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

Contents

Chapter 1
Introduction

This reference manual provides a detailed description of the Bluetooth ® Low Energy (BLE) 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 BLE 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 BLE Host Stack FSCI functionality can be desktop applications, such as the NXP Test Tool for Connectivity Products, or embedded systems that have a Bluetooth® LE applications which use BLE stack services via FSCI.

1.2 Audience description

This reference manual is intended for profile/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 v4.2	2013	www.bluetooth.org/en-us/ specification/adopted-specifications
Bluetooth® Low Energy Host Stack API Reference Manual	BLEHSAPIRM	2015	Included in the installer

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
Table continues on the next page...	

Table 2. Acronyms Table (continued)

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 BLE Host Stack interface set

The BLE 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 BLE 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 figure below. 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.
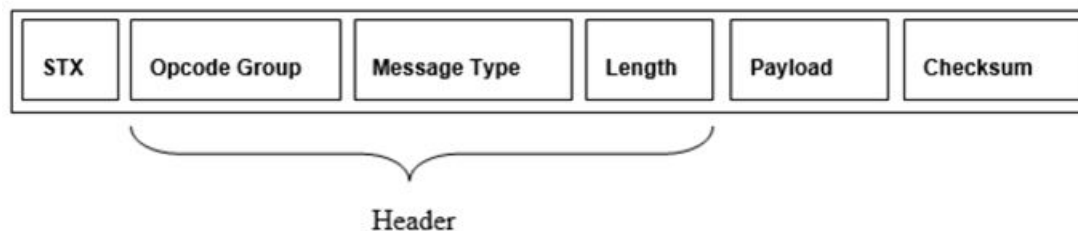
Figure 1. Packet Structure

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 provides an XML representation of all these commands and events.

3.1 L2CAP CB Messages

3.1.1 L2CAP.Confirm

Description

Status of the L2CAP request.

Parameters

Table 4. L2CAP.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 4. L2CAP.Confirm Parameters (continued)

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
		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 4. L2CAP.Confirm Parameters (continued)

		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 4. L2CAP.Confirm Parameters (continued)

		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

Table 4. L2CAP.Confirm Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 4. L2CAP.Confirm Parameters (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

Table 4. L2CAP.Confirm Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 4. L2CAP.Confirm 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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

3.1.2 L2CAP-CancelConnection.Request

Description

Termination of an L2CAP channel.

Parameters

Table 5. L2CAP-CancelConnection.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x0B
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 0x0100: gCommandRejected_c 0xFFFE: gResponseTimeout_c

3.1.3 L2CAP-ConnectLePsm.Request

Description

L2CAP connect.

Parameters

Table 6. L2CAP-ConnectLePsm.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x09
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 6. L2CAP-ConnectLePsm.Request Parameters (continued)

LePsm	2	Bluetooth SIG or Vendor LE_PSM
DeviceId	1	The DeviceId for which the command is intended
InitialCredits	2	Initial credits

3.1.4 L2CAP-DeregisterLePsm.Request

Description

Deregister LePsm.

Parameters

Table 7. L2CAP-DeregisterLePsm.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x08
Length	1	Length in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM

3.1.5 L2CAP-DisconnectLeCbChannel.Request

Description

L2CAP disconnect.

Parameters

Table 8. L2CAP-DisconnectLeCbChannel.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x0A
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 L2CAP-LeCbData.Indication

Description

Data packet received through Credit-Based Channel.

Parameters

Table 9. L2CAP-LeCbData.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x88
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 L2CAP-LePsmConnectionComplete.Indication

Description

Credit Based - Connection complete event.

Parameters

Table 10. LePsmConnectionComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x84
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 11. 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
Table continues on the next page...		

Table 11. LeCbConnectionComplete Parameter Structure (continued)

PeerMps	2	Peer's MPS
InitialCredits	2	Initial credits
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 0xFFFE: gResponseTimeout_c

3.1.8 L2CAP-LePsmConnectionRequest.Indication

Description

Credit Based - Connection request event.

Parameters

Table 12. L2CAP-LePsmConnectionRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x83
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 13. LeCbConnectionRequest Parameter Structure

Structure Parameter	Size (bytes)	Comments
DeviceId	1	The DeviceId for which the command is intended
LePsm	2	Bluetooth SIG or Vendor LE_PSM
PeerMtu	2	Peer MTU
PeerMps	2	Peer MPS
InitialCredits	2	Initial credits

3.1.9 L2CAP-LePsmDisconnectNotification.Indication

Description

Credit Based - Disconnection notification event.

Parameters

Table 14. L2CAP-LePsmDisconnectNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x85
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 15. 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 L2CAP-LocalCreditsNotification.Indication

Description

Credit Based - Local credits notification event.

Parameters

Table 16. L2CAP-LocalCreditsNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x87
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 17. 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 L2CAP-NoPeerCredits.Indication

Description

Credit Based - No peer credits event.

Parameters

Table 18. L2CAP-NoPeerCredits.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x86
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 19. 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 L2CAP-RegisterLePsm.Request

Description

Register LePsm.

Parameters

Table 20. L2CAP-RegisterLePsm.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x07
Length	1	Length in bytes of the following parameters
LePsm	2	Bluetooth SIG or Vendor LE_PSM
LePsmMtu	2	MTU value

3.1.13 L2CAP-SendLeCbData.Request

Description

Sends a data packet through a Credit Based Channel.

Parameters

Table 21. L2CAP-SendLeCredit.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x0C
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 L2CAP-SendLeCredit.Request

Description

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

Parameters

Table 22. L2CAP-SendLeCredit.Request Parameters

Parameters	Size (bytes)	Comments
OpGroup	1	0x41
OpCode	1	0x0D
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

3.2 GATT Messages

3.2.1 GATT.Confirm

Description

Status of the GATT request.

Parameters

Table 23. GATT.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x80
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 23. GATT.Confirm Parameters (continued)

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
		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 23. GATT.Confirm Parameters (continued)

		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 23. GATT.Confirm Parameters (continued)

		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

Table 23. GATT.Confirm Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 23. GATT.Confirm Parameters (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

Table 23. GATT.Confirm Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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 23. GATT.Confirm 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
		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	0x44
OpCode	1	0x0E
Length	1	Length in bytes of the following parameters
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
Table continues on the next page...		

Table 25. Characteristic Parameter Structure (continued)

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 26. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
Table continues on the next page...		

Table 26. Value Parameter Structure (continued)

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 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	0x44
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.
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
Table continues on the next page...		

Table 31. Service 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
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
Table continues on the next page...		

Table 33. Characteristics Parameter Structure (continued)

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	0x44
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	0x44
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

Table continues on the next page...

Table 41. GATTClient-DiscoverCharacteristicOfServiceByUuid.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.
Service	Variable	The service within which characteristics should be searched
		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

Table continues on the next page...

Table 43. Service Parameter Structure (continued)

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.

Table continues on the next page...

Table 44. 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 45. 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 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

Table continues on the next page...

Table 46. Value 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.
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	0x44
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	0x44
OpCode	1	0x08
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of 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	0x44
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
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
Table continues on the next page...		

Table 57. Characteristics Parameter Structure (continued)

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 58. IncludedServices Parameter Structure

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

Table continues on the next page...

Table 58. 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 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	0x44
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	0x44
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	0x44

Table continues on the next page...

Table 66. GATTClient-Notification.Indication Parameters (continued)

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

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 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...		

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

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
		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...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		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

Table continues on the next page...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		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

Table continues on the next page...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		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

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Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

Table continues on the next page...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 67. GATTClient-ProcedureDiscoverAllCharacteristicDescriptors.Indication Parameters (continued)

		0x0905: gGattDbDescriptorNotFound_c
Characteristic	Variable	The characteristic within which descriptors were searched
		Structure type parameter. See the detailed table below for parameter structure.

Table 68. 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

Table continues on the next page...

Table 68. Characteristics Parameter Structure (continued)

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

Table 69. 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 70. Descriptors Parameter Structure

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

Table continues on the next page...

Table 70. Descriptors 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.
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 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

Table 72. 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

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

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...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

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
		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...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		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

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		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: gHciChannelClassificationNotSupport ed_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: gHciExtendedInquiryResponseTooLar ge_c
		0x0137: gHciSecureSimplePairingNotSupporte dByHost_c
		0x0138: gHciHostBusyPairing_c
		0x0139: gHciConnectionRejectedDueToNoSuit ableChannelFound_c
		0x013A: gHciControllerBusy_c

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		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

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknownDevice_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 73. GATTClient-ProcedureDiscoverAllCharacteristics.Indication Parameters (continued)

		0x0905: gGattDbDescriptorNotFound_c
Service	Variable	The service within which characteristics were searched Structure type parameter. See the detailed table below for parameter structure.

Table 74. 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 75. 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 76. 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 77. 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 78. 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

Table continues on the next page...

Table 78. Value Parameter Structure (continued)

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 79. 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 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

Table 81. 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 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

3.2.14 GATTClient-ProcedureDiscoverAllPrimaryServices.Indication

Description

Specifies that the Primary Service Discovery procedure ended.

Parameters

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

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
		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...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknownDevice_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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

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Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 83. GATTClient-ProcedureDiscoverAllPrimaryServices.Indication Parameters (continued)

		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 84. 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.
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 85. 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 86. 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 87. 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 88. 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

Table continues on the next page...

Table 88. Value Parameter Structure (continued)

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 89. 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 90. 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 91. 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 92. 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

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

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
		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...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		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

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		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

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		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: gSmReceivedSmpPacketFromUnknow nDevice_c

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 93. GATTClient-ProcedureDiscoverCharacteristicByUuid.Indication Parameters (continued)

		0x0905: gGattDbDescriptorNotFound_c
NbOfCharacteristics	1	Number of discovered characteristics
Characteristics	Variable	Characteristics that were filled Structure type parameter. See the detailed table below for parameter structure.

Table 94. 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.

Table continues on the next page...

Table 94. Characteristic 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 95. 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 96. Descriptors Parameter Structure

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

Table continues on the next page...

Table 96. Descriptors 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.
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 97. 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 98. 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

3.2.16 GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication

Description

Specifies that the Primary Service Discovery by UUID procedure ended.

Parameters

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

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...		

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

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
		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...

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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

Table continues on the next page...

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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

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Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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: gSmReceivedSmpPacketFromUnknow nDevice_c

Table continues on the next page...

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

Table continues on the next page...

Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

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Table 99. GATTClient-ProcedureDiscoverPrimaryServicesByUuid.Indication Parameters (continued)

		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 100. 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.
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 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. 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 103. 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 104. 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

Table continues on the next page...

Table 104. Value Parameter Structure (continued)

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 105. 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 106. 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 107. 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 108. 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

Table 109. GATTClient-ProcedureExchangeMtu.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

Table 109. GATTClient-ProcedureExchangeMtu.Indication Parameters (continued)

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
		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 109. GATTClient-ProcedureExchangeMtu.Indication Parameters (continued)

		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 109. GATTClient-ProcedureExchangeMtu.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

Table 109. GATTClient-ProcedureExchangeMtu.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c

Table 109. GATTClient-ProcedureExchangeMtu.Indication Parameters (continued)

		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

Table 109. GATTClient-ProcedureExchangeMtu.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 109. GATTClient-ProcedureExchangeMtu.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

3.2.18 GATTClient-ProcedureFindIncludedServices.Indication

Description

Specifies that the Find Included Services procedure ended.

Parameters

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

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
		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...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		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

Table continues on the next page...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		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

Table continues on the next page...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		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

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Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

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Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 110. GATTClient-ProcedureFindIncludedServices.Indication Parameters (continued)

		0x0905: gGattDbDescriptorNotFound_c
Service	Variable	The service within which inclusions were searched Structure type parameter. See the detailed table below for parameter structure.

Table 111. 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 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

Table 113. 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 114. 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 115. 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

Table continues on the next page...

Table 115. Value Parameter Structure (continued)

| 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 116. 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 117. 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 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

3.2.19 GATTClient-ProcedureReadCharacteristicDescriptor.Indication

Description

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

Parameters

Table 120. GATTClient-ProcedureReadCharacteristicDescriptor.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

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

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

		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

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

		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

Table continues on the next page...

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

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

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

		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

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

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

Table continues on the next page...

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

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

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

		0x0905: gGattDbDescriptorNotFound_c
Descriptor	Variable	The characteristic descriptor whose value was read Structure type parameter. See the detailed table below for parameter structure.

Table 121. 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 122. 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

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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) 0x01: gProcedureError_c (The procedure was terminated due to an error)

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

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
		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...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		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

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		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

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		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

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknownDevice_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 123. GATTClient-ProcedureReadCharacteristicValue.Indication Parameters (continued)

		0x0905: gGattDbDescriptorNotFound_c
Characteristic	Variable	The characteristic whose value was read
		Structure type parameter. See the detailed table below for parameter structure.

Table 124. 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 124. Characteristic Parameter Structure (continued)

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

Table 125. 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 126. Descriptors Parameter Structure

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

Table continues on the next page...

Table 126. Descriptors 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.
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 127. 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 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

3.2.21 GATTClient-ProcedureReadMultipleCharacteristicValues.Indication

Description

Specifies that the Characteristic Read Multiple procedure ended.

Parameters

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x8B
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

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...		

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

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
		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...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknown Device_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgres s_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeout Occurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupport ed_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_c
		0x0460: gSmTbResolvableAddressDoesNotMa tchIrk_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

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

Table 129. GATTClient-ProcedureReadMultipleCharacteristicValues.Indication Parameters (continued)

		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 130. 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.

Table continues on the next page...

Table 130. 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 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 0x03: Uuid32Bits

Table continues on the next page...

Table 132. Descriptors 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.
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

3.2.22 GATTClient-ProcedureReadUsingCharacteristicUuid.Indication

Description

Specifies that the Characteristic Read by UUID procedure ended.

Parameters

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x8A
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

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...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

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
		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...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		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

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		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

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		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: gSmReceivedSmpPacketFromUnknow nDevice_c

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		0x0414: gSmReceivedUnexpectedHciEvent_c
		0x0415: gSmReceivedHciEventFromUnknownDevice_c
		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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

Table continues on the next page...

Table 135. GATTClient-ProcedureReadUsingCharacteristicUuid.Indication Parameters (continued)

		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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c

Table continues on the next page...

		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

Table 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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)

Table continues on the next page...

Table 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters (continued)

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
		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 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters (continued)

		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 136. GATTClient-ProcedureWriteCharacteristicDescriptor.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

Table 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c

Table 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters (continued)

		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

Table 136. GATTClient-ProcedureWriteCharacteristicDescriptor.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 136. GATTClient-ProcedureWriteCharacteristicDescriptor.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
		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

Table 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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...		

Table 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

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
		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 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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 137. GATTClient-ProcedureWriteCharacteristicValue.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

Table 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c

Table 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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

Table 137. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 137. GATTClient-ProcedureWriteCharacteristicValue.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
		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

Table 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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...

Table 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

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
		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 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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 138. GATTClient-ProcedureWriteCharacteristicValue.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

Table 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c

Table 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		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

Table 138. GATTClient-ProcedureWriteCharacteristicValue.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 138. GATTClient-ProcedureWriteCharacteristicValue.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
		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 139. GATTClient-ReadCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x13
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 140. 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 141. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
0x01	Uuid16Bits	2	UUID 16 bits
Table continues on the next page...			

Table 141. Uuid Parameter Structure (continued)

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 142. GATTClient-ReadCharacteristicValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 143. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 143. Characteristic Parameter Structure (continued)

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 144. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle

Table continues on the next page...

Table 144. Value Parameter Structure (continued)

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 145. 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 146. 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 147. 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 148. GATTClient-ReadMultipleCharacteristicValues.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x11
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the connected peer
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 149. Characteristics Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 149. Characteristics Parameter Structure (continued)

| 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 150. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
Table continues on the next page...		

Table 150. Value Parameter Structure (continued)

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 151. 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 152. 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 153. 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 154. GATTClient-ReadUsingCharacteristicUUID.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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

Table continues on the next page...

Table 154. GATTClient-ReadUsingCharacteristicUUID.Request Parameters (continued)

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

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. 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 157. GATTClient-RegisterIndicationCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 158. GATTClient-RegisterNotificationCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 159. GATTClient-RegisterProcedureCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 160. GATTClient-ResetProcedure.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 161. GATTClient-WriteCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 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 162. 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 163. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
Table continues on the next page...			

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Table 163. Uuid Parameter Structure (continued)

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 164. GATTClient-WriteCharacteristicValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 165. Characteristic Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 165. Characteristic Parameter Structure (continued)

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 166. Value Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Attribute handle
Table continues on the next page...		

Table 166. Value Parameter Structure (continued)

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 167. 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 168. 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 169. 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 170. GATT-GetMtu.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 171. GATT-GetMtu.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 172. GATT-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 173. GATTServer-AttributeRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 174. 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 175. GATTServer-AttributeWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 176. 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

3.2.41 GATTServer-AttributeWrittenWithoutResponse.Indication

Description

GATT Server attribute written without response.

Parameters

Table 177. GATTServer-AttributeWrittenWithoutResponse.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 178. 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 179. GATTServer-CharacteristicCccdWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x94
Length	1	Length in bytes of the following parameters
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 180. 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 181. GATTServer-Error.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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.

Table 182. ProcedureError Parameter Structure

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

Table continues on the next page...

Table 182. ProcedureError Parameter Structure (continued)

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
		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 182. ProcedureError Parameter Structure (continued)

		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 182. ProcedureError Parameter Structure (continued)

		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

Table 182. ProcedureError Parameter Structure (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 182. ProcedureError 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

Table 182. ProcedureError Parameter Structure (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 182. ProcedureError Parameter Structure (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
		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 183. GATTServer-HandleValueConfirmation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 184. GATTServer-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 185. GATTServer-LongCharacteristicWritten.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 186. LongCharacteristicWrittenEvent Parameter Structure

Structure Parameter	Size (bytes)	Comments
Handle	2	Handle of the characteristic value
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 187. GATTServer-MtuChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 188. 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 189. GATTServer-RegisterCallback.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44

Table continues on the next page...

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 190. GATTServer-RegisterHandlesForReadNotifications.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 191. 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 192. GATTServer-RegisterHandlesForWriteNotifications.Request Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 192. GATTServer-RegisterHandlesForWriteNotifications.Request Parameters (continued)

OpGroup	1	0x44
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 193. 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 194. GATTServer-SendAttributeReadStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 195. GATTServer-SendAttributeWrittenStatus.Request Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 195. GATTServer-SendAttributeWrittenStatus.Request Parameters (continued)

OpGroup	1	0x44
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 196. GATTServer-SendIndication.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x1A
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 197. GATTServer-SendInstantValueIndication.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
OpCode	1	0x1C
Length	1	Length in bytes of the following parameters
DeviceId	1	The device ID of the connected peer

Table continues on the next page...

Table 197. GATTServer-SendInstantValueIndication.Request Parameters (continued)

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 198. GATTServer-SendInstantValueNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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 199. GATTServer-SendNotification.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x44
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

Chapter 4
GATTDB_App Messages

4.1 GATTDB.Confirm

Description

Status of the GATT Database (application) request.

Parameters

Table 200. GATTDB.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x80
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 200. GATTDB.Confirm Parameters (continued)

Status	2	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
		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 200. GATTDB.Confirm Parameters (continued)

		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 200. GATTDB.Confirm Parameters (continued)

		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

Table 200. GATTDB.Confirm Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 200. GATTDB.Confirm Parameters (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

Table 200. GATTDB.Confirm Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 200. GATTDB.Confirm 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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

4.2 GATTDBDynamic-AddCccd.Request

Description

Adds a CCCD in the database.

Parameters

<p align="center">**Table 201. GATTDBDynamic-AddCccd.Request Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0F
Length	1	0x00 - This message does not have any parameters

4.3 GATTDBDynamic-AddCccd.Indication

Description

Adds a CCCD in the database.

Parameters

<p align="center">**Table 202. GATTDBDynamic-AddCccd.Indication Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8B
Length	1	Length in bytes of the following parameters
CCCDHandle	2	Handle of the CCCD declaration

4.4 GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request

Description

Adds a Characteristic declaration and its Value into the database.

Parameters

<p align="center">**Table 203. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0D
Length	1	Length in bytes of the following parameters

<p align="center">*Table continues on the next page...*</p>

Table 203. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters (continued)

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)
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
Table continues on the next page...		

Table 203. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Request Parameters (continued)

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)
		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 204. 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

4.5 GATTDBDynamic-AddCharacteristicDeclarationAndValue.Indication

Description

Adds a Characteristic declaration and its Value into the database.

Parameters

Table 205. GATTDBDynamic-AddCharacteristicDeclarationAndValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x89
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Handle of the Characteristic declaration

4.6 GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request

Description

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

Parameters

Table 206. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x10
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits

Table continues on the next page...

Table 206. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.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.
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)

Table continues on the next page...

Table 206. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Request Parameters (continued)

| 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)

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 207. 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

4.7 GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Indication

Description

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

Parameters

Table 208. GATTDBDynamic-AddCharacteristicDeclarationWithUniqueValue.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8C
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Handle of the Characteristic declaration

4.8 GATTDBDynamic-AddCharacteristicDescriptor.Request

Description

Adds a Characteristic descriptor into the database.

Parameters

Table 209. GATTDBDynamic-AddCharacteristicDescriptor.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0E
Length	1	Length in bytes of the following parameters
UuidType	1	UUID type Possible values: 0x01: Uuid16Bits 0x02: Uuid128Bits 0x03: Uuid32Bits

Table continues on the next page...

Table 209. GATTDBDynamic-AddCharacteristicDescriptor.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.
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)
		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 210. 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

4.9 GATTDBDynamic-AddCharacteristicDescriptor.Indication

Description

Adds a Characteristic descriptor into the database.

Parameters

Table 211. GATTDBDynamic-AddCharacteristicDescriptor.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x8A
Length	1	Length in bytes of the following parameters
DescriptorHandle	2	Handle of the Descriptor declaration

4.10 GATTDBDynamic-AddIncludeDeclaration.Request

Description

Adds an Include declaration into the database.

Parameters

Table 212. GATTDBDynamic-AddIncludeDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
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
Table continues on the next page...		

Table 212. GATTDBDynamic-AddIncludeDeclaration.Request Parameters (continued)

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 213. 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

4.11 GATTDBDynamic-AddIncludeDeclaration.Indication

Description

Adds an Include declaration into the database.

Parameters

Table 214. GATTDBDynamic-AddIncludeDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x88
Length	1	Length in bytes of the following parameters
IncludeHandle	2	Handle of the Include declaration

4.12 GATTDBDynamic-AddPrimaryServiceDeclaration.Request

Description

Adds a Primary Service declaration into the database.

Parameters

Table 215. GATTDBDynamic-AddPrimaryServiceDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0A
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.

Table 216. 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

4.13 GATTDBDynamic-AddPrimaryServiceDeclaration.Indication

Description

Adds a Primary Service declaration into the database.

Parameters

Table 217. GATTDBDynamic-AddPrimaryServiceDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
Table continues on the next page...		

Table 217. GATTDBDynamic-AddPrimaryServiceDeclaration.Indication Parameters (continued)

OpCode	1	0x86
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Handle of the Service declaration

4.14 GATTDBDynamic-AddSecondaryServiceDeclaration.Request

Description

Adds a Secondary Service declaration into the database.

Parameters

Table 218. GATTDBDynamic-AddSecondaryServiceDeclaration.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x0B
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.

Table 219. 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

4.15 GATTDBDynamic-AddSecondaryServiceDeclaration.Indication

Description

Adds an Primary Service declaration into the database.

Parameters

Table 220. GATTDBDynamic-AddSecondaryServiceDeclaration.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Handle of the Service declaration

4.16 GATTDBDynamic-Init.Request

Description

Allocates smallest possible buffers and initializes an empty database.

Parameters

Table 221. GATTDBDynamic-Init.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x08
Length	1	0x00 - This message does not have any parameters

4.17 GATTDBDynamic-ReleaseDatabase.Request

Description

Releases the allocated buffers.

Parameters

Table 222. GATTDBDynamic-ReleaseDatabase.Request Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 222. GATTDBDynamic-ReleaseDatabase.Request Parameters (continued)

OpGroup	1	0x45
OpCode	1	0x09
Length	1	0x00 - This message does not have any parameters

4.18 GATTDBDynamic-RemoveCharacteristic.Request

Description

Removes a Characteristic from the database.

Parameters

Table 223. GATTDBDynamic-RemoveCharacteristic.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x12
Length	1	Length in bytes of the following parameters
CharacteristicHandle	2	Attribute handle of the Characteristic declaration

4.19 GATTDBDynamic-RemoveService.Request

Description

Removes a Service from the database.

Parameters

Table 224. GATTDBDynamic-RemoveService.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x11
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Attribute handle of the Service declaration

4.20 GATTDB-FindCccdHandleForCharValueHandle.Request

Description

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

Parameters

Table 225. GATTDB-FindCccdHandleForCharValueHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x06
Length	1	Length in bytes of the following parameters
CharValueHandle	2	The handle of the characteristic value

4.21 GATTDB-FindCccdHandleForCharValueHandle.Indication

Description

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

Parameters

Table 226. GATTDB-FindCccdHandleForCharValueHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
CccdHandle	2	CCCD handle

4.22 GATTDB-FindCharValueHandleInService.Request

Description

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

Parameters

Table 227. GATTDB-FindCharValueHandleInService.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
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
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 228. 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

4.23 GATTDB-FindCharValueHandleInService.Indication

Description

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

Parameters

Table 229. GATTDB-FindCharValueHandleInService.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
CharValueHandle	2	Characteristic value handle

4.24 GATTDB-FindDescriptorHandleForCharValueHandle.Request

Description

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

Parameters

Table 230. GATTDB-FindDescriptorHandleForCharValueHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x07
Length	1	Length in bytes of the following parameters
CharValueHandle	2	The handle of the characteristic value
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 231. 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

4.25 GATTDB-FindDescriptorHandleForCharValueHandle.Indication

Description

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

Parameters

Table 232. GATTDB-FindDescriptorHandleForCharValueHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x85
Length	1	Length in bytes of the following parameters
DescriptorHandle	2	Descriptor handle

4.26 GATTDB-FindServiceHandle.Request

Description

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

Parameters

Table 233. GATTDB-FindServiceHandle.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
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 234. Uuid Parameter Structure

UuidType	Structure Parameter	Size (bytes)	Comments
Table continues on the next page...			

Table 234. Uuid Parameter Structure (continued)

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

4.27 GATTDB-FindServiceHandle.Indication

Description

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

Parameters

Table 235. GATTDB-FindServiceHandle.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
ServiceHandle	2	Service handle

4.28 GATTDB-Init.Request

Description

Initializes the GATT database at runtime.

Parameters

Table 236. GATTDB-Init.Request Parameters

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

4.29 GATTDB-ReadAttribute.Request

Description

Reads an attribute from application level.

Parameters

Table 237. GATTDB-ReadAttribute.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x03
Length	1	Length in bytes of the following parameters
Handle	2	The handle of the attribute to be read
MaxBytes	2	The maximum number of bytes to be read

4.30 GATTDB-ReadAttribute.Indication

Description

Reads an attribute value (from application level).

Parameters

Table 238. GATTDB-ReadAttribute.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
ValueLength	2	Attribute value length
Value	ValueLength	Attribute value

4.31 GATTDB-WriteAttribute.Request

Description

Writes an attribute from the application level.

Parameters

Table 239. GATTDB-WriteAttribute.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x45
OpCode	1	0x02

Table continues on the next page...

Table 239. GATTDB-WriteAttribute.Request Parameters (continued)

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

Chapter 5
GAP Messages

5.1 BLE-HostInitialize.Request

Description

Performs master initialization of the BLE Host stack.

Parameters

Table 240. BLE-HostInitialize.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x01
Length	1	0x00 - This message does not have any parameters

5.2 GAP.Confirm

Description

Status of the GAP request.

Parameters

Table 241. GAP.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x80
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 241. GAP.Confirm Parameters (continued)

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
		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 241. GAP.Confirm Parameters (continued)

		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 241. GAP.Confirm Parameters (continued)

		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

Table 241. GAP.Confirm Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 241. GAP.Confirm Parameters (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

Table 241. GAP.Confirm Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 241. GAP.Confirm 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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.3 GAP-AcceptPairingRequest.Request

Description

Accepts the pairing request from a peer.

Parameters

Table 242. GAP-AcceptPairingRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 243. 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 (BLE 4.2 only)) 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

Table continues on the next page...

Table 243. PairingParameters Parameter Structure (continued)

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)
		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

Table continues on the next page...

Table 243. PairingParameters Parameter Structure (continued)

UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

5.4 GAP-AddDeviceToWhiteList.Request

Description

Adds a device address to the White List.

Parameters

Table 244. GAP-AddDeviceToWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.5 GAP-AdvertisingEventCommandFailed.Indication

Description

Event received when advertising could not be enabled or disabled.

Parameters

Table 245. GAP-AdvertisingEventCommandFailed.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x99
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (continued)

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
		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 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (continued)

		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 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (continued)

		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

Table 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (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

Table 245. GAP-AdvertisingEventCommandFailed.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 245. GAP-AdvertisingEventCommandFailed.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.6 GAP-AdvertisingEventStateChanged.Indication

Description

Event received when advertising has been successfully enabled or disabled.

Parameters

<p style="text-align: center;">**Table 246. GAP-AdvertisingEventStateChanged.Indication Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x98
Length	1	0x00 - This message does not have any parameters

5.7 GAP-Authorize.Request

Description

Authorizes a peer for a certain attribute in the database.

Parameters

<p style="text-align: center;">**Table 247. GAP-Authorize.Request Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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)

5.8 GAP-CheckIfBonded.Request

Description

Verifies if a connected peer device is bonded.

Parameters

Table 248. GAP-CheckIfBonded.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x20
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the GAP peer

5.9 GAP-CheckIfBonded.Indication

Description

Returns whether a connected peer device is bonded or not.

Parameters

Table 249. GAP-CheckIfBonded.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x86
Length	1	Length in bytes of the following parameters
IsBonded	1	Bonded flag

5.10 GAP-CheckIndicationStatus.Request

Description

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

Parameters

Table 250. Parameters GAP-CheckIndicationStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.11 GAP-CheckIndicationStatus.Indication

Description

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

Parameters

Table 251. GAP-CheckIndicationStatus.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x82
Length	1	Length in bytes of the following parameters
IsActive	1	Indication status

5.12 GAP-CheckNotificationStatus.Request

Description

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

Parameters

Table 252. GAP-CheckNotificationStatus.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.13 GAP-CheckNotificationStatus.Indication

Description

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

Parameters

Table 253. GAP-CheckNotificationStatus.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x81
Length	1	Length in bytes of the following parameters
IsActive	1	Notification status

5.14 GAP-ClearWhiteList.Request

Description

Removes all addresses from the White List.

Parameters

Table 254. GAP-ClearWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x22
Length	1	0x00 - This message does not have any parameters

5.15 GAP-Connect.Request

Description

Connects to a scanned device.

Parameters

Table 255. GAP-Connect.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 256. 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
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

Table continues on the next page...

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

5.16 GAP-ConnectionEventAuthenticationRejected.Indication

Description

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

Parameters

Table 257. GAP-ConnectionEventAuthenticationRejected.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA1
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

Table continues on the next page...

Table 257. GAP-ConnectionEventAuthenticationRejected.Indication Parameters (continued)

RejectReason	1	The reason of the rejection
		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)

5.17 GAP-ConnectionEventConnected.Indication

Description

A connection has been established.

Parameters

Table 258. GAP-ConnectionEventConnected.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 258. 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	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	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 259. 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
Table continues on the next page...		

Table 259. Connection Parameters Parameter Structure (continued)

MasterClockAccuracy	1	Accuracy of master's clock, allowing for frame detection optimizations
		Possible values:
		0x00: gMasterClkAcc500ppm_c
		0x01: gMasterClkAcc250ppm_c
		0x02: gMasterClkAcc150ppm_c
		0x03: gMasterClkAcc100ppm_c
		0x04: gMasterClkAcc75ppm_c
		0x05: gMasterClkAcc50ppm_c
		0x06: gMasterClkAcc30ppm_c
		0x07: gMasterClkAcc20ppm_c

5.18 GAP-ConnectionEventDisconnected.Indication

Description

A connection is terminated.

Parameters

Table 260. ConnectionEventDisconnected.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xAA
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

Table continues on the next page...

Table 260. ConnectionEventDisconnected.Indication Parameters (continued)

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
		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 260. ConnectionEventDisconnected.Indication Parameters (continued)

		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 260. ConnectionEventDisconnected.Indication Parameters (continued)

		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

Table 260. ConnectionEventDisconnected.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 260. ConnectionEventDisconnected.Indication Parameters (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

Table 260. ConnectionEventDisconnected.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 260. ConnectionEventDisconnected.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.19 GAP-ConnectionEventEncryptionChanged.Indication

Description

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

Parameters

Table 261. GAP-ConnectionEventEncryptionChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.20 GAP-ConnectionEventKeyExchangeRequest.Indication

Description

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

Parameters

Table 262. GAP-ConnectionEventKeyExchangeRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 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)
RequestedLtkSize	1	Requested size of the encryption key

5.21 GAP-ConnectionEventKeysReceived.Indication

Description

SMP keys distributed by the peer during pairing have been received.

Parameters

Table 263. ConnectionEventKeysReceived.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA6
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 264. 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.

Table continues on the next page...

Table 264. Keys Parameter Structure (continued)

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 265. LtkInfo Parameter Structure

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

Table 266. 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 267. 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

5.22 GAP-ConnectionEventLeDataLengthChanged.Indication

Description

The new TX/RX Data Length paramaters.

Parameters

Table 268. GAP-ConnectionEventLeDataLengthChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 269. 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
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

5.23 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 270. GAP-ConnectionEventLeScDisplayNumericValue Indication Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 270. GAP-ConnectionEventLeScDisplayNumericValue Indication Parameters (continued)

OpGroup	1	0x47
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

5.24 GAP-ConnectionEventLeScKeypressNotification.Indication

Description

Remote Keypress Notification recieved during Passkey Entry Pairing Method.

Parameters

Table 271. GAP-ConnectionEventLeScKeyPressNotification.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xB3
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
GapLeScKeypressNotificationParams	Variable	Keypress notification type which denotes a passkey entry keypress action Structure type parameter. See the detailed table below for parameter structure.

Table 272. GapLeScKeypressNotificationParams Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 272. GapLeScKeypressNotificationParams Parameter Structure (continued)

keypressNotifType	1	Possible values:
		0x00: gKnPasskeyEntryStarted_c
		0x01: gKnPasskeyDigitStarted_c
		0x02: gKnPasskeyDigitErased_c (gKnPasskeyDigitErased_c)
		0x03: gKnPasskeyCleared_c
		0x04: gKnPasskeyEntryCompleted_c

5.25 GAP-ConnectionEventLeScOobDataRequest.Indication

Description

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

Parameters

Table 273. GAP-ConnectionEventLeScOobDataRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xB1
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

5.26 GAP-ConnectionEventLongTermKeyRequest.Indication

Description

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

Parameters

Table 274. GAP-ConnectionEventLongTermKeyRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA7
Table continues on the next page...		

Table 274. 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

5.27 GAP-ConnectionEventOobRequest.Indication

Description

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

Parameters

Table 275. GAP-ConnectionEventOobRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA3
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

5.28 GAP-ConnectionEventPairingComplete.Indication

Description

Pairing procedure is complete, either successfully or with failure.

Parameters

Table 276. GAP-ConnectionEventPairingComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA9
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

Table continues on the next page...

Table 276. GAP-ConnectionEventPairingComplete.Indication Parameters (continued)

PairingStatus	1	Pairing status Possible values: 0x01: PairingSuccessful (Pairing succeeded) 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 277. 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 278. PairingSuccessful Parameter Structure

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

Table 279. PairingFailed Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 279. PairingFailed Parameter Structure (continued)

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
		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 279. PairingFailed Parameter Structure (continued)

		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: gHciUnknownLmpPdu_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 279. PairingFailed Parameter Structure (continued)

		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

Table 279. PairingFailed Parameter Structure (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 279. PairingFailed 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

Table 279. PairingFailed Parameter Structure (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 279. PairingFailed Parameter Structure (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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.29 GAP-ConnectionEventPairingRequest.Indication

Description

A pairing request has been received from the peer Master.

Parameters

<p align="center">**Table 280. GAP-ConnectionEventPairingRequest.Indication Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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.

<p align="center">**Table 281. PairingParameters Parameter Structure**</p>

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 (BLE 4.2 only)) 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

<p align="center">*Table continues on the next page...*</p>

Table 281. PairingParameters Parameter Structure (continued)

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)
		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

Table continues on the next page...

Table 281. PairingParameters Parameter Structure (continued)

UseKeypressNotifications	1	Indicates if device supports Keypress Notification PDUs during Passkey Entry pairing

5.30 GAP-ConnectionEventPairingResponse.Indication

Description

A pairing response has been received from the peer Slave.

Parameters

Table 282. GAP-ConnectionEventPairingResponse.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 283. 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
Table continues on the next page...		

Table 283. PairingParameters Parameter Structure (continued)

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 (BLE 4.2 only))
		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

Table continues on the next page...

Table 283. PairingParameters Parameter Structure (continued)

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

5.31 GAP-ConnectionEventParameterUpdateComplete.Indication

Description

The connection has new parameters.

Parameters

Table 284. GAP-ConnectionEventParameterUpdateComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xAF
Table continues on the next page...		

Table 284. GAP-ConnectionEventParameterUpdateComplete.Indication Parameters (continued)

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.

Table 285. ConnectionParameterUpdateComplete Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

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
		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 continues on the next page...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		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 continues on the next page...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		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...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c

Table continues on the next page...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		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

Table continues on the next page...

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Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

		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
		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

Table continues on the next page...

Table 285. ConnectionParameterUpdateComplete Parameter Structure (continued)

SupervisionTimeout	2	Supervision timeout

5.32 GAP-ConnectionEventParameterUpdateRequest.Indication

Description

A connection parameter update request has been received.

Parameters

Table 286. GAP-ConnectionEventParameterUpdateRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 287. ConnectionParameterUpdateRequest Parameter Structure

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

5.33 GAP-ConnectionEventPasskeyDisplay.Indication

Description

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

Parameters

Table 288. GAP-ConnectionEventPassKeyDisplay.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.34 GAP-ConnectionEventPasskeyRequest.Indication

Description

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

Parameters

Table 289. GAP-ConnectionEventPassKeyRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xA2
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection

5.35 GAP-ConnectionEventPowerReadFailure.Indication

Description

Power reading could not be performed.

Parameters

Table 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xAD
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID identifying the connection
Table continues on the next page...		

Table 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (continued)

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
		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 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (continued)

		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 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (continued)

		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

Table 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (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

Table 290. GAP-ConnectionEventPowerReadFailure.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 290. GAP-ConnectionEventPowerReadFailure.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.36 GAP-ConnectionEventRssiRead.Indication

Description

RSSI for an active connection has been read.

Parameters

Table 291. GAP-ConnectionEventRssiRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.37 GAP-ConnectionEventSlaveSecurityRequest.Indication

Description

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

Parameters

Table 292. Parameters GAP-ConnectionEventSlaveSecurityRequest.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 293. 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

5.38 GAP-ConnectionEventTxPowerLevelRead.Indication

Description

TX power level for an active connection has been read.

Parameters

Table 294. GAP-ConnectionEventTxPowerLevelRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.39 GAP-ControllerReset.Request

Description

Reset the controller.

Parameters

Table 295. GAP-ConnectionReset.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x34
Length	1	0x00 - This message does not have any parameters

5.40 GAP-CreateRandomDeviceAddress.Request

Description

Requests the controller to create a random address.

Parameters

Table 296. GAP-CreateRandomDeviceAddress.Request Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 296. GAP-CreateRandomDeviceAddress.Request Parameters (continued)

OpGroup	1	0x47
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

5.41 GAP-DenyLongTermKey.Request

Description

Rejects a long term key request from the controller.

Parameters

Table 297. GAP-DenyLongTermKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x17
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested encryption

5.42 GAP-Disconnect.Request

Description

Initiates disconnection from a connected peer device.

Parameters

Table 298. GAP-Disconnect.Request Parameters

Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 298. GAP-Disconnect.Request Parameters (continued)

OpGroup	1	0x47
OpCode	1	0x1D
Length	1	Length in bytes of the following parameters
DeviceId	1	The connected peer to disconnect from

5.43 GAP-EnableControllerPrivacy.Request

Description

nables or disables Controller Privacy (Enhanced Privacy feature).

Parameters

Table 299. GAP-EnableControllerPrivacy.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 Structure type parameter. See the detailed table below for parameter structure.

Table 300. PeerIdentities Parameters Structure

Structure Parameter	Size (bytes)	Comments
	1	

5.44 GAP-EnableHostPrivacy.Request

Description

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

Parameters

Table 301. GAP-EnableHostPrivacy.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.45 GAP-EnableUpdateConnectionParameters.Request

Description

Update the connection parameters.

Parameters

Table 302. GAP-EnableUpdateConnectionParameters.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.46 GAP-EncryptLink.Request

Description

Encrypts the link with a bonded peer.

Parameters

Table 303. GAP-EncryptLink.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
Table continues on the next page...		

Table 303. GAP-EncryptLink.Request Parameters (continued)

OpCode	1	0x0E
Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer

5.47 GAP-EnterPasskey.Request

Description

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

Parameters

Table 304. GAP-EnterPassKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.48 GAP-GenericEventAdvertisingDataSetupComplete.Indication

Description

Controller event - advertising data setup completed.

Parameters

Table 305. GAP-GenericventAdvertisingDataSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x8D
Length	1	0x00 - This message does not have any parameters

5.49 GAP-GenericEventAdvertisingParametersSetupComplete.Indication

Description

Controller event - advertising parameters setup completed.

Parameters

Table 306. GAP-GenericEventAdvertisingParametersSetupComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x8C
Length	1	0x00 - This message does not have any parameters

5.50 GAP-GenericEventAdvertisingSetupFailed.Indication

Description

Controller event - advertising setup failed.

Parameters

Table 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x8B
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (continued)

SetupFailReason	2	Setup fail reason
		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
		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 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (continued)

		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 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (continued)

		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

Table 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (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

Table 307. GAP-GenericEventAdvertisingSetupFailed.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 307. GAP-GenericEventAdvertisingSetupFailed.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.51 GAP-GenericEventAdvTxPowerLevelRead.Indication

Description

Controller event - advertising transmission power level.

Parameters

Table 308. GAP-GenericEventAdvTxPowerLevelRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x95
Length	1	Length in bytes of the following parameters
AdvTxPowerLevel	1	Advertising transmission power level (in dBm)

5.52 GAP-GenericEventControllerPrivacyStateChanged.Indication

Description

The Controller Privacy was enabled or disabled.

Parameters

Table 309. GAP-GenericEventControllerPrivacyStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xB7
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

5.53 GAP-GenericEventControllerResetComplete.Indication

Description

The controller has been reset.

Parameters

Table 310. GAP-GenericEventControllerResetComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xB4
Table continues on the next page...		

Table 310. GAP-GenericEventControllerResetComplete.Indication Parameters (continued)

Length	1	0x00 - This message does not have any parameters

5.54 GAP-GenericEventCreateConnectionCanceled.Indication

Description

Controller event - create connection procedure canceled.

Parameters

Table 311. GAP-GenericEventCreateConnectionCanceled.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x93
Length	1	0x00 - This message does not have any parameters

5.55 GAP-GenericEventDeviceAddedToWhiteList.Indication

Description

Controller event - device added to White List.

Parameters

Table 312. GAP-GenericEventDeviceAddedToWhiteList.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x8F
Length	1	0x00 - This message does not have any parameters

5.56 GAP-GenericEventDeviceRemovedFromWhiteList.Indication

Description

Controller event - device removed from White List.

Parameters

Table 313. GAP-GenericEventDeviceRemovedFromWhiteList.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x90
Length	1	0x00 - This message does not have any parameters

5.57 GAP-GenericEventInitializationComplete.Indication

Description

Controller event - initialization complete.

Parameters

Table 314. GAP-GenericEventInitializationComplete.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x89
Length	1	0x00 - This message does not have any parameters

5.58 GAP-GenericEventInternalError.Indication

Description

Controller event - controller error.

Parameters

Table 315. GAP-GenericEventInternalError.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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.

Table 316. InternalError Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 316. InternalError Parameter Structure (continued)

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
		0x0008: gBleUnexpectedError_c
		0x0009: gBleInvalidState_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 continues on the next page...

Table 316. InternalError Parameter Structure (continued)

		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 continues on the next page...

Table 316. InternalError Parameter Structure (continued)

		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...

Table 316. InternalError Parameter Structure (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c

Table continues on the next page...

Table 316. InternalError Parameter Structure (continued)

		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

Table continues on the next page...

Table 316. InternalError Parameter Structure (continued)

		0x0416: gSmInvalidHciEventParameter_c
		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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...

Table 316. InternalError Parameter Structure (continued)

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

Table continues on the next page...

Table 316. InternalError Parameter Structure (continued)

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
		0x18: gSendSlaveSecurityRequest_c
		0x19: gEnterPasskey_c
		0x1A: gProvideOob_c
		0x1B: gSendSmpKeys_c
		0x1C: gWriteSuggestedDefaultDataLength_c

Table continues on the next page...

Table 316. InternalError Parameter Structure (continued)

		0x1D: gReadSuggestedDefaultDataLength_c
		0x1E: gUpdateLeDataLength_c
		0x1F: gEnableControllerPrivacy_c
		0x20: gLeScSendKeypressNotification_c
		0x21: gLeScSetPeerOobData_c
		0x22: gLeScGetLocalOobData_c
		0x23: gLeScValidateNumericValue_c
		0x24: gLeScRegeneratePublicKey_c
		0x25: gLeSetResolvablePrivateAddressTimeout_c
HciCommandOpcode	2	HCI command operation code

5.59 GAP-GenericEventLeScLocalOobData.Indication

Description

Local OOB data used for LE Secure Connections pairing.

Parameters

Table 317. GAP-GenericEventLeScLocalOobData.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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)

5.60 GAP-GenericEventPrivateResolvableAddressVerified.Indication

Description

Controller event - Private Resolvable Address verified.

Parameters

Table 318. GAP-GenericEventPrivateResolvableAddressVerified.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x96
Length	1	Length in bytes of the following parameters
Verified	1	Private Resolvable Address verified

5.61 GAP-GenericEventPublicAddressRead.Indication

Description

Controller event - public address read.

Parameters

Table 319. GAP-GenericEventPublicAddressRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x94
Length	1	Length in bytes of the following parameters
Address	6	Public address

5.62 GAP-GenericEventRandomAddressReady.Indication

Description

Controller event - random address ready.

Parameters

Table 320. GAP-GenericEventRandomAddressReady.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x92
Length	1	Length in bytes of the following parameters
Address	6	Random address

5.63 GAP-GenericEventRandomAddressSet.Indication

Description

Controller event - Private Resolvable Address verified.

Parameters

Table 321. GAP-GenericEventRandomAddressSet.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x97
Length	1	0x00 - This message does not have any parameters

5.64 GAP-GenericEventWhiteListCleared.Indication

Description

Controller event - White List cleared.

Parameters

Table 322. GAP-GenericEventWhiteListCleared.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x91
Length	1	0x00 - This message does not have any parameters

5.65 GAP-GenericEventWhiteListSizeRead.Indication

Description

Controller event - White List size.

Parameters

Table 323. GAP-GenericEventWhiteListSizeRead.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x8E
Table continues on the next page...		

Table 323. GAP-GenericEventWhiteListSizeRead.Indication Parameters (continued)

Length	1	Length in bytes of the following parameters
WhiteListSize	1	White list size

5.66 GAP-GetBondedDeviceName.Request

Description

Retrieves the name of a bonded device.

Parameters

Table 324. GAP-GetBondedDeviceName.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.67 GAP-GetBondedDeviceName.Indication

Description

Returns the name of a bonded device.

Parameters

Table 325. GAP-GetBondedDeviceName.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x88
Length	1	Length in bytes of the following parameters
NameSize	1	The name size
Name	NameSize	The name value

5.68 GAP-GetBondedDevicesCount.Request

Description

Retrieves the number of bonded devices.

Parameters

Table 326. GAP-GetBondedDevicesCount.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x28
Length	1	0x00 - This message does not have any parameters

5.69 GAP-GetBondedDevicesCount.Indication

Description

Returns the number of bonded devices.

Parameters

Table 327. GAP-GetBondedDevicesCount.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x87
Length	1	Length in bytes of the following parameters
NbOfBondedDevices	1	Number of bonded devices

5.70 GAP-GetBondedDevicesIdentityInformation.Request

Description

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

Parameters

Table 328. GAP-GetBondedDevicesIdentityInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47

Table continues on the next page...

Table 328. GAP-GetBondedDevicesIdentityInformation.Request Parameters (continued)

OpCode	1	0x3C
Length	1	Length in bytes of the following parameters
maxDevices	1	Maximum number of addresses to be obtained

5.71 GAP-GetBondedStaticAddresses.Request

Description

Retrieves a list of the static addresses of bonded devices.

Parameters

Table 329. GAP-GetBondedStaticAddresses.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x0B
Length	1	Length in bytes of the following parameters
MaxNbOfDevices	1	Maximum number of addresses to be obtained

5.72 GAP-GetBondedStaticAddresses.Indication

Description

Returns a list with the static addresses of bonded devices.

Parameters

Table 330. GAP-GetBondedStaticAddresses.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x83
Length	1	Length in bytes of the following parameters
NbOfDeviceAddresses	1	The number of device addresses
DeviceAddresses	6 x NbOfDeviceAddresses	Device addresses list

5.73 GAP-LeScSetPeerOobData.Request

Description

Set peer OOB data used for LE Secure Connections pairing.

Parameters

<p align="center">**Table 331. GAP-LeScSetPeerOobData.Request Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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)

5.74 GAP-LeScPublicKeyRegenerated.Indication

Description

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

Parameters

<p align="center">**Table 332. GAP-LeScPublicKeyRegenerated.Indication Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0xB5
Length	1	0x00 - This message does not have any parameters

5.75 GAP-LeScRegeneratePublicKey.Request

Description

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

Parameters

<p style="text-align:center">Table 333. GAP-LeScRegeneratePublicKey.Request Parameters</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x37
Length	1	0x00 - This message does not have any parameters

5.76 GAP-LeScSendKeypressNotificationPrivacy.Request

Description

Send a Keypress Notification to the peer.

Parameters

<p style="text-align:center">Table 334. GAP-LeScSendKeypressNotification.Request Parameters</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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.

<p style="text-align:center">Table 335. GapLeScKeypressNotificationParams Parameter Structure</p>

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

5.77 GAP-LeScGetLocalOobData.Request

Description

Retrieve local OOB data used for LE Secure Connections pairing.

Parameters

Table 336. GAP-LeScGetLocalOobData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x39
Length	1	0x00 - This message does not have any parameters

5.78 GAP-LeScValidateNumericValue.Request

Description

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

Parameters

Table 337. GAP-LeScValidateNumericValue.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.79 GAP-LoadCustomPeerInformation.Request

Description

Loads the custom peer information in raw data format.

Parameters

Table 338. GAP-LoadCustomPeerInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.80 GAP-LoadCustomPeerInformation.Indication

Description

Returns the custom peer information in raw data format.

Parameters

Table 339. GAP-LoadCustomPeerInformation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x85
Length	1	Length in bytes of the following parameters
InfoSize	2	Data size
Info	InfoSize	Data value

5.81 GAP-LoadEncryptionInformation.Request

Description

Loads encryption key for a bonded device.

Parameters

Table 340. GAP-LoadEncryptionInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x18

Table continues on the next page...

Table 340. GAP-LoadEncryptionInformation.Request Parameters (continued)

Length	1	Length in bytes of the following parameters
DeviceId	1	Device ID of the peer

5.82 GAP-LoadEncryptionInformation.Indication

Description

Returns the encryption key for a bonded device.

Parameters

Table 341. GAP-LoadEncryptionInformation.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x84
Length	1	Length in bytes of the following parameters
LtkSize	1	LTK size
Ltk	LtkSize	LTK value

5.83 GAP-Pair.Request

Description

Initiate pairing with a peer device.

Parameters

Table 342. GAP-Pair.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 343. Pairing Parameters 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 (BLE 4.2 only)) 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

Table continues on the next page...

Table 343. Pairing Parameters Structure (continued)

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

5.84 GAP-ProvideLongTermKey.Request

Description

Provides the Long Term Key to the controller for encryption setup.

Parameters

Table 344. GAP-ProvideLongTermKey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x16
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Table 344. GAP-ProvideLongTermKey.Request Parameters (continued)

DeviceId	1	The GAP peer who requested encryption
LtkSize	1	The Long Term Key size
Ltk	LtkSize	The Long Term Key

5.85 GAP-ProvideOob.Request

Description

Provides the Out Of Band data for SMP pairing process.

Parameters

Table 345. GAP-ProvideOob.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x12
Length	1	Length in bytes of the following parameters
DeviceId	1	The pairing device
Oob	16	OOB data

5.86 GAP-ReadPublicDeviceAddress.Request

Description

Reads the device's public address from the controller.

Parameters

Table 346. GAP-ReadPublicDeviceAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x25
Length	1	0x00 - This message does not have any parameters

5.87 GAP-ReadRadioPowerLevel.Request

Description

Reads the power level of the controller's radio.

Parameters

Table 347. GAP-ReadRadioPowerLevel.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.88 GAP-ReadWhiteListSize.Request

Description

Retrieves the size of the White List.

Parameters

Table 348. GAP-ReadWhiteListSize.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x21
Length	1	0x00 - This message does not have any parameters

5.89 GAP-RegisterDeviceSecurityRequirements.Request

Description

Registers the device security requirements.

Parameters

Table 349. GAP-RegisterDeviceSecurityRequirements.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 350. 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 351. MasterSecurityRequirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 351. MasterSecurityRequirements Parameter Structure (continued)

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 (BLE 4.2 only))
		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 352. 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 353. Requirements Parameter Structure

Structure Parameter	Size (bytes)	Comments
Table continues on the next page...		

Table 353. Requirements Parameter Structure (continued)

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 (BLE 4.2 only))
		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

5.90 GAP-RejectKeyExchangeRequest.Request

Description

Rejects the Key Exchange procedure with a paired peer.

Parameters

Table 354. GAP-RejectKeyExchangeRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x15
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer who requested the Key Exchange procedure

5.91 GAP-RejectPairing.Request

Description

Rejects the peer's authentication request.

Parameters

Table 355. GAP-RejectPairing.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 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)

5.92 GAP-RejectPasskeyRequest.Request

Description

Rejects the passkey request from a peer.

Parameters

Table 356. GAP-RejectPasskeyRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x13
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer that requested a passkey entry

5.93 GAP-RemoveAllBonds.Request

Description

Removes all bonds with other devices.

Parameters

Table 357. GAP-RemoveAllBonds.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x2B
Length	1	0x00 - This message does not have any parameters

5.94 GAP-RemoveBond.Request

Description

Removes the bond with a device.

Parameters

Table 358. GAP-RemoveBond.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x2A
Length	1	Length in bytes of the following parameters
NvmIndex	1	Index of the device in NVM bonding area

5.95 GAP-RemoveDeviceFromWhiteList.Request

Description

Removes a device address from the White List.

Parameters

Table 359. GAP-RemoveDeviceFromWhiteList.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.96 GAP-SaveCccd.Request

Description

Save the CCCD value for a specific client and CCCD handle.

Parameters

Table 360. GAP-SaveCccd.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

Table continues on the next page...

Table 360. GAP-SaveCccd.Request Parameters (continued)

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)

5.97 GAP-SaveCustomPeerInformation.Request

Description

Saves custom peer information in raw data format.

Parameters

Table 361. GAP-SaveCustomPeerInformation.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.98 GAP-SaveDeviceName.Request

Description

Saves the name of a bonded device.

Parameters

Table 362. GAP-SaveDeviceName.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47

Table continues on the next page...

Table 362. GAP-SaveDeviceName.Request Parameters (continued)

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

5.99 GAP-ScanningEventCommandFailed.Indication

Description

Event received when scanning could not be enabled or disabled.

Parameters

Table 363. GAP-ScanningEventCommandFailed.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x9B
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 363. GAP-ScanningEventCommandFailed.Indication Parameters (continued)

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
		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 363. GAP-ScanningEventCommandFailed.Indication Parameters (continued)

		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 363. GAP-ScanningEventCommandFailed.Indication Parameters (continued)

		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

Table 363. GAP-ScanningEventCommandFailed.Indication Parameters (continued)

		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
		0x03F8: gL2caChannelInvalid_c
		0x03F9: gL2caChannelClosed_c
		0x03FA: gL2caChannelAlreadyConnected_c
		0x03FB: gL2caConnectionParametersRejected_c
		0x03FC: gL2caChannelBusy_c
		0x03FE: gL2caInvalidParameter_c
		0x03FF: gL2caError_c

Table 363. GAP-ScanningEventCommandFailed.Indication Parameters (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

Table 363. GAP-ScanningEventCommandFailed.Indication Parameters (continued)

		0x0417: gSmLlConnectionEncryptionInProgress_c
		0x0418: gSmLlConnectionEncryptionFailure_c
		0x0419: gSmInsufficientResources_c
		0x041A: gSmOobDataAddressMismatch_c
		0x041A: gSmSmpPacketReceivedAfterTimeoutOccurred_c
		0x0431: gSmPairingErrorPasskeyEntryFailed_c
		0x0432: gSmPairingErrorConfirmValueFailed_c
		0x0433: gSmPairingErrorCommandNotSupported_c
		0x0434: gSmPairingErrorInvalidParameters_c
		0x0435: gSmPairingErrorUnknownReason_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 363. GAP-ScanningEventCommandFailed.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
		0x0801: gDevDbCccdLimitReached_c
		0x0802: gDevDbCccdNotFound_c
		0x0901: gGattDbInvalidHandle_c
		0x0902: gGattDbCharacteristicNotFound_c
		0x0903: gGattDbCccdNotFound_c
		0x0904: gGattDbServiceNotFound_c
		0x0905: gGattDbDescriptorNotFound_c

5.100 GAP-ScanningEventDeviceScanned.Indication

Description

Event received when an advertising device has been scanned.

Parameters

Table 364. GAP-ScanningEventDeviceScanned.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 365. 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
DataLength	1	Length of the advertising or scan response data
Data	DataLength	Advertising or scan response data

Table continues on the next page...

Table 365. ScannedDevice Parameter Structure (continued)

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	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

5.101 GAP-ScanningEventStateChanged.Indication

Description

Event received when scanning had been successfully enabled or disabled.

Parameters

Table 366. GAP-ScanningEventStateChanged.Indication Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x9A
Length	1	0x00 - This message does not have any parameters

5.102 GAP-SendSlaveSecurityRequest.Request

Description

Informs the peer Master about local security requirements.

Parameters

Table 367. GAP-SendSlaveSecurityRequest.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x0D
Length	1	Length in bytes of the following parameters
DeviceId	1	The GAP peer to pair with
BondAfterPairing	1	Specifies if bonding is supported
SecurityModeLevel	1	The level of security requested 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 (BLE 4.2 only)) 0x21: gMode2Level1_c (Mode 2 Level 1 - Data Signing without authentication) 0x22: gMode2Level2_c (Mode 2 Level 2 - Data Signing with authentication)

5.103 GAP-SendSmpKeys.Request

Description

Sends the SMP keys during SMP Key Exchange procedure.

Parameters

Table 368. GAP-SendSmpKeys.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 369. 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 370. LtkInfo Parameter Structure

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

Table 371. 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 372. 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

5.104 GAP-SetAdvertisingData.Request

Description

Sets the advertising and scan response data.

Parameters

Table 373. GAP-SetAdvertisingData.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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
Table continues on the next page...		

Table 373. GAP-SetAdvertisingData.Request Parameters (continued)

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 374. 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.

Table 375. AdStructures Parameter Structure

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length

Table continues on the next page...

Table 375. AdStructures Parameter Structure (continued)

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)
		0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG)
		0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 375. AdStructures Parameter Structure (continued)

		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)
		0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

Table 376. ScanResponseData Parameter Structure

Structure Parameter	Size (bytes)	Comments
NbOfAdStructures	1	Number of advertising data structures
Table continues on the next page...		

Table 376. ScanResponseData Parameter Structure (continued)

AdStructures	Variable	Advertising data structures
		Structure type parameter. See the detailed table below for parameter structure.

Table 377. AdStructures Parameter Structure

Structure Parameter	Size (bytes)	Comments
Length	1	Advertising data length
Table continues on the next page...		

Table 377. AdStructures Parameter Structure (continued)

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)
		0x11: gAdSecurityManagerOobFlags_c (Defined by the Bluetooth SIG)
		0x12: gAdSlaveConnectionIntervalRange_c (Defined by the Bluetooth SIG)

Table continues on the next page...

Table 377. AdStructures Parameter Structure (continued)

		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)
		0xFF: gAdManufacturerSpecificData_c (Defined by the Bluetooth SIG)
Data	Length	Advertising data

5.105 GAP-SetAdvertisingParameters.Request

Description

Sets the advertising parameters.

Parameters

<p align="center">**Table 378. GAP-SetAdvertisingParameters.Request Parameters**</p>

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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.

<p align="center">**Table 379. AdvertisingParameters Parameter Structure**</p>

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)

<p align="center">*Table continues on the next page...*</p>

Table 379. AdvertisingParameters Parameter Structure (continued)

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:
		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)

5.106 GAP-SetDefaultPairingParameters.Request

Description

Sets the default pairing parameters to be used by automatic pairing procedures.

Parameters

Table 380. GAP-SetDefaultPairingParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 381. 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
Table continues on the next page...		

Table 381. PairingParameters Parameter Structure (continued)

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 (BLE 4.2 only))
		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

Table continues on the next page...

Table 381. PairingParameters Parameter Structure (continued)

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

5.107 GAP-SetLocalPasskey.Request

Description

Sets the SMP passkey for this device.

Parameters

Table 382. GAP-SetLocalPasskey.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x19
Length	1	Length in bytes of the following parameters
Passkey	4	The SMP passkey

5.108 GAP-SetRandomAddress.Request

Description

Sets a random address into the controller.

Parameters

Table 383. GAP-SetRandomAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x2E
Length	1	Length in bytes of the following parameters
Address	6	The Private Resolvable, Private Non-Resolvable, or Static Random Address

5.109 GAP-SetScanMode.Request

Description

Sets internal scan filters and actions.

Parameters

Table 384. GAP-SetScanMode.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x2F
Length	1	Length in bytes of the following parameters
Table continues on the next page...		

Table 384. GAP-SetScanMode.Request Parameters (continued)

ScanMode	1	The scan mode to be activated.
		Possible values:
		0x00: gDefaultScan_c (Reports all scanned devices to the application)
		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 385. 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 386. AutoConnectData Parameter Structure

Structure Parameter	Size (bytes)	Comments
ScanInterval	2	Scanning interval - default 10ms
ScanWindow	2	Scanning window - default 10ms
Table continues on the next page...		

Table 386. AutoConnectData Parameter Structure (continued)

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
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

Table continues on the next page...

Table 386. AutoConnectData Parameter Structure (continued)

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

5.110 GAP-StartAdvertising.Request

Description

Commands the controller to start advertising.

Parameters

Table 387. GAP-StartAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x05
Length	1	0x00 - This message does not have any parameters

5.111 GAP-StartScanning.Request

Description

Sets the scanning parameters (optionally) and begins scanning.

Parameters

Table 388. GAP-StartScanning.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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 388. GAP-StartScanning.Request Parameters (continued)

ScanningParameters	Variable	The scanning parameters
		Structure type parameter. See the detailed table below for parameter structure.

Table 389. 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
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)

5.112 GAP-StopAdvertising.Request

Description

Commands the controller to stop advertising.

Parameters

Table 390. GAP-StopAdvertising.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x06
Length	1	0x00 - This message does not have any parameters

5.113 GAP-StopScanning.Request

Description

Commands the controller to stop scanning.

Parameters

Table 391. GAP-StopScanning.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x1B
Length	1	0x00 - This message does not have any parameters

5.114 GAP-UpdateConnectionParameters.Request

Description

Request a set of new connection parameters.

Parameters

Table 392. GAP-UpdateConnectionParameters.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
OpCode	1	0x31
Length	1	Length in bytes of the following parameters
DeviceId	1	The DeviceID for which the command is intended

Table continues on the next page...

Table 392. GAP-UpdateConnectionParameters.Request Parameters (continued)

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
MinCeLength	2	The minimum connection event length
MaxCeLength	2	The maximum connection event length

5.115 Gap-UpdateLeDataLength.Request

Description

Update the Tx Data parameters.

Parameters

Table 393. GAP-UpdateLeDataLength.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
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

5.116 GAP-VerifyPrivateResolvableAddress.Request

Description

Verifies a Private Resolvable Address with a bonded device's IRK.

Parameters

Table 394. GAP-VerifyPrivateResolvableAddress.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0x47
Table continues on the next page...		

Table 394. GAP-VerifyPrivateResolvableAddress.Request Parameters (continued)

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

Chapter 6
FSCI Messages

6.1 FSCI-AllowDeviceToSleep.Request

Description

FSCI-AllowDeviceToSleep.Request description.

Parameters

Table 395. 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.

6.2 FSCI-AllowDeviceToSleep.Confirm

Description

FSCI-AllowDeviceToSleep.Request description.

Parameters

Table 396. FSCI-AllowDeviceToSleep.Confirm Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0x70
Length	1	Length in bytes of the following parameters

Table continues on the next page...

Status	1	Possible values: 0x00: gSuccess (Success) 0xFF: gError (Error)

6.3 FSCI-Error.Indication

Description

FSCI is reporting an error condition.

Parameters

Table 397. 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

6.4 FSCI-GetWakeupReason.Request

Description

FSCI-GetWakeupReason.Request description.

Parameters

Table 398. FSCI-GetWakeupReason.Request Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA3
OpCode	1	0x72
Length	1	0x00 - This message does not have any parameters

6.5 FSCI-GetWakeupReason.Response

Description

FSCI-GetWakeupReason.Response description.

Parameters

Table 399. FSCI-GetWakeupReason.Response Parameters

Parameter	Size (bytes)	Comments
OpGroup	1	0xA4
OpCode	1	0x72
Length	1	Length in bytes of the following parameters
WakeUpReason	1	Wake Up Reason

6.6 FSCI-WakeUp.Indication

Description

FSCI-WakeUp.Indication description.

Parameters

Table 400. 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 7
Revision history

This table summarizes revisions to this document

Table 401. 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