



## **Application Note: Upgrading To Z-Stack v2.3**

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Version	Description	Date
1.0	Initial release	01/17/2010
1.1	Updated for ZStack-2.3.1 release	08/01/2010

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## 1. Purpose

This document describes considerations to make when upgrading to Texas Instruments Z-Stack™ version 2.3.0 or 2.3.1, discussing changes made since the 2.2.2 release of Z-Stack. Most importantly, changes have been made to introduce the ZigBee Network Processor (ZNP) application for the CC2530/CC2531, better performance of larger networks, and various enhancements/optimizations of OSAL and Z-Stack functionality. This document deals with the “core” and “full” Z-Stack installation packages listed below. “Core” packages include the latest Z-Stack files and libraries along with one simple sample application. “Full” packages include all components of the associated “core” package, along with additional sample applications, additional documentation, Z-Tool, and ZOAD.

- *ZStack-CC2530-2.3.x.exe* - “Core” package for SmartRF05EB + CC2530EM
- *ZStack-EXP5438-2.3.x.exe* - “Core” package for MSP-EXP430F5438 + CC2520EM
- *ZStack-MSP2618-2.3.x.exe* - “Core” package for SmartRF05EB + MSP2618 + CC2520EM
- *ZStack-CC2530-2.3.x-1.4.0.exe* - “Full” package for SmartRF05EB + CC2530EM
- *ZStack-EXP5438-2.3.x-1.4.0.exe* - “Full” package for MSP-EXP430F5438 + CC2520EM
- *ZStack-MSP2618-2.3.x-1.4.0.exe* - “Full” package for SmartRF05EB + MSP2618 + CC2520EM

## 2. Summary of Changes

### 2.1 ZStack-2.3.0 Changes

This section summarizes changes to Z-Stack that are observed when upgrading from version 2.2.2 to 2.3.0.

#### 2.1.1 CC2530-ZNP

Z-Stack now supports an IAR project to build ZigBee Network Processor (ZNP) devices. CC2530-ZNP devices can be used in conjunction with any host MCU (via SPI or UART interface) to add ZigBee PRO wireless communication to existing or new product designs. ZNP images can be built from standardized configurations or the developer can alter project build options to produce customized ZNP images. Refer to the “CC2530-ZNP Interface Specification” document for details on using a ZNP device.

#### 2.1.2 OSAL Enhancements

Enhancements have been made to OSAL functionality as described below. These new features were developed for use in the Z-Stack system but are also available for application program usage. Refer to the “OSAL API” document for details on the use of OSAL features and functions.

##### 2.1.2.1 Reloading Timers

The OSAL\_Timer API has been extended to add capability to define automatically reloading timers. In addition to simplifying the use of periodic timers, this feature eliminates problems that could occur when re-scheduling of a periodic timer failed due to depletion of dynamic memory (heap) under heavy traffic conditions. See section 5.3 of the “OSAL API” document for details on use of *osal\_start\_reload\_timer()*.

##### 2.1.2.2 Queued Message Search

The OSAL\_MSG API has been extended to add capability to search for an existing OSAL message in the queue. See section 3.6 of the “OSAL API” document for details on use of *osal\_msg\_find()*.

#### 2.1.3 Monitor-Test Extensions

Additions have been made to the Monitor-Test (MT) API to expand command/response capability for serial control of Z-Stack devices. Read the “Z-Stack Monitor and Test API” document for details on MT commands and responses.

##### 2.1.3.1 Inter-Pan Communication

The MT\_AF API has been extended to support control of Inter-Pan communication. Sections 3.2.1.5 and 3.2.1.3 of the “Z-Stack Monitor and Test API” has details on using this MT function. Section 12 of the “Z-Stack Developer’s Guide” provides a discussion of the Inter-Pan feature.

##### 2.1.3.2 Source Routing

The MT\_AF API has been extended to provide support for sending messages using source routing. Sections 3.2.1.4 and 3.12.2.27 of the “Z-Stack Monitor and Test API” have details on using these MT functions. Refer to section 5.4 of the “Z-Stack Developer’s Guide” for a discussion of the many-to-one and source routing features.

#### 2.1.3.3 Application Link Keys

The MT\_ZDO API has been extended to provide support for configuring application link keys. Refer to sections 3.12.1.28 through 3.12.1.30 of the “Z-Stack Monitor and Test API” document for details of using MT commands and responses for link key configuration. Refer to section 10.5 of the “Z-Stack Developer’s Guide” for discussion of link key usage in Smart Energy devices.

#### 2.1.3.4 ZDO Message Callback

The MT\_ZDO API has been extended to provide for single command and response for ZDO callbacks. Refer to sections 3.12.1.24, 3.12.1.25, and 3.12.2.28 of the “Z-Stack Monitor and Test API” document for details of using MT commands/responses for ZDO callbacks. Refer to section 6 of the “Z-Stack Developer’s Guide” for discussions of registering for and receiving ZDO callbacks.

### 2.1.4 Performance Improvements

Changes to ZStack-2.3.0 have been made to improve stability and performance in dense and higher traffic networks. See the README document accompanying the installation for a summary of improvements for this release.

#### 2.1.4.1 Best Router Algorithm

To improve the quality of network structure formation in ZigBee PRO, the “best router” algorithm that is used to select a parent device during joining, has been changed to consider the link quality of received beacons. In the past, minimizing network depth (hops from the Coordinator) was the dominant criterion when choosing a parent device.

#### 2.1.4.2 Neighbor Table Size

The default size of the neighbor table has been increased from 8 to 16. This improves “out-of-the-box” performance in denser networks (many routers within one hop of each other). Performance will be best when setting the size of the neighbor table at or near to the number of actual neighbor devices in the network.

#### 2.1.4.3 CC2530 Virtual Registers

For Z-Stack packages that support CC2530-based platforms, the default setting for *Virtual Registers* increased from 8 to 16. This typically results in code size reduction of approximately 1% and slight performance gain. Developers could reduce code size slightly more by further increasing the *Virtual Registers* setting but there is a risk of causing an “out of ISTACK” linker error.

### 2.1.5 MSP430 Compiler Change

Z-Stack packages that support MSP430-based platforms (MSP2618 and EXP5438) have been upgraded to use the IAR EW430 v4.21 Embedded Workbench toolset. The previous Z-Stack release used v4.20. Note that ZStack-2.3.0 projects will not build properly with the v4.20 toolset – developers need to upgrade to the v4.21 version.

## 2.2 ZStack-2.3.1 Changes

This section summarizes changes to Z-Stack that are observed when upgrading from version 2.3.0 to 2.3.1.

### 2.2.1 CC253x-ZNP

The ZigBee Network Processor (ZNP) application has been extended to provide three “default” pin configurations, as well as, support for CC2531 USB devices (CC2531DK\_Dongle) and the ZNP Mini-Kit. Refer to section 2.1 of the “CC2530-ZNP Interface Specification” document for information on ZNP configurations.

### 2.2.2 MSP430 Compiler Change

Z-Stack packages that support MSP430-based platforms (MSP2618 and EXP5438) have been upgraded to use the IAR EW430 v5.10 Embedded Workbench toolset. The previous Z-Stack release used v4.21. Note that ZStack-2.3.1 projects will not build properly with the v4.21 toolset – developers need to upgrade to the v5.10 version.

## 3. Changes to Installed Files

Refer to the tables in Sections 3.1 and 3.2 for file changes to the ZStack “core” and “full” installers, respectively. Items with Modified, **New** or **Removed** in the **Change** column occurred in the 2.3.0 release. Italicized items in the **Change** column (*Modified*, **New** or **Removed**) occurred with the 2.3.1 release. Folder updates are indicated when

there is no entry in the **File** column. Making changes to existing project files (\*.ewp,\*.ewd,\*.eww) can be done with the Embedded Workbench IDE or by editing the XML files directly.

### 3.1 Changes to “Core” Installed Files

The following “core” Z-Stack files have been changed since the v2.2.2 release:

File	Location	Change
hal_assert.c	...\Components\hal\common	Modified
hal_drivers.c	...\Components\hal\common	Modified
hal_adc.h	...\Components\hal\include	Modified
hal_flash.h	...\Components\hal\include	Modified
_hal_uart_dma.c	...\Components\hal\target\CC2530EB	Modified
_hal_uart_isr.c	...\Components\hal\target\CC2530EB	Modified
hal_adc.c	...\Components\hal\target\CC2530EB	Modified
hal_aes.h	...\Components\hal\target\CC2530EB	Modified
hal_board_cfg.h	...\Components\hal\target\CC2530EB	Modified
hal_dma.c	...\Components\hal\target\CC2530EB	Modified
hal_dma.h	...\Components\hal\target\CC2530EB	Modified
hal_flash.c	...\Components\hal\target\CC2530EB	Modified
hal_key.c	...\Components\hal\target\CC2530EB	Modified
hal_lcd.c	...\Components\hal\target\CC2530EB	Modified
hal_mac_cfg.h	...\Components\hal\target\CC2530EB	Modified
hal_mcu.h	...\Components\hal\target\CC2530EB	Modified
hal_oad.c	...\Components\hal\target\CC2530EB	Modified
hal_oad.h	...\Components\hal\target\CC2530EB	Modified
hal_sleep.c	...\Components\hal\target\CC2530EB	Modified
hal_timer.c	...\Components\hal\target\CC2530EB	Modified
hal_adc.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_aes.h	...\Components\hal\target\MSP2618CC2520	Modified
hal_board_cfg.h	...\Components\hal\target\MSP2618CC2520	Modified
hal_key.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_mac_cfg.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_mac_cfg.h	...\Components\hal\target\MSP2618CC2520	Modified
hal_mcu.h	...\Components\hal\target\MSP2618CC2520	Modified
hal_oad.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_oad.h	...\Components\hal\target\MSP2618CC2520	Modified
hal_sleep.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_timer.c	...\Components\hal\target\MSP2618CC2520	Modified
hal_adc.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_aes.h	...\Components\hal\target\MSP5438CC2520	Modified
hal_board_cfg.h	...\Components\hal\target\MSP5438CC2520	Modified
hal_dco.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_key.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_lcd.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_mac_cfg.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_mac_cfg.h	...\Components\hal\target\MSP5438CC2520	Modified
hal_mcu.h	...\Components\hal\target\MSP5438CC2520	Modified
hal_oad.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_oad.h	...\Components\hal\target\MSP5438CC2520	Modified
hal_sleep.c	...\Components\hal\target\MSP5438CC2520	Modified
hal_timer.c	...\Components\hal\target\MSP5438CC2520	Modified
mac_high_level.h	...\Components\mac\high_level	Modified
mac_pib.c	...\Components\mac\high_level	Modified
mac_api.h	...\Components\mac\include	Modified

mac_dualchip.c	...\Components\mac\low_level\srf04\dual_chip	Modified
mac_dualchip_tx.c	...\Components\mac\low_level\srf04\dual_chip	Modified
mac_radio_defs.c	...\Components\mac\low_level\srf04\dual_chip	Modified
mac_radio_defs.h	...\Components\mac\low_level\srf04\dual_chip	Modified
mac_csp_tx.c	...\Components\mac\low_level\srf04\single_chip	Modified
mac_mcu.c	...\Components\mac\low_level\srf04\single_chip	Modified
mac_radio_defs.c	...\Components\mac\low_level\srf04\single_chip	Modified
mac_radio_defs.h	...\Components\mac\low_level\srf04\single_chip	Modified
mac_rffrontend.c	...\Components\mac\low_level\srf04\single_chip	Modified
DebugTrace.h	...\Components\mt	Modified
MT.c	...\Components\mt	Modified
MT.h	...\Components\mt	Modified
MT_AF.c	...\Components\mt	Modified
MT_AF.h	...\Components\mt	Modified
MT_APP.c	...\Components\mt	Modified
MT_MAC.c	...\Components\mt	Modified
MT_NWK.c	...\Components\mt	Modified
MT_NWK.h	...\Components\mt	Modified
MT_RPC.h	...\Components\mt	Modified
MT_SAPI.c	...\Components\mt	Modified
MT_SYS.c	...\Components\mt	Modified
MT_SYS.h	...\Components\mt	Modified
MT_TASK.c	...\Components\mt	Modified
MT_UTIL.c	...\Components\mt	Modified
MT_VERSION.c	...\Components\mt	Modified
MT_ZDO.c	...\Components\mt	Modified
MT_ZDO.h	...\Components\mt	Modified
OSAL.c	...\Components\osal\common	Modified
OSAL_Timers.c	...\Components\osal\common	Modified
OSAL.h	...\Components\osal\include	Modified
OSAL_Timers.h	...\Components\osal\include	Modified
ZComDef.h	...\Components\osal\include	Modified
OSAL_Nv.c	...\Components\osal\mcu\cc2530	Modified
OSAL_Nv.c	...\Components\osal\mcu\msp430	Modified
saddr.c	...\Components\services\saddr	Modified
saddr.h	...\Components\services\saddr	Modified
AF.c	...\Components\stack\af	Modified
AF.h	...\Components\stack\af	Modified
AddrMgr.h	...\Components\stack\nwk	Modified
APSMED.h	...\Components\stack\nwk	Modified
NLMEDE.h	...\Components\stack\nwk	Modified
nwk.h	...\Components\stack\nwk	Modified
nwk_bufs.h	...\Components\stack\nwk	Modified
nwk_globals.c	...\Components\stack\nwk	Modified
nwk_globals.h	...\Components\stack\nwk	Modified
nwk_util.h	...\Components\stack\nwk	Modified
rtg.h	...\Components\stack\nwk	Modified
sapi.c	...\Components\stack\sapi	Modified
ssp.h	...\Components\stack\sec	Modified
ZGlobals.c	...\Components\stack\sys	Modified
ZGlobals.h	...\Components\stack\sys	Modified
ZDApp.c	...\Components\stack\zdo	Modified
ZDApp.h	...\Components\stack\zdo	Modified
ZDConfig.h	...\Components\stack\zdo	Modified

ZDObject.c	...\Components\stack\zdo	Modified
ZDProfile.c	...\Components\stack\zdo	Modified
ZDProfile.h	...\Components\stack\zdo	Modified
ZDSecMgr.c	...\Components\stack\zdo	Modified
ZDSecMgr.h	...\Components\stack\zdo	Modified
ZMAC.h	...\Components\zmac	Modified
zmac.c	...\Components\zmac\f8w	Modified
zmac_cb.c	...\Components\zmac\f8w	Modified
zmac_internal.h	...\Components\zmac\f8w	Modified
802.15.4 MAC API	...\Documents	Modified
OSAL API	...\Documents	Modified
Upgrading To Z-Stack v2.3	...\Documents	Modified
Z-Stack API	...\Documents	Modified
Z-Stack Developer's Guide	...\Documents	Modified
Z-Stack Monitor and Test API	...\Documents	Modified
Z-Stack User's Guide – CC2530DB	...\Documents\CC2530	Modified
Z-Stack User's Guide – CC2520	...\Documents\MSP2618	Modified
Z-Stack User's Guide – EXP5438	...\Documents\EXP5438	Modified
EndDevice.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
EndDevice-Pro.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
EndDeviceMT.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
EndDeviceMT-Pro.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
Router.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
Router-Pro.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
RouterMT.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
RouterMT-Pro.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
Security.lib	...\Projects\zstack\Libraries\TI2530DB\bin	Modified
EndDevice2618.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
EndDevice2618-Pro.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
EndDevice2618MT.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
EndDevice2618MT-Pro.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
Router2618.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
Router2618-Pro.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
Router2618MT.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
Router2618MT-Pro.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
Security2618.lib	...\Projects\zstack\Libraries\MSP2618\bin	Modified
EndDevice54xx.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
EndDevice54xx-Pro.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
EndDevice54xxMT.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
EndDevice54xxMT-Pro.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
Router54xx.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
Router54xx-Pro.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
Router54xxMT.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
Router54xxMT-Pro.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
Security54xx.lib	...\Projects\zstack\Libraries\MSP54xx\bin	Modified
TIMAC-CC2530.lib	...\Projects\zstack\Libraries\TIMAC\bin	Modified
TIMAC-MSP2618.lib	...\Projects\zstack\Libraries\TIMAC\bin	Modified
TIMAC-MSP54xx.lib	...\Projects\zstack\Libraries\TIMAC\bin	Modified
SampleApp.ewd	...\Projects\zstack\Samples\SampleApp\CC2520DB	Modified
SampleApp.ewp	...\Projects\zstack\Samples\SampleApp\CC2520DB	Modified
SampleApp.ewp	...\Projects\zstack\Samples\SampleApp\CC2530DB	Modified
SampleApp.ewd	...\Projects\zstack\Samples\SampleApp\EXP5438	Modified
SampleApp.ewp	...\Projects\zstack\Samples\SampleApp\EXP5438	Modified
f8w2530.xcl	...\Projects\zstack\Tools\CC2530DB	Modified



f8wConfig.cfg	...\Projects\zstack\Tools\CC2530DB	Modified
f8wCoord.cfg	...\Projects\zstack\Tools\CC2530DB	Modified
f8wEndev.cfg	...\Projects\zstack\Tools\CC2530DB	Modified
f8wRouter.cfg	...\Projects\zstack\Tools\CC2530DB	Modified
f8wConfig.cfg	...\Projects\zstack\Tools\MSP2618	Modified
f8wCoord.cfg	...\Projects\zstack\Tools\MSP2618	Modified
f8wEndev.cfg	...\Projects\zstack\Tools\MSP2618	Modified
f8wRouter.cfg	...\Projects\zstack\Tools\MSP2618	Modified
MSP430F2618.ddf	...\Projects\zstack\Tools\MSP2618	Removed
MSP430F2618.sfr	...\Projects\zstack\Tools\MSP2618	Removed
MSP430F2618.xcl	...\Projects\zstack\Tools\MSP2618	Modified
f8wConfig.cfg	...\Projects\zstack\Tools\MSP5438	Modified
f8wCoord.cfg	...\Projects\zstack\Tools\MSP5438	Modified
f8wEndev.cfg	...\Projects\zstack\Tools\MSP5438	Modified
f8wRouter.cfg	...\Projects\zstack\Tools\MSP5438	Modified
MSP430F5438.xcl	...\Projects\zstack\Tools\MSP5438	Modified
chipcon_cstartup.s51	...\Projects\zstack\ZMain\TI2530DB	Modified
OnBoard.c	...\Projects\zstack\ZMain\TI2530DB	Modified
OnBoard.h	...\Projects\zstack\ZMain\TI2530DB	Modified
ZMain.c	...\Projects\zstack\ZMain\TI2530DB	Modified
OnBoard.c	...\Projects\zstack\ZMain\MSP2618	Modified
OnBoard.h	...\Projects\zstack\ZMain\MSP2618	Modified
ZMain.c	...\Projects\zstack\ZMain\MSP2618	Modified
OnBoard.c	...\Projects\zstack\ZMain\MSP5438	Modified
OnBoard.h	...\Projects\zstack\ZMain\MSP5438	Modified
ZMain.c	...\Projects\zstack\ZMain\MSP5438	Modified

### 3.2 Changes to “Full” Installed Files

In addition to the “core” installer file changes listed in Section 3.1, the following Z-Stack “full” installer files have been changed since the v2.2.2 release:

File	Location	Change
_hal_uart_usb.c	...\Components\hal\target\CC2530USB	Modified
hal_adc.c	...\Components\hal\target\CC2530USB	Modified
hal_aes.h	...\Components\hal\target\CC2530USB	New
hal_board_cfg.h	...\Components\hal\target\CC2530USB	Modified
hal_dma.c	...\Components\hal\target\CC2530USB	Modified
hal_dma.h	...\Components\hal\target\CC2530USB	Modified
hal_flash.c	...\Components\hal\target\CC2530USB	Modified
hal_key.c	...\Components\hal\target\CC2530USB	Modified
hal_lcd.c	...\Components\hal\target\CC2530USB	Modified
hal_led.c	...\Components\hal\target\CC2530USB	New
hal_mac_cfg.h	...\Components\hal\target\CC2530USB	New
hal_mcu.h	...\Components\hal\target\CC2530USB	Modified
hal_oad.c	...\Components\hal\target\CC2530USB	Modified
hal_oad.h	...\Components\hal\target\CC2530USB	Modified
hal_sleep.c	...\Components\hal\target\CC2530USB	Modified
hal_startup.c	...\Components\hal\target\CC2530USB	New
hal_timer.c	...\Components\hal\target\CC2530USB	Modified
hal_types.h	...\Components\hal\target\CC2530USB	New
hal_uart.c	...\Components\hal\target\CC2530USB	New
_hal_uart_dma.c	...\Components\hal\target\CC2530ZNP	Modified
_hal_uart_isr.c	...\Components\hal\target\CC2530ZNP	Modified

hal_adc.c	...\Components\hal\target\CC2530ZNP	Modified
hal_aes.h	...\Components\hal\target\CC2530ZNP	New
hal_board_cfg.h	...\Components\hal\target\CC2530ZNP	Modified
hal_dma.c	...\Components\hal\target\CC2530ZNP	Modified
hal_dma.h	...\Components\hal\target\CC2530ZNP	Modified
hal_flash.c	...\Components\hal\target\CC2530ZNP	Modified
hal_key.c	...\Components\hal\target\CC2530ZNP	Modified
hal_lcd.c	...\Components\hal\target\CC2530ZNP	Modified
hal_led.c	...\Components\hal\target\CC2530ZNP	New
hal_mac_cfg.h	...\Components\hal\target\CC2530ZNP	New
hal_mcu.h	...\Components\hal\target\CC2530ZNP	Modified
hal_oad.c	...\Components\hal\target\CC2530ZNP	Modified
hal_oad.h	...\Components\hal\target\CC2530ZNP	Modified
hal_sleep.c	...\Components\hal\target\CC2530ZNP	Modified
hal_spi.c	...\Components\hal\target\CC2530ZNP	New
hal_spi.h	...\Components\hal\target\CC2530ZNP	New
hal_startup.c	...\Components\hal\target\CC2530ZNP	New
hal_timer.c	...\Components\hal\target\CC2530ZNP	Modified
hal_types.h	...\Components\hal\target\CC2530ZNP	New
hal_uart.c	...\Components\hal\target\CC2530ZNP	New
zcl.c	...\Components\stack\zcl	Modified
zcl.h	...\Components\stack\zcl	Modified
Zcl_cert_data.c	...\Components\stack\zcl	New
zcl_general.c	...\Components\stack\zcl	Modified
zcl_key_establish.c	...\Components\stack\zcl	Modified
zcl_key_establish.h	...\Components\stack\zcl	Modified
zcl_pi.c	...\Components\stack\zcl	New
zcl_pi.h	...\Components\stack\zcl	New
zcl_se.c	...\Components\stack\zcl	Modified
zcl_se.h	...\Components\stack\zcl	Modified
Smart Energy Sample Application User's Guide	...\Documents	Modified
Z-Stack Compile Options	...\Documents	Modified
Z-Stack ZCL API	...\Documents	Modified
Z-Stack User's Guide ZNP - Sample Applications	...\Documents	Modified
CC2530ZNP Interface Specification	...\Documents\CC2530	Modified
Over Air Download for CC2530	...\Documents\CC2530	Modified
Power Management For The CC2530	...\Documents\CC2530	Modified
Serial Boot Loader for CC253x	...\Documents\CC2530	Modified
Over Air Download for MSP430	...\Documents\MSP2618	Modified
Over Air Download for MSP430	...\Documents\EXP5438	Modified
SampleLight.ewd	...\Projects\zstack\HomeAutomation\SampleLight\CC2520DB	Modified
SampleLight.ewp	...\Projects\zstack\HomeAutomation\SampleLight\CC2520DB	Modified
SampleLight.eww	...\Projects\zstack\HomeAutomation\SampleLight\CC2520DB	Modified
SampleLight.ewp	...\Projects\zstack\HomeAutomation\SampleLight\CC2530DB	Modified
SampleLight.eww	...\Projects\zstack\HomeAutomation\SampleLight\CC2530DB	Modified
SampleLight.ewd	...\Projects\zstack\HomeAutomation\SampleLight\EXP5438	Modified
SampleLight.ewp	...\Projects\zstack\HomeAutomation\SampleLight\EXP5438	Modified
SampleLight.eww	...\Projects\zstack\HomeAutomation\SampleLight\EXP5438	Modified
zcl_samplelight.h	...\Projects\zstack\HomeAutomation\SampleLight\Source	Modified
SampleSwitch.ewd	...\Projects\zstack\HomeAutomation\SampleSwitch\CC2520DB	Modified
SampleSwitch.ewd	...\Projects\zstack\HomeAutomation\SampleSwitch\CC2520DB	Modified
SampleSwitch.eww	...\Projects\zstack\HomeAutomation\SampleSwitch\CC2520DB	Modified
SampleSwitch.ewp	...\Projects\zstack\HomeAutomation\SampleSwitch\CC2530DB	Modified
SampleSwitch.eww	...\Projects\zstack\HomeAutomation\SampleSwitch\CC2530DB	Modified

SampleSwitch.ewd	...\Projects\zstack\HomeAutomation\SampleSwitch\EXP5438	<i>Modified</i>
SampleSwitch.ewp	...\Projects\zstack\HomeAutomation\SampleSwitch\EXP5438	<i>Modified</i>
SampleSwitch.eww	...\Projects\zstack\HomeAutomation\SampleSwitch\EXP5438	<i>Modified</i>
zcl_samplesw.h	...\Projects\zstack\HomeAutomation\SampleSwitch\Source	<i>Modified</i>
AllDevice-Pro.lib	...\Projects\zstack\Libraries\TI2530DB\bin	<i>Modified</i>
GenericApp.ewd	...\Projects\zstack\Samples\GenericApp\CC2520DB	<i>Modified</i>
GenericApp.ewp	...\Projects\zstack\Samples\GenericApp\CC2520DB	<i>Modified</i>
GenericApp.ewd	...\Projects\zstack\Samples\GenericApp\CC2530DB	<i>Modified</i>
GenericApp.ewp	...\Projects\zstack\Samples\GenericApp\CC2530DB	<i>Modified</i>
GenericApp.eww	...\Projects\zstack\Samples\GenericApp\CC2530DB	<i>Modified</i>
GenericApp.ewd	...\Projects\zstack\Samples\GenericApp\EXP5438	<i>Modified</i>
GenericApp.ewp	...\Projects\zstack\Samples\GenericApp\EXP5438	<i>Modified</i>
GenericApp.eww	...\Projects\zstack\Samples\GenericApp\EXP5438	<i>Modified</i>
SimpleApp.ewd	...\Projects\zstack\Samples\SimpleApp\CC2520DB	<i>Modified</i>
SimpleApp.ewp	...\Projects\zstack\Samples\SimpleApp\CC2520DB	<i>Modified</i>
SimpleApp.ewp	...\Projects\zstack\Samples\SimpleApp\CC2530DB	<i>Modified</i>
SimpleApp.ewd	...\Projects\zstack\Samples\SimpleApp\EXP5438	<i>Modified</i>
SimpleApp.ewp	...\Projects\zstack\Samples\SimpleApp\EXP5438	<i>Modified</i>
SimpleSensor.c	...\Projects\zstack\Samples\SimpleApp\Source	<i>Modified</i>
SampleApp.ewd	...\Projects\zstack\SE\SampleApp\CC2520DB	<i>Modified</i>
SampleApp.ewp	...\Projects\zstack\SE\SampleApp\CC2520DB	<i>Modified</i>
SampleApp.eww	...\Projects\zstack\SE\SampleApp\CC2520DB	<i>Modified</i>
SampleApp.ewp	...\Projects\zstack\SE\SampleApp\CC2530DB	<i>Modified</i>
SampleApp.ewd	...\Projects\zstack\SE\SampleApp\EXP5438	<i>Modified</i>
SampleApp.ewp	...\Projects\zstack\SE\SampleApp\EXP5438	<i>Modified</i>
esp.c	...\Projects\zstack\SE\SampleApp\Source\ESP	<i>Modified</i>
esp.h	...\Projects\zstack\SE\SampleApp\Source\ESP	<i>Modified</i>
esp_data.c	...\Projects\zstack\SE\SampleApp\Source\ESP	<i>Modified</i>
OSAL_esp.c	...\Projects\zstack\SE\SampleApp\Source\ESP	<i>Modified</i>
ipd.c	...\Projects\zstack\SE\SampleApp\Source\IPD	<i>Modified</i>
ipd.h	...\Projects\zstack\SE\SampleApp\Source\IPD	<i>Modified</i>
ipd_data.c	...\Projects\zstack\SE\SampleApp\Source\IPD	<i>Modified</i>
OSAL_ipd.c	...\Projects\zstack\SE\SampleApp\Source\IPD	<i>Modified</i>
loadcontrol.c	...\Projects\zstack\SE\SampleApp\Source\LoadControl	<i>Modified</i>
loadcontrol.h	...\Projects\zstack\SE\SampleApp\Source\LoadControl	<i>Modified</i>
loadcontrol_data.c	...\Projects\zstack\SE\SampleApp\Source\LoadControl	<i>Modified</i>
OSAL_LoadControl.c	...\Projects\zstack\SE\SampleApp\Source\LoadControl	<i>Modified</i>
OSAL_pct.c	...\Projects\zstack\SE\SampleApp\Source\PCT	<i>Modified</i>
pct.c	...\Projects\zstack\SE\SampleApp\Source\PCT	<i>Modified</i>
pct.h	...\Projects\zstack\SE\SampleApp\Source\PCT	<i>Modified</i>
pct_data.c	...\Projects\zstack\SE\SampleApp\Source\PCT	<i>Modified</i>
OSAL_RangeExt.c	...\Projects\zstack\SE\SampleApp\Source\RangeExt	<i>Modified</i>
rangeext.c	...\Projects\zstack\SE\SampleApp\Source\RangeExt	<i>Modified</i>
rangeext.h	...\Projects\zstack\SE\SampleApp\Source\RangeExt	<i>Modified</i>
rangeext_data.c	...\Projects\zstack\SE\SampleApp\Source\RangeExt	<i>Modified</i>
OSAL_SimpleMeter.c	...\Projects\zstack\SE\SampleApp\Source\SimpleMeter	<i>Modified</i>
simplemeter.c	...\Projects\zstack\SE\SampleApp\Source\SimpleMeter	<i>Modified</i>
simplemeter.h	...\Projects\zstack\SE\SampleApp\Source\SimpleMeter	<i>Modified</i>
simplemeter_data.c	...\Projects\zstack\SE\SampleApp\Source\SimpleMeter	<i>Modified</i>
cc2530-sb.xcl	...\Projects\zstack\Tools\CC2530DB	<i>New</i>
f8wZCL.cfg	...\Projects\zstack\Tools\CC2530DB	<i>Modified</i>
oad.xcl	...\Projects\zstack\Tools\CC2530DB	<i>Modified</i>
oad-boot.xcl	...\Projects\zstack\Tools\CC2530DB	<i>Modified</i>
sb-boot.xcl	...\Projects\zstack\Tools\CC2530DB	<i>New</i>

znp.cfg	...\Projects\zstack\Tools\CC2530DB	<i>Removed</i>
	...\Projects\zstack\Utilities\BootLoad	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2530	<i>New</i>
Boot.ewd	...\Projects\zstack\Utilities\BootLoad\CC2530	<i>New</i>
Boot.ewp	...\Projects\zstack\Utilities\BootLoad\CC2530	<i>New</i>
Boot.eww	...\Projects\zstack\Utilities\BootLoad\CC2530	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2530\source	<i>New</i>
interrupt_stubs.s51	...\Projects\zstack\Utilities\BootLoad\CC2530\source	<i>New</i>
sb_main.c	...\Projects\zstack\Utilities\BootLoad\CC2530\source	<i>New</i>
sb_main.h	...\Projects\zstack\Utilities\BootLoad\CC2530\source	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP	<i>New</i>
Boot.ewd	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP	<i>New</i>
Boot.ewp	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP	<i>New</i>
Boot.eww	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP\source	<i>New</i>
_hal_uart_spi.c	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP\source	<i>New</i>
interrupt_stubs.s51	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP\source	<i>New</i>
sb_main.c	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP\source	<i>New</i>
sb_main.h	...\Projects\zstack\Utilities\BootLoad\CC2530ZNP\source	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2531	<i>New</i>
Boot.ewd	...\Projects\zstack\Utilities\BootLoad\CC2531	<i>New</i>
Boot.ewp	...\Projects\zstack\Utilities\BootLoad\CC2531	<i>New</i>
Boot.eww	...\Projects\zstack\Utilities\BootLoad\CC2531	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\CC2531\source	<i>New</i>
interrupt_stubs.s51	...\Projects\zstack\Utilities\BootLoad\CC2531\source	<i>New</i>
sb_main.c	...\Projects\zstack\Utilities\BootLoad\CC2531\source	<i>New</i>
sb_main.h	...\Projects\zstack\Utilities\BootLoad\CC2531\source	<i>New</i>
	...\Projects\zstack\Utilities\BootLoad\Source	<i>New</i>
sb_exec.c	...\Projects\zstack\Utilities\BootLoad\Source	<i>New</i>
sb_exec.h	...\Projects\zstack\Utilities\BootLoad\Source	<i>New</i>
Dongle.ewd	...\Projects\zstack\Utilities\OAD\CC2520DB	<i>Modified</i>
Dongle.ewp	...\Projects\zstack\Utilities\OAD\CC2520DB	<i>Modified</i>
Dongle.eww	...\Projects\zstack\Utilities\OAD\CC2520DB	<i>Modified</i>
Boot.ewp	...\Projects\zstack\Utilities\OAD\CC2530DB	<i>Modified</i>
Dongle.ewd	...\Projects\zstack\Utilities\OAD\CC2530DB	<i>Modified</i>
Dongle.ewp	...\Projects\zstack\Utilities\OAD\CC2530DB	<i>Modified</i>
	...\Projects\zstack\Utilities\OAD\CC2530DB\source	<i>New</i>
interrupt_stubs.s51	...\Projects\zstack\Utilities\OAD\CC2530DB\source	<i>New</i>
Dongle.ewd	...\Projects\zstack\Utilities\OAD\EXP5438	<i>Modified</i>
Dongle.ewp	...\Projects\zstack\Utilities\OAD\EXP5438	<i>Modified</i>
Dongle.eww	...\Projects\zstack\Utilities\OAD\EXP5438	<i>Modified</i>
oad_app.c	...\Projects\zstack\Utilities\OAD\Source	<i>Modified</i>
oad_app.h	...\Projects\zstack\Utilities\OAD\Source	<i>Modified</i>
SerialApp.ewd	...\Projects\zstack\Utilities\SerialApp\CC2520DB	<i>Modified</i>
SerialApp.ewp	...\Projects\zstack\Utilities\SerialApp\CC2520DB	<i>Modified</i>
SerialApp.ewp	...\Projects\zstack\Utilities\SerialApp\CC2530DB	<i>Modified</i>
SerialApp.ewd	...\Projects\zstack\Utilities\SerialApp\EXP5438	<i>Modified</i>
SerialApp.ewp	...\Projects\zstack\Utilities\SerialApp\EXP5438	<i>Modified</i>
TransmitApp.ewd	...\Projects\zstack\Utilities\Transmit\CC2520DB	<i>Modified</i>
TransmitApp.ewp	...\Projects\zstack\Utilities\Transmit\CC2520DB	<i>Modified</i>
TransmitApp.eww	...\Projects\zstack\Utilities\Transmit\CC2520DB	<i>Modified</i>
TransmitApp.ewp	...\Projects\zstack\Utilities\Transmit\CC2530DB	<i>Modified</i>
TransmitApp.ewd	...\Projects\zstack\Utilities\Transmit\EXP5438	<i>Modified</i>
TransmitApp.ewp	...\Projects\zstack\Utilities\Transmit\EXP5438	<i>Modified</i>

	...\Projects\zstack\ZMain\TI2530ZNP	New
chipcon_cstartup.s51	...\Projects\zstack\ZMain\TI2530ZNP	Modified
OnBoard.c	...\Projects\zstack\ZMain\TI2530ZNP	Modified
OnBoard.h	...\Projects\zstack\ZMain\TI2530ZNP	Modified
ZMain.c	...\Projects\zstack\ZMain\TI2530ZNP	Modified
	...\Projects\zstack\ZNP	New
	...\Projects\zstack\ZNP\CC2530DB	Removed
	...\Projects\zstack\ZNP\CC253x	New
	...\Projects\zstack\ZNP\CC253x\bin	New
CC2530ZNP-SB.hex	...\Projects\zstack\ZNP\CC253x\bin	New
CC2531SB.hex	...\Projects\zstack\ZNP\CC253x\bin	New
	...\Projects\zstack\ZNP\CC253x\tools	New
sim2bin.exe	...\Projects\zstack\ZNP\CC253x\tools	New
znp.bat	...\Projects\zstack\ZNP\CC253x\tools	New
znp.js	...\Projects\zstack\ZNP\CC253x\tools	New
znp-prod.xcl	...\Projects\zstack\ZNP\CC253x\tools	New
CC2530.ewd	...\Projects\zstack\ZNP\CC253x\tools	New
CC2530.ewp	...\Projects\zstack\ZNP\CC253x\tools	New
CC2531.ewd	...\Projects\zstack\ZNP\CC253x\tools	New
CC2531.ewp	...\Projects\zstack\ZNP\CC253x\tools	New
znp.eww	...\Projects\zstack\ZNP\CC253x\tools	New
znp.ewd	...\Projects\zstack\ZNP\CC2530DB	Removed
znp.ewp	...\Projects\zstack\ZNP\CC2530DB	Removed
znp.eww	...\Projects\zstack\ZNP\CC2530DB	Removed
	...\Projects\zstack\ZNP\Source	New
OSAL_ZNP.c	...\Projects\zstack\ZNP\Source	Modified
znp_app.c	...\Projects\zstack\ZNP\Source	Modified
znp_app.h	...\Projects\zstack\ZNP\Source	Modified
znp.cfg	...\Projects\zstack\ZNP\Source	Modified
znp_spi.c	...\Projects\zstack\ZNP\Source	Modified
znp_spi.h	...\Projects\zstack\ZNP\Source	Modified
TI.CommonLib.dll	...\Tools\Z-Tool	Modified
TI.Config.xml	...\Tools\Z-Tool	Modified
TI.ZCmdMatchings.dll	...\Tools\Z-Tool	Modified
TI.ZPI.dll	...\Tools\Z-Tool	Modified
TI.ZPI.xml	...\Tools\Z-Tool	Modified
TI.ZPortLib.dll	...\Tools\Z-Tool	Modified
TI.ZScript.dll	...\Tools\Z-Tool	Modified
Z-Tool 2.0.exe	...\Tools\Z-Tool	Modified
Z-Tool.exe.config	...\Tools\Z-Tool	Modified
ZPI Help.chm	...\Tools\Z-Tool	Modified