# Wizard Gecko SDK Release Notes

  

# 1. SDK Release 1.2.0

Released on September 15, 2021.

## 1.1 New features

This version includes the following new features:

- Endpoint status event will be sent when USB cable is connected and disconnected
- Hardware failure error added for WiFi module lack of responsivity (for example when there is an insufficient power supply)
- Added possibility to limit tcp client local port range
- Added possibility to set custom Information Elements in AP beacons and probe responses
- Added possibility to scan for Access Points with specified Information Elements
- Added possibility to disable debug interface - this makes pins PF0 and PF1 available to be used as GPIOs
- Added possibility to force closure of TCP server when TCP clients are connected
- Added support for Wi-Fi Direct in BGTool
- Improved data handling in HTTP server
- Added possibility to disable handling GET,POST,PUT,DELETE requests and SD card directory listing in HTTP server
- Added possibility to change size of buffer used during EAP handshake
- Added validation of date and hostname during TLS handshake
- Added possibility to enable detailed HTTP server error
- Added PSkey used for disabling ARP checking mechanism

## 1.2 Changes in API

The following API changes have been made in this version:

- Commands added:
  - cmd_hardware_dbg_interface_set_active
  - cmd_https_enable_detailed_error
  - cmd_sme_set_ap_custom_ie
  - cmd_sme_add_scan_result_filter
  - cmd_sme_remove_scan_result_filter
  - cmd_tcpip_force_tcp_server_endpoint_close
  - cmd_tcpip_set_tcp_client_port_range
  - cmd_tcpip_tls_set_hostname
  - cmd_util_atou
  - cmd_util_utoa
  - cmd_util_base64encode
  - cmd_util_base64decode
- Events added:
  - evt_sme_scan_result_filter
  - evt_https_error_detailed
- Commands changed:
  - cmd_https_enable - with https parameter it is now possible to disable handling of GET, PUT, POST, DELETE reqests and directory listing of SD Card in HTTP server
- Events changed:
  - evt_endpoint_status - added flags field to indicate internal state of the endpoint

## 1.3 Quality improvements

This version includes the following improvements to previous versions:

- BURTC handling improvement - fixed soft timer handling when switching power modes
- Corrected PS_KEY_DNSS_ANY_URL value checking
- Improved UART data handling in transparent mode
- Improved SPI data handling in BGAPI™ mode
- Improved scanning stability and RSSI averaging in scan results
- Improved UART handling in BGAPI™ mode
- Improved UART flow control handling
- Improved TX bulkdata handling
- Improved handling of out-of-order packets in HTTP API
- Corrected USB CDC in transparent mode input data handling
- Corrected handling of TTL value in DNS hostname resolving
- Corrected handling of Content-Encoding in HTTP response
- Corrected cmd_wifi_off command handling in AP mode and Wi-Fi Direct mode
- Improved DNS cache handling on disconnect
- Improved handling of .gz files in HTTP server
- Improved default 404 message header in http response from HTTP server
- Corrected SPI in DFU boot mode
- Corrected handling of negative numbers in cmd_util_atoi and cmd_util_itoa command
- Corrected examples to use atou and utoa instead of atoi and itoa
- Corrected parsing values above 0x7F in BGTool persistent storage tab
- Added request_id in https_error event
- Fixed issue with TLS packets being dropped during transmission without error message
- Fixed overwriting of Wi-Fi off state when starting WPS session and immediately turning off Wi-Fi
- Fixed overwriting of disconnecting state in specific test case scenario
- Fixed issues with malfunctioning invalidation of few PSKeys
- Added option to make amount of connection retries configurable
- Improved internal resources handling
- Fixed vulnerabilities related to Fragmentation and Aggregation attacks: CVE-2020-24588, CVE-2020-26140, CVE-2020-26143, CVE-2020-26144, CVE-2020-26145

### 1.4 Known issues

The following issues are known for this release:

- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations.

# 2. SDK Release 1.1.1

Released on January 22, 2018.

## 2.1 New features

This release does not include any new features.

## 2.2 Changes in API

This release does not include any changes in API.

## 2.3 Quality improvements

This version includes the following improvements to previous versions:

- Wi-Fi Krack vulnerability in WPA2 4-way handshake key reinstalations patch.
- Added licensing information to SDK folder.
- gmail example update

## 2.4 Known issues

The following issues are known for this release:

- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations.

# 3. SDK Release 1.1.0

Released on April 5, 2017.

## 3.1 New features

This version introduces the following features to previous versions:

- Wi-Fi Direct Group Owner functionality, including new example code
- HTTP server capability to create directories in SD card and support for gzip files
- Configurable time window for abrupt disconnection detection
- Maximum number of AP clients increased to 10
- Getting boot event parameters in run-time over USB
- AP isolation mode
- DHCP Server subnet mask and lease time values are configurable
- Resolve *.local domain hostnames via mDNS
- Command to list stations connected to the module in AP mode
- GPIO configuration possible in hw config file

## 3.2 Changes in API

The following API changes have been made in this version:

- Commands added:
  - cmd_hardware_uart_conf_get
  - cmd_hardware_uart_conf_set
  - cmd_sme_p2p_accept_client
  - cmd_sme_start_p2p_group
  - cmd_sme_stop_p2p_group
  - cmd_sme_ap_client_config
  - cmd_sme_set_ap_client_isolation
  - cmd_tcpip_dhcp_configure
  - cmd_tcpip_mdns_gethostbyname
  - cmd_tcpip_dhcp_clients
- Events added:
  - evt_hardware_uart_conf
  - evt_sme_p2p_group_started
  - evt_sme_p2p_group_stopped
  - evt_sme_p2p_group_failed
  - evt_sme_p2p_client_wants_to_join
  - evt_tcpip_dhcp_configuration
  - evt_tcpip_mdns_gethostbyname_result
  - evt_tcpip_dhcp_client
  - evt_https_error

## 3.3 Quality improvements

This version includes the following improvements to previous versions:

- TLS certificate management for supporting bridge certificates
- HTTP server timeouts and double events removed
- TCP connection and data management
- DHCP server address pool parsing
- AP mode 11n behavior
- Connection failure event when trying to connect to a non-allowed high channel AP
- Power saving behavior
- Connection time and retry attempts behavior
- Wi-Fi on and off commands and events behavior
- SSID scan behavior
- Connect to the strongest SSID when multiple are present
- WPA2/WPA PTK rekeying
- PBKDF2 optimization for deriving WPA-PSK from passphrase
- RSA behavior with keys smaller than 2048 bits
- Bgbuild output now includes certificate fingerprints
- Software-based RTS/CTS flow control
- PS key management
- BGScript I2C functions timeouts
- System_sync command with MAC address
- RTC behavior
- Timestamps with pin interrupts
- Bootloader detection of HW configuration mistakes in flash
- BGTool overall
- UART DFU configuration
- PC DFU command-line tool timeout
- wifi_dfu tool with flow-control
- Fixed http_serv example while scanning networks
- spi_host example update

### 3.4 Known issues

The following issues are known for this release:

- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations.

# 4. SDK Release 1.0.1

Released on September 16, 2016.

## 4.1 New features

This release does not include any new features.

## 4.2 Changes in API

The following API changes have been made in this version:

- Event evt_sme_scan_result has been updated. Secure status bitmask has 2 new bits defined:
  - bit 2: defines whether the Access Point supports WPA Enterprise
  - bit 3: defines whether SSID is hidden

## 4.3 Quality improvements

This version includes the following improvements to previous versions:

- Reduced power consumption in module startup
- AES HW acceleration for better performance
- 802.11n support in AP mode
- HTTP server access to SD card
- Handling of hidden SSID networks during scan
- TCP endpoint data handling when client has closed the connection
- Handling of encrypted A-MSDU frames
- UART CTS handling
- I2C read operation
- HW timer allocation
- LFXO initialization

## 4.4 Known issues

The following issues are known for this release:

- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations.

# 5. SDK Release 1.0.0

Released on May 23, 2016. This is the first official Wizard Gecko SDK release.

## 5.1 New features

This version introduces the following features to previous versions:

- Support for IP multicast
- SPI Master mode
- TLS mutual authentication

## 5.2 Changes in API

The following API changes have been made in this version:

- *cmd_tcpip_multicast_join* has been added
- *cmd_tcpip_multicast_leave* has been added
- *cmd_hardware_spi_transfer* has been added
- *cmd_tcpip_tls_set_user_certificate* has been added
- *cmd_tcpip_ssl_connect* has been renamed to *cmd_tcpip_tls_connect*
- *cmd_tcpip_ssl_set_authmode* has been renamed to *cmd_tcpip_tls_set_authmode*
- *evt_tcpip_ssl_verify_result* has been renamed to *evt_tcpip_tls_verify_result*

## 5.3 Quality improvements

This version includes the following improvements to previous versions:

- Boot-up time optimized
- Switching endpoints between streaming and BGAPI™ modes enabled
- Throughput increased
- USB driver signed and installed automatically with SDK installer
- BGTool data view improved
- WPA/WPA2 Enterprise is now fully working
- SD card with USB host interface corrected
- HTTP server improved to recognize read-only files in SD card
- UDP packet size limitation of 1024 bytes removed
- BGAPI message size limitation of 1024 bytes removed
- wifi_dfu tool completed to work over all host interfaces
- DHCP improved for better interoperability
- mbedTLS 2.1.4 integrated
- A-MSDU aggregation reception improved
- Unnecessary TCP retransmissions removed
- Unnecessary delays of HTTP Server responses over BGAPI™ removed
- DNS and DHCP ports not reserved anymore when not in use
- UART streaming mode improved to be reliable in any bitrate

## 5.4 Known issues

The following issues are known for this release:

- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations.

# 6. SDK Release 0.9.0

Released on February 22, 2016.

## 6.1 New features

Wizard Gecko SDK version 0.9.0 is the first Beta release for the WGM110 Wi-Fi Module, therefore all supported features are listed here as new features:

- 802.11 b/g/n Wi-Fi stack
  - Bit reate up to 72.2 Mbps
  - 802.11 security
  - WPA/WPA2 Personal
  - WPA/WPA2 Enterprise
  - WEP
  - Station mode
  - Soft Access Point mode, up to 5 clients
  - WPS 1.0
- TCP/IP stack
  - IP version: IPv4
  - TCP: client/server
  - UDP: client/server
  - TCP sockets: 20+
  - DHCP: client/server
  - ARP
  - DNS: client/server
  - mDNS
  - DNS-SD
  - HTTP: server
  - TLS/SSL: client
- BGScript™ support for hosted applications
- BGLib™ ANSI C library for network co-processor (NCP) mode
- BGTool for controlling and updating the module firmware
- Command line DFU tool *wifi_dfu* for firmware update

## 6.2 Known issues

The following issues are known for Beta release:

- Software performance not yet fully optimized
- WPA/WPA2 Enterprise feature is not yet stable enough to be used
- UART in streaming mode recommended bitrate is 1Mbps or higher, risk of losing bytes at lower bitrates
- Switching endpoints between streaming and BGAPI™ mode does not work reliably
- The SD card cannot be used together with the USB host interface
- HTTP server cannot read “read only” files from the SD card
- UDP packets cannot be larger than 1024 bytes at the moment
- BGAPI™ SPI cannot handle BGAPI messages larger than 1024 bytes
- The wifi_dfu tool, used for DFU upgrades, works only with the UART interface
- The UART-USB converter included in the Wireless Starter Kit SLWSTK6120A may lose bytes in some situations
- The Wireless Starter Kit accelerometer on the Expansion board cannot be used due to SPI master pending implementation

# 7. Document Revision History

**Table 7.1. Document Revision History**

| Document Revision Number | Effective Date | Change Description |
|---|---|---|
| 0.9 | 22.02.2016 | Wizard Gecko SDK Beta Release 0.9.0 |
| 1.0 | 23.05.2016 | Wizard Gecko SDK Release 1.0.0 |
| 1.0.1 | 16.09.2016 | Wizard Gecko SDK Release 1.0.1 |
| 1.1 | 31.03.2017 | Wizard Gecko SDK Release 1.1.0 |
| 1.1.1 | 22.01.2018 | Wizard Gecko SDK Release 1.1.1 |
| 1.2.0 | 15.09.2021 | Wizard Gecko SDK Release 1.2.0 |

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