



# Release Notes

Release 16.01.2

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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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## DOCUMENT HISTORY

Version	Date	Description
15.10.Beta	November 13, 2015	initial PDF version
16.01.2	February 24, 2016	16.01.2 version
	June 3, 2016	fixed broken link to wpfirmwarerelease

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# WELCOME TO LEGATO

This document provides important information about the Legato Beta 16.01 release.

You may also want to look at:

[Upgrade Legato Notes](#)

[Complete Legato Documentation](#)

## Downloads

Download legato-af source from [Legato GitHub](#).

The following Legato 16.01 source packages are available at [Legato Downloads](#):

### Linux Distribution

Legato-Dist-Source-mdm9x15-SWI9X15Y\_07.08.03.00.tar.bz2

See [Legato Linux Distribution - Yocto Platform](#) for instructions.

### Toolchain for Linux PC i686 Legato 32 bits:

poky-swi-ext-glibc-i686-meta-toolchain-swi-ext-armv7a-vfp-neon-toolchain-swi-ext-1.7.2.sh

See [Install Source Files - Toolchain](#) for instructions.

### Toolchain for Linux PC x86 64bits:

poky-swi-ext-glibc-x86\_64-meta-toolchain-swi-ext-armv7a-vfp-neon-toolchain-swi-ext-1.7.2.sh

See [Install Source Files - Toolchain](#) for instructions.

### WP Firmware

Download and instructions available at [WP Firmware Releases](#)

# FEATURES

Legato 16.01.2 has the following new and changed features.

## New Features

### **Input Power Supply Monitoring API**

Input Power Supply Monitoring API has been added to monitor platform voltage input and support setting warning/critical thresholds.

See [Input Power Supply Monitoring](#) Service docs.

### **Secure Storage Admin API**

Secure Storage Admin API has been added to provide secure storage administrative control for privileged users.

See [Secure Storage Admin](#) Service docs.

### **Ultra Low Power Mode API - WP85**

A new API has been added for WP8548 to provide ultra low power mode control. This is an Alpha release; development is in progress.

A Boot Reason Query API was also added to determine the reason for the last OS boot from ultra low power mode.

See [Ultra Low Power Mode](#) Service docs.

## Changed Features

### Software Update

The Software Update API now supports atomic updates, autonomous recovery/roll-back, and reduces flash consumption.

See [Software Update Service](#) docs for details on the new update process, the update pack format, and how to use the service to update the target including the Legato framework.

### System Definition .sdef

The System Definition .sdef files are now fully supported, and are now the preferred method to build your code. See [System Definition](#) file docs.

These new sections are now available:

- **apps**: subsection **preloaded** to indicate if an app must be preloaded onto a target separate from the rest of the system. See [.sdef preloaded](#) docs.
- **commands**: section makes a command-line tool available to the root user logged into a shell on the target tty. See [.sdef commands](#) docs.

### Application Definition - .adef

The application definition .adef file "requires: api:" section and "provides: api:" sections have been replaced by the "extern:" section that can include both client-side and server-side interfaces.

See [Application Definition](#) file docs.

### Modem Radio Control API

The `le_mrc_RegisterCellularNetwork` function has been deleted. `le_mrc_SetManualRegisterMode` should be used instead.

See [Modem Radio Control](#) docs.

## MODIFICATIONS

The following modifications were completed.

### Enhancements

These features were enhanced:

- [AirVantage] Add capability file for the Legato framework
- [AirVantage] Implement command fields for AV data
- [Audio] Can't hear sound while play analog local record file
- [C APIs] [mdm9x40] add RTC in cm tool
- [FW Update] report progress indication only when change is >1%
- [GNSS/Positioning] GNSS API should work as a standalone service
- [Modem] Update LE\_MDC\_INTERFACE\_NAME\_MAX\_LEN
- [Modem] MRC - Add function to get List of supported GSM bands
- [Sandbox] Extend mount option string length
- [Services] Add support for 'file' parameter in HANDLERS
- [SIM] Legato SIM PA is changing the QMI CAT mode...
- [Start-up] Bring up ecm with default parameters

### Changes

These changes were completed:

- [AirVantage] avcService fixes
- [AirVantage] LE\_AVC\_UNINSTALL\_PENDING Notification don't survive a Power outage
- [AirVantage] Ensure only one AVC control app is running
- [App Data] Old app data not being cleared on upgrade.
- [Apps-LWM2M] Remove "tools" and "gpioService" from the announced apps
- [Audio] Make 2 playbacks in the same time
- [Audio] le\_audio\_Connect and returns LE\_FAULT
- [Audio] QMI Fix init of audio service
- [CDMA] Can't get remote number when incoming call
- [Copy] Recursive copy fix when using cp in file\_Copy
- [Event Loop] Fixed deadlock in event loop
- [DTMF] key not be detected when touch key on remote side
- [eCall] PSAP eCall clear-down should stop the redial after ...
- [eCall] Unable to encode the MSD with Bad Vehicle direction



[eCall] - ERA-GLONASS dial duration timer is not started...

[File Permissions] App file permission errors.

[File Names] Rename generated \_local.h files to \_messages.h

[FOTA] Send FOTA error state to user control app

[Make] Change protocol hash calculation generated by ifgen

[Modem] Manual register network returns timeout(use legato API) and error(use AT)

[Modem] UE release connection fixes

[Modem] le\_mrc\_GetServingCellId() doesn't handle LTE cell id info

[Modem] fwupdate query doesn't work if modemService is not working

[Modem] If no PDP context set initially, le\_mdc\_GetProfileFromApn ...

[Modem] modemDaemon has no access to apns-full-conf.json file

[Modem] le\_mdc\_GetDataBearerTechnology failure when connected in IPV6

[Positioning] Heading and Direction parameters are inconsistent

[Sample Apps] Added missing Makefile for sample apps

[Sandbox] devices are not available in sandbox apps

[Secure Storage] Can't create item with maximum allowable name length

[Services] GPIO service attempts to export GPIO 1

[Services] le\_ecall / SMS fallback case / cannot have voice ...

[Services] le\_voicecall\_RemoveStateHandler() makes the modemService

[Services] secure storage low write performances

[Services] Add system info le\_update.api

[Start-up] System installed missing startSystem and fix /mnt/legato image start

[Start-up] start program jumbles up systems on boot

[SMACK] appSmack LABEL\_LEN is too small

[Supervisor] Fixed race in Supervisor

[Target Access] configEcm issues

[Tools][CM]Some ADC values can't be read

[Tools] setNet generated config invalid if no gateway/no nameserver

[VoLTEMO] Legato CallEventHandler not raised during VoLTE MO call

[WP8548] - Audio file playback fails

## Yocto

These Yocto layer modifications are included:

### meta-swi

- Add kernel-dev package to toolchain
- Detect squashfs volume at run time
- New recipe for performances
- Legato does not install liblegato.so in the good place in sysroots
- Tie legato build dir to version
- Legato does not install .update when build in Yocto
- Make Legato compatible with dash
- Enable the NMEA service
- Add CRDA to rootfs for TI Wireless
- Allow kernel modules auto load at system startup
- TI wlc core ELP timeout
- Provide kernel source dir to lk
- Install kernel modules in rootfs
- Add device tree support
- New recipe for WiFi modules and tools into RootFS
- Removing 2k.yaffs2 from rootfs image gen
- CodeAurora versions update (except lk, alsa-intf)
- Use libhardware from codeaurora
- Update ti-compat-wireless recipe to build on recent ubuntu releases
- Add kernel-dev package to toolchain
- new recipe for performances
- Detect squashfs volume at run time

### meta-swi extras

- Strip binaries in generated source tarball
- Fix compatibility with dash
- new recipe for performances
- Update generate\_version\_file() for meta-swi-extras
- Redirect free output to log file
- Make Legato compatible with dash
- Fix legato repo not provided to build system if LEGATO\_BUILD=false
- Re-enable USB audio
- Make Legato compatible with dash
- Remove package seminole
- Fix compatibility with dash
- Strip binaries in generated source tarball

**kernel**

- MCI user app support for MCU firmware update with MCU kernel driver
- WP85/75: Increase OS heap for CF3
- Remove support for some obsolete products
- Prevent invalid I2C addressing via direct device access
- Sometimes UART1 about AT service can't work, vt: fix race in vt\_waitactive()
- SPI I/O drive strength improperly set
- WPx5 MCU kernel driver, phase 1
- Kernel does not handle GPIOs external IRQ correctly
- Enable device tree support
- TI wl18xx wireless driver introduction

**kernel-meta**

- WPx5 MCU kernel driver, phase 1
- Add USB serial FTDI driver support
- Disable early print
- Move kernel drivers to modules, enable device tree
- TI wl18xx wireless driver introduction

## KNOWN ISSUES

Legato 16.01 has the following known issues:

[Audio] Inband DTMF play failed with USB interface

[Audio] le\_audio\_PlaySignallingDtmf returns an "Unspecified internal error" after called it 944 times

[busybox] 'mdev -s' vs. hotplug events are not generating the same environment

[Debug] log level setting had no effect on logs sent by a process

[Dev Studio] Inconsistent stack when debugging on WP85

[eCall] - ERA-GLONASS dial duration timer is not started on 1st try and redial counter is not reset on connection

[eCall] In only Mode, the UE deregister after clear down when it should wait for T10(12h) to expire

[Framework] event missed from legacy App: LE\_MRC\_REG\_HOME

[Framework] Bundled directories are not deployed and app cannot start as a result

[GNSS]le\_gnss\_LoadExtendedEphemerisFile always return LE\_FORMAT\_ERROR

[GNSS] le\_antenna\_GetExternalAdc return LE\_FAULT when called with the GNSS Antenna.

[GNSS] le\_gnss\_PositionHandler is raised more often than the rate specified using le\_gnss\_SetAcquisitionRate

[GNSS] le\_gnss\_GetTtff always return LE\_BUSY even after first 3D fix when GNSS mode is standalone

[GNSS] [WP85] le\_antenna\_GetStatus return LE\_FAULT

[LWM2M] Modem obj9 is not updated properly when obj9 instance is deleted from legato

[Modem] Legato API le\_mrc\_RegisterCellularNetwork unable to connect to the home network

[SIM Toolkit][WP85][eUICC] BIP commands are not processed by legato

[SIM toolkit] [UICC] [BIP] No event raised by legato when a proactive command is pending.

[SIM Toolkit] [AR8652] QMI CAT MODE should not be initialized by Legato at power on

[SMSCB] Cannot receive SMS Cell Broadcast

[Start up] Restarting of syslog by Legato start-up code causes log data to be lost.

## DOCUMENTATION

The documentation has a new look and topics have been reorganized for easier access to key info. Search functionality has also been improved. See [Legato docs](#).

The following documentation changes are included in this release:

[Docs] Add reference to real test code in MDC API documentation

[Docs] Add reference to real test code in MRC API documentation

[Docs] Add reference to real test code in SIM API documentation

[Docs] Add reference to real test code in MCC API documentation

[Docs] Add reference to real test code in Audio API documentation

[Docs] Add reference to real test code in SMS API documentation

[Docs] Add reference to real test code in eCall API documentation

[Docs] Added info on how to use avsysinfo and avappinfo

[Docs] Independent Definition Language topics renamed to API Files

[Docs] Improve function header comments in some generated API functions and ifgen topic edits

[Docs] Document change on usage of accept install/uninstall

[Docs] Fixed AirVantage-related docs

[Docs] remove wp7 references

[Docs] Add Ultra Low and Boot Query API topics

[Docs] broken sdef file link fixed

[Docs] Add Sec Store Admin API topic

[Docs] Update to new colours and style

[Docs] Change navigation and colours for new style

[Docs] Update Services docs

[Docs] Modify build apps process for new system update pack

[Docs] Update Build topic make syntax to include .update

[Docs] Clarified get/set user timebase info

[Docs] Renamed IDL topics, now API Files, moved to new Learn section

[Docs] GPIO sample app only CF3

[Docs] Move uninstall topic

[Docs] Change instapp syntax, now needs .update

[Docs] Add How To Use Software Update topic

[Docs] Add How To Security topic

[Docs] Add links for 16.01 release and upgrade notes

[Docs] Add App Dev Quick Start topic

[Docs] Move sample apps topics to Get Started

[Doc] eCall update for Automatic and Normal eCall...

[Docs] - [GNSS documentation issue