

Authorizes a peer for a certain attribute in the database.

Parameters

Table 241. GAP-Authorize.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x07
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer being authorized
Handle	2	The attribute handle
Access	1	GATT Database access type (the type of access granted - read or write) Possible values: 0x00: gRead_c (Attempting to read the attribute) 0x01: gWrite_c (Attempting to write the attribute)

3.4.13 GAP-BondCreated.Indication

Description

A bond has been created by the stack or the application.

Parameters

Table 242. GAP-BondCreated.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xBD
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area
AddrType	1	BLE Address Type Possible values: 0x00: gPublic_c 0x01: gRandom_c
Addr	6	BLE Address

3.4.14 GAP-CheckIfBonded.Request

Description

Verifies if a connected peer device is bonded.

Parameters

Table 243. GAP-CheckIfBonded.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x20
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the GAP peer

3.4.15 GAP-CheckIfBonded.Indication

Description

Returns whether a connected peer device is bonded or not.

Parameters

Table 244. GAP-CheckIfBonded.Indication Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 244. GAP-CheckIfBonded.Indication Parameters (continued)

OpGroup	1	0x48
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
IsBonded	1	Bonded flag
NvmIndex	1	NVM Index

3.4.16 GAP-CheckIndicationStatus.Request

Description

Retrieves the indication status for a given client and a given CCCD handle.

Parameters

Table 245. Parameters GAP-CheckIndicationStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x0A
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer GATT client
Handle	2	The handle of the CCCD

3.4.17 GAP-CheckIndicationStatus.Indication

Description

Returns the indication status for a given Client and a given CCCD handle.

Parameters

Table 246. GAP-CheckIndicationStatus.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
IsActive	1	Indication status

3.4.18 GAP-CheckNotificationStatus.Request

Description

Retrieves the notification status for a given client and a given CCCD handle.

Parameters

Table 247. GAP-CheckNotificationStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x09
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer GATT client
Handle	2	The handle of the CCCD

3.4.19 GAP-CheckNotificationStatus.Indication

Description

Returns the notification status for a given Client and a given CCCD handle.

Parameters

Table 248. GAP-CheckNotificationStatus.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
IsActive	1	Notification status

3.4.20 GAP-ClearWhiteList.Request

Description

Removes all addresses from the White List.

Parameters

Table 249. GAP-ClearWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x22
Length	1	0x00 - This message does not have any parameters

3.4.21 GAP-Connect.Request

Description

Connects to a scanned device.

Parameters

Table 250. GAP-Connect.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1C
Length	1	Length in bytes of the following parameters
CreateConnectionParameters	Variable	Create connection command parameters Structure type parameter. See the detailed table below for parameter structure.

Table 251. CreateConnectionParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
ScanInterval	2	Scanning interval - default 10ms
ScanWindow	2	Scanning window - default 10ms
FilterPolicy	1	Indicates whether the connection request is issued for a specific device or for all the devices in the White List - default specific device Possible values: 0x00: gUseDeviceAddress_c (Initiates a connection with a specific device identified by its address) 0x01: gUseWhiteList_c (Initiates connections with all the devices in the White List at the same time)
OwnAddressType	1	Indicates whether the address used in connection requests will be the public address or the random address - default public address Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddressType	1	When connecting to a specific device, this indicates that device's address type - default public address Possible values: 0x00: gPublic_c 0x01: gRandom_c

Table continues on the next page...

Table 251. CreateConnectionParameters Parameter Structure (continued)

PeerAddress	6	When connecting to a specific device, this indicates that device's address
ConnIntervalMin	2	The minimum desired connection interval - default 100ms
ConnIntervalMax	2	The maximum desired connection interval - default 200ms
ConnLatency	2	The desired connection latency (the maximum number of consecutive connection events the Slave is allowed to ignore) - default 0
SupervisionTimeout	2	The maximum time interval between consecutive over-the-air packets; if this timer expires, the connection is dropped - default 10s
ConnEventLengthMin	2	The minimum desired connection event length - default 0ms
ConnEventLengthMax	2	The maximum desired connection event length - default maximum possible, ~41 s
usePeerIdentityAddress	1	TRUE if the address defined in the peerAddressType and peerAddress is an identity address
Initiating_PHYs	1	Phy Flags

3.4.22 GAP-ConnectionEventAuthenticationRejected.Indication

Description

A link encryption or pairing request was rejected by the peer Slave.

Parameters

Table 252. GAP-ConnectionEventAuthenticationRejected.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA1
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
RejectReason	1	The reason of the rejection Possible values: 0x02: gOobNotAvailable_c (This device does not have the required OOB for authenticated pairing)

Table continues on the next page...

Table 252. GAP-ConnectionEventAuthenticationRejected.Indication Parameters (continued)

		0x03: gIncompatibleIoCapabilities_c (The combination of I/O capabilities does not allow pairing with the desired level of security) 0x05: gPairingNotSupported_c (This device does not support pairing) 0x06: gLowEncryptionKeySize_c (The peer's encryption key size is too low for this device's required security level) 0x08: gUnspecifiedReason_c (The host has rejected the pairing for an unknown reason) 0x09: gRepeatedAttempts_c (This device is the target of repeated unsuccessful pairing attempts and does not allow further pairing attempts at the moment) 0xF0: gLinkEncryptionFailed_c (Link could not be encrypted)

3.4.23 GAP-ConnectionEventChannelMapRead.Indication

Description

A channel map read operation has completed.

Parameters

Table 253. GAP-ConnectionEventChannelMapRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xBF
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Channel Map	5	

3.4.24 GAP-ConnectionEventChannelMapReadFailure.Indication

Description

A channel map set operation has failed.

Parameters

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

OpGroup	1	0x48
OpCode	1	0xC0
Length	1	Length in bytes of the following parameters
FailReason	2	Reason for channel read failure Possible values: 0x0000: gBleSuccess_c 0x0001: gBleInvalidParameter_c 0x0002: gBleOverflow_c 0x0003: gBleUnavailable_c 0x0004: gBleFeatureNotSupported_c 0x0005: gBleOutOfMemory_c 0x0006: gBleAlreadyInitialized_c 0x0007: gBleOsError_c 0x0008: gBleUnexpectedError_c 0x0009: gBleInvalidState_c 0x000A: gBleTimerError_c 0x0101: gHciUnknownHciCommand_c 0x0102: gHciUnknownConnectionIdentifier_c 0x0103: gHciHardwareFailure_c 0x0104: gHciPageTimeout_c 0x0105: gHciAuthenticationFailure_c 0x0106: gHciPinOrKeyMissing_c 0x0107: gHciMemoryCapacityExceeded_c 0x0108: gHciConnectionTimeout_c 0x0109: gHciConnectionLimitExceeded_c 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c 0x010B: gHciAclConnectionAlreadyExists_c 0x010C: gHciCommandDisallowed_c 0x010D: gHciConnectionRejectedDueToLimitedResources_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x010E: gHciConnectionRejectedDueToSecurityReasons_c 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c 0x0110: gHciConnectionAcceptTimeoutExceeded_c 0x0111: gHciUnsupportedFeatureOrParameterValue_c 0x0112: gHciInvalidHciCommandParameters_c 0x0113: gHciRemoteUserTerminatedConnection_c 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c 0x0116: gHciConnectionTerminatedByLocalHost_c 0x0117: gHciRepeatedAttempts_c 0x0118: gHciPairingNotAllowed_c 0x0119: gHciUnknownLpmPdu_c 0x011A: gHciUnsupportedRemoteFeature_c 0x011B: gHciScoOffsetRejected_c 0x011C: gHciScoIntervalRejected_c 0x011D: gHciScoAirModeRejected_c 0x011E: gHciInvalidLpmParameters_c 0x011F: gHciUnspecifiedError_c 0x0120: gHciUnsupportedLpmParameterValue_c 0x0121: gHciRoleChangeNotAllowed_c 0x0122: gHciLLResponseTimeout_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x0123: gHciLmpErrorTransactionCollision_c 0x0124: gHciLmpPduNotAllowed_c 0x0125: gHciEncryptionModeNotAcceptable_c 0x0126: gHciLinkKeyCannotBeChanged_c 0x0127: gHciRequestedQosNotSupported_c 0x0128: gHciInstantPassed_c 0x0129: gHciPairingWithUnitKeyNotSupported_c 0x012A: gHciDifferentTransactionCollision_c 0x012B: gHciReserved_0x2B_c 0x012C: gHciQosNotAcceptableParameter_c 0x012D: gHciQosRejected_c 0x012E: gHciChannelClassificationNotSupported_c 0x012F: gHciInsufficientSecurity_c 0x0130: gHciParameterOutOfMandatoryRange_c 0x0131: gHciReserved_0x31_c 0x0132: gHciRoleSwitchPending_c 0x0133: gHciReserved_0x33_c 0x0134: gHciReservedSlotViolation_c 0x0135: gHciRoleSwitchFailed_c 0x0136: gHciExtendedInquiryResponseTooLarge_c 0x0137: gHciSecureSimplePairingNotSupportedByHost_c 0x0138: gHciHostBusyPairing_c 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x013A: gHciControllerBusy_c 0x013B: gHciUnacceptableConnectionParameters_c 0x013C: gHciDirectedAdvertisingTimeout_c 0x013D: gHciConnectionTerminatedDueToMicFailure_c 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c 0x013F: gHciMacConnectionFailed_c 0x0140: gHciCoarseClockAdjustmentRejected_c 0x0141: gHciType0SubmapNotDefined_c 0x0142: gHciUnknownAdvertisingIdentifier_c 0x0143: gHciLimitReached_c 0x0144: gHciOperationCancelledByHost_c 0x01A0: gHciAlreadyInit_c 0x01A1: gHciInvalidParameter_c 0x01A2: gHciCallbackNotInstalled_c 0x01A3: gHciCallbackAlreadyInstalled_c 0x01A4: gHciCommandNotSupported_c 0x01A5: gHciEventNotSupported_c 0x01A6: gHciTransportError_c 0x03F0: gL2caAlreadyInit_c 0x03F1: gL2caInsufficientResources_c 0x03F2: gL2caCallbackNotInstalled_c 0x03F3: gL2caCallbackAlreadyInstalled_c 0x03F4: gL2caLePsmInvalid_c 0x03F5: gL2caLePsmAlreadyRegistered_c 0x03F6: gL2caLePsmNotRegistered_c 0x03F7: gL2caLePsmInsufficientResources_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x03F8: gL2caChannelInvalid_c 0x03F9: gL2caChannelClosed_c 0x03FA: gL2caChannelAlreadyConnected_c 0x03FB: gL2caConnectionParametersRejected_c 0x03FC: gL2caChannelBusy_c 0x03FE: gL2caInvalidParameter_c 0x03FF: gL2caError_c 0x0401: gSmNullCBFunction_c 0x0402: gSmCommandNotSupported_c 0x0403: gSmUnexpectedCommand_c 0x0404: gSmInvalidCommandCode_c 0x0405: gSmInvalidCommandLength_c 0x0406: gSmInvalidCommandParameter_c 0x0407: gSmInvalidDeviceId_c 0x0408: gSmInvalidInternalOperation_c 0x0409: gSmInvalidConnectionHandle_c 0x040A: gSmInproperKeyDistributionField_c 0x040B: gSmUnexpectedKeyType_c 0x040C: gSmUnexpectedPairingTerminationReason_c 0x040D: gSmUnexpectedKeyset_c 0x040E: gSmSmpTimeoutOccurred_c 0x040F: gSmUnknownSmpPacketType_c 0x0410: gSmInvalidSmpPacketLength_c 0x0411: gSmInvalidSmpPacketParameter_c 0x0412: gSmReceivedUnexpectedSmpPacket_c 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c 0x0414: gSmReceivedUnexpectedHciEvent_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x0415: gSmReceivedHciEventFromUnknownDevice_c 0x0416: gSmInvalidHciEventParameter_c 0x0417: gSmLlConnectionEncryptionInProgress_c 0x0418: gSmLlConnectionEncryptionFailure_c 0x0419: gSmInsufficientResources_c 0x041A: gSmOobDataAddressMismatch_c 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c 0x041C: gSmReceivedTimerEventForUnknownDevice_c 0x041D: gSmUnattainableLocalDeviceSecRequirements_c 0x041E: gSmUnattainableLocalDeviceMinKeySize_c 0x041F: gSmUnattainableSlaveSecReqRequirements_c 0x0431: gSmPairingErrorPasskeyEntryFailed_c 0x0432: gSmPairingErrorConfirmValueFailed_c 0x0433: gSmPairingErrorCommandNotSupported_c 0x0434: gSmPairingErrorInvalidParameters_c 0x0435: gSmPairingErrorUnknownReason_c 0x0436: gSmPairingErrorTimeout_c 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x0461: gSmTbInvalidDataSignature_c 0x0501: gAttInvalidHandle_c 0x0502: gAttReadNotPermitted_c 0x0503: gAttWriteNotPermitted_c 0x0504: gAttInvalidPdu_c 0x0505: gAttInsufficientAuthentication_c 0x0506: gAttRequestNotSupported_c 0x0507: gAttInvalidOffset_c 0x0508: gAttInsufficientAuthorization_c 0x0509: gAttPrepareQueueFull_c 0x050A: gAttAttributeNotFound_c 0x050B: gAttAttributeNotLong_c 0x050C: gAttInsufficientEncryptionKeySize_c 0x050D: gAttInvalidAttributeValueLength_c 0x050E: gAttUnlikelyor_c 0x050F: gAttInsufficientEncryption_c 0x0510: gAttUnsupportedGroupType_c 0x0511: gAttInsufficientResources_c 0x0601: gGattAnotherProcedureInProgress_c 0x0602: gGattLongAttributePacketsCorrupted_c 0x0603: gGattMultipleAttributesOverflow_c 0x0604: gGattUnexpectedReadMultipleResponseLength_c 0x0605: gGattInvalidValueLength_c 0x0606: gGattServerTimeout_c 0x0607: gGattIndicationAlreadyInProgress_c 0x0608: gGattClientConfirmationTimeout_c 0x0701: gGapAdvDataTooLong_c 0x0702: gGapScanRspDataTooLong_c 0x0703: gGapDeviceNotBonded_c

Table continues on the next page...

Table 254. GAP-ConnectionEventChannelMapReadFailure.Indication Parameters (continued)

		0x0704: gGapAnotherProcedureInProgress_c 0x0801: gDevDbCccdLimitReached_c 0x0802: gDevDbCccdNotFound_c 0x0901: gGattDbInvalidHandle_c 0x0902: gGattDbCharacteristicNotFound_c 0x0903: gGattDbCccdNotFound_c 0x0904: gGattDbServiceNotFound_c 0x0905: gGattDbDescriptorNotFound_c

3.4.25 GAP-ConnectionEventChannelSelectionAlgorithm2.Indication

Description

LE Channel Selection Algorithm #2 is used on the data channel connection.

Parameters

Table 255. GAP-ConnectionEventChannelSelectionAlgorithm2.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xD1
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceId for which the command is intended

3.4.26 GAP-ConnectionEventConnected.Indication

Description

A connection was established.

Parameters

Table 256. GAP-ConnectionEventConnected.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9D
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

Table continues on the next page...

Table 256. GAP-ConnectionEventConnected.Indication Parameters (continued)

ConnectionParameters	Variable	Connection parameters established by the Controller Structure type parameter. See the detailed table below for parameter structure.
PeerAddressType	1	Connected device's address type Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddress	6 x peerRpaResolved	Connected device's address
peerRpaResolved	1	TRUE if the address defined by peerAddressType and peerAddress is the identity address of the peer, and the peer used an RPA that was resolved by the Controller and is contained in the peerRpa field
peerRpa	6 x localRpaUsed	Peer Resolvable Private Address if Controller Privacy is active and peerRpaResolved is TRUE
localRpaUsed	1	TRUE if the Controller has used an RPA contained in the localRpa field
localRpa	6	Local Resolvable Private Address if Controller Privacy is active and localRpaUsed is TRUE

Table 257. Connection Parameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
ConnInterval	2	Interval between connection events
ConnLatency	2	Number of consecutive connection events the Slave may ignore
SupervisionTimeout	2	The maximum time interval between consecutive over-the-air packets; if this timer expires, the connection is dropped
MasterClockAccuracy	1	Accuracy of master's clock, allowing for frame detection optimizations Possible values: 0x00: gMasterClkAcc500ppm_c 0x01: gMasterClkAcc250ppm_c 0x02: gMasterClkAcc150ppm_c

Table continues on the next page...

Table 257. Connection Parameters Parameter Structure (continued)

		0x03: gMasterClkAcc100ppm_c 0x04: gMasterClkAcc75ppm_c 0x05: gMasterClkAcc50ppm_c 0x06: gMasterClkAcc30ppm_c 0x07: gMasterClkAcc20ppm_c

3.4.27 GAP-ConnectionEventDisconnected.Indication

Description

A connection is terminated.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAA
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Reason	2	Reason for disconnection Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.28 GAP-ConnectionEventEncryptionChanged.Indication

Description

Link's encryption state has changed, for example, during pairing or after a reconnection with a bonded peer.

Parameters

Table 258. GAP-ConnectionEventEncryptionChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA8
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
NewEncryptionState	1	TRUE if link has been encrypted, FALSE if encryption was paused or removed

3.4.29 GAP-ConnectionEventKeyExchangeRequest.Indication

Description

The pairing procedure requires the SMP keys to be distributed to the peer.

Parameters

Table 259. GAP-ConnectionEventKeyExchangeRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA5
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
RequestedKeys	1	Mask identifying the keys being requested
RequestedLtkSize	1	Requested size of the encryption key

3.4.30 GAP-ConnectionEventKeysReceived.Indication

Description

SMP keys distributed by the peer during pairing were received.

Parameters

Table 260. ConnectionEventKeysReceived.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA6

Table continues on the next page...

Table 260. ConnectionEventKeysReceived.Indication Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Keys	Variable	The SMP keys of the local device Structure type parameter. See the detailed table below for parameter structure.

Table 261. Keys Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkIncluded	1	Boolean value which indicates if LTK size and LTK are included or not
LtkInfo	Variable	LTK information (size and value) Structure type parameter. See the detailed table below for parameter structure.
IrkIncluded	1	Boolean value which indicates if IRK is included or not
Irk	16 x IrkIncluded	Identity Resolving Key
CsrkIncluded	1	Boolean value which indicates if CSRK is included or not
Csrk	16 x CsrkIncluded	Connection Signature Resolving Key
RandEdivInfo	Variable	Rand information (size and value) and Ediv Structure type parameter. See the detailed table below for parameter structure.
AddressIncluded	IrkIncluded	Boolean value which indicates if Address is included or not
AddressInfo	Variable	Address information (type and value Structure type parameter. See the detailed table below for parameter structure.

Table 262. LtkInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkSize	1	Encryption Key Size
Ltk	LtkSize	Long Term (Encryption) Key

Table 263. RandEdivInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
RandSize	1	Random value size
Rand	RandSize	Random value used to identify the LTK
Ediv	2	EDIV value used to identify the LTK

Table 264. AddressInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceAddressType	1	Public or Random address Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Device Address

3.4.31 GAP-ConnectionEventLeDataLengthChanged.Indication

Description

The new TX/RX Data Length paramaters.

Parameters

Table 265. GAP-ConnectionEventLeDataLengthChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB0
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
LeDataLengthChanged	Variable	Connection Le Data Length Changed Event data Structure type parameter. See the detailed table below for parameter structure.

Table 266. LeDataLengthChanged Parameter Structure

Structure Parameter	Size (bytes)	Comments
MaxTxOctets	2	The maximum number of payload octets in a Link Layer Data Channel PDU to transmit on this connection

Table continues on the next page...

Table 266. LeDataLengthChanged Parameter Structure (continued)

MaxTxTime	2	The maximum time that the local Controller will take to send a Link Layer Data Channel PDU on this connection
MaxRxOctets	2	The maximum number of payload octets in a Link Layer Data Channel PDU to receive on this connection
MaxRxTime	2	The maximum time that the local Controller will take to receive a Link Layer Data Channel PDU on this connection

3.4.32 GAP-ConnectionEventLeScDisplayNumericValue.Indication

Description

Event sent to display and confirm a Numeric Comparison Value when using the LE SC Numeric Comparison pairing method.

Parameters

Table 267. GAP-ConnectionEventLeScDisplayNumericValue Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB2
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
ncValue	4	A number between 0 and 999999 decimal which must be confirmed by the user on both pairing devices

3.4.33 GAP-ConnectionEventLeScKeypressNotification.Indication

Description

Remote Keypress Notification recieved during Passkey Entry Pairing Method.

Parameters

Table 268. GAP-ConnectionEventLeScKeyPressNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB3
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

Table continues on the next page...

Table 268. GAP-ConnectionEventLeScKeyPressNotification.Indication Parameters (continued)

GapLeScKeypressNotificationParams	Variable	Keypress notification type which denotes a passkey entry keypress action Structure type parameter. See the detailed table below for parameter structure.

Table 269. GapLeScKeypressNotificationParams Parameter Structure

Structure Parameter	Size (bytes)	Comments
keypressNotifType	1	Possible values: 0x00: gKnPasskeyEntryStarted_c 0x01: gKnPasskeyDigitStarted_c 0x02: gKnPasskeyDigitErased_c (gKnPasskeyDigitErased_c) 0x03: gKnPasskeyCleared_c 0x04: gKnPasskeyEntryCompleted_c

3.4.34 GAP-ConnectionEventLeScOobDataRequest.Indication

Description

Event sent to request LE SC OOB Data (r, Cr and Addr) received from a peer.

Parameters

Table 270. GAP-ConnectionEventLeScOobDataRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB1
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

3.4.35 GAP-ConnectionEventLongTermKeyRequest.Indication

Description

The bonded peer Master has requested link encryption and the LTK must be provided.

Parameters

Table 271. GAP-ConnectionEventLongTermKeyRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA7

Table continues on the next page...

Table 271. GAP-ConnectionEventLongTermKeyRequest.Indication Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Ediv	2	The Encryption Diversifier, as defined by the SMP
RandSize	1	Random number size
Rand	RandSize	The Random number, as defined by the SMP

3.4.36 GAP-ConnectionEventOobRequest.Indication

Description

Out-of-Band data must be provided for the pairing procedure.

Parameters

Table 272. GAP-ConnectionEventOobRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA3
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

3.4.37 GAP-ConnectionEventPairingComplete.Indication

Description

Pairing procedure is complete, either successfully or with failure.

Parameters

Table 273. GAP-ConnectionEventPairingComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA9
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
PairingStatus	1	Pairing status Possible values: 0x01: PairingSuccessful (Pairing succeeded)

Table continues on the next page...

Table 273. GAP-ConnectionEventPairingComplete.Indication Parameters (continued)

		0x00: PairingFailed (Pairing failed)
PairingData	Variable	Information of pairing completion "Union" type parameter. Its structure is based on the value of parameter PairingStatus. See the detailed table below for parameter structure.

Table 274. PairingData Parameter Structure

PairingStatus	Structure Parameter	Size (bytes)	Comments
0x01	PairingSuccessful	Variable	Pairing successful data Structure type parameter. See the detailed table below for parameter structure.
0x00	PairingFailed	Variable	Pairing failed data Structure type parameter. See the detailed table below for parameter structure.

Table 275. PairingSuccessful Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	Indicates whether the devices is bonded

Structure Parameter (PairingFailed)	Size (bytes)	Comments
FailReason	2	The reason of failure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c

Structure Parameter (PairingFailed)	Size (bytes)	Comments
		• 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.38 GAP-ConnectionEventPairingRequest.Indication

Description

A pairing request was received from the peer Master.

Parameters

Table 276. GAP-ConnectionEventPairingRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
PairingParameters	Variable	Pairing parameters Structure type parameter. See the detailed table below for parameter structure.

Table 277. PairingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values: 0x00: gIoDisplayOnly_c (May display a PIN, no input)

Table continues on the next page...

Table 277. PairingParameters Parameter Structure (continued)

		0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (for example, YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
PeripheralKeys	1	SMP keys to be distributed by the Peripheral Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.39 GAP-ConnectionEventPairingResponse.Indication

Description

A pairing response was received from the peer Slave.

Parameters

Table 278. GAP-ConnectionEventPairingResponse.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA0
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
PairingParameters	Variable	Pairing parameters Structure type parameter. See the detailed table below for parameter structure.

Table 279. PairingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values: 0x00: gIoDisplayOnly_c (May display a PIN, no input)

Table continues on the next page...

Table 279. PairingParameters Parameter Structure (continued)

		0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (for example, YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
PeripheralKeys	1	SMP keys to be distributed by the Peripheral Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.40 GAP-ConnectionEventParameterUpdateComplete.Indication

Description

The connection has new parameters.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAF
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
ConnectionParameterUpdateComplete	Variable	Connection parameter update complete event data Structure type parameter. See the detailed table below for parameter structure.

Structure Parameter	Size (bytes)	Comments
Status	2	The status of the request Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: SmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c

Table continues on the next page...

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Structure Parameter	Size (bytes)	Comments
		• 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
ConnInterval	2	Connection interval
ConnLatency	2	Connection latency
SupervisionTimeout	2	Supervision timeout

3.4.41 GAP-ConnectionEventParameterUpdateRequest.Indication

Description

A connection parameter update request has been received.

Parameters

Table 280. GAP-ConnectionEventParameterUpdateRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAE
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
ConnectionParameterUpdateRequest	Variable	Connection parameter update request event data Structure type parameter. See the detailed table below for parameter structure.

Table 281. ConnectionParameterUpdateRequest Parameter Structure

Structure Parameter	Size (bytes)	Comments
IntervalMin	2	Minimum interval
IntervalMax	2	Maximum interval
SlaveLatency	2	Slave latency
TimeoutMultiplier	2	Timeout multiplier

3.4.42 GAP-ConnectionEventPasskeyDisplay.Indication

Description

The pairing procedure requires this Slave to display the passkey for the Master's user.

Parameters

Table 282. GAP-ConnectionEventPassKeyDisplay.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA4
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
PasskeyForDisplay	4	Passkey to be displayed by this Slave

3.4.43 GAP-ConnectionEventPasskeyRequest.Indication

Description

Peer Slave has requested a passkey (maximum 6 digit PIN) for the pairing procedure.

Parameters

Table 283. GAP-ConnectionEventPassKeyRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xA2
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

3.4.44 GAP-ConnectionEventPowerReadFailure.Indication

Description

Power reading could not be performed.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAD
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
FailReason	2	Reason for power reading failure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.45 GAP-ConnectionEventRssiRead.Indication

Description

RSSI for an active connection has been read.

Parameters

Table 284. GAP-ConnectionEventRssiRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAB
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Rssi	1	Value of the RSSI

3.4.46 GAP-ConnectionEventSlaveSecurityRequest.Indication

Description

A Slave Security Request has been received from the peer Slave.

Parameters

Table 285. Parameters GAP-ConnectionEventSlaveSecurityRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9F
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
SlaveSecurityRequestParameters	Variable	Slave security request parameters Structure type parameter. See the detailed table below for parameter structure.

Table 286. SlaveSecurityRequestParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
BondAfterPairing	1	TRUE if the Slave supports bonding, FALSE otherwise
bAuthenticationRequired	1	TRUE if the slave requires authentication for MITM protection, FALSE otherwise

3.4.47 GAP-ConnectionEventTxPowerLevelRead.Indication

Description

TX power level for an active connection has been read.

Parameters

Table 287. GAP-ConnectionEventTxPowerLevelRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xAC
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
TxPowerLevel	1	Value of the TX power

3.4.48 GAP-ControllerReset.Request

Description

Resets the controller.

Parameters

Table 288. GAP-ConnectionReset.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x34
Length	1	0x00 - This message does not have any parameters

3.4.49 GAP-ControllerEnhancedNotification.Request

Description

Configure enhanced ADV/SCAN/CONN events in the controller.

Parameters

Table 289. GAP-ControllerEnhancedNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x40
Length	1	Length in bytes of the following parameters
EventType	2	Events to enable.
DeviceId	1	Device ID of the peer.

3.4.50 GAP-ControllerNotification.Indication

Description

ADV/SCAN/CONN notification event from the controller

Parameters

Table 290. GAP-ControllerNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xBC
Length	1	Length in bytes of the following parameters
EventType	2	Events type.
DeviceId	1	Device ID identifying the connection
RSSI	1	RSSI, valid for Rx event types
Channel	1	Channel, valid for conn event over or Rx/Tx events
ConnEvCounter	2	Connection event counter, valid for conn event over or Conn Rx event
Status	1	Status of the request to select which events to be enabled/disabled

3.4.51 GAP-CreateRandomDeviceAddress.Request

Description

Requests the controller to create a random address.

Parameters

Table 291. GAP-CreateRandomDeviceAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x26
Length	1	Length in bytes of the following parameters
IrkIncluded	1	Boolean value which indicates if IRK is included or not
Irk	16 x IrkIncluded	The Identity Resolving Key to be used for a private resolvable address
RandomPartIncluded	IrkIncluded	Boolean value which indicates if random part is included or not
RandomPart	3 x RandomPartIncluded	Array containing the random part of a Private Resolvable Address

3.4.52 GAP-DenyLongTermKey.Request

Description

Rejects a long term key request from the controller.

Parameters

Table 292. GAP-DenyLongTermKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x17
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested encryption

3.4.53 GAP-Disconnect.Request

Description

Initiates disconnection from a connected peer device.

Parameters

Table 293. GAP-Disconnect.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1D
Length	1	Length in bytes of the following parameters
DeviceId	1	The connected peer to disconnect from

3.4.54 GAP-EnableControllerPrivacy.Request

Description

Enables or disables Controller Privacy (Enhanced Privacy feature).

Parameters

Table 294. GAP-EnableControllerPrivacy.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x36
Length	1	Length in bytes of the following parameters
Enable	1	Enables or disables Controller Privacy
OwnIrk	16 x Enable	Local IRK
PeerIdCount	Enable	Size of PeerIdentities array
PeerIdentities	Variable	Array of peer identity addresses and IRKs

Table continues on the next page...

Table 294. GAP-EnableControllerPrivacy.Request Parameters (continued)

		Structure type parameter. See the detailed table below for parameter structure.

Table 295. PeerIdentities Parameters Structure

Structure Parameter	Size (bytes)	Comments
IdentityAddressType	1	Identity Address Type Possible values: 0x00: gPublic_c 0x01: gRandom_c
IdentityAddress	6	Identity Address
Irk	16	Identity Resolving Key
PrivacyMode	1	Privacy Mode Possible values: 0x00: gNetworkPrivacy_c (Use Network Privacy Mode for this peer device (default)) 0x01: gDevicePrivacy_c (Use Device Privacy Mode for this peer device)

3.4.55 GAP-EnableHostPrivacy.Request

Description

Enables or disables Host Privacy (automatic regeneration of a Private Address).

Parameters

Table 296. GAP-EnableHostPrivacy.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x35
Length	1	Length in bytes of the following parameters
Enable	1	Enables or disables Host Privacy
Irk	16 x Enable	Local IRK to be used for Resolvable Private Address generation

3.4.56 GAP-EnableUpdateConnectionParameters.Request

Description

Updates the connection parameters.

Parameters

Table 297. GAP-EnableUpdateConnectionParameters.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x32
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
Enable	1	Allow/dissalow the parameters update

3.4.57 GAP-EncryptLink.Request

Description

Encrypts the link with a bonded peer.

Parameters

Table 298. GAP-EncryptLink.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x0E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer

3.4.58 GAP-EnterPasskey.Request

Description

Enters the passkey requested by a peer during the pairing process.

Parameters

Table 299. GAP-EnterPassKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x11
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer that requested a passkey entry
Passkey	4	The peer's secret passkey

3.4.59 GAP-GenericEventAdvertisingDataSetupComplete.Indication

Description

Controller event - advertising data setup completed.

Parameters

Table 300. GAP-GenericventAdvertisingDataSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x8D
Length	1	0x00 - This message does not have any parameters

3.4.60 GAP-GenericEventAdvertisingParametersSetupComplete.Indication

Description

Controller event - advertising parameters setup completed.

Parameters

Table 301. GAP-GenericEventAdvertisingParametersSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x8C
Length	1	0x00 - This message does not have any parameters

3.4.61 GAP-GenericEventAdvertisingSetupFailed.Indication

Description

Controller event - advertising setup failed.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x8B
Length	1	Length in bytes of the following parameters
SetupFailReason	2	Setup fail reason Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c • 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c • 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c • 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c • 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.62 GAP-GenericEventAdvTxPowerLevelRead.Indication

Description

Controller event - advertising transmission power level.

Parameters

Table 302. GAP-GenericEventAdvTxPowerLevelRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x95
Length	1	Length in bytes of the following parameters
AdvTxPowerLevel	1	Advertising transmission power level (in dBm)

3.4.63 GAP-GenericEventChannelMapSet.Indication

Description

A channel map set operation has completed.

Parameters

Table 303. GAP-GenericEventChannelMapSet.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48

Table continues on the next page...

Table 303. GAP-GenericEventChannelMapSet.Indication Parameters (continued)

Parameter	Size (bytes)	Comments
OpCode	1	0xBE
Length	1	0x00 - This message does not have any parameters

3.4.64 GAP-GenericEventControllerPrivacyStateChanged.Indication

Description

The Controller Privacy was enabled or disabled.

Parameters

Table 304. GAP-GenericEventControllerPrivacyStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB8
Length	1	Length in bytes of the following parameters
NewControllerPrivacyState	1	Indicates the new state of the controller privacy: TRUE if enabled, FALSE if disabled

3.4.65 GAP-GenericEventCreateConnectionCanceled.Indication

Description

Controller event - create connection procedure canceled.

Parameters

Table 305. GAP-GenericEventCreateConnectionCanceled.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x93
Length	1	0x00 - This message does not have any parameters

3.4.66 GAP-GenericEventDeviceAddedToWhiteList.Indication

Description

Controller event - device added to White List.

Parameters

Table 306. GAP-GenericEventDeviceAddedToWhiteList.Indication Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 306. GAP-GenericEventDeviceAddedToWhiteList.Indication Parameters (continued)

OpGroup	1	0x48
OpCode	1	0x8F
Length	1	0x00 - This message does not have any parameters

3.4.67 GAP-GenericEventDeviceRemovedFromWhiteList.Indication

Description

Controller event - device removed from White List.

Parameters

Table 307. GAP-GenericEventDeviceRemovedFromWhiteList.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x90
Length	1	0x00 - This message does not have any parameters

3.4.68 GAP-GenericEventExtAdvertisingDataSetupComplete.Indication

Description

Extended advertising data setup completed.

Parameters

Table 308. GAP-GenericEventExtAdvertisingDataSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC2
Length	1	0x00 - This message does not have any parameters

3.4.69 GAP-GenericEventExtAdvertisingParamSetupComplete.Indication

Description

Extended advertising parameters setup completed.

Parameters

Table 309. GAP-GenericEventExtAdvertisingParamSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC1

Table continues on the next page...

Table 309. GAP-GenericEventExtAdvertisingParamSetupComplete.Indication Parameters (continued)

Parameter	Size (bytes)	Comments
Length	1	0x00 - This message does not have any parameters
SelectedTxPower	1	Indicates the transmit power selected by the Controller (in dBm)

3.4.70 GAP-GenericEventHostPrivacyStateChanged.Indication

Description

The Host Privacy was enabled or disabled.

Parameters

Table 310. GAP-GenericEventHostPrivacyStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB7
Length	1	Length in bytes of the following parameters
NewHostPrivacyState	1	Indicates the new state of the host privacy: TRUE if enabled, FALSE if disabled

3.4.71 GAP-GenericEventInitializationComplete.Indication

Description

Controller event - initialization complete.

Parameters

Table 311. GAP-GenericEventInitializationComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x89
Length	1	Length in bytes of the following parameters
initCompleteData	Variable	data for the gInitializationComplete_c event Structure type parameter. See detailed table below for parameter structure.

Table 312. initCompleteData Parameter Structure

Structure Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 312. initCompleteData Parameter Structure (continued)

SupportedFeatures	4	local supported features
MaxAdvDataSize	2	The maximum length of data supported by the Controller for use as advertisement data or scan response data in an advertising event or as periodic advertisement data
NumOfSupportedAdvSets	1	number of supported advertising sets
PeriodicAdvListSize	1	periodic advertiser list size

3.4.72 GAP-GenericEventInternalError.Indication

Description

Controller event - controller error.

Parameters

Table 313. GAP-GenericEventInternalError.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x8A
Length	1	Length in bytes of the following parameters
InternalError	Variable	Internal Error event data Structure type parameter. See the detailed table below for parameter structure.

Structure Parameter	Size (bytes)	Comments
ErrorCode	2	Error code Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0008: gBleUnexpectedError_c • 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c • 0x013B: gHciUnacceptableConnectionParameters_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_ • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c • 0x03F5: gL2caLePsmAlreadyRegistered_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c • 0x040D: gSmUnexpectedKeyset_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c

Table continues on the next page...

Structure Parameter	Size (bytes)	Comments
		• 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c • 0x0902: gGattDbCharacteristicNotFound_c

Table continues on the next page...

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Structure Parameter	Size (bytes)	Comments
		• 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c
ErrorSource	1	Error source Possible values: • 0x00: gHciCommandStatus_c • 0x01: gCheckPrivateResolvableAddress_c • 0x02: gVerifySignature_c • 0x03: gAddNewConnection_c • 0x04: gResetController_c • 0x05: gSetEventMask_c • 0x06: gReadLeBufferSize_c • 0x07: gSetLeEventMask_c • 0x08: gReadDeviceAddress_c • 0x09: gReadLocalSupportedFeatures_c • 0x0A: gReadWhiteListSize_c • 0x0B: gClearWhiteList_c • 0x0C: gAddDeviceToWhiteList_c • 0x0D: gRemoveDeviceFromWhiteList_c • 0x0E: gCancelCreateConnection_c • 0x0F: gReadRadioPower_c • 0x10: gSetRandomAddress_c • 0x11: gCreateRandomAddress_c • 0x12: gEncryptLink_c • 0x13: gProvideLongTermKey_c • 0x14: gDenyLongTermKey_c • 0x15: gConnect_c • 0x16: gDisconnect_c • 0x17: gTerminatePairing_c

Table continues on the next page...

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Structure Parameter	Size (bytes)	Comments
		• 0x18: gSendSlaveSecurityRequest_c • 0x19: gEnterPasskey_c • 0x1A: gProvideOob_c • 0x1B: gSendSmpKeys_c • 0x1C: gWriteSuggestedDefaultDataLength_c • 0x1D: gReadSuggestedDefaultDataLength_c • 0x1E: gUpdateLeDataLength_c • 0x1F: gEnableHostPrivacy_c • 0x20: gEnableControllerPrivacy_c • 0x21: gLeScSendKeypressNotification_c • 0x22: gLeScSetPeerOobData_c • 0x23: gLeScGetLocalOobData_c • 0x24: gLeScValidateNumericValue_c • 0x25: gLeScRegeneratePublicKey_c • 0x26: gLeSetResolvablePrivateAddressTimeout_c • 0x27: gDefaultPairingProcedure_c • 0x28: gLeControllerTest_c • 0x29: gLeReadPhy_c • 0x2A: gLeSetPhy_c • 0x2B: gSaveKeys_c • 0x2C: gSetChannelMap_c • 0x2D: gReadLocalSupportedCommands_c • 0x2E: gEnableLdmTimer_c • 0x2F: gRemoveAdvertisingSet_c • 0x30: gLePeriodicAdvSyncEstb_c

Table continues on the next page...

Table continued from the previous page...

Structure Parameter	Size (bytes)	Comments
		• 0x31: gLePeriodicAdvSyncLost_c • 0x32: gLeRemoveDeviceFromPeriodicAdvList_c • 0x33: gLeClearPeriodicAdvList_c • 0x34: gLeAddDeviceToPeriodicAdvList_c • 0x35: gLeReadNumOfSupportedAdvSets_c • 0x36: gLeReadPeriodicAdvListSize_c • 0x37: gLeReadMaxAdvDataLen_c • 0x38: gPeriodicAdvCreateSync • 0x39: gPeriodicAdvCancelSync • 0x3A: gPeriodicAdvTerminateSync • 0x3B: gL2capRxPacket_c
HciCommandOpcode	2	HCI command operation code

3.4.73 GAP-GenericEventLePhyEvent.Indication

Description

Phy Mode of a connection has been updated by the Controller.

Parameters

Table 314. GAP-GenericEventLePhyEvent.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xBA
Length	1	Length in bytes of the following parameters
eventType	1	Specifies the Phy event type Possible values: 0x00: gPhySetDefaultComplete_c (A Set Phy request with default mode was successful) 0x01: gPhyRead_c (Return parameters for a Read Phy Request)

Table continues on the next page...

Table 314. GAP-GenericEventLePhyEvent.Indication Parameters (continued)

		0x02: gPhyUpdateComplete_c (Return parameters for a Set Phy request on a connection or an update occured)
DeviceId	1	Device ID identifying the connection
txPhy	1	Specifies the Tx Phy, valid only for gPhyRead_c or gPhyUpdateComplete_c event type. Possible values: 0x01: gLeTxPhy1M_c (Tx Phy on the connection is LE 1M) 0x02: gLeTxPhy2M_c (Tx Phy on the connection is LE 2M) 0x03: gLeTxPhyCoded_c (Tx Phy on the connection is LE Coded)
rxPhy	1	Specifies the Rx Phy, valid only for gPhyRead_c or gPhyUpdateComplete_c event type. Possible values: 0x01: gLeRxPhy1M_c (Rx Phy on the connection is LE 1M) 0x02: gLeRxPhy2M_c (Rx Phy on the connection is LE 2M) 0x03: gLeRxPhyCoded_c (Rx Phy on the connection is LE Coded)

3.4.74 GAP-GenericEventLeScLocalOobData.Indication

Description

Local OOB data used for LE Secure Connections pairing.

Parameters

Table 315. GAP-GenericEventLeScLocalOobData.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB6
Length	1	Length in bytes of the following parameters
RandomValue	16	LE SC OOB r (Random value)
ConfirmValue	16	LE SC OOB Cr (Random Confirm value)

3.4.75 GAP-GenericEventPeriodicAdvCreateSyncCancelled.Indication

Description

Controller event - periodic advertising create sync procedure canceled.

Parameters

Table 316. GenericEventPeriodicAdvCreateSyncCancelled.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xD0
Length	1	0x00 - This message does not have any parameters

3.4.76 GAP-GenericEventPeriodicAdvDataSetupComplete.Indication

Description

Periodic advertising data setup completed.

Parameters

Table 317. GAP-GenericEventPeriodicAdvDataSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC4
Length	1	0x00 - This message does not have any parameters

3.4.77 GAP-GenericEventPeriodicAdvListUpdateComplete.Indication

Description

An update to the periodic advertiser list was successfully made.

Parameters

Table 318. GAP-GenericEventPeriodicAdvListUpdateComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC5
Length	1	0x00 - This message does not have any parameters

3.4.78 GAP-GenericEventPeriodicAdvParamSetupComplete.Indication

Description

Periodic advertising parameters setup completed.

Parameters

Table 319. GAP-GenericEventPeriodicAdvParamSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xC3
Length	1	0x00 - This message does not have any parameters

3.4.79 GAP-GenericEventPrivateResolvableAddressVerified.Indication

Description

Controller event - Private Resolvable Address verified.

Parameters

Table 320. GAP-GenericEventPrivateResolvableAddressVerified.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x96
Length	1	Length in bytes of the following parameters
Verified	1	Private Resolvable Address verified

3.4.80 GAP-GenericEventPublicAddressRead.Indication

Description

Controller event - public address read.

Parameters

Table 321. GAP-GenericEventPublicAddressRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x94
Length	1	Length in bytes of the following parameters
Address	6	Public address

3.4.81 GAP-GenericEventRandomAddressReady.Indication

Description

Controller event - random address ready.

Parameters

Table 322. GAP-GenericEventRandomAddressReady.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x92
Length	1	Length in bytes of the following parameters
Address	6	Random address
Handle	1	Advertising set handle if the generated device address will be used on an extended set, 0xFF otherwise

3.4.82 GAP-GenericEventRandomAddressSet.Indication

Description

Controller event - Private Resolvable Address verified.

Parameters

Table 323. GAP-GenericEventRandomAddressSet.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x97
Length	1	0x00 - This message does not have any parameters
Handle	1	Advertising handle of the configured set or 0xFF in case of legacy advertising or scanning and initiating address

3.4.83 GAP-GenericEventTxEntryAvailable.Indication

Description

At least one Tx entry is available in the L2CAP queue.

Parameters

Table 324. GAP-GenericEventTxEntryAvailable.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xD2
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceId for which the command is intended

3.4.84 GAP-GenericEventTxPowerLevelSetComplete.Indication

Description

Tx Power Level set completed.

Parameters

Table 325. GAP-GenericEventTxPowerLevelSetComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB9
Length	1	Length in bytes of the following parameters
status	1	Indicates the status of the Set Tx Power Level request

3.4.85 GAP-GenericEventWhiteListCleared.Indication

Description

Controller event - White List cleared.

Parameters

Table 326. GAP-GenericEventWhiteListCleared.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x91
Length	1	0x00 - This message does not have any parameters

3.4.86 GAP-GenericEventWhiteListSizeRead.Indication

Description

Controller event - White List size.

Parameters

Table 327. GAP-GenericEventWhiteListSizeRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x8E
Length	1	Length in bytes of the following parameters
WhiteListSize	1	White list size

3.4.87 GAP-GetBondedDeviceName.Request

Description

Retrieves the name of a bonded device.

Parameters

Table 328. GAP-GetBondedDeviceName.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x29
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area
MaxNameSize	1	Maximum number of characters to be copied, including the terminating NULL character

3.4.88 GAP-GetBondedDeviceName.Indication

Description

Returns the name of a bonded device.

Parameters

Table 329. GAP-GetBondedDeviceName.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x88
Length	1	Length in bytes of the following parameters
NameSize	1	The name size
Name	NameSize	The name value

3.4.89 GAP-GetBondedDevicesCount.Request

Description

Retrieves the number of bonded devices.

Parameters

Table 330. GAP-GetBondedDevicesCount.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x28
Length	1	0x00 - This message does not have any parameters

3.4.90 GAP-GetBondedDevicesCount.Indication

Description

Returns the number of bonded devices.

Parameters

Table 331. GAP-GetBondedDevicesCount.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
NbOfBondedDevices	1	Number of bonded devices

3.4.91 GAP-GetBondedDevicesIdentityInformation.Request

Description

Retrieves a list of the identity information of bonded devices, if any.

Parameters

Table 332. GAP-GetBondedDevicesIdentityInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3C
Length	1	Length in bytes of the following parameters
maxDevices	1	Maximum number of addresses to be obtained

3.4.92 GAP-GetBondedDevicesIdentityInformation.Indication

Description

Returns a list of the identity information of bonded devices.

Parameters

Table 333. GAP-GetBondedDevicesIdentityInformation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xBB
Length	1	Length in bytes of the following parameters
NbOfDeviceIdentityAddresses	1	The number of device identity addresses
IdentityAddresses	Variable	Identity addresses list

Table continues on the next page...

Table 333. GAP-GetBondedDevicesIdentityInformation.Indication Parameters (continued)

Parameter	Size (bytes)	Comments
		Structure type parameter. See detailed table below for parameter structure.

Table 334. IdentityAddresses Parameter Structure

Structure Parameter	Size (bytes)	Comments
IdentityAddressType	1	Identity Address Type Possible values: 0x00: gPublic_c 0x01: gRandom_c
IdentityAddress	6	Identity Address
Irk	16	Identity Resolving Key
PrivacyMode	1	Privacy Mode Possible values: 0x00: gNetworkPrivacy_c (Use Network Privacy Mode for this peer device (default)) 0x01: gDevicePrivacy_c (Use Device Privacy Mode for this peer device)

3.4.93 GAP-LeReadPhy.Request

Description

Read the Tx and Rx Phy on the connection with a device.

Parameters

Table 335. GAP-LeReadPhy.Request

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer

3.4.94 GAP-LeScSetPeerOobData.Request

Description

Sets peer OOB data used for LE Secure Connections pairing.

Parameters

Table 336. GAP-LeScSetPeerOobData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3A
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
RandomValue	16	LE SC OOB r (Random value)
ConfirmValue	16	LE SC OOB Cr (Random Confirm value)

3.4.95 GAP-LeScPublicKeyRegenerated.Indication

Description

The private/public key pair used for LE Secure Connections pairing has been regenerated.

Parameters

Table 337. GAP-LeScPublicKeyRegenerated.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xB5
Length	1	0x00 - This message does not have any parameters

3.4.96 GAP-LeScRegeneratePublicKey.Request

Description

Regenerates the private/public key pair used for LE Secure Connections pairing.

Parameters

Table 338. GAP-LeScRegeneratePublicKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x37
Length	1	0x00 - This message does not have any parameters

3.4.97 GAP-LeScSendKeypressNotificationPrivacy.Request

Description

Sends a Keypress Notification to the peer.

Parameters

Table 339. GAP-LeScSendKeypressNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3B
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
GapLeScKeypressNotificationParams	Variable	Keypress notification type which denotes a passkey entry keypress action Structure type parameter. See the detailed table below for parameter structure.

Table 340. GapLeScKeypressNotificationParams Parameter Structure

Structure Parameter	Size (bytes)	Comments
keypressNotifType	1	Possible values: 0x00: gKnPasskeyEntryStarted_c 0x01: gKnPasskeyDigitStarted_c 0x02: gKnPasskeyDigitErased_c (gKnPasskeyDigitErased_c) 0x03: gKnPasskeyCleared_c 0x04: gKnPasskeyEntryCompleted_c

3.4.98 GAP-LeScGetLocalOobData.Request

Description

Retrieves local OOB data used for LE Secure Connections pairing.

Parameters

Table 341. GAP-LeScGetLocalOobData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x39
Length	1	0x00 - This message does not have any parameters

3.4.99 GAP-LeScValidateNumericValue.Request

Description

Validates the numeric value during the Numeric Comparison LE Secure Connections pairing.

Parameters

Table 342. GAP-LeScValidateNumericValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x38
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
Valid	1	TRUE if user has indicated that numeric values are matched, FALSE otherwise

3.4.100 GAP-LeSetPhy.Request

Description

Set the Tx and Rx Phy on the connection with a device or all subsequent connections.

Parameters

Table 343. GAP-LeSetPhy.Request

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3F
Length	1	Length in bytes of the following parameters
defaultMode	1	Use the provided values for all subsequent connections or provide a device ID for a single connection
DeviceId	1	Device ID of the peer.
allPhys	1	Bit mask indicating Host preferences on Tx and Rx Phy
txPhys	1	Bit mask indicating Host preferences on Tx Phy
rxPhys	1	Bit mask indicating Host preferences on Rx Phy
phyOptions	2	Host preferences on Coded Phy Possible values: 0x00: gLeCodingNoPreference_c (Host has no preference on the LE Coded Phy) 0x01: gLeCodingS2_c (Host prefers to use S=2 on the LE Coded Phy)

Table continues on the next page...

Table 343. GAP-LeSetPhy.Request (continued)

		0x02: gLeCodingS8_c (Host prefers to use S=8 on the LE Coded Phy)

3.4.101 GAP-LoadCustomPeerInformation.Request

Description

Loads the custom peer information in raw data format.

Parameters

Table 344. GAP-LoadCustomPeerInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1F
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the GAP peer
Offset	2	Data offset (offset from the beginning)
InfoSize	2	Data size

3.4.102 GAP-LoadCustomPeerInformation.Indication

Description

Returns the custom peer information in raw data format.

Parameters

Table 345. GAP-LoadCustomPeerInformation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x85
Length	1	Length in bytes of the following parameters
InfoSize	2	Data size
Info	InfoSize	Data value

3.4.103 GAP-LoadEncryptionInformation.Request

Description

Loads encryption key for a bonded device.

Parameters

Table 346. GAP-LoadEncryptionInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x18
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer

3.4.104 GAP-LoadEncryptionInformation.Indication

Description

Returns the encryption key for a bonded device.

Parameters

Table 347. GAP-LoadEncryptionInformation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
LtkSize	1	LTK size
Ltk	LtkSize	LTK value

3.4.105 GAP-LoadKeys.Request

Description

Load the bond keys from an NVM index.

Parameters

Table 348. GAP-LoadKeys.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x41
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area

3.4.106 GAP-LoadKeys.Indication

Description

Returns the keys of a bonded device

Parameters

Table 349. GAP-LoadKeys.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
Keys	Variable	The SMP keys distributed by the peer Structure type parameter. See detailed table below for parameter structure.
KeyFlags	1	Mask identifying the keys stored
LeSc	1	LE SC pairing
Authenticated	1	Peer is authenticated during pairing

Table 350. Keys Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkIncluded	1	Boolean value which indicates if LTK size and LTK are included or not
LtkInfo	Variable	LTK information (size and value) Structure type parameter. See detailed table below for parameter structure.
IrkIncluded	1	Boolean value which indicates if IRK is included or not
Irk	16 x IrkIncluded	Identity Resolving Key
CsrkIncluded	1	Boolean value which indicates if CSRK is included or not
Csrk	16 x CsrkIncluded	Connection Signature Resolving Key
RandEdivInfo	Variable	Rand information (size and value) and Ediv Structure type parameter. See detailed table below for parameter structure.
AddressIncluded	IrkIncluded	Boolean value which indicates if Address is included or not
AddressInfo	Variable	Address information (type and value) Structure type parameter. See detailed table below for parameter structure.

Table 351. LtkInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 351. LtkInfo Parameter Structure (continued)

LtkSize	1	Encryption Key Size
Ltk	LtkSize	Long Term (Encryption) Key

Table 352. RandEdivInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
RandSize	1	Random value size
Rand	RandSize	Random value used to identify the LTK
Ediv	2	EDIV value used to identify the LTK

Table 353. AddressInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceAddressType	1	Public or Random address Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Device Address

3.4.107 GAP-Pair.Request

Description

Initiate pairing with a peer device.

Parameters

Table 354. GAP-Pair.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x0C
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer to pair with
PairingParameters	Variable	Pairing parameters as required by the SMP Structure type parameter. See the detailed table below for parameter structure.

Table 355. Pairing Parameters Structure

Structure Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 355. Pairing Parameters Structure (continued)

WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values: 0x00: gIoDisplayOnly_c (May display a PIN, no input) 0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (for example, YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central Possible values: 0x00: gNoKeys_c (No key can be distributed)

Table continues on the next page...

Table 355. Pairing Parameters Structure (continued)

		0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
PeripheralKeys	1	SMP keys to be distributed by the Peripheral Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.108 GAP-PeriodicAdvCreateSync.Request

Description

Synchronize with a periodic advertiser.

Parameters

Table 356. GAP-PeriodicAdvCreateSync.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x5A
Length	1	Length in bytes of the following parameters
FilterPolicy	1	Periodic advertising create sync request parameters Possible values: 0x00: gUseCommandParameters_c (Use the SID, peerAddressType, and peerAddress parameters to determine which advertiser to listen to)

Table continues on the next page...

Table 356. GAP-PeriodicAdvCreateSync.Request Parameters (continued)

Parameter	Size (bytes)	Comments
		0x01: gUsePeriodicAdvList_c (Use the Periodic Advertiser List to determine which advertiser to listen to)
SID	1	Periodic advertising create sync request parameters
DeviceAddressType	1	Periodic advertising create sync request parameters Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Periodic advertising create sync request parameters
SkipCount	2	Periodic advertising create sync request parameters
Timeout	2	Periodic advertising create sync request parameters

3.4.109 GAP-PeriodicAdvTerminateSync.Request

Description

Stop reception of the periodic advertising identified by the SID parameter.

Parameters

Table 357. GAP-PeriodicAdvTerminateSync.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x5B
Length	1	Length in bytes of the following parameters
SyncHandle	2	Sync_Handle to be used to identify the periodic advertiser

3.4.110 GAP-ProvideLongTermKey.Request

Description

Provides the Long Term Key to the controller for encryption setup.

Parameters

Table 358. GAP-ProvideLongTermKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x16
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested encryption
LtkSize	1	The Long Term Key size
Ltk	LtkSize	The Long Term Key

3.4.111 GAP-ProvideOob.Request

Description

Provides the Out Of Band data for SMP pairing process.

Parameters

Table 359. GAP-ProvideOob.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x12
Length	1	Length in bytes of the following parameters
DeviceId	1	The pairing device
Oob	16	OOB data

3.4.112 GAP-ReadChannelMap.Request

Description

Read the channel map from a connected peer.

Parameters

Table 360. GAP-ReadChannelMap.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x44
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer.

3.4.113 GAP-ReadPublicDeviceAddress.Request

Description

Reads the device's public address from the controller.

Parameters

Table 361. GAP-ReadPublicDeviceAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x25
Length	1	0x00 - This message does not have any parameters

3.4.114 GAP-ReadRadioPowerLevel.Request

Description

Reads the power level of the controller's radio.

Parameters

Table 362. GAP-ReadRadioPowerLevel.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2C
Length	1	Length in bytes of the following parameters
TxReadType	1	Transmission read type Possible values: 0x00: gTxPowerCurrentLevelInConnection_c (Reading the instantaneous TX power level in a connection) 0x01: gTxPowerMaximumLevelInConnection_c (Reading the maximum TX power level achieved during a connection) 0x02: gTxPowerLevelForAdvertising_c (Reading the TX power on the advertising channels) 0x03: gRssi_c (Reading the Received Signal Strength Indication in a connection)
DeviceId	1	The DeviceId for which the command is intended

3.4.115 GAP-ReadWhiteListSize.Request

Description

Retrieves the size of the White List.

Parameters

Table 363. GAP-ReadWhiteListSize.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x21
Length	1	0x00 - This message does not have any parameters

3.4.116 GAP-RegisterDeviceSecurityRequirements.Request

Description

Registers the device security requirements.

Parameters

Table 364. GAP-RegisterDeviceSecurityRequirements.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x02
Length	1	Length in bytes of the following parameters
SecurityRequirementsIncluded	1	Boolean value which indicates if security requirements are included or not
SecurityRequirements	Variable	Device security requirements Structure type parameter. See the detailed table below for parameter structure.

Table 365. SecurityRequirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
MasterSecurityRequirements	Variable	Security requirements added to all services Structure type parameter. See the detailed table below for parameter structure.
NbOfServices	1	Number of service-specific requirements
GapServiceSecurityRequirements	Variable	Array of service-specific requirements Structure type parameter. See the detailed table below for parameter structure.

Table 366. MasterSecurityRequirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
SecurityModeLevel	1	Security mode and level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
Authorization	1	Authorization required
MinimumEncryptionKeySize	2	Minimum encryption key (LTK) size

Table 367. GapServiceSecurityRequirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
ServiceHandle	2	Handle of the Service declaration in the GATT Database
Requirements	Variable	Requirements for all attributes in this service Structure type parameter. See the detailed table below for parameter structure.

Table 368. Requirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
SecurityModeLevel	1	Security mode and level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication)

Table continues on the next page...

Table 368. Requirements Parameter Structure (continued)

		0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
Authorization	1	Authorization required
MinimumEncryptionKeySize	2	Minimum encryption key (LTK) size

3.4.117 GAP-RejectKeyExchangeRequest.Request

Description

Rejects the Key Exchange procedure with a paired peer.

Parameters

Table 369. GAP-RejectKeyExchangeRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x15
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested the Key Exchange procedure

3.4.118 GAP-RejectPairing.Request

Description

Rejects the peer's authentication request.

Parameters

Table 370. GAP-RejectPairing.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x10
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested authentication
Reason	1	Pairing reject reason

Table continues on the next page...

Table 370. GAP-RejectPairing.Request Parameters (continued)

		Possible values: 0x02: gOobNotAvailable_c (This device does not have the required OOB for authenticated pairing) 0x03: gIncompatibleIoCapabilities_c (The combination of I/O capabilities does not allow pairing with the desired level of security) 0x05: gPairingNotSupported_c (This device does not support pairing) 0x06: gLowEncryptionKeySize_c (The peer's encryption key size is too low for this device's required security level) 0x08: gUnspecifiedReason_c (The host has rejected the pairing for an unknown reason) 0x09: gRepeatedAttempts_c (This device is the target of repeated unsuccessful pairing attempts and does not allow further pairing attempts at the moment) 0xF0: gLinkEncryptionFailed_c (Link could not be encrypted)

3.4.119 GAP-RejectPasskeyRequest.Request

Description

Rejects the passkey request from a peer.

Parameters

Table 371. GAP-RejectPasskeyRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x13
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer that requested a passkey entry

3.4.120 GAP-RemoveAdvertisingSet.Request

Description

Remove an advertising set from the Controller.

Parameters

Table 372. GAP-RemoveAdvertisingSet.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x52
Length	1	Length in bytes of the following parameters
SID	1	Advertising set to remove or 0xFF to remove all

3.4.121 GAP-RemoveAllBonds.Request

Description

Removes all bonds with other devices.

Parameters

Table 373. GAP-RemoveAllBonds.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2B
Length	1	0x00 - This message does not have any parameters

3.4.122 GAP-RemoveBond.Request

Description

Removes the bond with a device.

Parameters

Table 374. GAP-RemoveBond.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2A
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area

3.4.123 GAP-RemoveDeviceFromWhiteList.Request

Description

Removes a device address from the White List.

Parameters

Table 375. GAP-RemoveDeviceFromWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x24
Length	1	Length in bytes of the following parameters
AddressType	1	The address type (public or random) Possible values: 0x00: gPublic_c 0x01: gRandom_c
Address	6	The address of the white-listed device

3.4.124 GAP-SaveCccd.Request

Description

Save the CCCD value for a specific client and CCCD handle.

Parameters

Table 376. GAP-SaveCccd.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x08
Length	1	Length in bytes of the following parameters
DeviceId	1	The peer GATT client
Handle	2	The handle of the CCCD as defined in the GATT Database
Cccd	1	The bit mask representing the CCCD value to be saved Possible values: 0x00: gEmpty_c (Nothing is enabled) 0x01: gNotification_c (Enables notifications) 0x02: gIndication_c (Enabled indications)

3.4.125 GAP-SaveCustomPeerInformation.Request

Description

Saves custom peer information in raw data format.

Parameters

Table 377. GAP-SaveCustomPeerInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the GAP peer
Offset	2	Data offset (offset from the beginning)
InfoSize	2	Data size
Info	InfoSize	Data

3.4.126 GAP-SaveDeviceName.Request

Description

Saves the name of a bonded device.

Parameters

Table 378. GAP-SaveDeviceName.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x27
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID for the active peer which name is saved
NameSize	1	Number of characters to be saved
Name	NameSize	Array of characters holding the name

3.4.127 GAP-SaveKeys.Request

Description

Save the bond keys to an NVM index.

Parameters

Table 379. GAP-SaveKeys.Request

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x42
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 379. GAP-SaveKeys.Request (continued)

Parameter	Size (bytes)	Comments
NvmIndex	1	Index of the device in NVM bonding area
Keys	Variable	The SMP keys distributed by the peer Structure type parameter. See detailed table below for parameter structure.
LeSc	1	LE SC connections pairing
Authenticated	1	Peer was authenticated during pairing

Table 380. Keys Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkIncluded	1	Boolean value which indicates if LTK size and LTK are included or not
LtkInfo	Variable	LTK information (size and value) Structure type parameter. See detailed table below for parameter structure.
IrkIncluded	1	Boolean value which indicates if IRK is included or not
Irk	16 x IrkIncluded	Identity Resolving Key
CsrkIncluded	1	Boolean value which indicates if CSRK is included or not
Csrk	16 x CsrkIncluded	Connection Signature Resolving Key
RandEdivInfo	Variable	Rand information (size and value) and Ediv Structure type parameter. See detailed table below for parameter structure.
AddressIncluded	IrkIncluded	Boolean value which indicates if Address is included or not
AddressInfo	Variable	Address information (type and value) Structure type parameter. See detailed table below for parameter structure.

Table 381. LtkInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkSize	1	Encryption Key Size
Ltk	LtkSize	Long Term (Encryption) Key

Table 382. RandEdivInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
RandSize	1	Random value size
Rand	RandSize	Random value used to identify the LTK
Ediv	2	EDIV value used to identify the LTK

Table 383. AddressInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceAddressType	1	Public or Random address Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Device Address

3.4.128 GAP-ScanningEventCommandFailed.Indication

Description

Event received when scanning could not be enabled or disabled.

Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9B
Length	1	Length in bytes of the following parameters
FailReason	2	The reason of failure Possible values: • 0x0000: gBleSuccess_c • 0x0001: gBleInvalidParameter_c • 0x0002: gBleOverflow_c • 0x0003: gBleUnavailable_c • 0x0004: gBleFeatureNotSupported_c • 0x0005: gBleOutOfMemory_c • 0x0006: gBleAlreadyInitialized_c • 0x0007: gBleOsError_c • 0x0008: gBleUnexpectedError_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0009: gBleInvalidState_c • 0x000A: gBleTimerError_c • 0x0101: gHciUnknownHciCommand_c • 0x0102: gHciUnknownConnectionIdentifier_c • 0x0103: gHciHardwareFailure_c • 0x0104: gHciPageTimeout_c • 0x0105: gHciAuthenticationFailure_c • 0x0106: gHciPinOrKeyMissing_c • 0x0107: gHciMemoryCapacityExceeded_c • 0x0108: gHciConnectionTimeout_c • 0x0109: gHciConnectionLimitExceeded_c • 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c • 0x010B: gHciAclConnectionAlreadyExists_c • 0x010C: gHciCommandDisallowed_c • 0x010D: gHciConnectionRejectedDueToLimitedResources_c • 0x010E: gHciConnectionRejectedDueToSecurityReasons_c • 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c • 0x0110: gHciConnectionAcceptTimeoutExceeded_c • 0x0111: gHciUnsupportedFeatureOrParameterValue_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0112: gHciInvalidHciCommandParameters_c • 0x0113: gHciRemoteUserTerminatedConnection_c • 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c • 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c • 0x0116: gHciConnectionTerminatedByLocalHost_c • 0x0117: gHciRepeatedAttempts_c • 0x0118: gHciPairingNotAllowed_c • 0x0119: gHciUnknownLpmPdu_c • 0x011A: gHciUnsupportedRemoteFeature_c • 0x011B: gHciScoOffsetRejected_c • 0x011C: gHciScoIntervalRejected_c • 0x011D: gHciScoAirModeRejected_c • 0x011E: gHciInvalidLpmParameters_c • 0x011F: gHciUnspecifiedError_c • 0x0120: gHciUnsupportedLpmParameterValue_c • 0x0121: gHciRoleChangeNotAllowed_c • 0x0122: gHciLLResponseTimeout_c • 0x0123: gHciLmpErrorTransactionCollision_c • 0x0124: gHciLmpPduNotAllowed_c • 0x0125: gHciEncryptionModeNotAcceptable_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0126: gHciLinkKeyCannotBeChanged_c • 0x0127: gHciRequestedQosNotSupported_c • 0x0128: gHciInstantPassed_c • 0x0129: gHciPairingWithUnitKeyNotSupported_c • 0x012A: gHciDifferentTransactionCollision_c • 0x012B: gHciReserved_0x2B_c • 0x012C: gHciQosNotAcceptableParameter_c • 0x012D: gHciQosRejected_c • 0x012E: gHciChannelClassificationNotSupported_c • 0x012F: gHciInsufficientSecurity_c • 0x0130: gHciParameterOutOfMandatoryRange_c • 0x0131: gHciReserved_0x31_c • 0x0132: gHciRoleSwitchPending_c • 0x0133: gHciReserved_0x33_c • 0x0134: gHciReservedSlotViolation_c • 0x0135: gHciRoleSwitchFailed_c • 0x0136: gHciExtendedInquiryResponseTooLarge_c • 0x0137: gHciSecureSimplePairingNotSupportedByHost_c • 0x0138: gHciHostBusyPairing_c • 0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c • 0x013A: gHciControllerBusy_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x013B: gHciUnacceptableConnectionParameters_c • 0x013C: gHciDirectedAdvertisingTimeout_c • 0x013D: gHciConnectionTerminatedDueToMicFailure_c • 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c • 0x013F: gHciMacConnectionFailed_c • 0x0140: gHciCoarseClockAdjustmentRejected_c • 0x0141: gHciType0SubmapNotDefined_c • 0x0142: gHciUnknownAdvertisingIdentifier_c • 0x0143: gHciLimitReached_c • 0x0144: gHciOperationCancelledByHost_c • 0x01A0: gHciAlreadyInit_c • 0x01A1: gHciInvalidParameter_c • 0x01A2: gHciCallbackNotInstalled_c • 0x01A3: gHciCallbackAlreadyInstalled_c • 0x01A4: gHciCommandNotSupported_c • 0x01A5: gHciEventNotSupported_c • 0x01A6: gHciTransportError_c • 0x03F0: gL2caAlreadyInit_c • 0x03F1: gL2caInsufficientResources_c • 0x03F2: gL2caCallbackNotInstalled_c • 0x03F3: gL2caCallbackAlreadyInstalled_c • 0x03F4: gL2caLePsmInvalid_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x03F5: gL2caLePsmAlreadyRegistered_c • 0x03F6: gL2caLePsmNotRegistered_c • 0x03F7: gL2caLePsmInsufficientResources_c • 0x03F8: gL2caChannelInvalid_c • 0x03F9: gL2caChannelClosed_c • 0x03FA: gL2caChannelAlreadyConnected_c • 0x03FB: gL2caConnectionParametersRejected_c • 0x03FC: gL2caChannelBusy_c • 0x03FE: gL2caInvalidParameter_c • 0x03FF: gL2caError_c • 0x0401: gSmNullCBFunction_c • 0x0402: gSmCommandNotSupported_c • 0x0403: gSmUnexpectedCommand_c • 0x0404: gSmInvalidCommandCode_c • 0x0405: gSmInvalidCommandLength_c • 0x0406: gSmInvalidCommandParameter_c • 0x0407: gSmInvalidDeviceId_c • 0x0408: gSmInvalidInternalOperation_c • 0x0409: gSmInvalidConnectionHandle_c • 0x040A: gSmInproperKeyDistributionField_c • 0x040B: gSmUnexpectedKeyType_c • 0x040C: gSmUnexpectedPairingTerminationReason_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x040D: gSmUnexpectedKeyset_c • 0x040E: gSmSmpTimeoutOccurred_c • 0x040F: gSmUnknownSmpPacketType_c • 0x0410: gSmInvalidSmpPacketLength_c • 0x0411: gSmInvalidSmpPacketParameter_c • 0x0412: gSmReceivedUnexpectedSmpPacket_c • 0x0413: gSmReceivedSmpPacketFromUnknownDevice_c • 0x0414: gSmReceivedUnexpectedHciEvent_c • 0x0415: gSmReceivedHciEventFromUnknownDevice_c • 0x0416: gSmInvalidHciEventParameter_c • 0x0417: gSmLlConnectionEncryptionInProgress_c • 0x0418: gSmLlConnectionEncryptionFailure_c • 0x0419: gSmInsufficientResources_c • 0x041A: gSmOobDataAddressMismatch_c • 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c • 0x041C: gSmReceivedTimerEventForUnknownDevice_c • 0x041D: gSmUnattainableLocalDeviceSecRequirements_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x041E: gSmUnattainableLocalDeviceMinKeySize_c • 0x041F: gSmUnattainableSlaveSecReqRequirements_c • 0x0431: gSmPairingErrorPasskeyEntryFailed_c • 0x0432: gSmPairingErrorConfirmValueFailed_c • 0x0433: gSmPairingErrorCommandNotSupported_c • 0x0434: gSmPairingErrorInvalidParameters_c • 0x0435: gSmPairingErrorUnknownReason_c • 0x0436: gSmPairingErrorTimeout_c • 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c • 0x0461: gSmTbInvalidDataSignature_c • 0x0501: gAttInvalidHandle_c • 0x0502: gAttReadNotPermitted_c • 0x0503: gAttWriteNotPermitted_c • 0x0504: gAttInvalidPdu_c • 0x0505: gAttInsufficientAuthentication_c • 0x0506: gAttRequestNotSupported_c • 0x0507: gAttInvalidOffset_c • 0x0508: gAttInsufficientAuthorization_c • 0x0509: gAttPrepareQueueFull_c • 0x050A: gAttAttributeNotFound_c • 0x050B: gAttAttributeNotLong_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x050C: gAttInsufficientEncryptionKeySize_c • 0x050D: gAttInvalidAttributeValueLength_c • 0x050E: gAttUnlikelyor_c • 0x050F: gAttInsufficientEncryption_c • 0x0510: gAttUnsupportedGroupType_c • 0x0511: gAttInsufficientResources_c • 0x0601: gGattAnotherProcedureInProgress_c • 0x0602: gGattLongAttributePacketsCorrupted_c • 0x0603: gGattMultipleAttributesOverflow_c • 0x0604: gGattUnexpectedReadMultipleResponseLength_c • 0x0605: gGattInvalidValueLength_c • 0x0606: gGattServerTimeout_c • 0x0607: gGattIndicationAlreadyInProgress_c • 0x0608: gGattClientConfirmationTimeout_c • 0x0701: gGapAdvDataTooLong_c • 0x0702: gGapScanRspDataTooLong_c • 0x0703: gGapDeviceNotBonded_c • 0x0704: gGapAnotherProcedureInProgress_c • 0x0801: gDevDbCccdLimitReached_c • 0x0802: gDevDbCccdNotFound_c • 0x0901: gGattDbInvalidHandle_c

Table continued from the previous page...

Parameter	Size (bytes)	Comments
		• 0x0902: gGattDbCharacteristicNotFound_c • 0x0903: gGattDbCccdNotFound_c • 0x0904: gGattDbServiceNotFound_c • 0x0905: gGattDbDescriptorNotFound_c

3.4.129 GAP-ScanningEventDeviceScanned.Indication

Description

Event received when an advertising device has been scanned.

Parameters

Table 384. GAP-ScanningEventDeviceScanned.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9C
Length	1	Length in bytes of the following parameters
ScannedDevice	Variable	Scanned device information Structure type parameter. See the detailed table below for parameter structure.

Table 385. ScannedDevice Parameter Structure

Structure Parameter	Size (bytes)	Comments
AddressType	1	Device's advertising address type Possible values: 0x00: gPublic_c 0x01: gRandom_c
Address	6	Device's advertising address
Rssi	1	RSSI on the advertising channel; may be compared to the TX power contained in the AD Structure of type gAdTxPowerLevel_c to estimate distance from the advertiser

Table continues on the next page...

Table 385. ScannedDevice Parameter Structure (continued)

DataLength	1	Length of the advertising or scan response data
Data	DataLength	Advertising or scan response data
AdvEventType	1	Advertising report type, indicating what type of event generated this data (advertising, scan response) Possible values: 0x00: gBleAdvRepAdvInd_c (Connectable undirected advertising (ADV_IND)) 0x01: gBleAdvRepAdvDirectInd_c (Connectable directed advertising (ADV_DIRECT_IND)) 0x02: gBleAdvRepAdvScanInd_c (Scannable undirected advertising (ADV_SCAN_IND)) 0x03: gBleAdvRepAdvNonconnInd_c (Non Connectable undirected advertising (ADV_NONCONN_IND)) 0x04: gBleAdvRepScanRsp_c (Scan Response (SCAN_RSP))
DirectRpaUsed	1	TRUE if directed advertising with Resolvable Private Address as Direct Address was detected while Enhanced Privacy is enabled
DirectRpa	6 x DirectRpaUsed	Resolvable Private Address set as Direct Address for directed advertising
advertisingAddressResolved	1	TRUE if the address contained in the addressType and aAddress fields is the identity address of a resolved RPA from the Advertising Address field

3.4.130 GAP-ScanningEventExtDeviceScanned.Indication

Description

Event received when an extended advertising device has been scanned.

Parameters

Table 386. GAP-ScanningEventExtDeviceScanned.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xCB

Table continues on the next page...

Table 386. GAP-ScanningEventExtDeviceScanned.Indication Parameters (continued)

Parameter	Size (bytes)	Comments
Length	1	Length in bytes of the following parameters
AddressType	1	Device's advertising address type Possible values: 0x00: gPublic_c 0x01: gRandom_c
Address	6	Device's advertising address
SID	1	Advertising set ID
AdvertisingAddressResolved	1	TRUE if the address contained in the addressType and aAddress fields is the identity address of a resolved RPA from the Advertising Address field
AdvEventProperties	2	Advertising report properties, indicating what type of event generated this data (advertising, scan response)
Rssi	1	Value of the RSSI
TxPower	1	The Tx power level of the advertiser
PrimaryPHY	1	Advertiser PHY for primary channel
SecondaryPHY	1	Advertiser PHY for secondary channel
PeriodicAdvInterval	2	Interval of the periodic advertising. Zero if not periodic advertising
DirectRpaUsed	1	TRUE if directed advertising with Resolvable Private Address as Direct Address was detected while Enhanced Privacy is enabled
DirectRpaType	1	Resolvable Private Address type Possible values: 0x00: gPublic_c 0x01: gRandom_c
DirectRpa	6	Resolvable Private Address set as Direct Address for directed advertising
DataLength	2	Length of the advertising or scan response data
Data	DataLength	Advertising or scan response data

3.4.131 GAP-ScanningEventPeriodicAdvSyncEstablished.Indication

Description

Controller event - periodic advertising sync established indication.

Parameters

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xCC
Length	1	Length in bytes of the following parameters
Status	2	Periodic advertising sync status Possible values: 0x0000: gBleSuccess_c 0x0001: gBleInvalidParameter_c 0x0002: gBleOverflow_c 0x0003: gBleUnavailable_c 0x0004: gBleFeatureNotSupported_c 0x0005: gBleOutOfMemory_c 0x0006: gBleAlreadyInitialized_c 0x0007: gBleOsError_c 0x0008: gBleUnexpectedError_c 0x0009: gBleInvalidState_c 0x000A: gBleTimerError_c 0x0101: gHciUnknownHciCommand_c 0x0102: gHciUnknownConnectionIdentifier_c 0x0103: gHciHardwareFailure_c 0x0104: gHciPageTimeout_c 0x0105: gHciAuthenticationFailure_c 0x0106: gHciPinOrKeyMissing_c 0x0107: gHciMemoryCapacityExceeded_c 0x0108: gHciConnectionTimeout_c 0x0109: gHciConnectionLimitExceeded_c 0x010A: gHciSynchronousConnectionLimitToADeviceExceeded_c 0x010B: gHciAclConnectionAlreadyExists_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x010C: gHciCommandDisallowed_c 0x010D: gHciConnectionRejectedDueToLimitedResources_c 0x010E: gHciConnectionRejectedDueToSecurityReasons_c 0x010F: gHciConnectionRejectedDueToUnacceptableBdAddr_c 0x0110: gHciConnectionAcceptTimeoutExceeded_c 0x0111: gHciUnsupportedFeatureOrParameterValue_c 0x0112: gHciInvalidHciCommandParameters_c 0x0113: gHciRemoteUserTerminatedConnection_c 0x0114: gHciRemoteDeviceTerminatedConnectionLowResources_c 0x0115: gHciRemoteDeviceTerminatedConnectionPowerOff_c 0x0116: gHciConnectionTerminatedByLocalHost_c 0x0117: gHciRepeatedAttempts_c 0x0118: gHciPairingNotAllowed_c 0x0119: gHciUnknownLpmPdu_c 0x011A: gHciUnsupportedRemoteFeature_c 0x011B: gHciScoOffsetRejected_c 0x011C: gHciScoIntervalRejected_c 0x011D: gHciScoAirModeRejected_c 0x011E: gHciInvalidLpmParameters_c 0x011F: gHciUnspecifiedError_c 0x0120: gHciUnsupportedLpmParameterValue_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x0121: gHciRoleChangeNotAllowed_c 0x0122: gHciLLResponseTimeout_c 0x0123: gHciLmpErrorTransactionCollision_c 0x0124: gHciLmpPduNotAllowed_c 0x0125: gHciEncryptionModeNotAcceptable_c 0x0126: gHciLinkKeyCannotBeChanged_c 0x0127: gHciRequestedQosNotSupported_c 0x0128: gHciInstantPassed_c 0x0129: gHciPairingWithUnitKeyNotSupported_c 0x012A: gHciDifferentTransactionCollision_c 0x012B: gHciReserved_0x2B_c 0x012C: gHciQosNotAcceptableParameter_c 0x012D: gHciQosRejected_c 0x012E: gHciChannelClassificationNotSupported_c 0x012F: gHciInsufficientSecurity_c 0x0130: gHciParameterOutOfMandatoryRange_c 0x0131: gHciReserved_0x31_c 0x0132: gHciRoleSwitchPending_c 0x0133: gHciReserved_0x33_c 0x0134: gHciReservedSlotViolation_c 0x0135: gHciRoleSwitchFailed_c 0x0136: gHciExtendedInquiryResponseTooLarge_c 0x0137: gHciSecureSimplePairingNotSupportedByHost_c 0x0138: gHciHostBusyPairing_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x0139: gHciConnectionRejectedDueToNoSuitableChannelFound_c 0x013A: gHciControllerBusy_c 0x013B: gHciUnacceptableConnectionParameters_c 0x013C: gHciDirectedAdvertisingTimeout_c 0x013D: gHciConnectionTerminatedDueToMicFailure_c 0x013E: gHciConnectionFailedToBeEstablishedOrSyncTimeout_c 0x013F: gHciMacConnectionFailed_c 0x0140: gHciCoarseClockAdjustmentRejected_c 0x0141: gHciType0SubmapNotDefined_c 0x0142: gHciUnknownAdvertisingIdentifier_c 0x0143: gHciLimitReached_c 0x0144: gHciOperationCancelledByHost_c 0x01A0: gHciAlreadyInit_c 0x01A1: gHciInvalidParameter_c 0x01A2: gHciCallbackNotInstalled_c 0x01A3: gHciCallbackAlreadyInstalled_c 0x01A4: gHciCommandNotSupported_c 0x01A5: gHciEventNotSupported_c 0x01A6: gHciTransportError_c 0x03F0: gL2caAlreadyInit_c 0x03F1: gL2caInsufficientResources_c 0x03F2: gL2caCallbackNotInstalled_c 0x03F3: gL2caCallbackAlreadyInstalled_c 0x03F4: gL2caLePsmInvalid_c 0x03F5: gL2caLePsmAlreadyRegistered_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x03F6: gL2caLePsmNotRegistered_c 0x03F7: gL2caLePsmInsufficientResources_c 0x03F8: gL2caChannelInvalid_c 0x03F9: gL2caChannelClosed_c 0x03FA: gL2caChannelAlreadyConnected_c 0x03FB: gL2caConnectionParametersRejected_c 0x03FC: gL2caChannelBusy_c 0x03FE: gL2caInvalidParameter_c 0x03FF: gL2caError_c 0x0401: gSmNullCBFunction_c 0x0402: gSmCommandNotSupported_c 0x0403: gSmUnexpectedCommand_c 0x0404: gSmInvalidCommandCode_c 0x0405: gSmInvalidCommandLength_c 0x0406: gSmInvalidCommandParameter_c 0x0407: gSmInvalidDeviceId_c 0x0408: gSmInvalidInternalOperation_c 0x0409: gSmInvalidConnectionHandle_c 0x040A: gSmInproperKeyDistributionField_c 0x040B: gSmUnexpectedKeyType_c 0x040C: gSmUnexpectedPairingTerminationReason_c 0x040D: gSmUnexpectedKeyset_c 0x040E: gSmSmpTimeoutOccurred_c 0x040F: gSmUnknownSmpPacketType_c 0x0410: gSmInvalidSmpPacketLength_c 0x0411: gSmInvalidSmpPacketParameter_c 0x0412: gSmReceivedUnexpectedSmpPacket_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x0413: gSmReceivedSmpPacketFromUnknownDevice_c 0x0414: gSmReceivedUnexpectedHciEvent_c 0x0415: gSmReceivedHciEventFromUnknownDevice_c 0x0416: gSmInvalidHciEventParameter_c 0x0417: gSmLlConnectionEncryptionInProgress_c 0x0418: gSmLlConnectionEncryptionFailure_c 0x0419: gSmInsufficientResources_c 0x041A: gSmOobDataAddressMismatch_c 0x041B: gSmSmpPacketReceivedAfterTimeoutOccurred_c 0x041C: gSmReceivedTimerEventForUnknownDevice_c 0x041D: gSmUnattainableLocalDeviceSecRequirements_c 0x041E: gSmUnattainableLocalDeviceMinKeySize_c 0x041F: gSmUnattainableSlaveSecReqRequirements_c 0x0431: gSmPairingErrorPasskeyEntryFailed_c 0x0432: gSmPairingErrorConfirmValueFailed_c 0x0433: gSmPairingErrorCommandNotSupported_c 0x0434: gSmPairingErrorInvalidParameters_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x0435: gSmPairingErrorUnknownReason_c 0x0436: gSmPairingErrorTimeout_c 0x0460: gSmTbResolvableAddressDoesNotMatchIrk_c 0x0461: gSmTbInvalidDataSignature_c 0x0501: gAttInvalidHandle_c 0x0502: gAttReadNotPermitted_c 0x0503: gAttWriteNotPermitted_c 0x0504: gAttInvalidPdu_c 0x0505: gAttInsufficientAuthentication_c 0x0506: gAttRequestNotSupported_c 0x0507: gAttInvalidOffset_c 0x0508: gAttInsufficientAuthorization_c 0x0509: gAttPrepareQueueFull_c 0x050A: gAttAttributeNotFound_c 0x050B: gAttAttributeNotLong_c 0x050C: gAttInsufficientEncryptionKeySize_c 0x050D: gAttInvalidAttributeValueLength_c 0x050E: gAttUnlikelyor_c 0x050F: gAttInsufficientEncryption_c 0x0510: gAttUnsupportedGroupType_c 0x0511: gAttInsufficientResources_c 0x0601: gGattAnotherProcedureInProgress_c 0x0602: gGattLongAttributePacketsCorrupted_c 0x0603: gGattMultipleAttributesOverflow_c 0x0604: gGattUnexpectedReadMultipleResponseLength_c 0x0605: gGattInvalidValueLength_c 0x0606: gGattServerTimeout_c 0x0607: gGattIndicationAlreadyInProgress_c

Table continues on the next page...

Table 387. GAP-ScanningEventPeriodicAdvSyncEstablished.Indication Parameters (continued)

		0x0608: gGattClientConfirmationTimeout_c 0x0701: gGapAdvDataTooLong_c 0x0702: gGapScanRspDataTooLong_c 0x0703: gGapDeviceNotBonded_c 0x0704: gGapAnotherProcedureInProgress_c 0x0801: gDevDbCccdLimitReached_c 0x0802: gDevDbCccdNotFound_c 0x0901: gGattDbInvalidHandle_c 0x0902: gGattDbCharacteristicNotFound_c 0x0903: gGattDbCccdNotFound_c 0x0904: gGattDbServiceNotFound_c 0x0905: gGattDbDescriptorNotFound_c
SyncHandle	2	Sync_Handle to be used to identify the periodic advertiser

3.4.132 GAP-ScanningEventPeriodicAdvSyncLost.Indication

Description

Controller event - the controller has not received a periodic advertising packet identified by the handle within the timeout period.

Parameters

Table 388. GAP-ScanningEventPeriodicAdvSyncLost.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xCE
Length	1	Length in bytes of the following parameters
SyncHandle	2	Sync_Handle to be used to identify the periodic advertiser

3.4.133 GAP-ScanningEventPeriodicAdvSyncTerminated.Indication

Description

Controller event - the controller stopped receiving periodic advertisements.

Parameters

Table 389. GAP-ScanningEventPeriodicAdvSyncTerminated.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xCD
Length	1	0x00 - This message does not have any parameters

3.4.134 GAP-ScanningEventPeriodicDeviceScanned.Indication

Description

Event received when periodic advertising has been received.

Parameters

Table 390. GAP-ScanningEventPeriodicDeviceScanned.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0xCF
Length	1	Length in bytes of the following parameters
SyncHandle	2	Sync Handle
Rssi	1	Value of the RSSI
TxPower	1	The Tx power level of the advertiser
DataLength	2	Length of the advertising or scan response data
Data	DataLength	Advertising or scan response data

3.4.135 GAP-ScanningEventStateChanged.Indication

Description

Event received when scanning had been successfully enabled or disabled.

Parameters

Table 391. GAP-ScanningEventStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x9A
Length	1	0x00 - This message does not have any parameters

3.4.136 GAP-SendSlaveSecurityRequest.Request

Description

Informs the peer Master about local security requirements.

Parameters

Table 392. GAP-SendSlaveSecurityRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x0D
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer to pair with
PairingParameters	Variable	Pairing parameters as required by the SMP (MaxEncryptionKeySize, CentralKeys and PeripheralKeys are not used by this command) Structure type parameter. See detailed table below for parameter structure.

Table 393. PairingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values:

Table continues on the next page...

Table 393. PairingParameters Parameter Structure (continued)

		0x00: gIoDisplayOnly_c (May display a PIN, no input) 0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (e.g. YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central
PeripheralKeys	1	SMP keys to be distributed by the Peripheral
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.137 GAP-SendSmpKeys.Request

Description

Sends the SMP keys during SMP Key Exchange procedure.

Parameters

Table 394. GAP-SendSmpKeys.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x14
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who initiated the procedure
Keys	Variable	The SMP keys of the local device Structure type parameter. See the detailed table below for parameter structure.

Table 395. Keys Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkIncluded	1	Boolean value which indicates if LTK size and LTK are included or not
LtkInfo	Variable	LTK information (size and value) Structure type parameter. See the detailed table below for parameter structure.
IrkIncluded	1	Boolean value which indicates if IRK is included or not
Irk	16 x IrkIncluded	Identity Resolving Key
CsrkIncluded	1	Boolean value which indicates if CSRK is included or not
Csrk	16 x CsrkIncluded	Connection Signature Resolving Key
RandEdivInfo	Variable	Rand information (size and value) and Ediv Structure type parameter. See the detailed table below for parameter structure.
AddressIncluded	IrkIncluded	Boolean value which indicates if Address is included or not
AddressInfo	Variable	Address information (type and value Structure type parameter. See the detailed table below for parameter structure.

Table 396. LtkInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
LtkSize	1	Encryption Key Size
Ltk	LtkSize	Long Term (Encryption) Key

Table 397. RandEdivInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments
RandSize	1	Random value size
Rand	RandSize	Random value used to identify the LTK
Ediv	2	EDIV value used to identify the LTK

Table 398. AddressInfo Parameter Structure

Structure Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 398. AddressInfo Parameter Structure (continued)

DeviceAddressType	1	Public or Random address Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Device Address

3.4.138 GAP-SetAdvertisingData.Request

Description

Sets the advertising and scan response data.

Parameters

Table 399. GAP-SetAdvertisingData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x04
Length	1	Length in bytes of the following parameters
AdvertisingDataIncluded	1	Boolean value which indicates if advertising data is included or not
AdvertisingData	Variable	Advertising data Structure type parameter. See the detailed table below for parameter structure.
ScanResponseDataIncluded	1	Boolean value which indicates if scan response data is included or not
ScanResponseData	Variable	Scan response data Structure type parameter. See the detailed table below for parameter structure.

Table 400. AdvertisingData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
AdStructures	Variable	Advertising data structures Structure type parameter. See the detailed table below for parameter structure.

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Type	1	Advertising data type Possible values: • 0x01: gAdFlags_c (Defined by the Bluetooth SIG) • 0x02: gAdIncomplete16bitServiceList_c (Defined by the Bluetooth SIG) • 0x03: gAdComplete16bitServiceList_c (Defined by the Bluetooth SIG) • 0x04: gAdIncomplete32bitServiceList_c (Defined by the Bluetooth SIG) • 0x05: gAdComplete32bitServiceList_c (Defined by the Bluetooth SIG) • 0x06: gAdIncomplete128bitServiceList_c (Defined by the Bluetooth SIG) • 0x07: gAdComplete128bitServiceList_c (Defined by the Bluetooth SIG) • 0x08: gAdShortenedLocalName_c (Defined by the Bluetooth SIG) • 0x09: gAdCompleteLocalName_c (Defined by the Bluetooth SIG) • 0x0A: gAdTxPowerLevel_c (Defined by the Bluetooth SIG) • 0x0D: gAdClassOfDevice_c (Defined by the Bluetooth SIG) • 0x0E: gAdSimplePairingHashC192_c (Defined by the Bluetooth SIG) • 0x0F: gAdSimplePairingRandomizerR192_c (Defined by the Bluetooth SIG) • 0x10: gAdSecurityManagerTkValue_c (Defined by the Bluetooth SIG)

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Structure Parameter	Size (bytes)	Comments
		• 0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG) • 0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG) • 0x14: gAdServiceSolicitationList16bit_c (Defined by the Bluetooth SIG) • 0x15: gAdServiceSolicitationList128bit_c (Defined by the Bluetooth SIG) • 0x16: gAdServiceData16bit_c (Defined by the Bluetooth SIG) • 0x17: gAdPublicTargetAddress_c (Defined by the Bluetooth SIG) • 0x18: gAdRandomTargetAddress_c (Defined by the Bluetooth SIG) • 0x19: gAdAppearance_c (Defined by the Bluetooth SIG) • 0x1A: gAdAdvertisingInterval_c (Defined by the Bluetooth SIG) • 0x1B: gAdLeDeviceAddress_c (Defined by the Bluetooth SIG) • 0x1C: gAdLeRole_c (Defined by the Bluetooth SIG) • 0x1D: gAdSimplePairingHashC256_c (Defined by the Bluetooth SIG) • 0x1E: gAdSimplePairingRandomizerR256_c (Defined by the Bluetooth SIG) • 0x1F: gAdServiceSolicitationList32bit_c (Defined by the Bluetooth SIG) • 0x20: gAdServiceData32bit_c (Defined by the Bluetooth SIG) • 0x21: gAdServiceData128bit_c (Defined by the Bluetooth SIG) • 0x3D: gAd3dInformationData_c (Defined by the Bluetooth SIG)

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Structure Parameter	Size (bytes)	Comments
		• 0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

Table 401. ScanResponseData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
AdStructures	Variable	Advertising data structures Structure type parameter. See the detailed table below for parameter structure.

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Type	1	Advertising data type Possible values: • 0x01: gAdFlags_c (Defined by the Bluetooth SIG) • 0x02: gAdIncomplete16bitServiceList_c (Defined by the Bluetooth SIG) • 0x03: gAdComplete16bitServiceList_c (Defined by the Bluetooth SIG) • 0x04: gAdIncomplete32bitServiceList_c (Defined by the Bluetooth SIG) • 0x05: gAdComplete32bitServiceList_c (Defined by the Bluetooth SIG) • 0x06: gAdIncomplete128bitServiceList_c (Defined by the Bluetooth SIG) • 0x07: gAdComplete128bitServiceList_c (Defined by the Bluetooth SIG)

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Structure Parameter	Size (bytes)	Comments
		• 0x08: gAdShortenedLocalName_c (Defined by the Bluetooth SIG) • 0x09: gAdCompleteLocalName_c (Defined by the Bluetooth SIG) • 0x0A: gAdTxPowerLevel_c (Defined by the Bluetooth SIG) • 0x0D: gAdClassOfDevice_c (Defined by the Bluetooth SIG) • 0x0E: gAdSimplePairingHashC192_c (Defined by the Bluetooth SIG) • 0x0F: gAdSimplePairingRandomizerR192_c (Defined by the Bluetooth SIG) • 0x10: gAdSecurityManagerTkValue_c (Defined by the Bluetooth SIG) • 0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG) • 0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG) • 0x14: gAdServiceSolicitationList16bit_c (Defined by the Bluetooth SIG) • 0x15: gAdServiceSolicitationList128bit_c (Defined by the Bluetooth SIG) • 0x16: gAdServiceData16bit_c (Defined by the Bluetooth SIG) • 0x17: gAdPublicTargetAddress_c (Defined by the Bluetooth SIG) • 0x18: gAdRandomTargetAddress_c (Defined by the Bluetooth SIG) • 0x19: gAdAppearance_c (Defined by the Bluetooth SIG) • 0x1A: gAdAdvertisingInterval_c (Defined by the Bluetooth SIG) • 0x1B: gAdLeDeviceAddress_c (Defined by the Bluetooth SIG)

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Structure Parameter	Size (bytes)	Comments
		• 0x1C: gAdLeRole_c (Defined by the Bluetooth SIG) • 0x1D: gAdSimplePairingHashC256_c (Defined by the Bluetooth SIG) • 0x1E: gAdSimplePairingRandomizerR256_c (Defined by the Bluetooth SIG) • 0x1F: gAdServiceSolicitationList32bit_c (Defined by the Bluetooth SIG) • 0x20: gAdServiceData32bit_c (Defined by the Bluetooth SIG) • 0x21: gAdServiceData128bit_c (Defined by the Bluetooth SIG) • 0x3D: gAd3dInformationData_c (Defined by the Bluetooth SIG) • 0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

3.4.139 GAP-SetAdvertisingParameters.Request

Description

Sets the advertising parameters.

Parameters

Table 402. GAP-SetAdvertisingParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x03
Length	1	Length in bytes of the following parameters
AdvertisingParameters	Variable	Advertising parameters Structure type parameter. See the detailed table below for parameter structure.

Table 403. AdvertisingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
MinInterval	2	Minimum desired advertising interval - default 1.28s
MaxInterval	2	Maximum desired advertising interval - default 1.28s
AdvertisingType	1	Advertising type - default connectable undirected Possible values: 0x00: gConnectableUndirected_c (Answers to both connect and scan requests) 0x01: gDirectedHighDutyCycle_c (Answers only to connect requests; smaller advertising interval for quicker connection) 0x02: gScannable_c (Answers only to scan requests) 0x03: gNonConnectable_c (Does not answer to connect nor scan requests) 0x04: gDirectedLowDutyCycle_c (Answers only to connect requests; larger advertising interval)
OwnAddressType	1	Indicates whether the advertising address will be the public address or the random address Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddressType	1	Address type of the peer; only used in directed advertising and Enhanced Privacy Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddress	6	Address of the peer
ChannelMap	1	Bit mask indicating which of the three advertising channels will be used - default all three Possible values:

Table continues on the next page...

Table 403. AdvertisingParameters Parameter Structure (continued)

		0x01: gChannel37_c (Bit for channel 37) 0x02: gChannel38_c (Bit for channel 38) 0x04: gChannel39_c (Bit for channel 39)
FilterPolicy	1	Indicates whether the connect and scan requests are filtered using the White List - default does not use White List Possible values: 0x00: gProcessAll_c (Accept all connect and scan requests) 0x01: gProcessConnAllScanWL_c (Accept all connect requests, but scan requests only from devices in White List) 0x02: gProcessScanAllConnWL_c (Accept all scan requests, but connect requests only from devices in White List) 0x03: gProcessWhiteListOnly_c (Accept connect and scan requests only from devices in White List)

3.4.140 GAP-SetChannelMap.Request

Description

Set a channel classification in the Controller.

Parameters

Table 404. GAP-SetChannelMap.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x43
Length	1	Length in bytes of the following parameters
Channel Map	5	

3.4.141 GAP-SetDefaultPairingParameters.Request

Description

Sets the default pairing parameters to be used by automatic pairing procedures.

Parameters

Table 405. GAP-SetDefaultPairingParameters.Request Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 405. GAP-SetDefaultPairingParameters.Request Parameters (continued)

OpGroup	1	0x48
OpCode	1	0x30
Length	1	Length in bytes of the following parameters
PairingParametersIncluded	1	Boolean value which indicates if pairing parameters are included or not
PairingParameters	Variable	Pairing parameters as required by the SMP Structure type parameter. See the detailed table below for parameter structure.

Table 406. PairingParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
WithBonding	1	TRUE if this device is able to and wants to bond after pairing, FALSE otherwise
SecurityModeAndLevel	1	The desired security mode-level Possible values: 0x10: gMode1Level1_c (Mode 1 Level 1 - No Security) 0x11: gMode1Level2_c (Mode 1 Level 2 - Encryption without authentication) 0x12: gMode1Level3_c (Mode 1 Level 3 - Encryption with authentication) 0x13: gMode1Level4_c (Mode 1 Level 4 - Encryption with LE Secure Connections pairing) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)
MaxEncryptionKeySize	1	Maximum LTK size supported by the device
LocalIoCapabilities	1	I/O capabilities used to determine the pairing method Possible values: 0x00: gIoDisplayOnly_c (May display a PIN, no input)

Table continues on the next page...

Table 406. PairingParameters Parameter Structure (continued)

		0x01: gIoDisplayYesNo_c (May display a PIN and has a binary input (for example, YES and NO buttons)) 0x02: gIoKeyboardOnly_c (Has keyboard input, no display) 0x03: gIoNone_c (No input and no display) 0x04: gIoKeyboardDisplay_c (Has keyboard input and display)
OobAvailable	1	TRUE if this device has Out-of-Band data that can be used for authenticated pairing, FALSE otherwise
CentralKeys	1	SMP keys to be distributed by the Central Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
PeripheralKeys	1	SMP keys to be distributed by the Peripheral Possible values: 0x00: gNoKeys_c (No key can be distributed) 0x01: gLtk_c (Long Term Key) 0x02: gIrk_c (Identity Resolving Key) 0x04: gCsrk_c (Connection Signature Resolving Key)
LeSecureConnectionSupported	1	indicates if device supports LE Secure Connections pairing
UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

3.4.142 GAP-SetExtAdvertisingData.Request

Description

Sets the extended advertising and extended scan response data.

Parameters

Table 407. GAP-SetExtAdvertisingData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x58
Length	1	Length in bytes of the following parameters
Handle	1	Advertising handle
AdvertisingDataIncluded	1	Boolean value which indicates if extended advertising data is included or not
ExtAdvertisingData	Variable	Extended Advertising data Structure type parameter. See detailed table below for parameter structure.
ScanResponseDataIncluded	1	Boolean value which indicates if extended scan response data is included or not
ExtScanResponseData	Variable	Extended Scan response data Structure type parameter. See detailed table below for parameter structure.

Table 408. ExtAdvertisingData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
AdStructures	Variable	Advertising data structures Structure type parameter. See detailed table below for parameter structure.

Table 409. AdStructures Parameter Structure

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Type	1	Advertising data type Possible values: 0x01: gAdFlags_c (Defined by the Bluetooth SIG) 0x02: gAdIncomplete16bitServiceList_c (Defined by the Bluetooth SIG) 0x03: gAdComplete16bitServiceList_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 409. AdStructures Parameter Structure (continued)

		0x04: gAdIncomplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x05: gAdComplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x06: gAdIncomplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x07: gAdComplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x08: gAdShortenedLocalName_c (Defined by the Bluetooth SIG) 0x09: gAdCompleteLocalName_c (Defined by the Bluetooth SIG) 0x0A: gAdTxPowerLevel_c (Defined by the Bluetooth SIG) 0x0D: gAdClassOfDevice_c (Defined by the Bluetooth SIG) 0x0E: gAdSimplePairingHashC192_c (Defined by the Bluetooth SIG) 0x0F: gAdSimplePairingRandomizerR192_c (Defined by the Bluetooth SIG) 0x10: gAdSecurityManagerTkValue_c (Defined by the Bluetooth SIG) 0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG) 0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG) 0x14: gAdServiceSolicitationList16bit_c (Defined by the Bluetooth SIG) 0x15: gAdServiceSolicitationList128bit_c (Defined by the Bluetooth SIG) 0x16: gAdServiceData16bit_c (Defined by the Bluetooth SIG) 0x17: gAdPublicTargetAddress_c (Defined by the Bluetooth SIG) 0x18: gAdRandomTargetAddress_c (Defined by the Bluetooth SIG) 0x19: gAdAppearance_c (Defined by the Bluetooth SIG) 0x1A: gAdAdvertisingInterval_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 409. AdStructures Parameter Structure (continued)

		0x1B: gAdLeDeviceAddress_c (Defined by the Bluetooth SIG) 0x1C: gAdLeRole_c (Defined by the Bluetooth SIG) 0x1D: gAdSimplePairingHashC256_c (Defined by the Bluetooth SIG) 0x1E: gAdSimplePairingRandomizerR256_c (Defined by the Bluetooth SIG) 0x1F: gAdServiceSolicitationList32bit_c (Defined by the Bluetooth SIG) 0x20: gAdServiceData32bit_c (Defined by the Bluetooth SIG) 0x21: gAdServiceData128bit_c (Defined by the Bluetooth SIG) 0x3D: gAd3dInformationData_c (Defined by the Bluetooth SIG) 0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

Table 410. ExtScanResponseData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
AdStructures	Variable	Advertising data structures Structure type parameter. See detailed table below for parameter structure.

Table 411. AdStructures Parameter Structure

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Type	1	Advertising data type Possible values: 0x01: gAdFlags_c (Defined by the Bluetooth SIG) 0x02: gAdIncomplete16bitServiceList_c (Defined by the Bluetooth SIG) 0x03: gAdComplete16bitServiceList_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 411. AdStructures Parameter Structure (continued)

		0x04: gAdIncomplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x05: gAdComplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x06: gAdIncomplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x07: gAdComplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x08: gAdShortenedLocalName_c (Defined by the Bluetooth SIG) 0x09: gAdCompleteLocalName_c (Defined by the Bluetooth SIG) 0x0A: gAdTxPowerLevel_c (Defined by the Bluetooth SIG) 0x0D: gAdClassOfDevice_c (Defined by the Bluetooth SIG) 0x0E: gAdSimplePairingHashC192_c (Defined by the Bluetooth SIG) 0x0F: gAdSimplePairingRandomizerR192_c (Defined by the Bluetooth SIG) 0x10: gAdSecurityManagerTkValue_c (Defined by the Bluetooth SIG) 0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG) 0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG) 0x14: gAdServiceSolicitationList16bit_c (Defined by the Bluetooth SIG) 0x15: gAdServiceSolicitationList128bit_c (Defined by the Bluetooth SIG) 0x16: gAdServiceData16bit_c (Defined by the Bluetooth SIG) 0x17: gAdPublicTargetAddress_c (Defined by the Bluetooth SIG) 0x18: gAdRandomTargetAddress_c (Defined by the Bluetooth SIG) 0x19: gAdAppearance_c (Defined by the Bluetooth SIG) 0x1A: gAdAdvertisingInterval_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 411. AdStructures Parameter Structure (continued)

		0x1B: gAdLeDeviceAddress_c (Defined by the Bluetooth SIG) 0x1C: gAdLeRole_c (Defined by the Bluetooth SIG) 0x1D: gAdSimplePairingHashC256_c (Defined by the Bluetooth SIG) 0x1E: gAdSimplePairingRandomizerR256_c (Defined by the Bluetooth SIG) 0x1F: gAdServiceSolicitationList32bit_c (Defined by the Bluetooth SIG) 0x20: gAdServiceData32bit_c (Defined by the Bluetooth SIG) 0x21: gAdServiceData128bit_c (Defined by the Bluetooth SIG) 0x3D: gAd3dInformationData_c (Defined by the Bluetooth SIG) 0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

3.4.143 GAP-SetExtAdvertisingParameters.Request

Description

Sets the advertising parameters.

Parameters

Table 412. GAP-SetExtAdvertisingParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x50
Length	1	Length in bytes of the following parameters
SID	1	Advertising set ID
MinInterval	4	Minimum desired advertising interval - default 1.28s
MaxInterval	4	Maximum desired advertising interval - default 1.28s
OwnAddressType	1	Bluetooth device address types Possible values:

Table continues on the next page...

Table 412. GAP-SetExtAdvertisingParameters.Request Parameters (continued)

Parameter	Size (bytes)	Comments
		0x00: gPublic_c 0x01: gRandom_c
OwnRandomAddress	6	Bluetooth device address
PeerAddressType	1	Bluetooth device address types Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddress	6	Bluetooth device address
ChannelMap	1	Bit mask indicating which of the three advertising channels will be used - default all three
FilterPolicy	1	Indicates whether the connect and scan requests are filtered using the White List - default does not use White List Possible values: 0x00: gProcessAll_c (Accept all connect and scan requests) 0x01: gProcessConnAllScanWL_c (Accept all connect requests, but scan requests only from devices in White List) 0x02: gProcessScanAllConnWL_c (Accept all scan requests, but connect requests only from devices in White List) 0x03: gProcessWhiteListOnly_c (Accept connect and scan requests only from devices in White List)
AdvProperties	2	Extended Advertising Properties
AdvTxPowerLevel	1	Advertising transmission power level (in dBm)
PrimaryAdvPHY	1	Phy Mode Possible values: 0x01: gLePhy1M_c 0x02: gLePhy2M_c 0x03: gLePhyCoded_c
SecondaryAdvPHY	1	Phy Mode

Table continues on the next page...

Table 412. GAP-SetExtAdvertisingParameters.Request Parameters (continued)

Parameter	Size (bytes)	Comments
		Possible values: 0x01: gLePhy1M_c 0x02: gLePhy2M_c 0x03: gLePhyCoded_c
SecondaryAdvMaxSkip	1	Maximum advertising events the Controller can skip before sending the AUX_ADV_IND packets on the secondary advertising channel. If 0, AUX_ADV_IND shall be sent prior to the next advertising event
EnableScanReqNotification	1	Host is notified on scan requests

3.4.144 GAP-SetLocalPasskey.Request

Description

Sets the SMP passkey for this device.

Parameters

Table 413. GAP-SetLocalPasskey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x19
Length	1	Length in bytes of the following parameters
Passkey	4	The SMP passkey

3.4.145 GAP-SetPeriodicAdvertisingData.Request

Description

Sets the extended advertising and extended scan response data.

Parameters

Table 414. GAP-SetPeriodicAdvertisingData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x59
Length	1	Length in bytes of the following parameters
SID	1	Advertising set

Table continues on the next page...

Table 414. GAP-SetPeriodicAdvertisingData.Request Parameters (continued)

Parameter	Size (bytes)	Comments
PeriodicAdvertisingData	Variable	Extended Advertising data Structure type parameter. See detailed table below for parameter structure.

Table 415. PeriodicAdvertisingData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
AdStructures	Variable	Advertising data structures Structure type parameter. See detailed table below for parameter structure.

Table 416. AdStructures Parameter Structure

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Type	1	Advertising data type Possible values: 0x01: gAdFlags_c (Defined by the Bluetooth SIG) 0x02: gAdIncomplete16bitServiceList_c (Defined by the Bluetooth SIG) 0x03: gAdComplete16bitServiceList_c (Defined by the Bluetooth SIG) 0x04: gAdIncomplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x05: gAdComplete32bitServiceList_c (Defined by the Bluetooth SIG) 0x06: gAdIncomplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x07: gAdComplete128bitServiceList_c (Defined by the Bluetooth SIG) 0x08: gAdShortenedLocalName_c (Defined by the Bluetooth SIG) 0x09: gAdCompleteLocalName_c (Defined by the Bluetooth SIG) 0x0A: gAdTxPowerLevel_c (Defined by the Bluetooth SIG) 0x0D: gAdClassOfDevice_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 416. AdStructures Parameter Structure (continued)

Structure Parameter	Size (bytes)	Comments
		0x0E: gAdSimplePairingHashC192_c (Defined by the Bluetooth SIG) 0x0F: gAdSimplePairingRandomizerR192_c (Defined by the Bluetooth SIG) 0x10: gAdSecurityManagerTkValue_c (Defined by the Bluetooth SIG) 0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG) 0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG) 0x14: gAdServiceSolicitationList16bit_c (Defined by the Bluetooth SIG) 0x15: gAdServiceSolicitationList128bit_c (Defined by the Bluetooth SIG) 0x16: gAdServiceData16bit_c (Defined by the Bluetooth SIG) 0x17: gAdPublicTargetAddress_c (Defined by the Bluetooth SIG) 0x18: gAdRandomTargetAddress_c (Defined by the Bluetooth SIG) 0x19: gAdAppearance_c (Defined by the Bluetooth SIG) 0x1A: gAdAdvertisingInterval_c (Defined by the Bluetooth SIG) 0x1B: gAdLeDeviceAddress_c (Defined by the Bluetooth SIG) 0x1C: gAdLeRole_c (Defined by the Bluetooth SIG) 0x1D: gAdSimplePairingHashC256_c (Defined by the Bluetooth SIG) 0x1E: gAdSimplePairingRandomizerR256_c (Defined by the Bluetooth SIG) 0x1F: gAdServiceSolicitationList32bit_c (Defined by the Bluetooth SIG) 0x20: gAdServiceData32bit_c (Defined by the Bluetooth SIG) 0x21: gAdServiceData128bit_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 416. AdStructures Parameter Structure (continued)

Structure Parameter	Size (bytes)	Comments
		0x3D: gAd3dInformationData_c (Defined by the Bluetooth SIG) 0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

3.4.146 GAP-SetPeriodicAdvParameters.Request

Description

Sets the advertising parameters.

Parameters

Table 417. GAP-SetPeriodicAdvParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x55
Length	1	Length in bytes of the following parameters
SID	1	Advertising set ID
IncludeTxPower	1	Include TxPower in the advertising PDU
MinInterval	2	Minimum advertising interval for periodic advertising
MaxInterval	2	Maximum advertising interval for periodic advertising

3.4.147 GAP-SetPrivacyMode.Request

Description

Set the privacy mode for an NVM index.

Parameters

Table 418. GAP-SetPrivacyMode.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x45
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area

Table continues on the next page...

Table 418. GAP-SetPrivacyMode.Request Parameters (continued)

PrivacyMode	1	Privacy Mode Possible values: 0x00: gNetworkPrivacy_c (Use Network Privacy Mode for this peer device (default)) 0x01: gDevicePrivacy_c (Use Device Privacy Mode for this peer device)

3.4.148 GAP-SetRandomAddress.Request

Description

Sets a random address into the controller.

Parameters

Table 419. GAP-SetRandomAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2E
Length	1	Length in bytes of the following parameters
Address	6	The Private Resolvable, Private Non-Resolvable, or Static Random Address

3.4.149 GAP-SetScanMode.Request

Description

Sets internal scan filters and actions.

Parameters

Table 420. GAP-SetScanMode.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2F
Length	1	Length in bytes of the following parameters
ScanMode	1	The scan mode to be activated. Possible values: 0x00: gDefaultScan_c (Reports all scanned devices to the application)

Table continues on the next page...

Table 420. GAP-SetScanMode.Request Parameters (continued)

		0x01: gLimitedDiscovery_c (Reports only devices in Limited Discoverable Mode, in other words, containing the Flags AD with the LE Limited Discoverable Flag set) 0x02: gGeneralDiscovery_c (Reports only devices in General Discoverable Mode, in other words, containing the Flags AD with the LE General Discoverable Flag set) 0x03: gAutoConnect_c (Automatically connects with devices with known addresses and does not report any scanned device to the application)
AutoConnectParams	Variable	Parameters for the Auto Connect Scan Mode Structure type parameter. See the detailed table below for parameter structure.

Table 421. AutoConnectParams Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAddresses	1	Number of device addresses to automatically connect to
WriteInWhiteList	1	If set to TRUE, the device addresses will be written in the White List before scanning is enabled
AutoConnectData	Variable	The connection request parameters Structure type parameter. See the detailed table below for parameter structure.

Table 422. AutoConnectData Parameter Structure

Structure Parameter	Size (bytes)	Comments
ScanInterval	2	Scanning interval - default 10ms
ScanWindow	2	Scanning window - default 10ms
FilterPolicy	1	Indicates whether the connection request is issued for a specific device or for all the devices in the White List - default specific device Possible values:

Table continues on the next page...

Table 422. AutoConnectData Parameter Structure (continued)

		0x00: gUseDeviceAddress_c (Initiates a connection with a specific device identified by its address) 0x01: gUseWhiteList_c (Initiates connections with all the devices in the White List at the same time)
OwnAddressType	1	Indicates whether the address used in connection requests will be the public address or the random address - default public address Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddressType	1	When connecting to a specific device, this indicates that device's address type - default public address Possible values: 0x00: gPublic_c 0x01: gRandom_c
PeerAddress	6	When connecting to a specific device, this indicates that device's address
ConnIntervalMin	2	The minimum desired connection interval - default 100ms
ConnIntervalMax	2	The maximum desired connection interval - default 200ms
ConnLatency	2	The desired connection latency (the maximum number of consecutive connection events the Slave is allowed to ignore) - default 0
SupervisionTimeout	2	The maximum time interval between consecutive over-the-air packets; if this timer expires, the connection is dropped - default 10s
ConnEventLengthMin	2	The minimum desired connection event length - default 0ms
ConnEventLengthMax	2	The maximum desired connection event length - default maximum possible, ~41 s

Table continues on the next page...

Table 422. AutoConnectData Parameter Structure (continued)

usePeerIdentityAddress	1	TRUE if the address defined in the peerAddressType and peerAddress is an identity address
Initiating_PHYs	1	Phy Flags

3.4.150 GAP-SetTxPowerLevel.Request

Description

Sets a Transmission power level in the controller.

Parameters

Table 423. GAP-SetTxPowerLevel.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x3D
Length	1	Length in bytes of the following parameters
powerLevel	1	power level value as described by the controller interface
channelType	1	Advertising or Connection channel type for the Tx power level Possible values: 0x00: Advertising 0x01: Connection

3.4.151 GAP-StartAdvertising.Request

Description

Commands the controller to start advertising.

Parameters

Table 424. GAP-StartAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x05
Length	1	0x00 - This message does not have any parameters

3.4.152 GAP-StartExtAdvertising.Request

Description

Commands the controller to start advertising.

Parameters

Table 425. GAP-StartExtAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x51
Length	1	Length in bytes of the following parameters
SID	1	Advertising set ID
Duration	2	The duration of the advertising - Time = N * 10 ms
MaxExtAdvEvents	1	The maximum number of advertising events

3.4.153 GAP-StartPeriodicAdvertising.Request

Description

Start Periodic Advertising for a set Id.

Parameters

Table 426. GAP-StartPeriodicAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x56
Length	1	Length in bytes of the following parameters
SID	1	Advertising set

3.4.154 GAP-StartScanning.Request

Description

Sets the scanning parameters (optionally) and begins scanning.

Parameters

Table 427. GAP-StartScanning.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1A
Length	1	Length in bytes of the following parameters
ScanningParametersIncluded	1	Boolean value which indicates if scanning parameters are included or not

Table continues on the next page...

Table 427. GAP-StartScanning.Request Parameters (continued)

ScanningParameters	Variable	The scanning parameters Structure type parameter. See detailed table below for parameter structure.
FilterDuplicates	1	Indicates whether duplicate advertising report filtering is enabled. For BLE 5.0 adds the possibility to reset filtering for each scan period Possible values: 0x00: Disable (Duplicate filtering disabled) 0x01: Enable (Scans advertising packets using the White List) 0x02: PeriodicEnable (Duplicate filtering enabled, reset for each scan period)
ScanningPHYs	1	
Duration	2	Scan duration - Time = N * 10ms
Period	2	Periodic scanning - Time = N * 1.28s

Table 428. ScanningParameters Parameter Structure

Structure Parameter	Size (bytes)	Comments
Type	1	Scanning type - default passive Possible values: 0x00: gPassive_c (Passive Scanning - advertising packets are immediately reported to the Host) 0x01: gActive_c (Active Scanning - the scanner sends scan requests to the advertiser and reports to the Host after the scan response is received)
Interval	2	Scanning interval - default 10ms
Window	2	Scanning window - default 10ms
OwnAddressType	1	Indicates whether the address used in scan requests will be the public address or the random address - default public address Possible values: 0x00: gPublic_c 0x01: gRandom_c

Table continues on the next page...

Table 428. ScanningParameters Parameter Structure (continued)

FilterPolicy	1	Indicates whether the advertising packets are filtered using the White List - default does not use White List Possible values: 0x00: gScanAll_c (Scans all advertising packets) 0x01: gScanWithWhiteList_c (Scans advertising packets using the White List)

3.4.155 GAP-StopAdvertising.Request

Description

Commands the controller to stop advertising.

Parameters

Table 429. GAP-StopAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x06
Length	1	0x00 - This message does not have any parameters

3.4.156 GAP-StopExtAdvertising.Request

Description

Commands the controller to stop advertising.

>Parameters

Table 430. GAP-StopExtAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x53
Length	1	Length in bytes of the following parameters
SID	1	Advertising set to be disabled or 0xFF to disable all

3.4.157 GAP-StopPeriodicAdvertising.Request

Description

Stop Periodic Advertising for a set Id.

Parameters

Table 431. GAP-StopPeriodicAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x57
Length	1	Length in bytes of the following parameters
SID	1	Advertising set

3.4.158 GAP-StopScanning.Request

Description

Commands the controller to stop scanning.

Parameters

Table 432. GAP-StopScanning.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x1B
Length	1	0x00 - This message does not have any parameters

3.4.159 GAP-UpdateConnectionParameters.Request

Description

Request a set of new connection parameters.

Parameters

Table 433. GAP-UpdateConnectionParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x31
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
IntervalMin	2	The minimum value for the connection event interval
IntervalMax	2	The maximum value for the connection event interval
SlaveLatency	2	The slave latency parameter
TimeoutMultiplier	2	The connection timeout parameter

Table continues on the next page...

Table 433. GAP-UpdateConnectionParameters.Request Parameters (continued)

MinCeLength	2	The minimum connection event length
MaxCeLength	2	The maximum connection event length

3.4.160 Gap-UpdateLeDataLength.Request

Description

Update the Tx Data parameters.

Parameters

Table 434. GAP-UpdateLeDataLength.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x33
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended
TxOctets	2	Maximum transmission number of payload octets
TxTime	2	Maximum transmission time

3.4.161 GAP-UpdatePeriodicAdvList.Request

Description

Commands the controller to update the periodic advertiser list.

Parameters

Table 435. GAP-UpdatePeriodicAdvList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x54
Length	1	Length in bytes of the following parameters
Operation	1	The operation to be executed on the list Possible values: 0x00: gAddDevice_c (Add device to periodic advertiser list) 0x01: gRemoveDevice_c (Remove device from periodic advertiser list) 0x02: gRemoveAllDevices_c (Remove all devices from periodic advertiser list)

Table continues on the next page...

Table 435. GAP-UpdatePeriodicAdvList.Request Parameters (continued)

Parameter	Size (bytes)	Comments
DeviceAddressType	1	Bluetooth device address types Possible values: 0x00: gPublic_c 0x01: gRandom_c
DeviceAddress	6	Bluetooth device address
SID	1	Advertising set ID

3.4.162 GAP-VerifyPrivateResolvableAddress.Request

Description

Verifies a Private Resolvable Address with a bonded device's IRK.

Parameters

Table 436. GAP-VerifyPrivateResolvableAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x48
OpCode	1	0x2D
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area whose IRK must be checked
Address	6	The Private Resolvable Address to be verified

3.5 FSCI Messages

3.5.1 FSCI-Ack.Indication

Description

FSCI packet sent as acknowledgment to a received FSCI packet.

Parameters

Table 437. FSCI-Ack.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0xFD
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 437. FSCI-Ack.Indication Parameters (continued)

Checksum	1	Checksum of the FSCI packet being acknowledged

3.5.2 FSCI-AllowDeviceToSleep.Request

Description

FSCI-AllowDeviceToSleep.Request description.

Parameters

Table 438. FSCI-AllowDeviceToSleep.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA3
OpCode	1	0x70
Length	1	Length in bytes of the following parameters
Signal Host When Wake Up	1	Possible values: 0x00: FALSE 0x01: TRUE
Deep Sleep Duration	4	Deep sleep duration in units of 16 us. Default value is 5 s
Deep Sleep Mode	1	Deep sleep mode selection.

3.5.3 FSCI-AllowDeviceToSleep.Confirm

Description

FSCI-AllowDeviceToSleep.Request description.

Parameters

Table 439. FSCI-AllowDeviceToSleep.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0x70
Length	1	Length in bytes of the following parameters
Status	1	Possible values: 0x00: gSuccess (Success) 0xFF: gError (Error)

3.5.4 FSCI-CPUReset.Request

Description

Reset CPU.

Parameters

Table 440. FSCI-CPUReset.Request Parameters

Parameter	ize (bytes)	Comments
OpGroup	1	0xA3
OpCode	1	0x08
Length	1	0x00 - This message does not have any parameters

3.5.5 FSCI-Error.Indication

Description

FSCI is reporting an error condition.

Parameters

Table 441. FSCI-Error.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0xFE
Length	1	Length in bytes of the following parameters
Status	1	Occurred error Possible values: 0x00: gFsciSuccess_c 0xF0: gFsciSAPDisabled_c 0xF3: gFsciAppMsgTooBig_c 0xF4: gFsciOutOfMessages_c 0xF7: gFsciUnknownOpcodeGroup_c 0xF8: gFsciOpcodeGroupIsDisabled_c 0xFD: gFsciUnknownOpcode_c 0xFE: gFsciTooBig_c 0xFF: gFsciError_c

3.5.6 FSCI-GetNumberOfFreeBuffers.Request

Description

Get the number of free buffers.

Parameters

Table 442. FSCI-GetNumberOfFreeBuffers.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA3
OpCode	1	0x09
Length	1	0x00 - This message does not have any parameters

3.5.7 FSCI-GetNumberOfFreeBuffers.Response

Description

FSCI-GetNumberOfFreeBuffers.Response description.

Parameters

Table 443. FSCI-GetNumberOfFreeBuffers.Response Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0x09
Length	1	Length in bytes of the following parameters
FreeBuffers	2	Number of free buffers

3.5.8 FSCI-GetWakeupReason.Request

Description

FSCI-GetWakeupReason.Request description.

Parameters

Table 444. FSCI-GetWakeupReason.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA3
OpCode	1	0x72
Length	1	0x00 - This message does not have any parameters

3.5.9 FSCI-GetWakeupReason.Response

Description

FSCI-GetWakeupReason.Response description.

Parameters

Table 445. FSCI-GetWakeupReason.Response Parameters

Parameter	Size (bytes)	Comments

Table continues on the next page...

Table 445. FSCI-GetWakeupReason.Response Parameters (continued)

OpGroup	1	0xA4
OpCode	1	0x72
Length	1	Length in bytes of the following parameters
WakeUpReason	1	Wake Up Reason

3.5.10 FSCI-WakeUp.Indication

Description

FSCI-WakeUp.Indication description.

Parameters

Table 446. FSCI-WakeUp.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0x71
Length	1	0x00 - This message does not have any parameters

Chapter 4
Revision history

This table summarizes revisions to this document

Table 447. Revision history

Revision number	Date	Substantive changes
0	06/2015	Initial release
1	10/2015	Added new applications
2	04/2016	Added new BLE 4.2 API
3	07/2016	Updates for Kinetis W
4	09/2016	Public information
5	12/2017	Adapted the text to match the QN908 platform which supports BLE 5.0
6	03/2018	Removed obsolete GAP-GetBondedStaticAddresses Request and Indication
7	07/2019	Updated for K32W0 and QN90xx
8	10/2019	Updated for QN908x
9	02/2020	Updated for KW37 PRC3.0
10	04/2020	Updated for KW37 RFP

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