EmberZNet SDK 6.0.1.0 GA

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December 20, 2017

1 Release Highlights

1.1 Version 6.1.0.0 GA:

- Support for EFR32xG12 QFN68 package
- Bug fixes

2 Using This Release

This release contains the following

- Zigbee stack EmberZNet Pro v6.1
- Zigbee Application Framework v6.1
- Zigbee Sample Applications

For more information about the Silicon Labs EmberZNet Pro stack see UG103.02 - Zigbee Fundamentals. If you are a first time user, see QSG106: Getting Started with EmberZNet Pro.

2.1 Support

Development Kit customers are eligible for training and technical support. You can use the Silicon Laboratories web site http://www.silabs.com to obtain information about all Silicon Labs Zigbee products and services, and to sign up for product support.

You can contact Silicon Laboratories support at http://www.silabs.com/support

3 Added Items

3.1 Version 6.1.0.0 GA:

3.2 New Application Plugins:

- Barrier Control Server Cluster
  This release contains an implementation of the new Barrier Control Server Cluster. The Barrier Control Cluster contains functionality for controlling an object that can be open or closed. The Barrier Control Cluster specification is very close to 1.0 status. If you would like to help this specification reach 1.0 status more quickly, please consider participating in the Zigbee Foundation and Base Device Behavior working group calls in order to encourage this specification forward.

3.3 New Stack APIs:

- The stack callback, emberOutgoingCommandHandler, now supports the message type EMBER_ZIGBEE_COMMAND_TYPE_MAC_COMMAND for interpan messages. The stack callbacks emberZllSendNetworkResponseTestHandler and emberZllSendUnicastTestHandler are now retired.
- Support for enhanced beacons has been added to emberOutgoingMessageHandler.

3.3.1 New Sample Applications:

4 Changed Items

4.1 Version 6.1.0.0 GA:

- The neighbor table size has been increased to a maximum of 26 nodes. The value is configurable to either 16 or 26. The default value is 16.

5 Deprecated Items

5.1 Version 6.1.0.0 GA:

- Mobile End Device node type support is deprecated as this proprietary feature was never adopted as standard practice by the Zigbee Alliance. Customers presently using this feature should migrate to Sleepy End Device node type instead as the Mobile End Device functionality will be removed in a future release.

6 Removed Items

6.1 Version 6.1.0.0 GA:

7 Fixed Issues

7.1 Version 6.1.0.0 GA:

- 233037 NCP concentrator support code may incorrectly initiate IEEE Address Requests even if Concentrator Support feature not enabled by host.
- 265682 Z3 Light app should disable Concentrator Support plugin functionality by default. (Customer should enable this plugin manually if device is expected to form a centralized network as the trust center.)
- 275718 New Z3 End Device Sample Applications automatically send a NWK Rejoin after reboot, which is required by Zigbee compliance testing. Pre-existing Z3 End Device Sample Applications can manually initiate a NWK Rejoin as a workaround.
- 277855 A timing issue that could cause asserts during joining while the PTA feature "Synch MAC to Grant" is enabled has been fixed.
- 279860 Coexistence: GRANT denial shows incorrect REQUEST deassert/re-assert behavior
- 282306 Potential infinite loop in sourceRouteAddEntry() causes watchdog reset.
- 284159 Earlier logic to determine phy index was valid for switched radio device only, update the code to get appropriate phy index for simultaneous dual phy device.

- 284767 HAL_HAS_INT64 is now defined for GCC Cortex-M builds, properly indicating the platform's support for 64-bit integers. A side effect of this is that GCC-built EmberZNet applications can now define an end device child table larger than 32.
- 288709 Added USART3 defines to plugin/serial/com_vcom.h

8 Open Issues

8.1 EmberZNet Open Issues:

- **EFR32 Link Cost:** Optimizations have been identified in the EFR32 implementation of the zigbee-pro-stack library to improve link cost evaluation and route selection, especially in mixed networks comprised of both EFR32 and EM35xx radios. These optimizations are scheduled to appear in the next release of EmberZNet (in Q1-2018), but taking full advantage of this improvement will require updating *all* EFR32-based EmberZNet devices to that version of software or later. Customers with existing or approaching EFR32 deployments should plan accordingly. Contact Silicon Labs technical support for more information.
- **Zigbee 3.0 Compliance:** There are known compliance issues with Touchlink Commissioning (optional) and Green Power Proxy (required for router-capable devices). Customers seeking Zigbee 3.0 certification with this release should contact Silicon Labs technical support to review their implementation and current gaps in test case support before submitting for certifications.
- 60757 Indirect Transaction Expiry route error not being sent when TX failure count is reached on parent router.
- 60774 MTORR reception by concentrator neighbor sometimes causes assert in route-discovery.c (emHandleRouteCommand).
- 60858 Sleepy broadcast payload is sometimes corrupted when relaying to child
- 60868 Extra retries seen on ZDO requests; ZDO response going out before APS ACK.
- 60944 EZSP-SPI NCP may become unresponsive if callbacks are received during ECC operations.
- 60970 TC link key should be used for Transport Key to rejoining devices even if decision is Send Key In Clear
- 60975 EZSP_VALUE_TOKEN_STACK_NODE_DATA, EZSP_VALUE_UART_SYNCH_CALLBACKS, EZSP_VALUE_MAXIMUM_INCOMING_TRANSFER_SIZE, and EZSP_VALUE_MAXIMUM_OUTGOING_TRANSFER_SIZE ValueIDs are writable but not readable.
- 61008 Scanning state machine (stack level or form-and-join util) can get stuck in "scanning" state indefinitely
- 66508 Framework should avoid sending unicast loopback messages with APS security since stack doesn't support this
- 66785 Messaging Client plugin should differentiate between Cancel Msg command and timed out / replaced message
- 66786 "zcl ota server reload" doesn't properly reload image info when using OTA Simple Storage plugin
- 66944 Duplicate Key Confirm Response message can lock up KE plugin state machine
- 82600 Setting a non-zero MAC Filter Table Size but no MAC Filter Table Entries causes NCP resets when joining a network
- 83798 Image Integrity Tag generation in image builder for an OTA file

- 86948 Fragmented messages can be passed to the application with old data from the rxFragmentedPacket buffer
- 92147 ZLL Scan Response Should Be Sent at Power 0 rather than last-used power level
- 101644 Add a callback to the check-in interval for poll control.
- 103833 Second energy scan request caught in first energy scan request knocks node out of network.
- 108582 For the ZigBee Over-the-air Cluster the minBlockRequestPeriod is in milliseconds but compared to imageBlockRequestMinRequestPeriodSeconds as if they are both seconds. Unfortunately this causes problems for servers that make use of this value and try to throttle the rate of the client. Recommend that the client disables support for this feature to avoid problems.
- 119037 Packet-buffer.c Assert at line 352 occurs during rapid packet transmission and Partner-link-key-exchange.
- 119828 ota-client.c does not use the server EUI64 in Partner Link Key Exchange.
- 119939 ZDO IEEE Request's APS ACK proxied by parent incorrectly includes long source address.
- 121984 Turning off NCP concentrator support does not disable all stack concentrator logic.
- 123399 Non-sleepy endpoint does not always keep correct network parameters on reset in multi-networking.
- 126087 Sleepy end device would return NO_LOCAL_RESOURCES when a coordinator initiates key establishment with it in Multi-networking.
- 135649 Multi-networking can cause APS frame counter confusion between networks. Workaround: Use emberAfSecurityInitCallback to add EMBER_NO_FRAME_COUNTER_RESET to EmberInitialSecurityBitmask.
- 146795 Added Alarm Cluster functionality to IAS Zone Plugin.
- 158598 OTA Client plugin's Bootloading Message Timeout doesn't account for Short Poll Interval being longer than the default and may spuriously time out messages before the sleepy client has had a chance to poll for the response.
- 162190 Fixed issue in packet reception that could cause misprocessing of non-ACK-requesting packets after an ACK with frame-pending bit set was sent.
- 177619 Including OTA Server and OTA Common Plugins but not using OTA Server Policy Plugin to implement Image Block Request Callback results in linker error for emAfOtaServerImageBlockRequestCallback.
- 180028 OTA Client Plugin should send ZCL Default Response to messages with wrong Mfg Code
- 181793 SE Remote Communications Device ZCL device type should allow option to enable Definitive Time Source for Time server cluster.
- 185606 ZCL framework does not support reuse of cluster IDs across different manufacturer codes (although this is theoretically permissible per ZCL specs).
- 201417 Adding GPIO Sensor Interface plugin to an EM358x project results in error: "identifier "GPIO_SENSOR_IRQ" is undefined".
- 205394 In situations where a concentrator doesn't use the NCP-based concentrator-util-library code to manage source routing, a route error will trigger an MTORR from the Conc Support plugin, but the new source route may not be known for a long time. The ZigBee NCP firmware concentrator-util solves this problem by doing a ZDO Network Address Request for the target device. For SoC, until that functionality is added to the Conc Support plugin code, it needs to be implemented manually.

- 213424 Problem with ZLL Devices responding to a multicast addScene when they should not.
- 251287 To achieve the lowest current during sleep on EFR32xG12, EFR32xG13, and EFR32xG14 parts, you must turn on voltage scaling. However, the radio will not operate with voltage scaling turned on, so to turn it on you must also make sure to disable it after each wake-up. Furthermore, some resets will not turn off voltage scaling, so please ensure that it is disabled before attempting to turn on the radio. Note that there is a ramp when turning voltage scaling on or off, so enabling this feature may increase the time it takes to go to sleep or wake up.
- 258890 Legacy CLI (used by older plugins) is deprecated and will be removed in the next release.
- 258970 Plugins with custom token (NVM) data, such as Scenes Server plugin, may cause App Framework V2 (ZCL) builds to fail due to missing token header. Workaround: De-select and then re-enable the plugin before generating in AppBuilder.
- 261670 Harden the ZLL touchlink process to mitigate malicious attacks
- 266341 Z3 Light sample app has two endpoints that support similar cluster commands, so duplicate responses may be generated for certain commands.
- 266888 A Z3.0 sample app that supports ZLL will fail compliance test DN-TLP-TC01a due to the fact it does not transmit a Beacon request prior to starting a network. This only effects compliance and does not effect operational behavior.
- 268553 emberSetMessageFlag, emberClearMessageFlag are listed in the child.h API but not available in the EmberZNet libraries
- 269282 Concentator plugin's state machine should start upon joining or forming a network rather than at boot time.
- 269283 Default APS options mask should exclude Enable Route Discovery when destination is known to be a concentrator.
- 271896 Certain non-standard/malformed packets may trigger packet-buffer.c assert on receiver.
- 273430 OTA upgrade server plugin should dynamically determine client's units for block request delay
- 274414 AFv2 blank app project template for SOC and Host should use Z3 defaults, not ZHA defaults
- 274451 OTA Simple Storage EEPROM plugin doesn't resume download after a power failure; instead restarts the download process from beginning.
- 277029 Green Power Security security level default bitmask should be 0x00, not 0x10
- 277510 nWAKE handshake does not complete between EM35x SPI NCP and host, causing the host to assert
- 278063 Smart Energy Tunneling plugins have conflicting treatment/usage of address table index
- 280374 Sleep end device sometimes cant communicate parent after the device leaves and joins again soon after.
- 281231 Enabling Serial 3 or USB functionality on EM358x and EM359x may cause memory management faults and other errors. As EM358x and EM359x USB support has been deprecated, please ensure that Serial 3 and USB functionality are disabled.
- 281831 Green Power Client plugin: When commissioning bi-directional green power devices, sometimes the node will change its channel permanently instead of recovering back to expected Zigbee channel.
- 281832 Green Power Common plugin incorrectly formats groupList and groupListCount parameters of GP Pairing Configuration frame.

- 281833 Green Power Pairing Response frame is malformed by Green Power Common plugin.
- 281835 Green Power Channel Request message is always tunneled to the sink with spurious LQI of 0xFF.
- 285469 After GPD join attempt while GPP has Green Power Commissioning disabled, GPP sometimes stops receiving GP Response for Channel Config
- 285563 platform/base/phy/phy.h is incorrectly included in the stack install and references other header files not available in the installer.
- 288066 Some MG13 parts are missing in the available device list for NCP Framework projects
- 288195 Packet buffer leakage when sending broadcast to address 0xFFFF and a node has end device children
- 288819 Resuming OTA downloads does not function correctly with internal storage and no Gecko bootloader slot support. Users are encouraged to utilize slot support in the OTA EEPROM Storage plugin when using internal storage, for which resuming downloads will result in restarting the download.
- 289569 network-creator plugin power level picklist doesn't offer full range of supported values for EFR32
- 290265 Sleepy end device doesn't go to sleep for approximately 30 seconds when sending APS-retried unicast to unreachable parent. Workaround: Disable EMBER_APS_OPTION_RETRY for current message or poll during delivery process to detect and repair the broken parent link.

9 Intended Behavior

10 Documentation Changes

11 History