

RW BLE Host Error Code Interface Specification

Interface Specification

RW-BLE-HOST-ERR-CODE-IS

Version 9.1

2018-10-24



Revision History

Version	Date	Revision Description	Author
1.0	2012-12-13	Added error codes	KY/FBE
2.0	2013-03-10	Update error codes table	FBE
7.00	2014-06-30	BLE 4.1 HL Error Codes	FBE
7.01	2015-01-06	Add new error code for L2CAP LE Credit Based Connection	FBE
8.00	2015-06-29	Update Error codes for BLE 4.2	FBE
8.01	2015-10-26	Add some new error codes for Audio Mode 0	FBE
8.02	2016-04-15	New error code for LE Credit Based Connection	FBE
8.02	2016-12-12	New error code for LE Credit Based Connection	FBE
9.0	2017-03-09	Update for BLE 5	LT
9.1	2018-10-24	Remove some error code overlapping	FBE



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1 Abbreviations

Abbreviation	Original Terminology
API	Application Programming Interface
ATT	Attribute
BLE	Bluetooth Low Energy
GAP	Generic Access Profile
GATT	Generic Attribute Profile
SMP	Security Manager Protocol
RW	RivieraWaves



2 Document Overview

This document describes the non-standard error code interface of the RW BLE Host implementation.

These error codes can be triggered by any host task such as GAP, GATT, SMP, ATT or profiles



3 Error Code List

Value	Error	Description
0x00	GAP_ERR_NO_ERROR	No error
ATT Error Codes		
0x01	ATT_ERR_INVALID_HANDLE	Handle is invalid
0x02	ATT_ERR_READ_NOT_PERMITTED	Read permission disabled
0x03	ATT_ERR_WRITE_NOT_PERMITTED	Write permission disabled
0x04	ATT_ERR_INVALID_PDU	Incorrect PDU
0x05	ATT_ERR_INSUFF_AUTHEN	Authentication privilege not enough
0x06	ATT_ERR_REQUEST_NOT_SUPPORTED	Request not supported or not understood
0x07	ATT_ERR_INVALID_OFFSET	Incorrect offset value
0x08	ATT_ERR_INSUFF_AUTHOR	Authorization privilege not enough
0x09	ATT_ERR_PREPARE_QUEUE_FULL	Capacity queue for reliable write reached
0x0A	ATT_ERR_ATTRIBUTE_NOT_FOUND	Attribute requested not existing
0x0B	ATT_ERR_ATTRIBUTE_NOT_LONG	Attribute requested not long
0x0C	ATT_ERR_INSUFF_ENC_KEY_SIZE	Encryption size not sufficient
0x0D	ATT_ERR_INVALID_ATTRIBUTE_VAL_LEN	Invalid length of the attribute value
0x0E	ATT_ERR_UNLIKELY_ERR	Operation not fit to condition
0x0F	ATT_ERR_INSUFF_ENC	Attribute requires encryption before operation
0x10	ATT_UNSUPP_GRP_TYPE	Attribute grouping not supported
0x11	ATT_INSUFF_RESOURCE	Resources not sufficient to complete the request
0x80	ATT_ERR_APP_ERROR	Application Error
L2C Specific Error		
0x30	L2C_ERR_CONNECTION_LOST	Message cannot be sent because connection lost. (disconnected)
0x31	L2C_ERR_INVALID_MTU_EXCEED	Invalid PDU length exceed MTU
0x32	L2C_ERR_INVALID_MPS_EXCEED	Invalid PDU length exceed MPS
0x33	L2C_ERR_INVALID_CID	Invalid Channel ID
0x34	L2C_ERR_INVALID_PDU	Invalid PDU
0x35	L2C_ERR_NO_RES_AVAIL	Connection refused - no resources available
0x36	L2C_ERR_INSUFF_AUTHEN	Connection refused - insufficient authentication
0x37	L2C_ERR_INSUFF_AUTHOR	Connection refused - insufficient authorization
0x38	L2C_ERR_INSUFF_ENC_KEY_SIZE	Connection refused - insufficient encryption key size
0x39	L2C_ERR_INSUFF_ENC	Connection Refused - insufficient encryption
0x3A	L2C_ERR_LEPSM_NOT_SUPP	Connection refused - LE_PSM not supported
0x3B	L2C_ERR_INSUFF_CREDIT	No more credit
0x3C	L2C_ERR_NOT_UNDERSTOOD	Command not understood by peer device
0x3D	L2C_ERR_CREDIT_ERROR	Credit error, invalid number of credit received
0x3E	L2C_ERR_CID_ALREADY_ALLOC	Channel identifier already allocated



GAP Error Codes

0x40	GAP_ERR_INVALID_PARAM	Invalid parameters set
0x41	GAP_ERR_PROTOCOL_PROBLEM	Problem with protocol exchange, get unexpected response
0x42	GAP_ERR_NOT_SUPPORTED	Request not supported by software configuration
0x43	GAP_ERR_COMMAND_DISALLOWED	Request not allowed in current state.
0x44	GAP_ERR_CANCELED	Requested operation canceled.
0x45	GAP_ERR_TIMEOUT	Requested operation timeout.
0x46	GAP_ERR_DISCONNECTED	Link connection lost during operation.
0x47	GAP_ERR_NOT_FOUND	Search algorithm finished, but no result found
0x48	GAP_ERR_REJECTED	Request rejected by peer device
0x49	GAP_ERR_PRIVACY_CFG_PB	Problem with privacy configuration
0x4A	GAP_ERR_ADV_DATA_INVALID	Duplicate or invalid advertising data
0x4B	GAP_ERR_INSUFF_RESOURCES	Insufficient resources
0x4C	GAP_ERR_UNEXPECTED	Unexpected Error
0x4D	GAP_ERR_MISMATCH	Feature mismatch

GATT Error Codes

0x50	GATT_ERR_INVALID_ATT_LEN	Problem with ATTC protocol response
0x51	GATT_ERR_INVALID_TYPE_IN_SVC_SEARCH	Error in service search
0x52	GATT_ERR_WRITE	Invalid write data
0x53	GATT_ERR_SIGNED_WRITE	Signed write error
0x54	GATT_ERR_ATT_CLIENT_MISSING	No attribute client defined
0x55	GATT_ERR_ATT_SERVER_MISSING	No attribute server defined
0x56	GATT_ERR_INVALID_PERM	Permission set in service/attribute are invalid

SMP Protocol Errors detected on local device

0x61	SMP_ERROR_LOC_PASSKEY_ENTRY_FAILED	The user input of passkey failed, for example, the user cancelled the operation.
0x62	SMP_ERROR_LOC_OOB_NOT_AVAILABLE	The OOB Data is not available.
0x63	SMP_ERROR_LOC_AUTH_REQ	The pairing procedure cannot be performed as authentication requirements cannot be met due to IO capabilities of one or both devices.
0x64	SMP_ERROR_LOC_CONF_VAL_FAILED	The confirm value does not match the calculated confirm value.
0x65	SMP_ERROR_LOC_PAIRING_NOT_SUPP	Pairing is not supported by the device.
0x66	SMP_ERROR_LOC_ENC_KEY_SIZE	The resultant encryption key size is insufficient for the security requirements of this device.
0x67	SMP_ERROR_LOC_CMD_NOT_SUPPORTED	The SMP command received is not supported on this device.
0x68	SMP_ERROR_LOC_UNSPECIFIED_REASON	Pairing failed due to an unspecified reason.
0x69	SMP_ERROR_LOC_REPEATED_ATTEMPTS	Pairing or Authentication procedure is disallowed because too little time has elapsed since last pairing request or security request.
0x6A	SMP_ERROR_LOC_INVALID_PARAM	The command length is invalid or a parameter is outside of the specified range.



0x6B	SMP_ERROR_LOC_DHKEY_CHECK_FAILED	Indicates to the remote device that the DHKey Check value received doesn't match the one calculated by the local device.
0x6C	SMP_ERROR_LOC_NUMERIC_COMPARISON_FAILED	Indicates that the confirm values in the numeric comparison protocol do not match.
0x6D	SMP_ERROR_LOC_BREDR_PAIRING_IN_PROGRESS	Indicates that the pairing over the LE transport failed due to a Pairing Request sent over the BR/EDR transport in process.
0x6E	SMP_ERROR_LOC_CROSS_TRANSPORT_KEY_GENERATION_NOT_ALLOWED	Indicates that the BR/EDR Link Key generated on the BR/EDR transport cannot be used to derive and distribute keys for the LE transport.

SMP Protocol Errors detected by remote device

0x71	SMP_ERROR_REM_PASSKEY_ENTRY_FAILED	The user input of passkey failed, for example, the user cancelled the operation.
0x72	SMP_ERROR_REM_OOB_NOT_AVAILABLE	The OOB Data is not available.
0x73	SMP_ERROR_REM_AUTH_REQ	The pairing procedure cannot be performed as authentication requirements cannot be met due to IO capabilities of one or both devices.
0x74	SMP_ERROR_REM_CONF_VAL_FAILED	The confirm value does not match the calculated confirm value.
0x75	SMP_ERROR_REM_PAIRING_NOT_SUPP	Pairing is not supported by the device.
0x76	SMP_ERROR_REM_ENC_KEY_SIZE	The resultant encryption key size is insufficient for the security requirements of this device.
0x77	SMP_ERROR_REM_CMD_NOT_SUPPORTED	The SMP command received is not supported on this device.
0x78	SMP_ERROR_REM_UNSPECIFIED_REASON	Pairing failed due to an unspecified reason.
0x79	SMP_ERROR_REM_REPEATED_ATTEMPTS	Pairing or Authentication procedure is disallowed because too little time has elapsed since last pairing request or security request.
0x7A	SMP_ERROR_REM_INVALID_PARAM	The command length is invalid or a parameter is outside of the specified range.
0x7B	SMP_ERROR_REM_DHKEY_CHECK_FAILED	Indicates to the remote device that the DHKey Check value received doesn't match the one calculated by the local device.
0x7C	SMP_ERROR_REM_NUMERIC_COMPARISON_FAILED	Indicates that the confirm values in the numeric comparison protocol do not match.
0x7D	SMP_ERROR_REM_BREDR_PAIRING_IN_PROGRESS	Indicates that the pairing over the LE transport failed due to a Pairing Request sent over the BR/EDR transport in process.
0x7E	SMP_ERROR_REM_CROSS_TRANSPORT_KEY_GENERATION_NOT_ALLOWED	Indicates that the BR/EDR Link Key generated on the BR/EDR transport cannot be used to derive and distribute keys for the LE transport.

SMP Errors triggered by local device

0x20	SMP_ERROR_ADDR_RESOLV_FAIL	The provided resolvable address has not been resolved.
0x21	SMP_ERROR_SIGN_VERIF_FAIL	The Signature Verification Failed
0x22	SMP_ERROR_ENC_KEY_MISSING	The encryption procedure failed because the slave device didn't find the LTK needed to start an encryption session.
0x23	SMP_ERROR_ENC_NOT_SUPPORTED	The encryption procedure failed because the slave device doesn't support the encryption feature.
0x24	SMP_ERROR_ENC_TIMEOUT	A timeout has occurred during the start encryption session.

Profile error codes



0x80	PRF_APP_ERROR	Application Error
0x81	PRF_ERR_INVALID_PARAM	Invalid parameter in request
0x82	PRF_ERR_INEXISTENT_HDL	Nonexistent handle for sending a read/write characteristic request
0x83	PRF_ERR_STOP_DISC_CHAR_MISSING	Discovery stopped due to missing attribute according to specification
0x84	PRF_ERR_MULTIPLE_SVC	Too many SVC instances found -> protocol violation
0x85	PRF_ERR_STOP_DISC_WRONG_CHAR_PROP	Discovery stopped due to found attribute with incorrect properties
0x86	PRF_ERR_MULTIPLE_CHAR	Too many Char. instances found-> protocol violation
0x87	PRF_ERR_NOT_WRITABLE	Attribute write not allowed
0x88	PRF_ERR_NOT_READABLE	Attribute read not allowed
0x89	PRF_ERR_REQ_DISALLOWED	Request not allowed
0x8A	PRF_ERR_NTF_DISABLED	Notification Not Enabled
0x8B	PRF_ERR_IND_DISABLED	Indication Not Enabled
0x8C	PRF_ERR_FEATURE_NOT_SUPPORTED	Feature not supported by profile
0x8D	PRF_ERR_UNEXPECTED_LEN	Read value has an unexpected length
0x8E	PRF_ERR_DISCONNECTED	Disconnection occurs
0x8F	PRF_ERR_PROC_TIMEOUT	Procedure Timeout
0xFD	PRF_CCCD_IMPR_CONFIGURED	Client characteristic configuration improperly configured
0xFE	PRF_PROC_IN_PROGRESS	Procedure already in progress
0xFF	PRF_OUT_OF_RANGE	Out of Range

LL Error codes conveyed to upper layer

0x91	LL_ERR_UNKNOWN_HCI_COMMAND	Unknown HCI Command
0x92	LL_ERR_UNKNOWN_CONNECTION_ID	Unknown Connection Identifier
0x93	LL_ERR_HARDWARE_FAILURE	Hardware Failure
0x94	LL_ERR_PAGE_TIMEOUT	BT Page Timeout
0x95	LL_ERR_AUTH_FAILURE	Authentication failure
0x96	LL_ERR_PIN_MISSING	Pin code missing
0x97	LL_ERR_MEMORY_CAPA_EXCEED	Memory capacity exceed
0x98	LL_ERR_CON_TIMEOUT	Connection Timeout
0x99	LL_ERR_CON_LIMIT_EXCEED	Connection limit Exceed
0x9A	LL_ERR_SYNC_CON_LIMIT_DEV_EXCEED	Synchronous Connection limit exceed
0x9B	LL_ERR_ACL_CON_EXISTS	ACL Connection exists
0x9C	LL_ERR_COMMAND_DISALLOWED	Command Disallowed
0x9D	LL_ERR_CONN_REJ_LIMITED_RESOURCES	Connection rejected due to limited resources
0x9E	LL_ERR_CONN_REJ_SECURITY_REASONS	Connection rejected due to security reason
0x9F	LL_ERR_CONN_REJ_UNACCEPTABLE_BDADDR	Connection rejected due to unacceptable BD Addr
0xA0	LL_ERR_CONN_ACCEPT_TIMEOUT_EXCEED	Connection rejected due to Accept connection timeout
0xA1	LL_ERR_UNSUPPORTED	Not Supported



0xA2	LL_ERR_INVALID_HCI_PARAM	invalid parameters
0xA3	LL_ERR_REMOTE_USER_TERM_CON	Remote user terminate connection
0xA4	LL_ERR_REMOTE_DEV_TERM_LOW_RESOURCES	Remote device terminate connection due to low resources
0xA5	LL_ERR_REMOTE_DEV_POWER_OFF	Remote device terminate connection due to power off
0xA6	LL_ERR_CON_TERM_BY_LOCAL_HOST	Connection terminated by local host
0xA7	LL_ERR_REPEATED_ATTEMPTS	Repeated attempts
0xA8	LL_ERR_PAIRING_NOT_ALLOWED	Pairing not Allowed
0xA9	LL_ERR_UNKNOWN_LMP_PDU	Unknown PDU Error
0xAA	LL_ERR_UNSUPPORTED_REMOTE_FEATURE	Unsupported remote feature
0xAB	LL_ERR_SCO_OFFSET_REJECTED	Sco Offset rejected
0xAC	LL_ERR_SCO_INTERVAL_REJECTED	SCO Interval Rejected
0xAD	LL_ERR_SCO_AIR_MODE_REJECTED	SCO air mode Rejected
0xAE	LL_ERR_INVALID_LMP_PARAM	Invalid LMP parameters
0xAF	LL_ERR_UNSPECIFIED_ERROR	Unspecified error
0xB0	LL_ERR_UNSUPPORTED_LMP_PARAM_VALUE	Unsupported LMP Parameter value
0xB1	LL_ERR_ROLE_CHANGE_NOT_ALLOWED	Role Change Not allowed
0xB2	LL_ERR_LMP_RSP_TIMEOUT	LMP Response timeout
0xB3	LL_ERR_LMP_COLLISION	LMP Collision
0xB4	LL_ERR_LMP_PDU_NOT_ALLOWED	LMP Pdu not allowed
0xB5	LL_ERR_ENC_MODE_NOT_ACCEPT	Encryption mode not accepted
0xB6	LL_ERR_LINK_KEY_CANT_CHANGE	Link Key Cannot be changed
0xB7	LL_ERR_QOS_NOT_SUPPORTED	Quality of Service not supported
0xB8	LL_ERR_INSTANT_PASSED	Error, instant passed
0xB9	LL_ERR_PAIRING_WITH_UNIT_KEY_NOT_SUP	Pairing with unit key not supported
0xBA	LL_ERR_DIFF_TRANSACTION_COLLISION	Transaction collision
0xBC	LL_ERR_QOS_UNACCEPTABLE_PARAM	Unacceptable parameters
0xBD	LL_ERR_QOS_REJECTED	Quality of Service rejected
0xBE	LL_ERR_CHANNEL_CLASS_NOT_SUP	Channel class not supported
0xBF	LL_ERR_INSUFFICIENT_SECURITY	Insufficient security
0xC0	LL_ERR_PARAM_OUT_OF_MAND_RANGE	Parameters out of mandatory range
0xC2	LL_ERR_ROLE_SWITCH_PEND	Role switch pending
0xC4	LL_ERR_RESERVED_SLOT_VIOLATION	Reserved slot violation
0xC5	LL_ERR_ROLE_SWITCH_FAIL	Role Switch fail
0xC6	LL_ERR_EIR_TOO_LARGE	Error, EIR too large
0xC7	LL_ERR_SP_NOT_SUPPORTED_HOST	Simple pairing not supported by host
0xC8	LL_ERR_HOST_BUSY_PAIRING	Host pairing is busy
0xCA	LL_ERR_CONTROLLER_BUSY	Controller is busy
0xCB	LL_ERR_UNACCEPTABLE_CONN_INT	Unacceptable connection initialization
0xCC	LL_ERR_DIRECT_ADV_TO	Direct Advertising Timeout



0xCD	LL_ERR_TERMINATED_MIC_FAILURE	Connection Terminated due to a MIC failure
0xCE	LL_ERR_CONN_FAILED_TO_BE_EST	Connection failed to be established
0xCF	LL_ERR_MAC_CONN_FAILED	MAC Connection Failed
0xD0	LL_ERR_CCA_REJ_USE_CLOCK_DRAG	Coarse Clock Adjustment Rejected but Will Try to Adjust Using Clock Dragging
0xD1	LL_ERR_TYPE0_SUBMAP_NOT_DEFINED	Type0 Submap Not Defined
0xD2	LL_ERR_UNKNOWN_ADVERTISING_ID	Unknown Advertising Identifier
0xD3	LL_ERR_LIMIT_REACHED	Limit Reached
0xD4	LL_ERR_OPERATION_CANCELED_BY_HOST	Operation Cancelled by Host

Table 1: Host Stack Error Codes