Legato™

Release Notes

Release 16.07.0

Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

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16.01.02	February 16, 2016	16.01.02 version
16.04.0	June 9, 2016	16.04.0 version
16.07.0	August 18, 2016	16.07.0 version

Contents

TOOLING CHANGES

Deprecated Tools

The following tools have been deprecated. They will be removed in the 16.10 release:

TARGET

- o   execInApp – replaced by "app runProc"

HOST

- o   lsapp – replaced by "**app List**"

- o   rmapp – replaced by "**app remove**"

- o   startapp – replaced by "**app start**"

- o   statapp – replaced by "**app status**"

- o   stopapp – replaced by "**app stop**"

NEW FEATURES

Application bundle (system) delta update

Delta update functionality has been added (**http://legato.io/legato-docs/latest/toolsHost_update-util.html**) that supports creating a new update package from an old update package.

The delta created omits data for sections that have the same md5 as the updater. If an app with the same md5 is found, the data deleted. If you're transmitting updates over the air where unused data could cause negative impact, the update-util tool allows you to remove all the apps that are the same as a previously installed update.

Therefore, if you have the last update that was successfully sent to the device, you can compare the newly created update against it to remove unneeded data.

NOTE

The target must have the same version of the update installed as the one used as the starting point for the delta update. Otherwise, the target could be updated incorrectly.

Updates to the documentation（**http://legato.io/legato-docs/latest/legatoServicesUpdatePack.html**） for delta update will be provided in a future release.

Sample Apps

HTTP Get

A new sample app has been added to demonstrate how to use HTTP Get to open a data connection and use `libcurl`. See **http://legato.io/legato-docs/latest/sample_apps_http_get.html**

Karaoke

A new sample app has been added to demonstrate how to use interactive apps through an app's processes standard streams.

Documentation is pending.

Raspi WiFi demo

A new sample app has been added demonstrating how one Internet connection can be shared with multiple WiFi devices using a Raspberry Pi with Linkwave The PiloT WiFi.

See **http://legato.io/legato-docs/latest/wifi_wifiap_testapp.html**

AT command services – alpha phase

A new service has been added for apps to access modem functions using AT commands and the ATClient service.

This API is a temporary work-around. It may cause conflicts with other programs that use Legato APIs resulting in undesirable behaviour.

WARNING

AT commands may conflict with Legato APIs; using both may cause problems that can be difficult to diagnose. AT commands should be avoided whenever possible, and should only be used with great care.

MODIFICATIONS

Development

[AirVantage] Adding a new lwm2m object to support Legato packages.

[AT Commands] Add AT commands client service.

[AT Commands] Add AT commands parser.

[AT Commands] platformAdaptor/at Adapt PA AT to the AT commands client.

[AT Commands] platformAdaptor/at Add the path of AT services API in PA Component.cdef.

[AT Commands] platformAdaptor/at Fix PPPDaemon Port for AT Modem.

[Build] Add prefix option to findtoolchain script.

[Def Files] Add support for optional client-side IPC API interfaces.

[Deprecated Apps] Call new app script from deprecated ones.

[Deprecated Apps] Deprecate exeInApp.

[eCall] Add API to address eCall config DB settings.

[eCall] Refactoring of redial management.

[GitHub] Add individual contribution agreement.

[GitHub] Update email to send contribution agreement.

[GNSS] platformAdaptor/qmi Clean old compilation flag for PA GNSS QMI.

[GNSS] platformAdaptor/qmi GNSS position's sample latency.

[GNSS] position's sample latency.

[Make] Generate images on wp750x.

[Modem] Add cm like tool for gnss.

[Modem] Add 'power' field to 'cm radio'.

[Modem] Correct modemServices and audio unit tests coverages.

[Positioning] Add API to address Positioning acquisition rate.

[Positioning] platformAdaptor/qmi Positioning service on top of GNSS service.

[Positioning] service on top of GNSS service.

[Positioning] Use the same type for hSpeedAccuracy parameter in Positioning API.

[Ring Indicator] Move Ring Signal Pulse code up to le_riPin.c.

[Ring Indicator] platformAdaptor/at Update riPin PA interface.

[Ring Indicator] platformAdaptor/qmi Move Ring Signal Pulse code up to le_riPin.c.

[Sample App] Add httpGet sample app.

[Sample App] Fix httpServer sandbox imports.

[SIM] platformAdaptor/simu Update PA Simu for riPin.

[SMS] Add a handler registration function to get SMS storage status notification.

[SMS] Add functionality to set and get the preferred SMS storage area.

[SMS] Add unit tests for the SMS storage status notification.

[SMS] platformAdaptor/qmi Add a handler registration function to get SMS storage status notification.

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[SMS] platformAdaptor/simu Add unit tests for the SMS storage status notification.

[Timer] Use safe refs for timers.

[Tools] Combine host app tools into single 'app' script.

[Tools] Create automated tests for mk tools.

[Tools] Create tool to calculate a delta update.

[UT] Add default timeout to unit-tests.

[WiFi] Improve web page design of wifiWebAp sample.

[WiFi] Add atServer and atClient services in the system definition.

[WiFi] Add atService to the system definition.

[WP750x] Add support for wp750x build targets.

[WP85] Enable eCall.

Fixes

LEGATO-AF

[ADC] Add ADC capabilities at build stage and update documentation accordingly.

[ADC] platformAdaptor/qmi Check if the correct QMI service is used to read ADC.

[ADC] platformAdaptor/qmi Use ADC definitions passed at build stage.

[AT Commands] Fix max bytes in an AT Command response.

[Audio] platformAdaptor/qmi Check Multimedia muting status before muting/unmuting it.

[CellNet] Correct the radio shutdown in case of cellular network release.

[Config Tree] Fix issues on setting node value via config tool.

[Config Tree] Increase node name for the config tree.

[eCall] apps failed (eCallDemo and eCallTest samples).

[eCall] Fatal error for erroneous eCall vehicle type.

[File Descriptor] Fix file descriptor leak when cleaning up processes.

[File Descriptors] Close unused file descriptors when deleting an app process.

[GDB] Fix issue of sandbox configured with gdbCfg cannot be started anymore.

[GNSS] platformAdaptor/qmi [GNSS] Always post XTRA semaphore in XTRAInjectionHandler function.

[GNSS] platformAdaptor/qmi Replace wait(80) with QMI event handling for GNSS engine restart.

[GNSS] Reset ttff out parameter of le_gnss_GetTtff() in case of error.

[GPIO] Fix false callback issue of gpio API.

[INFO] platformAdaptor/qmi Delete useless 2nd call to QMI_DMS_GET_DEVICE_REV_ID_REQ_V01.

[Log] Fix Issues with Log Backup upon Device Reboot.

[MD5] Fix app MD5 being changed when build dir is different.

[Modem] Checking string size of MCC and MNC.

[Modem] platformAdaptor/qmi Un-stub QMI temperature platform adaptor.

[Positioning] Fix On Demand API.

[Sample App] Fix errors in makefile and lighttpd.conf of httpServer sample.

[Sandbox] Fixed permission settings when snap shotting sandboxed apps.

[Sandbox] Remove unnecessary attempt to unmount files when creating sandboxes.

[SMS] Add error message to le_sms_SetTimeout and le_sms_SendAsync functions.

[Supervisor] Fix handling of app stop race condition.

[Thread] Fix setting of thread priorities.

[Thread] Update errno handling in le_thread_Start.

[Tools] Fix host app tools.

[Tools] Resolve envVars when modelling apps.

[Upate] Fix uninstall complete notification (SOTA).

[Update Control] Fix le_updateCtrl_Defer api usage issue.

[Update Control] Fix system index issue on install/remove app.

[Update] Delete extra systems in probation on start.

[Update] Fix breakage of system update on master.

[Update] Fix buffer overrun vuln in updateCtrl.c.

[Update] Fix security and other issues in updateDaemon.

[Update] Prevent rollback in probation from normal shutdown.

[Update] Resolve reboot issue caused by system update.

[WiFi] Fix issue related to an invalid SSID length.

[WiFi] Fix issue related to an invalid SSID length.

[WiFi] Synchronize wifi.sdef with Legato default.sdef.

[WiFi] Specify the reference in the wifi client help.

{supervisor} Cleanup inactive apps when Supervisor shuts down.

Fix updateDaemon error code return issue.

META-SWI

Audio mute during stress test.

Add crda rule in mdev.conf for wifi regulation

Create USER1 CWE image containing single, empty UBIFS partition

File Descriptor Need to close FD when after finishing voice call or playing wav file.

Make rngd available on all platforms

mdm9x15 Fix build of wr-ltp and mdm9x15-image-dev.

Provide curl dev package in toolchain

Provide new version of squashfs-tools

Source Distribution Legato Linux Source Distribution may not build for all users

Update Legato recipe to build from work directory

uSD cards are not recognized even available at power up

Voice Fix no voice after CS call stress test

WP SD detection does not work after TI WiFi support is added

META-SWI-EXTRAS

AT!POWERDOWN takes much longer than prior version

Create USER1 CWE image containing single, empty UBIFS partition

Enable Legato build by default on external

Fix missing fw.mk

mount_early: Add checking of UBI and SQUASHFS image

mount_early: Release resources in case of quotacheck failure

Remove patch_qmi/install_qmi for legato-af

Update Legato recipe to build from work directory

KERNEL

[9x40] Implement the file node /sys/class/gpio/gpiochipX/mask

Add shutdown option of watchdog bark

Allow ULPM without boot sources for sw powerdown

Block extra MCU call on WPx5 powerdown

Disable UART2 when MAPUART is set to 0

Echo '$GPS_START'>/dev/nmea twice returns error

Kernel should compile for QEMU msm9x15 targets

Make GPIO6 system reset function configurable from modem

msm_nand: Fix bug in msm_nand_get_dma_buffer

msm_nand: Fix file formatting

msm_nand: fix improper use of wait_event

msm_nand: fix improper use of wait_event

QMI messages lost in USB bus

OPEN ISSUES

Constraints and Limitations

Out of Tree Kernel Module

SDK generation has a current limitation with copying (or generating) the pre-built binaries required for the kernel module cross compilation process.

To work around this limitation, SDK users must execute the following (only once):

```
install SDK (poky-swi-ext-glibc-x86_64-meta-toolchain-swi-ext-armv7a-vfp-neon-
toolchain-swi-ext-1.7.3) to standard path
export PATH=$PATH:<path-to>/y17-ext/sysroots/x86_64-pokysdk-linux/usr/bin/arm-poky-
linux-gnueabi
cd <path-to>/y17-ext/sysroots/armv7a-vfp-neon-poky-linux-gnueabi/usr/src/kernel
ARCH=arm CROSS_COMPILE=arm-poky-linux-gnueabi- make scripts
```

It's recommended that the SDK **not** be installed with root privileges

SANDBOX PERSISTENT FILES

Support for persistent file creation has created a security hole where all of flash can be consumed by a malicious app. This hole will be patched when disk quotas are completed. However, disk quotas is only planned for ubifs not for yaffs2.

Persistent file creation is not fully supported in yaffs2 due to a lack of extended attribute support in yaffs2.

Behaviour: persistent files can be created but once the file is closed, access permission is denied to that file.

Known Issues

[App Framework] App trees being copied to new legato systems

[App Framework] MDM should not go into low power mode while any update(firmware, app, Legato etc) is in progress

[App Framework] sdir list attributes all bindings and services to <root>

[App Framework] System OTA update causes supervisor to segfault

[App Framework] System reset when receiving connection over unique local IPv6 unicast address

[AT Client] Calling le_atClient_Delete() with an invalid reference doesn't return the correct code

[AT Client] Calling le_atClient_SetCommand() with an invalid reference doesn't return the correct code

[AT Client] LE_ATCLIENT_CMD_RSP_MAX_BYTES should be 256 instead of 64

[AT Client][UserGuide] time out format is not defined in user guide

[AT Client]Calling le_atClient_SetDevice() with an invalid reference doesn't return the correct code

[AT Client]Calling le_atClient_SetFinalResponse() with an invalid reference doesn't return the correct code

[AT Client]Calling le_atClient_SetIntermediateResponse() with an invalid reference doesn't return the correct code

[AT Client]Calling le_atClient_SetText() with an invalid reference doesn't return the correct code

[AT Client]Calling le_atClient_SetTimeout() with an invalid reference doesn't return the correct code

[AVC] avAppsInfo and avSystemInfo sample apps use framework internals directly.

[eCall] LE_ECALL_STATE_DISCONNECTED is no notified when mcc handler has been subscribed

[eCall] LE_ECALL_STATE_MSD_TX_FAILED is received when pulling a new MSD

[GNSS] le_gnss_PositionHandler is raised more often than the rate specified using le_gnss_SetAcquisitionRate

[GNSS] le_gnss_SetConstellation(LE_GNSS_CONSTELLATION_GLONASS) return LE_OK But it shouldn't support GLONASS only

[GPIO] MangOH GPIO Expander API looks like a generic Legato GPIO API.

[Java App] Bundled Jar files should be added to a Java component's class path.

[Java App] Java app executable name is displayed as _UNKNOWN_ in logs while app startup:

[Java App] Java server IPC implementation missing string length validation:

[Java App] le_cellnet interface generation issue from Java apps - dependent files like le_sim.java not auto-generated:

[Java App] Several service API's not autogenrated from java apps:

[Linux 3.14]Integrate 'perf: duplicate deletion of perf event'

[Linux 3.14]Out-of-tree kernel module fails to build against released SDK (workaround-relnotes)

[Log] Log control tool - "forget" does not work

[Log] log level seems to have no effect on logs sent by a process

[MDC] le_mdc_StartSession fails with error -6

[MDC] Legato setting incorrect APN for Sierra SIMs

[MDC] mccUnitTest fails from time to time

[SIM] Remove a preferred operator not present in SIM card returns failure

[Tool] App status "running" can be misleading if app is waiting for a service.

[Tool] Inconsistent stack when debugging on WP85

[UICC] [BIP] No event raised by Legato when a proactive command is pending.

[uSD] uSD card can't be detected on run-time

[Wifi] Connection lost during robustness tests

[Wifi] Impossible to reboot because of a kernel NULL pointer

[Yocto 1.7] lsusb doesn't work on WPx5xx

DOCUMENTATION

The following documentation content changes are included in this release:

[Docs] Add new sample apps to docs

[Docs] AirVantage name correction

[Docs] Antenna API clarify thresholds

[Docs] Audio HW active note

[Docs] Config Tree topics

[Docs] Contribute to Legato project topic

[Docs] Directory and Folder structure diagram

[Docs] Exchange Data with AirVantage tutorial

[Docs] Links and other minor changes

[Docs] Out-of-tree Kernel Module topic

[Docs] Raspbian Info topic

[Docs] Warning note for realtime process priority

[Docs] Add pmtool topic

[Docs] le_temp.api correction

[Docs] Platform Constraints topic links

[Docs] Add constraints doc for AT-Command based functions

DOCS LIMITATIONS

The new search engine has a limitation for partial words. Searching for APIs using previous conventions (e.g., "le_audio") fails (considered a partial word). To work around this, you can use a wildcard after (`le_*`) or a fuzzy match (`le_~1`)

The Legato Reference manual has limitation with some links to online documentation. Use the legato.io version if a link is unavailable in the PDF.