
AVR Software Framework Release Notes 2.8.1

Introduction

The Atmel® AVR® Software Framework (ASF, www.atmel.com/asf) provides software drivers and libraries to build applications for Atmel megaAVR®, AVR XMEGA® and AVR UC3 devices. It has been designed to help develop and glue together the different components of a software design. It can easily integrate into an operating system (OS) or run as a stand-alone product.

The ASF is included in AVR Studio 5 (www.atmel.com/avrstudio5). A separate package is available for megaAVR, AVR XMEGA and AVR UC3 users for IAR®, AVR Studio 4 and AVR32 Studio on www.atmel.com/asf. AVR Studio 5 users do not need this package as the ASF is integrated in AVR Studio 5.

This document describes the supported devices, supported tools, and changes since last ASF release (enhancements, bugs fixes and known issues).

Device Support

This release supports the following devices:

- AVR UC3 A0/A1 (revision H and later)
- AVR UC3 B (revision F and later)
- AVR UC3 A3/A4 (revision E and later)
- AVR UC3 A3xS/A4xS (revision E and later)
- AVR UC3 C (revision D and later)
- AVR UC3 L0 (revision D and later)
- AVR XMEGA A1
- AVR XMEGA A1U
- AVR XMEGA A3
- AVR XMEGA A3B
- AVR XMEGA A3U
- AVR XMEGA A3BU
- AVR XMEGA A4U
- AVR XMEGA A4
- AVR XMEGA B
- AVR XMEGA D3
- AVR XMEGA D4
- megaAVR: ATmega1284P
- megaAVR: ATmega2560
- megaAVR: ATmega48/88/168/328
- megaAVR: ATmega16/32
- megaAVR: ATmega169/329
- megaAVR: ATmega64/128
- megaAVR: ATmega324/644/1284



AVR®
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Release Notes





Supported Tools

- AVR Studio 5.0 using GCC:
 - 32-bit version 4.4.3(AVR_32_bit_GNU_Toolchain_3.3.0_280)
 - 8-bit version 4.5.1(AVR_8_bit_GNU_Toolchain_3.3.0_387)
- AVR32 Studio version 2.6
- IAR EWAVR32 version 3.30
- IAR EWAVR version 5.50 and version 6.10
- WinAVR version 20100110
- AVR Studio 4.18 SP3

Note: Under AVR Studio 5.0, to get support of ATxmega16A4U, ATxmega32A4U, ATxmega64A3U, ATxmega128A3U, ATxmega192A3U, ATxmega256A3BU or ATxmega256A3U, it is require to install AVRStudio5-part-pack-installer-AVR_XMEGA_AU-0.1.78.exe or sooner for XMEGA AU devices, install AVRStudio5-part-pack-installer-AVR_XMEGA_B-x.y.z.exe for XMEGA B devices. It can be found at : http://www.atmel.com/dyn/products/tools_card.asp?tool_id=17212 .

Note: IAR EWAVR32 requires updated header files for the UC3 A3 and UC3 A3xS, UC3C C revision C, UC3 L series (unzip the avr32/utills/header_files/avr32-headers.zip under /Embedded Workbench x.x/avr32/inc/). WinAVR requires updated header files (refer to xmega/utills/header_files/readme.txt).

Contact Information

For more info about Atmel AVR visit www.atmel.com/avr, download application notes from the AVR Application Notes page or contact support through the <http://support.atmel.no/> site. The support site also have a Frequently Asked Questions page with the most common AVR questions.

ASF bug or enhancement requests can be reported in the ASF Bug Tracker at <http://asf.atmel.com/bugzilla/>.

Community Information

This forum can be used to have an open discussion about usage, development, bugs, fixes, improvements, etc.

- ASF forum on AVRFreaks at www.avrfreaks.net/index.php?name=PNphpBB2&file=viewforum&f=21.



Changes between version 2.8.1 and version 2.7.0 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
1049	avr32	DSPLIB - merge readme.html into the doxygen documentation	Merge static readme.html DSPLib documentation (only present in the ASF standalone archive) into the Doxygen html files.
505	avr32	Create Timer/Counter example for AVR Studio 5 simulator	Added Folder: avr32/drivers/tc/simulator_example1
456	build system	Generated IAR projects assume C-language only project source	Projects generated for IAR EWAVR and EWAVR32 assume that source files are C-language. The generated build options should specify compiling by file extension for those projects using, for example, C++ source files.
172	common	sleepmgr.h needs a sleepmgr_get_sleep_mode() function	Added sleepmgr_get_sleep_mode() function to the sleep manager service for easier access to used sleep mode. Files modified: common/services/sleepmgr/sleepmgr.h, common/services/sleepmgr/uc3/sleepmgr.h, services/sleepmgr/xmega/sleepmgr.h, xmega/drivers/ebi/unit_tests/sdram/atxmega128a1_xplain/conf_sleepmgr.h, xmega/drivers/ebi/unit_tests/sram/atxmega128a1_stk600-rc100x/conf_sleepmgr.h
1017	common	Add XMEGA-B1 Xplained user application template	Added user application template for XMEGA-B1 Xplained. Added folder: /common/applications/user_application/atxmega128b1_xmega_b1_xplained
1090	common	Add user application template for atxmega128a1u on stk600	Added user application template using STK600 and rc100x routing board for ATxmega128A1U target. Added folder: common\applications\user_application\atxmega128a1u_stk600-rc100x
674	common	Add unit test for USB Device enumeration on HID mouse class	Add unit tests for USB HID mouse class on: evk1100, evk1105, evk1104, evk1101, uc3c_ek, uc3_c2_xplained, atxmega128a1u_stk600, atxmega128b1_stk600, xmega_b1_xplained, atxmega256a3bu_stk600, xmega_a3bu_xplained, atxmega32a4u_stk600. Added folder: common/services/usb/class/hid/device/mouse/unit_tests/
788	common	Add an option to reduce RAM footprint of USB DFU FLIP class implementation	The define option ""UDI_DFU_SMALL_RAM"" can now be added in conf_usb.h to reduce the RAM used (1kB instead of 2kB), but the code increases of 80 Bytes. Modified file: common\services\usb\class\dfu_flip\device\udi_dfu_atmel.c."
789	common	Add support of ATxmegaA3U and ATxmegaA4U in ISP FLIP service	Add support of ATxmegaA3U and ATxmegaA4U in ISP FLIP service (Note: this service is required to implement USB DFU FLIP bootloader). Modified files: common\services\isp\flip\xmega\startup.s90, common\services\isp\flip\xmega\isp.c, common\services\isp\flip\xmega\macros.m90
935	common	Add possibility to have a dynamic USB serial number	The new defines USB_DEVICE_GET_SERIAL_NAME_POINTER and USB_DEVICE_GET_SERIAL_NAME_LENGTH can be used in conf_usb.h file to allow the load of a dynamic USB serial number. Modified file: common\services\usb\udc\udc.c.
1188	common	Add unit test for USB Device enumeration on HID keyboard class	Add unit test for HID keyboard class on: evk1100, evk1105, evk1104, evk1101, uc3c_ek, uc3_c2_xplained, atxmega128a1u_stk600, atxmega128b1_stk600, xmega_b1_xplained, atxmega256a3bu_stk600, xmega_a3bu_xplained, atxmega32a4u_stk600. Folder added: common/services/usb/class/hid/device/kbd/unit_tests/
1189	common	Add unit test for USB Device enumeration on MSC class	Add unit test for MSC class on: evk1100, evk1105, evk1104, evk1101, uc3c_ek, atxmega128a1u_stk600, atxmega128a4u_stk600, xmega_b1_xplained, xmega_a3bu_xplained, Folder added: common/services/usb/



ID	Component	Summary	Description
-	-	-	class/msc/device/unit_tests/
1190	common	Add unit test for USB Device enumeration on CDC class	Add unit test for CDC class on: evk1100, evk1105, evk1104, evk1101, uc3c_ek, uc3_c2_xplained, atxmega128a1u_stk600, xmega_b1_xplained, xmega_a3bu_xplained, atxmega32a4u_stk600. Folder added: common/services/usb/class/cdc/device/unit_tests/
771	other	Assert needs to generate unit-test failure when running the unit-test framework	Updated Assert() function to generate unit test failure. Files modified: avr32/utils/compiler.h, common/utils/asf.xml, common/utils/unit_test/suite.c, common/utils/unit_test/suite.h, mega/utils/compiler.h, xmega/drivers/nvm/nvm.c, xmega/utils/compiler.h
1221	unit test	Add unit test for XMEGA with XMEGA-A3BU Xplained	Add unit test for XMEGA running on XMEGA-A3BU Xplained: AES, DES, SPI and DMA XMEGA modules drivers. Folders added: / xmega/drivers/dma/unit_tests/atxmega256a3bu_xmega_a3bu_xplained, / xmega/drivers/aes/unit_tests/atxmega256a3bu_xmega_a3bu_xplained, / xmega/drivers/des/unit_tests/atxmega256a3bu_xmega_a3bu_xplained and / xmega/drivers/spi/unit_tests/atxmega256a3bu_xmega_a3bu_xplained
1000	xmega	Add Voltage Meter demonstration	Added XMEGA Basic Voltage meter application for ATxmega128B1 and XMEGA-B1 Xplained board. Added / xmega/applications/xmega_b1_xplained_voltage_meter.
257	xmega	Add example on XMEGA NVM drivers which uses FLASH program functions	This example writes data in application flash section thanks to NVM driver functions stored in FLASH BOOT section. New folder: xmega/drivers/nvm/example3/
902	xmega	Add CRC driver	Added CRC driver with examples. Added folder: xmega/drivers/crc
769	xmega	Add more unit tests for NVM driver	Added unit tests for reading from a buffer and writing to a buffer. Modified file: xmega/drivers/nvm/unit_tests/unit_tests.c
909	xmega	Add functionality to nvm driver for crc driver to be able to set up crc for nvm	Added functionality to be able to set up CRC for the NVM. Modified files: xmega/drivers/nvm/nvm.h, xmega/drivers/nvm/nvm.c
871	xmega	XMEGA twim driver should have configurable interrupt levels.	Expose the XMEGA twim interrupt level via configuration constants defined in a module configuration header. Added: / common/services/twi/master_example/atxmega128a1_stk600/conf_twim.h, / common/services/twi/master_example/atxmega128a1_xplain/conf_twim.h, / xmega/drivers/twi/module_config, / xmega/drivers/twi/module_config/conf_twim.h. Deleted: / common/services/twi/master_example/atxmega128a1_stk600/conf_twi_master.h, / common/services/twi/master_example/atxmega128a1_xplain/conf_twi_master.h, / common/services/twi/master_example/at32uc3a0512_evk1100/conf_twi_master.h, / common/services/twi/master_example/at32uc3a0512_evk1105/conf_twi_master.h, / common/services/twi/master_example/at32uc3a3256_evk1104/conf_twi_master.h, / common/services/twi/master_example/at32uc3b0256_evk1101/conf_twi_master.h, / common/services/twi/master_example/at32uc3c0512c_uc3c_ek/conf_twi_master.h, / common/services/twi/master_example/at32uc3l064_uc3l_ek/conf_twi_master.h. Modified: / common/services/twi/master_example/atxmega128a1_stk600/asf.xml, / common/services/twi/master_example/atxmega128a1_xplain/asf.xml, / xmega/drivers/twi/asf.xml, / xmega/drivers/twi/twim.c, / xmega/drivers/twi/twim.h, / common/services/twi/master_example/at32uc3a0512_evk1100/asf.xml, / common/services/twi/master_example/at32uc3a0512_evk1100/conf_board.h, / common/services/twi/



ID	Component	Summary	Description
-	-	-	master_example/at32u c3a0512_evk1105/asf.xml, / common/services/twi/ master_example/at32u c3a0512_evk1105/conf_board.h, / common/services/twi/ master_example/at32u c3a3256_evk1104/asf.xml, / common/services/twi/ master_example/at32u c3a3256_evk1104/conf_twim.h, / common/services/twi/ master_example/at32u c3b0256_evk1101/asf.xml, / common/services/twi/ master_example/at32u c3b0256_evk1101/conf_board.h, / common/services/twi/ master_example/at32u c3c0512c_uc3c_ek/asf.xml, / common/services/twi/ master_example/at32u c3c0512c_uc3c_ek/conf_twim.h, / common/services/twi/ master_example/at32u c3l064_uc3l_ek/asf.xml, / common/services/twi/ master_example/at32u c3l064_uc3l_ek/conf_twim.h, / common/services/twi/ master_example/asf.xml, / common/services/twi/ master_example/twi_master_example.c.
910	xmega	Add common sensor service support on XMEGA Xplained boards	Add common sensor service support for XMEGA-A1 Xplained and XMEGA-A3BU Xplained boards. Add additional sensor driver libraries for XMEGA under thirdparty/sensors/1ibs/gcc and thirdparty/sensors/1ibs/iar directories. Add sensor demo application project files in xmega/applications/x mega-compass-calibration, xmega/applications/x mega-inertial-demo, xmega/applications/x mega-inertial-visualizer, xmega/applications/x mega-inertial-wake-demo, xmega/applications/x mega-pressure-demo directories.
446	xmega	Add XMEGA-B1 Xplained support	Added XMEGA-B1 Xplained board support, added files within / xmega/boards/xmega_b1_xplained.
448	xmega	Add USB HID mouse examples for XMEGA B products family	Added XMEGA B USB HID mouse examples. Added folder: common/services/usb/ class/hid/device/mouse/example/atxmega128b1_stk600-rc100x and common/services/usb/ class/hid/device/mouse/example/atxmega128b1_xmega_b1_xplained.
470	xmega	Add XMEGA-B1 Xplained demo application related to application note AVR1619	Added XMEGA-B1 Xplained default demonstration firmware in xmega/applications/x mega_b1_xplained_demo/ folder. This application is the one that come by default with the XMEGA-B1 Xplained kit.
815	xmega	Update XMEGA nvm drivers for XMEGA B parts	Update XMEGA NVM driver to support XMEGA B parts: ATxmega128B1, ATxmega64B1, ATxmega128B3 and ATxmega64B3. Modified file: xmega/drivers/nvm/nvm.h
816	xmega	Add XMEGA B1 devices support in stk600/rc100x routing board	Added support for ATxmega128B1 and ATxmega64B1 to stk600_rc100x board. Modified file: / xmega/boards/stk600/rc100x/stk600_rc100x.h
817	xmega	Add XMEGA B1 B3 support in parts.h	Added support for ATxmega128B1, ATxmega64B1, ATxmega128B3 and ATxmega64B3 in ASF. Modified file: /xmega/utills/part.h
827	xmega	Add ATxmega128A4U and ATxmega64AAU support in ASF	Added support for ATxmega128A4U and ATxmega64A4U. Modified file: /xmega/utills/part.h
829	xmega	Add USB Device HID mouse examples for ATxmega128A4U	Added USB Device HID mouse examples for ATxmega128A4U. Added folder: / common/services/usb/ class/hid/device/mouse/example/atxmega128a4u_stk600-rc044x/
833	xmega	Add ATxmega128A1U and ATxmega64A1U support in ASF	Added support of ATxmega128A1U and ATxmega64A1U in ASF. Modified File: /xmega/utills/parts.h
834	xmega	Update XMEGA nvm drivers for ATxmega128A1U and ATxmega64A1U parts	Added FLASH definitions in XMEGA nvm drivers for ATxmega128A1U and ATxmega64A1U parts. Modified file: /xmega/drivers/nvm.h
998	xmega	Add XMEGA B3 devices support in stk600/rc064x routing board	Added support for ATxmega128B3 and ATxmega64B3 in stk600_rc064 routing board.



ID	Component	Summary	Description
1011	xmega	Update XMEGA ADC drivers to support XMEGA B family	The XMEGA B family supports VCC/2 ADC reference voltage. Modified file: xmega/drivers/adc/ad_c.h
1012	xmega	Add USB HID keyboard examples for XMEGA B products family	Added XMEGA B USB HID Keyboard examples. Added: common/services/usb/ class/hid/device/kbd / example/atxmega128b1 _stk600-rc100x and common/services/usb/ class/hid/device/kbd / example/atxmega128b1 _xmega_b1_xplained.
1013	xmega	Add USB Mass Storage examples for XMEGA B products family	Added XMEGA B USB Device Mass Storage examples. Added folder: common/services/usb/ class/msc/device/example/atxmega128b1_st k600-rc100x/ and common/services/usb/ class/msc/device/example/atxmega128b1_xm ega_b1_xplained
1014	xmega	Add USB CDC examples for XMEGA B products family	Added XMEGA B USB Device CDC examples. Added folder: common/services/usb/ class/cdc/device/example/atxmega128b1 _st k600-r100x/ and common/services/usb/ class/cdc/device/example/atxmega128b1_xm ega_b1_xplained/
1022	xmega	Add XMEGA LCD drivers	Added drivers for XMEGA LCD module. Added folder: /xmega/drivers/lcd/.
1023	xmega	Add c42048a LCD glass component for XMEGA B LCD controller	Added c42048a LCD glass component for XMEGA B LCD controller. Added folder: xmega/components/display/c42048a/.
1087	xmega	Add USB Device Mass Storage examples for ATxmega128A1U	Added ATxmega128A1U USB Device Mass Storage example. Added folder: common/services/usb/ class/msc/device/example/atxmega128a1u_s tk600-rc100x
1092	xmega	Add USB Device HID Keyboard examples for ATxmega128A4U	Added USB Device HID Keyboard examples for ATxmega128A4U. Added folder: / common/services/usb/ class/hid/device/kbd / example/atxmega128a4u_stk600-rc044x/
1103	xmega	High Speed mode from XMEGA AC driver is available only on XMEGA A family	ac_set_high_speed_mode() and ac_set_low_power_mode() are available for XMEGA A family only. Modified file: xmega/drivers/ac/ac.h
1123	xmega	Update XMEGA ioport driver to support XMEGA B3 family	Update ioport driver to make it compatible for devices without PORT A. Modified file: xmega/drivers/ioport.h
1138	xmega	Add USB DFU bootloaders for XMEGA B1 and B3 devices	Add USB DFU bootloaders for atxmega128b1, atxmega64b1, atxmega128b3, atxmega64b3. Modified files: / common/services/usb/ udc/udc_dfu_small.c, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_isp.h, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_usb.h, / common/services/usb/ usb_atmel.h. Added folders: / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega128b1/, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega128b3/, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega64b1/, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega64b3/
1144	xmega	Add DFU bootloaders for ATxmega128A4U and ATxmega64A4U	The DFU bootloaders for ATxmega128A4U and ATxmega64A4U are only available on IAR EWAVR 6.10. Modified files: / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_isp.h, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_usb.h, / common/services/usb/ usb_atmel.h. Added folders: / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega128a4u/, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/atxmega64a4u/
1145	xmega	Add DFU bootloaders for ATxmega128A1U and ATxmega64A1U	The DFU bootloaders for ATxmega128A1U and ATxmega64A1U are only available on IAR EWAVR 6.10. Modified files: / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_isp.h, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/conf/conf_usb.h, /



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-	-	-	common/services/usb/ usb_atmel.h, / common/services/isp/flip/xmega/cstartup. s90. Added folders: / common/services/usb/ class/dfu_flip/device/bootloader/xmega/a txmega128a1u/, / common/services/usb/ class/dfu_flip/device/bootloader/xmega/a txmega64a1u/
767	xmega	Add USB DFU FLIP bootloader for AVR XMEGA	Add USB DFU FLIP bootloaders for AVR ATxmega256A3BU, ATxmega256A3U, ATxmega192A3U, ATxmega128A3U, ATxmega64A4U, ATxmega32A4U, ATxmega16A4U. Added folder: common\services\usb\class\dfu_flip\device\bootloader\xmega, Added file: common\services\usb\udc\udc_dfu_small.c
786	xmega	Improve speed of EEPROM erase and write buffer function in XMEGA NVM driver	Improve speed of nvm_eeprom_erase_and_write_buffer() in xmega\drivers\nvm\nvm.c. 1 second instead of 22 seconds for a 2Kb EEPROM.

Bug Fixes

ID	Component	Summary	Description
1204	3rd party	Assert function cause error build on some IAR unit test	Fixed IAR build errors by adding a cast to (uint8_t*) for dst parameter. Modified files: avr32/drivers/flashc /flashc.c, avr32/drivers/flashc dw/flashcdw.c
276	3rd party	LodePNG should not depend the display driver, is hidden in AVR Studio 5	Remove LodePNG dependency to display driver. Removed file: thirdparty\lodepng\l odepng_app.c. Modified file: thirdparty\lodepng\l odepng_example.c
1198	3rd party	PolarSSL doesn't compile correctly	polarssl/openssl.h and polarssl/net.h must not be included as API in the asf.h file when importing PolarSSL in a project.
682	avr32	avr32/applications/u c3-audio-player: audio player shows a white screen with AVR Studio 5	The audio player application shows a blank screen even if the pictures are loaded to the DataFlash when compiled with AVR Studio 5.0.
997	avr32	The linker-generated content of avr32.drivers.intc.e xception.S::ipr_val may be wrong, causing interrupts at interrupt levels INT1, INT2 and INT3 to not work.	Get rid of the ipr_val[] pre-computed array and dynamically fill, during the interrupt handler registration, the register INTC.IPR with the appropriate value depending on the interrupt level. This is only an implementation change of the AVR UC3 intc sw driver. API is unchanged. Modified files: avr32/drivers/intc/, avr32/drivers/eic/ex ample2/exception.S., s82 & thirdparty/freertos/ source/portable/gcc/ avr32_uc3/exception. S & thirdparty/freertos/ source/portable/iar/ avr32_uc3/exception. s82.
579	avr32	SPI driver function getBaudDiv can give higher baudrate than requested	Updated integer division in getBaudDiv to use div_ceil function, to make sure divisor is not rounded up resulting in a higher baudrate than requested. Modified file: avr32/drivers/spi/sp i.c
1243	avr32	Increase CPU clock of SDRAM unit tests on UC3C_EK	Update CPU clock configuration on UC3C_EK for SDRAM unit test. Modified file: avr32\components\mem ory\sdram\mt48lc16m1 6a2tg7e\unit_tests\at32uc3c0512c_uc3c_ek \conf_clock.h.
1127	avr32	Bug in DP83848I PHY initialisation	Fix the loop-over-link-statu s while loop in the function ethernet_phy_sw_rese t() to match the DP83848 phy datasheet. File modified: asf/avr32/components / ethernet_phy/dp83848 /dp83848.h.
951	avr32	Wrong prototypes function definition in avr32/driver pwm4.h and wdt4.h	Several function prototypes and definitions in avr32/drivers/pwm/pw m4.c and avr32/drivers/pwm/pw m4.h are missing the void parameter specifiers, which causes needless build warnings.
331	avr32	common/services/cloc k: sysclk module sets non-optimal flash wait states for some PLL values	The Flash wait state should be based on the CPU/HSB clock frequency rather than on the main clock frequency. The modifications are in the sysclk.c files in common/services/cloc k for uc3a0_a1,uc3a3_a4, uc3b0_b1, uc3c and uc3l.
1107	avr32	Fix workaround for GPIO v211: 'Writing a one to the GPIO.IFRC register to clear an interrupt will be ignored if interrupt is enabled for the corresponding port'	The workaround implemented for the erratum for the GPIO version 211, should clear all the enabled GPIO interrupts before clearing the interrupt flag register. The modification is in function gpio_clear_pin_inter rupt_flag() in avr32/drivers/gpio/g pio.c file.
609	avr32	Update the avr32/drivers/tc/exa mple3 based on the new structure	Modified the Timer/Counter example3 based on the new structure. Modified folder: avr32/drivers/tc/exa mple3
419	avr32	return 42 should not be used in the code	Replaced return 42 in main() function by while (true). Modified files: avr32\applications\e vk1100-control-panel \main.c, avr32\applications\e vk1100-usb-cdc-msc-v 1\main.c, avr32\applications\e vk1101-demo\main.c, avr32\applications\e vk1104-usb-msc-sd-de mo\main.c, avr32\applications\e vk11xx-uc3b-usb-hid-qtouch-debug\hid_qto uch_debug.c, avr32\applications\e vk11xx-uc3b-virtual- com-port\main.c, avr32\components\mem ory\sd_mmc\sd_mmc_mc i\example\sd_mmc_mci _example.c, avr32\components\tou ch\resistive_touch\e xample\rtouch_exampl e.c,



ID	Component	Summary	Description
-	-	-	avr32\drivers\usbb_ asf_v1\examples\enum_example.c, avr32\services\usb_ asf_v1\class\audio\examples\device\audio_example.c, avr32\services\usb_ asf_v1\class\audio\examples\host\audio_example.c, avr32\services\usb_ asf_v1\class\cdc\examples\cdc_example.c, avr32\services\usb_ asf_v1\class\hid\examples\hid_example.c, avr32\services\usb_ asf_v1\class\hid\generic_examples\hid_generic_example.c, avr32\services\usb_ asf_v1\class\mass_storage\examples\mass_storage_example.c, thirdparty\freertos\demo\lwip_avr32_uc3_example\main.c
1218	avr32	Missing uc3a3 linker scripts	Added missing UC3 A3 linker scripts in avr32\utils\linker_scripts\at32uc3a3\ folder for atuc3a3{128,42}{,s} devices for IAR and GCC compilers.
557	avr32	avr32/drivers/twi/tw i.c twi_slave_init contradicts datasheet	Fixed the slave address assignment sequence and removed the unnecessary clock divider calculation to follow the datasheet. Updated file: / avr32/drivers/twi/tw i.c
759	common	Sensor range and bandwidth values are not set correctly	The sensor drivers in static link libraries under thirdparty\sensors\libs do not handle the sensor_set_range and sensor_set_bandwidth functions correctly. As a result, the values are not always changed to the new settings.
1166	common	Fix serial service to support all XMEGA family other than A1	Fixed common serial service for XMEGA, for devices without all USART instance available. Modified file: / common/services/serial/xmega_usart/usart_serial.h.
791	common	Fix implementation in ISP FLIP service for AVR UC3 devices	Replaced uint32_t by isp_addr_t structure in Read/Write memory routines. Modified file: common\services\isp\flip\uc3\isp.c.
803	common	Changed USB Class definition for USB bootloader (from DFU to Vendor Class)	Changed USB Class used for DFU bootloader from 'DFU' to 'Vendor' class. The behavior of the bootloader is unchanged. Modified files: common\services\usb\ class\dfu_flip\device\udi_dfu_atmel.h, common\services\usb\ class\dfu_flip\device\udi_dfu_atmel_desc .c, common\services\usb\usb_protocol.h
1104	common	USB Atmel DFU blank check operation fails on part with 64 kB of flash	This update fixes the issue on blank check command which returned always success when whole flash is checked. Modified file: common\services\usb\ class\dfu_flip\device\udi_dfu_atmel.c
699	documentation	EVK1100 Control Panel Application - documentation: empty doxygen main page	Fix missing includes files in Doxygen documentation generation.
886	xmega	twim_master_init sets the speed while master is enabled.	The XMEGA TWI Master BAUD register should be written while the master is disabled. The fix is included in modifications made for bug#871 which provides for configurable interrupt levels in addition to correcting source code formatting and spelling problems. Modified: / xmega/drivers/twi/tw im.c
878	xmega	Fix XMEGA NVM driver function asserts	Non-existent variable used in assert test of nvm_eeprom_read_byte () function. File modified: xmega/drivers/nvm/nv m.c
870	xmega	XMEGA twim driver has a logic error exposing driver to race conditions.	A logic error in the XMEGA twim driver leaves the driver exposed to a race condition that may result in TWI transaction failures. Modified file: / xmega/drivers/twi/tw im.c.
880	xmega	twim.c spelling error	Correct spelling and content errors in XMEGA twim driver source documentation. Modified file: / xmega/drivers/twi/tw im.c.
881	xmega	function doc error in twim_idle	Correct spelling and content errors in XMEGA twim driver source documentation. Modified file: / xmega/drivers/twi/tw im.c.

ID	Component	Summary	Description
582	xmega	Magic number used in XMEGA TC example 1	tc_set_resolution() in xmega/drivers/tc/example1/tc_example1.c uses a magic number, 31250, even though a symbol definition exists.
787	xmega	XMEGA NVM driver for flash size <= 32kB gives compilation error	Fix compilation error for XMEGA with a flash size <= 32kB (Note: flash boot section is not included in flash size). Modified file: xmega/drivers/nvm/nv_m.h.
1076	xmega	XMEGA EBI driver does not compile on IAR EWAVR 6.10	Update of XMEGA EBI driver to support new IAR EWAVR 6.10 header files. Modified files: xmega/drivers/ebi/ebi.h, xmega/drivers/ebi/sdram_example/ebi_sdram_example.c, xmega/drivers/ebi/sram_example/ebi_sram_example.c, xmega/drivers/ebi/unit_tests/sdram/atxmega128a1_xplain/conf_test.h, xmega/drivers/ebi/unit_tests/sram/atxmega128a1_stk600-rc100x/conf_test.h
1077	xmega	common stdio module does not support DLIB from IAR EWAVR6.10	The common stdio module has been updated to support the new DLIB release from IAR EWAVR6.10. Modified files: common/utils/stdio/read.c - write.c
1078	xmega	xmega_a1_xplained_demo does not compile on IAR EWAVR 6.10	Fix syntax in main file. Modified file: xmega/applications/xmega_a1_xplained_demo/main.c
1185	xmega	During XMEGA USB initialization, the DFLL calibration via USB start of frame must be disabled	The calibration must be disabled between USB interface enable and the enable of full speed mode. Modified file: xmega/drivers/usb/usb_device.c
1220	xmega	Compilation error on Assert() from XMEGA USB driver on IAR compiler	Remove the inline compilation attribute from the declaration of udd_ep_is_valid() to fix compilation error on IAR when ASSERT is enabled. File modified: xmega/drivers/usb/usb_device.c
1070	xmega	Peripheral clock not being enabled on USARTs	Fixed a bug in UART where the port letter and the USART number are swapped (e.g. ""USARTC0"" appears as ""USARTOC""). Modified file: common/services/clock/xmega/sysclk.h



Known Issues

ID	Component	Summary
862	3rd party	Sensor library fails compilation if not using an board in the ""Xplained"" series of boards."
860	3rd party	Sensor library does not compile correctly for other XMEGA devices than ATxmega128A1
863	avr32	The module ""MEMORY - SD/MMC card access using MCI"" can't be used with UC3-A3 Xplained."
735	avr32	T2BF library (thirdparty\cybercom\ t2bf\) set the state to ""connected"" too early"
491	avr32	avr32/services/netwo rk/can/can.c: Missing function prototypes (can_enable_interrupt () can_clear_status())
323	avr32	Display - LCD display - ET024006DHU driver does not compile unless the user has manually configured the it.
322	avr32	EBI SMC driver does not compile unless the user has manually configured the chip select.
321	avr32	The MACB driver doesn't build successfully under AVRStudio5's Application Builder unless manually configured by the user.
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error
647	build system	Some UC3L modules are missing in AVR Studio 5
1156	common	UC3C sysclk_set_prescaler s function of doesn't set correctly the prescaler value if higher than 1
654	common	common/components/me mory/data_flash/at45 dbx is not listed for any devices in AVR Studio 5 ASF menu
1226	xmega	DES unit test on Xmega A1 Xplained failed on IAR
861	xmega	XMEGA NVM driver does not support XMEGA A3 rev B errata.
853	xmega	XMEGA USB modules can be selected even for non-USB devices
761	xmega	RTC32 rtc32_init() is unusable when using battery backup (combination of rtc32_init() and rtc32_vbat_system_ch eck() is not complete)



Changes between version 2.7.0 and version 2.6.1 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
673	avr32	Add unit test for \avr32\components\memory\sd_mmc\sd_mmc_spi	Add unit tests for the SD/MMC SPI component. Added folder: avr32/components/memory/sd_mmc/sd_mmc_spi/unit_tests. Added configuration option (CONF_BOARD_SD_MMC_SPI) for the files: avr32/boards/evk1100/init.c, avr32/boards/evk1101/init.c, avr32/boards/evk1105/init.c, avr32/boards/uc3c_ek/init.c.
506	avr32	Create DSPLib example for AVR Studio 5 Simulator.	Added Folder: avr32/services/dsp/dsplib/simulator_examples.



Bug Fixes

ID	Component	Summary	Description
939	avr32	The audio player redraws more than once the song information.	The audio player now redraws only once the metadata information of the current song. Modified file : avr32/applications/u c3-audio-player/com_ task.c
838	avr32	MACB driver forces phy into RMII mode even if MII mode is used	Ethernet phy was forced into RMII mode even if MII mode was selected. This fix removes this force when using MII mode. Modified file: avr32/drivers/macb/m acb.c
847	avr32	twim/twis repeated start issue in slave/master example	Fixed the state machine issue when twi/twis slave example is used with twim master example. The twim_write_packet function is modified to remove the unwanted repeated start inserted between consecutive write commands. Modified file: avr32/drivers/twim/t wim.c
899	common	asf.h fixes integration	Update asf.h generation to show header files in ""blocks"" and recursive for all modules. All XMEGA driver examples are now including asf.h."
178	xmega	XMEGA DAC driver fails to compile for XMEGA128A1U	Updated the XMEGA DAC driver to support the new DAC implementation in XMEGA-U devices. Additional calibration values needed to be loaded and timing settings for the S/H are note needed for the new DAC. Modified files: xmega/drivers/dac/da c.c, dac.h
953	xmega	The ""Power LED"" on the XMEGA-A3BU Xplained should be lit when powering the board"	Updated the XMEGA-A3BU Xplained board initializing code so that a green power led is always lit when calling board_init() indication that the board init code has been run.
960	xmega	ADC driver has several parameter types for channel specification	XMEGA ADC driver API modification: Removed any use of channel id number and use channel mask for all functions. Affects the callback type adc_callback_t and the functions adcch_get_result(), adcch_get_signed_result(), adcch_get_unsigned_result(), adcch_write_configuration() and adcch_read_configuration(). Modified files: xmega/drivers/adc/ad c.c xmega/drivers/adc/ad c.h xmega/drivers/adc/ex ample1/adc_example1. c xmega/drivers/adc/ex ample2/adc_example2. c xmega/applications/x mega_a3bu_xplained_demo/adc_sensors.c
995	xmega	AD conversion start and result fetching functions should be in same ""module""	XMEGA ADC driver API modification: Renamed adcch_get_*result functions into adc_get_*result, and moved them to be together with adc_start_conversion . Modified files: xmega/drivers/adc/ad c.c xmega/drivers/adc/ad c.h xmega/drivers/adc/ex ample2/adc_example2. c



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491	avr32	avr32/services/netwo rk/can/can.c: Missing function prototypes (can_enable_interrupt () can_clear_status())
323	avr32	Display - LCD display - ET024006DHU driver does not compile unless the user has manually configured the it.
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321	avr32	The MACB driver doesn't build successfully under AVRStudio5's Application Builder unless manually configured by the user.
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error
647	build system	Some UC3L modules are missing in AVR Studio 5
654	common	common/components/me mory/data_flash/at45 dbx is not listed for any devices in AVR Studio 5 ASF menu
861	xmega	XMEGA NVM driver does not support XMEGA A3 rev B errata.
853	xmega	XMEGA USB modules can be selected even for non-USB devices
761	xmega	RTC32 rtc32_init() is unusable when using battery backup (combination of rtc32_init() and rtc32_vbat_system_ch eck() is not complete)



Changes between version 2.6.1 and version 2.5.1 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
132	avr32	Add DSPLib source code	The DSPLib is a full featured digital signal processing library which provides a large set of optimized and generic functions to process 16- and 32-bit fixed-point DSP algorithms. It comes with many examples as well as some utilities and a debug module to ease and speed-up development. Note: the directory naming has been updated to lower case since older versions. All the source code is located under: avr32/services/dsp/dsplib/. The library is located under: avr32/utills/libs/dsplib.
59	avr32	FreeRTOS port: get rid of the dependency to Newlib-addons in the FreeRTOS port.	Newlib-addons dependency has been removed from the FreeRTOS GCC port. Modified folder: /thirdparty/freertos/source/portable.
498	avr32	Add UC3-C2 Xplained board support	Add UC3-C2 Xplained board support. Added folder: /avr32/boards/uc3_c2_xplained/.
500	avr32	Add UC3-C2-Xplained kit support in avr32/drivers/usart example	Add UC3-C2-Xplained kit support in example avr32/drivers/usart. Modified files: /avr32/drivers/usart/usart_example/usart_example.c.
502	avr32	Add UC3-C2-Xplained support in example thirdparty/freertos/ demo/lwip	Add UC3-C2-Xplained kit support in example thirdparty/freertos/ demo/lwip. Added files: thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/at32uc3_c2512c_uc3_c2_xplained and thirdparty/freertos/ demo/lwip_avr32_uc3_example/at32uc3c2512c_uc3_c2_xplained.
310	avr32	Add USB Audio class device and host examples (for USB stack from ASF v1, in avr32/services/usb_ asf_v1)	Fixed by adding a USB Audio class device example using 3 different digital stream resynchronization methods (adaptive sampling rate conversion, add/remove of samples and external clock synthesizer). Also, a USB Audio class host example has been added (adaptive sampling rate conversion only). New examples are in avr32/services/usb_ asf_v1/class/audio/examples/.
615	avr32	32-bit AVR GNU makefile examples/applications can be more optimized with the "--direct-data" gcc option"	Added "--direct-data" as a default option for the 32-bit AVR makefile.in. This optimizes the TEXT sections of the applications and brings speed optimizations. Please look in http://www.atmel.com/dyn/resources/prod_documents/doc32074.pdf for more information for "linker relaxing". Modified file: avr32/utills/make/Makefile.in. This fix is only for GNU makefile and does not impact AVR Studio 5 project."
345	avr32	Add UC3 C1 and C2 devices support in /common/services/clock/uc3c/	Add UC3 C1 and C2 devices support in /common/services/clock/uc3c/. Modified files: /common/services/clock/uc3c/sysclk.h.
499	avr32	Add UC3-C2-Xplained kit support in avr32/drivers/gpio/local_bus_example example	Add UC3-C2-Xplained kit support in example avr32/drivers/gpio. Modified files: /avr32/drivers/gpio/local_bus_example/gpio_local_bus_example.c.
516	avr32	Add UC3-C2 kit support in avr32/drivers/mach and /thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/ examples	Add UC3-C2-Xplained kit support for mach drivers example and lwip example. Added folder: avr32/drivers/mach/example/at32uc3c2512c_uc3_c2_xplained and thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/at32uc3_c2512c_uc3_c2_xplained/conf_eth.h.
529	avr32	Add avr32/applications/uc3-c2-xplained-webserver-demo	Add a web server demo for UC3-C2-Xplained development kit. Added folder: avr32/applications/uc3-c2-xplained-webserver-demo.
556	avr32	Add UC3C missing linker scripts	Add UC3C{064,0128,164,1128,1256,1512,264,2128}c linker scripts. Added files: avr32/utills/linker_scripts/at32uc3c/{064,0128,164,1128,1256,1512,264,2128}c for both IAR and GCC compilers.

ID	Component	Summary	Description
685	avr32	Add unit test for \avr32\components\memory\sdr\mt48lc16m1_6a2tg7e component	Add unit tests for mt48lc16m1_6a2tg7e SDRAM component. Added folders: avr32/components/memory/sdr/mt48lc16m1_6a2tg7e/unit_tests/.
136	avr32	Improve code size of AT32UC3 flash drivers	Major flash_memcpy() optimization in flashc and flashcdw drivers to target less than 8kB bootloaders. Modified files: avr32/drivers/flashc/flashc.c, avr32/drivers/flashc/flashc.h, avr32/drivers/flashcdw/flashcdw.c, avr32/drivers/flashcdw/flashcdw.h, avr32/drivers/flashcdw/flashcdw.h, avr32/applications/uc3-uart-bootloader/flash_api.h.
689	avr32	Add a new avr32 service to detect external clock frequency	This service can be used by an application that does not know the value of the external oscillator. It is the case for USB DFU bootloaders. Added folder: avr32/services/freq_detect/.
375	common	Add Atmel USB DFU bootloader source for UC3C	Add USB DFU bootloader source code for the UC3C for GCC and IAR compilers. Added folder: common/services/usb/class/dfu_atmel/device/bootloader/avr32/
672	common	Add unit test for common\components\memory\data_flash\at45dbx module	Add unit tests for AT45dbx DataFlash component. Added folder: avr32/components/memory/data_flash/at45dbx/unit_tests/
844	common	Add UC3C-EK support for the AT45x unit tests	Add support to the UC3C-EK for the unit test of the AT45dbx DataFlash component. Added Folder : common/components/memory/data_flash/at45dbx/unit_tests/at32uc3c0512c_uc3c_ek
501	common	Add UC3-C2-Xplained kit support in common/services/clock/examples	Add UC3-C2 kit support in example common/services/clock. Added files: /common/services/clock/example1/at32uc3c2512c_uc3_c2_xplained, /common/services/clock/example2/at32uc3c2512c_uc3_c2_xplained and /common/services/clock/example3/at32uc3c2512c_uc3_c2_xplained.
503	common	Add UC3-C2-Xplained support in USB HID device mouse example	Add UC3-C2 kit support in example common/services/usb. Added files: /common/services/usb/class/hid/device/mouse/example/at32uc3c2512c_uc3_c2_xplained.
661	common	System font support	System font support for monochrome graphical library displaying ASCII letters on a graphical display. (common/services/gfx_mono/)
663	common	LCD Controller ST7565R low-level driver implementation	ST7565R low-level driver implementation for use with monochrome graphical library. Added folder: common/components/display/st7565r/
664	common	Common monochrome graphic primitives implementation	Monochrome graphical library. Added folder: common/services/gfx_mono/
732	common	Add calendar service	Added folder: common/services/calendar/
848	common	Add spinner widget for gfx_mono	Added spinner widget for monochrome graphical displays. Added Folder: common/services/gfx_mono/example_spinctrl Added files : common/services/gfx_mono/gfx_mono_spinctrl.c common/services/gfx_mono/gfx_mono_spinctrl.h common/services/gfx_mono/module_config/config_spinctrl.h
40	common	Add code that tests and demonstrates the FIFO service	Add a unit test for the FIFO service to common\services\fifo\unit_tests\, both to ensure that the service works as intended and to give some example usage code for it.
465	common	Add UC3 support in example of common/utills/stdio module	Add configuration files to create XMEGA-A1 Xplained and UC3-L0 Xplained example applications for C-library Standard I/O interface to USART. Modified common/utills/stdio/stdio_serial/stdio_serial_example/stdio_serial_example.c source. Added common/utills/stdio/stdio_serial/stdio_serial_example/at32uc31064_uc3_10_xplained and common/utills/stdio/stdio_serial/stdio_serial_example/atxmega

ID	Component	Summary	Description
-	-	-	128a1_xmega_a1_xplained folders.
193	common	Improve the API of the common/service/fifo module and make it compliant to mega/xmega architecture	fifo_push_byte, fifo_push_halfword, fifo_push_word, fifo_pull_byte, fifo_pull_halfword, fifo_pull_word respectively replaced by fifo_push_uint8, fifo_push_uint16, fifo_push_uint32, fifo_pull_uint8, fifo_pull_uint16 and fifo_pull_uint32. Added new ' fifo_push/pull_uintx_x_nocheck' functions for fast operation. Make this module compliant with mega and xmega architecture. Modified folder: common/services/fifo.
195	common	common/services/fifo : add fifo_peek() and fifo_is_full() functions	Add fifo_peek_uintxx() and fifo_is_full() functions. Modified folder: common/services/fifo.
693	common	Add FLIP service for Atmel USB and UART bootloaders	To perform firmware upgrade, Atmel has developed an application called FLIP. This software is a flexible application which lets you program and configure Atmel's microcontroller devices in their final environment without needing any dedicated hardware. This service provides a generic FLIP ISP API (/ common/services/isp/ flip/isp.h) and the FLIP protocol API (/ common/services/isp/ flip/flip_protocol.h).
694	common	Add support of AVR UC3 parts in FLIP service	Add FLIP-compliant In System Programming implementation and boot process for AVR UC3 devices. New files: common/services/isp/ flip/uc3/isp.c, common/services/isp/ flip/uc3/flash_api.h , common/services/isp/ flip/uc3/boot.h, common/services/isp/ flip/uc3/boot.S, common/services/isp/ flip/uc3/boot.s82.
695	common	Add USB Atmel DFU class in USB device stack V2	This class provides the USB device interface used by USB bootloaders which communicate with Atmel application called FLIP (Flexible In-system Programmer). Added folder: common/services/usb/ class/dfu_atmel/.
603	mega	Add megaAVR TC timeout driver	This provides a generic timeout driver running on top of the Timer/Counter peripheral module. Timeout is tick based and several concurrent timeouts can be configured. Added folder: mega/drivers/tc
684	other	/ thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/ should use sysclk_init() function	The configuration of clock is done through the sysclk module (common/services/clock). Modified files: thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/main.c and added files: thirdparty/freertos/ demo/lwip_avr32_uc3_dhcp_example/conf_clock.h.
852	xmega	Add ""Set date/time"" application to XMEGA-A3BU Xplained demo application"	Add applications for setting the date and time to the XMEGA-A3BU Xplained demo application. Add a ""date&time"" menu for all date and time related functionality. Modified Files : xmega/applications/xmega_a3bu_xplained_demo/date_time.c xmega/applications/xmega_a3bu_xplained_demo/date_time.h xmega/applications/xmega_a3bu_xplained_demo/main.c xmega/applications/xmega_a3bu_xplained_demo/xmega_a3bu_xplained_demo/conf_spintrl.h"
701	xmega	XMEGA-A3BU Xplained - Add demo application	Add XMEGA-A3BU Xplained demo application which demonstrates RTC32 and the monochrome graphical library. Added folder: xmega/applications/xmega_a3bu_xplained_demo/
666	xmega	Add unit test for XMEGA SPI driver baud rate setting	Unit test for the function spi_xmega_set_baud_div(). Added directory xmega/drivers/spi/unit_tests
730	xmega	Unit test for XMEGA AES module	Added tests for AES module driver. Tests encryption and decryption with pre-calculated values. Tests module interface. Added Folder : xmega/drivers/aes/unit_tests
734	xmega	Add unit test for XMEGA DES driver	Added tests for DES and 3DES encryption and decryption, and tests for DES/3DES CBC encryption/decryption. Added folder: xmega/drivers/des/unit_tests/.



ID	Component	Summary	Description
751	xmega	Add unit test for XMEGA DMA driver	Add tests for direct memory copy and burst lengths, copy directions, configuration interface, triggering and callback functionality, error handling and double buffering. Added folder: xmega/drivers/dma/unit_tests/
851	xmega	Add USB CDC to XMEGA-A3BU Xplained demo application	Added USB CDC functionality to the XMEGA-A3BU Xplained demo application. Added Files : xmega/applications/xmega_a3bu_xplained_demo/XPLAINED_Virtual_Com_Port.inf xmega/applications/xmega_a3bu_xplained_demo/cdc.c xmega/applications/xmega_a3bu_xplained_demo/cdc.h xmega/applications/xmega_a3bu_xplained_demo/conf_usb.h Modified Files : common/services/usb/udc/udc.c common/services/usb/usb_atmel.h xmega/applications/xmega_a3bu_xplained_demo/adc_sensors.c xmega/applications/xmega_a3bu_xplained_demo/keyboard.c xmega/applications/xmega_a3bu_xplained_demo/main.c xmega/applications/xmega_a3bu_xplained_demo/timezone.c xmega/applications/xmega_a3bu_xplained_demo/xmega_a3bu_xplained/conf_clock.h
445	xmega	Add XMEGA-A3BU Xplained support	Added XMEGA-A3BU Xplained board support: Added entry in /common/boards/board.h, added /xmega/boards/xmega_a3bu_xplained, added /common/applications/user_application/atxmega256a3bu_xmega_a3bu_xplained/
447	xmega	Add XMEGA USB drivers support	Added XMEGA USB module drivers in xmega/drivers/usb.
450	xmega	Add USB Device CDC examples for XMEGA	Added XMEGA USB Device CDC examples. Added: /common/services/usb/class/cdc/device/example/uart_xmega.c, /common/services/usb/class/cdc/device/example/atxmega32a4u_stk600-rc044x/, /common/services/usb/class/cdc/device/example/atxmega256a3bu_stk600-rc064x/, /common/services/usb/class/cdc/device/example/atxmega256a3bu_xmega_a3bu_xplained/
451	xmega	common/services/clock/xmega: add USB support	Update XMEGA sysclock service to support USB. Added USB source clock configuration and management. Modified files: /common/services/clock/xmega/
720	xmega	Add USB HID mouse examples for XMEGA	Added XMEGA USB HID mouse examples. Added: /common/services/usb/class/hid/device/mouse/example/atxmega256a3bu_stk600-rc064x/, /common/services/usb/class/hid/device/mouse/example/atxmega256a3bu_xmega_a3bu_xplained/, /common/services/usb/class/hid/device/mouse/example/atxmega32a4u_stk600-rc044x
721	xmega	USB Device Keyboard examples for XMEGA	Added XMEGA USB Device Keyboard examples. Added: /common/services/usb/class/hid/device/keyboard/example/atxmega256a3bu_stk600-rc064x/, /common/services/usb/class/hid/device/keyboard/example/atxmega256a3bu_xmega_a3bu_xplained/, /common/services/usb/class/hid/device/keyboard/example/atxmega32a4u_stk600-rc044x
722	xmega	USB Device Mass Storage examples for XMEGA	Added XMEGA USB Device Mass Storage examples. Added: /common/services/usb/class/msc/device/example/atxmega256a3bu_stk600-rc064x/, /common/services/usb/class/msc/device/example/atxmega256a3bu_xmega_a3bu_xplained/ and /common/services/usb/class/msc/device/example/atxmega32a4u_stk600-rc044x
723	xmega	Update XMEGA nvm drivers for XMEGA AU parts	Update XMEGA nvm driver to support ATxmega256A3U, ATxmega192A3U, ATxmega128A3U, ATxmega64A3U, ATxmega256A3BU, ATxmega32A4U, ATxmega16A4U parts in /xmega/drivers/nvm/nvm.h.
724	xmega	Update XMEGA TC drivers for XMEGA AU part (BYTEM0 bit compatibility)	Update xmega/drivers/tc to support new both BYTEM and BYTEM0 bit naming for XMEGA parts with and without USB.



ID	Component	Summary	Description
725	xmega	Add XMEGA A3U devices support in stk600/rc064x routing board	Added STK600 support for ATxmega256A3U, ATxmega192A3U, ATxmega128A3U, ATxmega64A3U, ATxmega256A3BU in / xmega/boards/stk600/ rc064x.
726	xmega	Add XMEGA A4U devices support in stk600/rc044x routing board	Added STK600 support for ATxmega32A4U and ATxmega16A4U in / xmega/boards/stk600/ rc044x.
727	xmega	Add XMEGA AU support in parts.h	Added support for ATxmega256A3U, ATxmega192A3U, ATxmega128A3U, ATxmega64A3U, ATxmega256A3BU, ATxmega32A4U, ATxmega16A4U in /xmega/utils/part.h
757	xmega	Add IAR support for XMEGA USB examples	The following IAR projects on atxmega256a3bu are added: USB Device MSC on STK600/A3BU XPLAINED, USB Device HID mouse on STK600/A3BU XPLAINED, USB Device HID keyboard on STK600/A3BU XPLAINED and USB Device CDC on STK600/A3BU XPLAINED.

Bug Fixes

ID	Component	Summary	Description
710	avr32	avr32/components/aud io/codec/ms3: missing default configuration	Add default CS2200_FREF definition value. Improve documentation. Modified files: avr32/components/aud io/codec/ms3/ms3.c, msc3.h.
318	avr32	Code style cleanup in TWIS	Improved TWIS coding style. Modified file: avr32/drivers/twis/t wis.c
543	avr32	avr32\applications\u c3-dsplib-demo\at32u c3a3256_evk1104 fails in AVR Studio 5	Exception raised due to a data alignment issue in the uc3-dsplib-demo application. Modified file: avr32/applications/u c3-dsplib-demo/dsp_p rocess.c
515	avr32	avr32/components/eth ernet_phy/rtl8201 should have a configuration to generate clock	Add a configuration file named conf_rtl8201.h.
652	avr32	OSC0 source is missing in the UC3C sysclk module implementation: function pll_enable_source_sy nc()	Fixed by enabling OSC0 in case it is used by a PLL. Modified file: common/services/cloc k/uc3c/pll.h
642	avr32	uc3c usbb and usbc drivers: sleepmgr_un/lock_mod e() functions call are inverted in add_sleep_mode function, used to authorize the CPU to enter sleep mode	The unlock/lock functions in the USBB and USBC drivers have been inverted. Modified files: avr32/drivers/usbb/u sbb_device.c, avr32/drivers/usbc/u sbc_device.c.
713	avr32	Fix the flashc driver example so that it can be loaded to target using batchisp when it is compiled with IAR.	This fix allows to compile the example on IAR and to program it through batchisp and a bootloader. Modified file: avr32/drivers/flashc / flash_example/flash_ example.c
872	common	gfx_mono_generic_dra w_vertical_line draws the line 1 pixel too long	Fix a bug where the generic draw_vertical_line draw a line 1 pixel longer than specified. Modified File : common/services/gfx_ mono/gfx_mono_generi c.c
876	common	gfx_mono_generic horizontal line missing bounds check	Add a simple bounds check to the generic draw_horizontal_line function to avoid a line continuing outside the display. Modified File: common/services/gfx_ mono/gfx_mono_generi c.c
857	common	gfx_mono_generic: bugs in gfx_mono_generic_dra w_horizontal_line and gfx_mono_generic_dra w_filled_rect.	fix bug in generic draw_horizontal_line where the line is one pixel longer than the given argument. This fixes error in the generic rectangle functions that uses horizontal lines. Modified Files: common/services/gfx_ mono/gfx_mono_generi c.c xmega/applications/x mega_a3bu_xplained_d emo/date_time.c xmega/applications/x mega_a3bu_xplained_d emo/lightsensor.c xmega/applications/x mega_a3bu_xplained_d emo/main.c xmega/applications/x mega_a3bu_xplained_d emo/ntc_sensor.c xmega/applications/x mega_a3bu_xplained_d emo/production_date. c
865	common	common.services.cale ndar calendar_is_date_val id should be a public function	The function calendar_is_date_val id() is a private function of the calendar service. However, it should be public since users may also have a need to check for valid dates in their code. Modified Files: common/services/cale ndar/calendar.h common/services/cale ndar/calendar.c
578	common	div_ceil function is missing. Required by macro PLL_TIMEOUT_MS.	Added div_ceil function. div_ceil is integer division rounded up to closest integer. This function was required by macro PLL_TIMEOUT_MS. Modified files: avr32/utls/compiler .h, xmega/utls/compiler .h.
810	common	common.services.gfx_ mono requires a Display driver to be included in order to build correctly in AVR Studio 5. Add a NULL framebuffer to support all boards.	A NULL framebuffer should be added so that the font service compile for any board which does not have a LCD connected. Folder added : common/components/di splay/null Added files : common/services/gfx_ mono/gfx_mono_null.c , common/services/gfx_ mono/gfx_mono_null.h Modified files common/services/gfx_ mono/example_sysfont / atxmega256a3bu_xmega_a3bu_xplained/asf.x ml common/services/gfx_ mono/gfx_mono.h common/services/gfx_ mono/gfx_mono_generi c.c



ID	Component	Summary	Description
866	common	common.services.cale ndar calendar_add_second_ to_date does not update dayofweek in date struct	The function calendar_add_second_ to_date() does not update the date struct member dayofweek. This can cause days to be lost if enough time to pass midnight is added. Modified file : common/services/cale ndar/calendar.c
662	common	SPI master init clock problem in uc3c	In spi_master_init() function, SPI0 is located on PBC bus for UC3C part. Modified file: common/services/spi/ uc3_spi/spi_master.h.
750	common	udi_cdc_read_buf() function in USB Device CDC does not work	Fix by copying from USB transmit buffer instead of USB read buffer in udi_cdc_read_buf function . Modified file: common/services/usb/ class/cdc/device/udi_cdc.c
343	documentation	Wrong documentation in fifo.h	Update documentation. Modified folder: common/services/fifo.
680	documentation	T2BF library (thirdparty\cybercom\ t2bf) set the state to ""connected"" too early - should be documented"	Update avr32/applications/u c3-bluetooth-t2bf-sp p-demo/ application documentation: the Bluetooth connection may be fail if the connection is initiated from the board. The state changes to ""connected"" too early even if the connection is not completed on the PC. If the connection is initiated by the PC, the connection will succeed in all cases. Please refer to http://www.atmel.com / dyn/resources/prod_d ocuments/doc32153.pd f . Modified file: avr32/applications/u c3-bluetooth-t2bf-sp p-demo/main.c"
912	xmega	xmega a3bu demonstration application reads out the cdc serial number incorrectly	Add binary to ASCII conversion of stored USB device serial number before passing it to the USB stack. Modified file : xmega/applications/x mega_a3bu_xplained_d emo/cdc.c
794	xmega	Move XMEGA-A3BU Xplained menu system to separate service	The menu system used by the XMEGA-A3BU Xplained demo application is now moved to a separate service, making it available for user applications. Added files: common/services/gfx_ mono/gfx_mono_menu.c common/services/gfx_ mono/gfx_mono_menu.h common/services/gfx_ mono/module_config/c onf_menu.h xmega/applications/x mega_a3bu_xplained_d emo/xmega_a3bu_xplai ned/conf_menu.h Deleted Files: xmega/applications/x mega_a3bu_xplained_d emo/menu.c xmega/applications/x mega_a3bu_xplained_d emo/menu.h Modified xmega/applications/x mega_a3bu_xplained_d emo/bitmaps.c xmega/applications/x mega_a3bu_xplained_d emo/bitmaps.h xmega/applications/x mega_a3bu_xplained_d emo/main.c xmega/applications/x mega_a3bu_xplained_d emo/timezone.c
806	xmega	XMEGA-A3BU Xplained demo app - update production date continuously	For the XMEGA-A3BU Xplained demo application, the clock on the Production Date-screen is now updated continuously instead of showing a static time stamp. Modified File : xmega/applications/x mega_a3bu_xplained_d emo/production_ date. c
409	xmega	RTC32 and VBAT fixes for delay, status reporting and sleep locking	Locking power-save in the sleep manager is not correct since the RTC32 will be running even in power-down, the deepest sleep mode. The delay function should have microsecond resolution, not millisecond. Status checking and initialization of the battery backup system should be separated, and the documentation for the various states be added/improved. Modified files: xmega/drivers/rtc32/ rtc32.c and xmega/drivers/rtc32/ rtc32.h.
410	xmega	XMEGA NVM EEPROM driver does not work	Fixed non-working nvm_eeprom_read_byte in xmega/drivers/nvm.
544	xmega	spi driver: wrong copy use of SPI_PRESCALER1_bp	Caused wrong resulting baud rate for some requested baud rates. Also changed the function to accept baud rates not exactly matched to possible divisor, so now it will round down the baud rate to closest divisor setting. Modified file: xmega/drivers/spi/sp i.c
801	xmega	A3BU Xplained demo: Date and time app does not update date	Date not updated in date and time application, only time. If RTC is reset and timezone offset is negative, date and time application hangs. Modified files : xmega/applications/x

ID	Component	Summary	Description
-	-	-	mega_a3bu_xplained_demo/date_time.c xmega/applications/xmega_a3bu_xplained_demo/main.c xmega/applications/xmega_a3bu_xplained_demo/production_date.c
901	xmega	A3BU Xplained: Fix software to reflect hardware changes	Minor fixes to the XMEGA-A3BU Xplained demo application because of hardware changes on the latest revision of the XMEGA-A3BU Xplained board. Modified Files : xmega/applications/xmega_a3bu_xplained_demo/lightsensor.c xmega/boards/xmega_a3bu_xplained/xmega_a3bu_xplained.h
747	xmega	stk600 rc044x : DataFlash connection and Number of Push Buttons are incorrect	Fixed STK600 RC044X board support: Update DataFlash connection and limit the number of available switches to 4. Updated files: xmega/boards/stk600/rc044x/stk600_rc044x.h and xmega/boards/stk600/rc044x/init.c
869	xmega	Update A3BU demo use date stamp from signature instead of EEPROM	The XMEGA-A3BU Xplained demo application is now reading/writing the production date time stamp to user signature row instead of EEPROM. Added File : xmega/applications/xmega_a3bu_xplained_demo/xmega_a3bu_xplained_demo/conf_application.h Modified Files : xmega/applications/xmega_a3bu_xplained_demo/production_date.c xmega/applications/xmega_a3bu_xplained_demo/main.c xmega/applications/xmega_a3bu_xplained_demo/production_date.h common/services/gfx_mono/gfx_mono_spinctrl.h



Known Issues

ID	Component	Summary
862	3rd party	Sensor library fails compilation if not using an board in the ""Xplained"" series of boards."
860	3rd party	Sensor library does not compile correctly for other XMEGA devices than ATxmega128A1
735	avr32	T2BF library (thirdparty\cybercom\ t2bf\) set the state to ""connected"" too early"
491	avr32	avr32/services/netwo rk/can/can.c: Missing function prototypes (can_enable_interrupt () can_clear_status())
323	avr32	Display - LCD display - ET024006DHU driver does not compile unless the user has manually configured the it.
322	avr32	EBI SMC driver does not compile unless the user has manually configured the chip select.
321	avr32	The MACB driver doesn't build successfully under AVRStudio5's Application Builder unless manually configured by the user.
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error
647	build system	Some UC3L modules are missing in AVR Studio 5
654	common	common/components/me mory/data_flash/at45 dbx is not listed for any devices in AVR Studio 5 ASF menu
861	xmega	XMEGA NVM driver does not support XMEGA A3 rev B errata.
761	xmega	RTC32 rtc32_init() is unusable when using battery backup (combination of rtc32_init() and rtc32_vbat_system_ch eck() is not complete)



Changes between version 2.5.1 and version 2.4.0 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
37	avr32	Add UC3C-EK support to the avr32/drivers/eic/example1 and example2	Fixed by adding UC3C-EK configuration. Modified files: avr32/drivers/eic/example1/eic_example1.c and avr32/drivers/eic/example2/eic_example2.c.
471	avr32	Add UC3 Audio MP3 decoder application	This software application includes a software MP3 decoder (libmad), a file system and a USB Host mass storage class support. It can play files or access audio streams from USB mass storage devices and SD/MMC cards. It supports many clocking schemes to handle most configurations and can be attached to any audio codec or DAC (using I2S bus interface or a standard analog output). This software provides an easy way to interact with a custom HMI (Human Machine Interface) and can handle extra user-defined tasks. Examples are provided for the EVK1104 and EVK1105 kits. Added folder: avr32/applications/uc3-audio-player.
542	avr32	Add libmad MP3 decoder third party	Added folders: third_party/libmad, avr32/services/audio/mp3/id3, avr32/services/audio/audio_player/players/mp3.
365	avr32	Add UC3L0128 & UC3L0256 support to the AVR UC3 UART Bootloader.	The AVR UC3 UART Bootloader now supports both the AVR UC3 L016/32/64 series and the AVR UC3 L0128/256 series. Modified folder: avr32/applications/uc3-uart-bootloader/.
484	avr32	avr32/drivers/scif/: add PLL0 support for UC3L0128 & UC3L0256.	This patch adds an enum value to the enum type scif_gcctrl_oscscel_t and adds a set of functions and a structure to control the PLL0 available on UC3L0128 & UC3L0256 devices. Modified files: avr32/drivers/scif/{ scif_uc3l.c, scif_uc3l.h}.
493	avr32	Add GCC and IAR linker scripts for UC3L0128 and UC3L0256.	Add GCC and IAR linker scripts for UC3L0128 and UC3L0256. New folders under: avr32/utills/linker_scripts/at32uc3l/.
536	avr32	avr32/drivers/scif/: add support for UC3L0128 & UC3L0256.	This patch adds support for UC3L0128 & UC3L0256 in the AVR UC3 SCIF drivers. Modified files: avr32/drivers/scif/{ scif_uc3l.c, scif_uc3l.h}
537	avr32	avr32/boards/stk600/rcuc3l0/: add STK600 support for the UC3L0256 device	This patch allows to build examples and applications for the STK600+RCUC3L0 routing card setup with an AT32UC3L0256 device.
580	avr32	Port the PDCA example to a STK600+RCUC3L0+UC3L0 256 setup.	The PDCA driver example is available on an AT32UC3L0256 on a STK600+RCUC3L0 setup with a 12MHz osc0.
581	avr32	Port the USART example to a STK600+RCUC3L0+UC3L0 256 setup.	The USART driver example is available for AT32UC3L0256 devices on a STK600+RCUC3L0 setup with a 12MHz osc0.
394	avr32	Create GPIO example for AVR Studio 5 Simulator	Added Folder: avr32/drivers/gpio/simulator_example
415	avr32	avr32/drivers/twim driver should be based on common/utills/interrupt module	Remove references to 'intc' driver and replace by references to common interrupt API. Modified file: avr32/drivers/twim/twim.c.
433	avr32	Add USB Device MSC example on UC3C-EK board	Add the UC3C-EK USB Device Mass Storage example on AT45DBX DataFlash and virtual memory. Modified folder: common/services/usb/class/msc/device/example/.
479	avr32	Create USART example project for AVR Studio 5 Simulator	Added folder: avr32/drivers/usart/simulator_example1.
494	avr32	Add GCC and IAR linker scripts for UC3L016 and UC3L032.	Add GCC and IAR linker scripts for UC3L016 and UC3L032. New folders under: avr32/utills/linker_scripts/at32uc3l/.
520	avr32	Create MPU example for AVR Studio 5 simulator	Added Folder: avr32/drivers/cpu/mpu/simulator_example1



ID	Component	Summary	Description
508	avr32	Update FreeRTOS to version 7.0.0	Modified folder: / thirdparty/freertos/. Changes between V6.1.1 and V7.0.0 released April 8 2011: http://www.freertos.org/History.txt
592	avr32	Add UC3 A3, B, C, L examples to FreeRTOS	Added FreeRTOS examples for UC3L-EK, UC3C-EK, EVK1104 (UC3A3) and EVK1101 (UC3B) kits. Modified folder: / thirdparty/freertos/ demo/avr32_uc3_example.
416	avr32	avr32/components/touch/at42qt1060 module should be based on common/utils/interrupt module	Remove references to 'intc' driver and replace by references to common interrupt API. Modified file: avr32/components/touch/at42qt1060/at42qt1060.c
586	avr32	Add configuration file for avr32/drivers/eic examples	Fixed by adding configuration files for eic example1 and eic example2. Added files: conf_example1.h and conf_example2.h. Modified files: avr32/drivers/eic/example1/eic_example1.c and avr32/drivers/eic/example1/eic_example1.c
600	avr32	avr32/drivers/eic: use common irq function instead of intc driver	Remove references to 'intc' driver and replace by references to common interrupt API (common/utils/interrupt.h). Modified file: avr32/drivers/eic/eic.c.
455	build system	Update the common XMEGA Makefile.in to support library builds.	Common GCC make rules for XMEGA now supports building libraries. Modified file: common/utils/make/Makefile.avr.in
458	common	Common sensor service	Add an ASF common service, application-layer API, and board support for sensor peripherals on Atmel top modules and development boards. Added folders: common/services/sensors, common/boards/sensors_xplained, thirdparty/sensors/libs/, common/applications/sensors/, avr32/applications/uc3-inertial-demo/, avr32/applications/uc3-compass-calibration/, avr32/applications/uc3-pressure-demo, avr32/applications/uc3-inertial-wake, and avr32/applications/uc3-inertial-visualizer. See also: http://www.atmel.com/dyn/products/tools_card.asp?tool_id=5017
594	common	Add support of the C library standard I/O functions to the USB CDC service	The USB CDC service does not supply a component or configuration supporting C library standard I/O functions. Added folder: common/utils/stdio/stdio_usb.
495	common	Add UC3L0128 & UC3L0256 support to the common/services/clock module.	This patch adds the support of UC3L0128 & UC3L0256 devices to the UC3L devices series by adding the support for PLL0. Modified files: common/services/clock/pll.h, common/services/clock/uc3l/{genclk.h, sysclk.c, sysclk.h}.
518	common	Add unit test suite	This module is the test suite framework, which provides a set of standard functions and macros for defining and running test suites. Added folder: common/utils/unit_test/.
482	mega	Add megaAVR code example for use of GPIO	Add example code for usage of General Purpose I/O (GPIO) on megaAVR devices. Added folder: mega/applications/mega_gpio_example/mega_gpio_example.c
507	mega	Add megaAVR example for interrupt UART	Add interrupt driven UART example for megaAVR. Added folder: mega/applications/mega_uart_interrupt_example/.
522	mega	Add STK600 board support for ATmega16/32, ATmega169/329 and ATmega64/128	Add board definitions for ATmega16/32, ATmega169/329 and ATmega64/128 on the STK600.
623	mega	add parts.h for megaAVR	Add /mega/utils/parts.h with megaAVR device families.
625	mega	Add mega devices support to common/utils/interrupt.h	Modified file: common/utils/interrupt.h
408	xmega	Add simulator project for AVR Studio 5 - GPIO	Added folders: xmega/boards/simulator, / xmega/drivers/ioport/simulator_example1
430	xmega	Add XMEGA AES and DES drivers	Add XMEGA AES and DES drivers, with examples for XMEGA128A1 Xplain. Added folders: xmega/drivers/aes, xmega/drivers/des.
457	xmega	XMEGA TWI master driver enhancement requests	The common service interfaces function prototypes are included from driver header files. The conditional compilation

ID	Component	Summary	Description
-	-	-	for the clock enables have been replaced with the new <code>sysclk_enable_peripheral_clock()</code> interface. The setup routine specifies <code>TWI_t *</code> CV-qualifiers that are compatible with the prototype for <code>twi_master_init()</code> in the driver implementation. In the XMEGA master driver, the <code>addr</code> and <code>addr_length</code> fields in the <code>twi_package_t</code> data structure are now implemented in the driver. The TWI master driver header file is now <code>C++ ready</code> . The XMEGA TWI master driver now uses <code>status_code_t</code> types in place of module-specific status constants. The data transfer functions are reentrant, but still block (busy-wait) for an unavailable bus interface. Additional conditionally-compiled ISR vectors have been added for other possible XMEGA TWI interfaces."
541	xmega	Add Timer/Counter project for AVR Studio 5 simulator	Added timer counter example 1 for the simulator
548	xmega	EBI driver should be unit tested, based on the examples	Add unit test applications for XMEGA EBI w/ external SRAM and SRAM. Added folders: <code>/xmega/drivers/ebi/unit_tests/{sram, sdram}/</code> .
377	xmega	Add user signature read to NVM driver	Add example 5 which does unit-testing on nvm user signature row functions. Modified files: <code>xmega/drivers/nvm.c</code> , <code>nvm.h</code> , <code>nvm_asm.s</code> .



Bug Fixes

ID	Component	Summary	Description
340	avr32	Distortion in usb_stream_player_with_resampling.c	When more than 1 channel was used, the output buffer was not fully copied to the output, omitting the last sample. This is now fixed in the file: /avr32/services/audio/audio_player/players/usb/usb_stream_player_with_resampling.c.
532	avr32	avr32/drivers/gpio/: the buskeeper feature and the pull-down and open-drain registers are not supported by UC3L devices.	This patch removes accesses to the non-existing pull-down and open-drain registers on AVR UC3L0 devices. This patch also removes the implementation of the buskeeper feature since it is not supported by the AVR UC3L0 devices. Modified files: avr32/drivers/gpio/{ gpio.c, gpio.h}.
575	avr32	UC3L common/services/clock support and modules that depend on this module are missing in AVR Studio 5	Add support of UC3L0 devices to the common service clock.
330	avr32	TWIM master / TWIS slave init function configures interrupt request line for module 0 only.	Fixed by adding configuration file for twim/twis modules. Added files: avr32/drivers/twim/module_config/conf_twim.h and avr32/drivers/twis/module_config/conf_twis.h.
437	avr32	avr32/drivers/pevc/example3 should be updated to use the twi driver configuration file (conf_twim.h)	Add conf_twim.h file for avr32/drivers/pevc/example3 example.
453	avr32	Implement UC3L errata fix in gpio_clear_pin_interrupt_flag()	The gpio_clear_pin_interrupt_flag() is conditionally compiled for UC3L by disabling the interrupt, clearing the interrupt by writing 1 to GPIO.IFRC, then reenabling the interrupt.
488	avr32	avr32/drivers/twis/twis.c: the ""Clock stretch on address match"" issue is not specific to UC3L0256."	All TWIS versions up to version 120 included incorrectly handle a clock stretch on address match. The workaround is to not use that feature on the faulty TWIS versions. Modified files: avr32/drivers/twis/twis.c.
519	avr32	Exception cause is not identified correctly in avr32/drivers/cpu/mpu example	Fixed the issue in the MPU example where the exception cause is not correctly identified. The example is restructured for more clarity. Modified folder: avr32/drivers/cpu/mpu/example1
622	avr32	MPU example for uc3c_ek doesn't work due to wrong access configuration of PBA bus leading to spurious exceptions.	Fixed the issue in MPU example for AT32UC3C series devices. Access configuration is done correctly for PBA bus instead of PBC bus in the example. Modified File: avr32/drivers/cpu/mpu/example1/mpu_example1.c
585	avr32	The common irq_register_handler() macro uses an incompatible pointer.	The common irq_register_handler() routine for AVR32 passes an incompatible pointer type to the underlying INTC_register_interrupt() function. In particular, the first parameter is ""&func"", when the intended parameter is apparently ""func"". Modified files: avr32/applications/uc3-uart-bootloader/intc/intc.h, avr32/drivers/intc/intc.h common/utils/interrupt/interrupt_avr32.h"
631	avr32	Project compilation issues due to missing conf_twim.h	Fixed by adding the conf_twim configuration file for modules using TWIM. Added files: conf_twim.h for uc3-dsplib-demo, uc3c_ek-can-lin-loop-backs-demo, tpa6130a2 example, at24cxx example, common services twi master example for evk1104/uc3c_ek/uc3l_ek. Modified projects: avr32/applications/uc3-dsplib-demo, avr32/applications/uc3c_ek-can-lin-loop-backs-demo, avr32/components/audio/amp/tpa6130a2 example, avr32/components/memory/eprom/at24cxx example, common/services/twi/master_example for EVK1104/UC3C-EK/UC3L-EK boards.
634	avr32	Remove dependencies on INTC for applications using TWIM	Fixed by removing usage of the INTC and adding call to common interrupt API (common/utils/interrupt.h). Modified files: avr32/applications/uc3-dsplib-demo/demo.c, avr32/applications/uc3c_ek-can-lin-loop-backs-demo/main.c, avr32/components/audio/amp/tpa6130a2/example/tpa6130_example.c and avr32/components/memory/eprom/at24cxx/example/at24cxx_example.c.

ID	Component	Summary	Description
432	avr32	avr32/drivers/twim driver should not use hard coded reference to TWIM instance	Add configuration file for TWIM interface. Added file: conf_twim.h
504	avr32	Atmel MAC address assignment should be respected in Ethernet examples	Change all conf_eth.h files with Atmel MAC address range.
474	avr32	twim/twis repeated start issue in slave/master example	Fixed the state machine issue when twi/twis slave example is used with twim master example. The twim_write_packet function is modified to remove the unwanted repeated start inserted between consecutive write commands. Modified file: avr32/drivers/twim/twim.c
107	avr32	avr32\applications\uc3-bluetooth-t2bf-spp-demo fails on EVK1104 and EVK1105	Fix the issue by applying a delay to ensure the EXTBT is reset before starting the Bluetooth application. Modified file: avr32/applications/uc3-bluetooth-t2bf-spp-demo/main.c.
434	avr32	Fix CPU clock on USB device mouse example for the UC3C-EK	The USB C interface, used by the UC3 C devices, requires a CPU clock higher than 25 MHz. Modified folder: common/services/usb/.
333	avr32	evk11xx-uc3b-usb-hid-qtouch-debug does not work when the number of sensor exceed 13	QTouch debug packetCount and packetNumber were inverted causing message with more than one packet not to be received correctly by QTouch Studio. Modified file: /avr32/applications/evk11xx-uc3b-usb-hid-qtouch-debug/qtouch_debug_frame.c.
632	avr32	Remove board dependencies in module-config/ configuration file for conf_twim and conf_twis	Fixed by removing board dependencies in conf_twim and conf_twis configuration files. Modified files: avr32/drivers/twim/module_config/conf_twim.h and avr32/drivers/twis/module_config/conf_twis.h.
354	build system	udc.h is missing from asf.h	Add #include ""udc.h"" in the file asf.h when adding the USB CDC (Single Interface Device) service in AVR Studio 5."
524	build system	asf.h should not assume that include paths lead directly to API header files	Some include paths in asf.h are not correct.
526	build system	avr32: _trampoline symbol is not set as entry point in the linker option in AVR Studio 5	_trampoline symbol is now set as the entry point for all avr32 projects so they can be loaded either using the Atmel bootloader (the trampoline section being linked to the reset vector at 0x80000000 to 0x80002000) or through a debugger (the trampoline code will jump at 0x80002000).
20	common	IAR EOL Warning	IAR project (EWP) now suppress the Pa050 warning. Both debug/release configurations are changed.
329	common	Typo in common/services/clock/uc3l/sysclk.h::sysclk_enable_peripheral_clock() and sysclk_disable_peripheral_clock() for the case AVR32_TWIM1_ADDRESS.	This patch fixes a typo in sysclk_enable_peripheral_clock() and sysclk_disable_peripheral_clock() for the case AVR32_TWIM1_ADDRESS. Modified files: common/services/clock/uc3l/sysclk.h
528	common	common.utils.stdio.serial_init(...) erroneously passes _const_USART_t pointer to USART init function	Remove the const attribute as parameter to the usart_serial_init function call in stdio_serial_init function. Modified file: common/utils/stdio/serial_init/stdio_serial.h.
399	common	Virtual Memory does not build when VIRTUAL_MEM_TEST_CHANGE_STATE == ENABLED	common\components\memory\virtual_mem: Remove unused flag s_b_data_modify.
436	common	Default common service clock configuration enables USB clock	Enable USB clock to remove compilation error in AVR Studio 5. Modified files: common/services/clock/uc3*/module_config/conf_clock.h.
443	common	Change default usb composite configuration to accept default empty interface	Modify USB composite descriptor to accept default empty interface. Modified folder: common/services/classes/composite/.
489	common	Improve speed on common USB Device MSC	Enter in sleep mode only if no mass storage transfer is pending. Modified folder: common/services/usb/.
492	common	USB: Fix udd_get_frame_number () routine	Fix a regression in ASF V2.4.0 on all USB Device examples that use the number of start-of-frame(SOF) to control the user interface (MSC Device, HID Device mouse). The fix re-implements the previous behavior of the



ID	Component	Summary	Description
-	-	-	udd_get_frame_number () routine. Modified files: avr32/drivers/usbb/u_sbb_device.c, avr32/drivers/usbc/u_sbc_device.c, common/services/usb/class/cdc/device/udi_cdc.c, common/services/usb/udc/udd.h.
16	common	Assert() preprocessed badly when disabled	Assert(expr) is now defined as ((void) 0) when _ASSERT_ENABLE_ is undefined. Modified files: /avr32/utls/compiler.h, xmega/utls/compiler.h.
397	common	Rework the default conf_access.h configuration file of the ctrl_access module for AVR Studio 5.	All Logical Unit Numbers (LUN) from common/services/storage/ctrl_access are now automatically enabled if a module related to a LUN is present in the project.
514	documentation	""make doc"" doesn't generate doxygen documentation"	Running ""make doc"" from GCC project directory should generate doxygen documentation for the project."
531	documentation	AVR UC3 USB stack v1 examples should have the technology keyword set to USB	AVR UC3 USB stack v1 (avr32/services/usb/_asf_v1) now appears in AVR Studio 5 menu: File->new->Example project->Technology->USB.
312	other	Non-compiling software example hidden in AVR Studio 5: Sleepmgr and ADC for XMEGA due to compiler errors	Reintroduce code examples for the XMEGA ADC driver and sleep manager service. These were excluded from previous release due to a toolchain bug which prevented them from compiling successfully.
607	other	Merge initial Sensors Xplained board support to /main	Add board adaptation modules and support for Sensors Xplained boards.
497	xmega	UTILITY - XMEGA compiler driver fails to compile as standalone	Fixing issue causing AVR Studio 5 to report error ""Option id 'com.atmel.avr.sf.xmega.common.utls.mak efile' cannot be found by the framework wizard option selector.""
546	xmega	NVM driver should be unit tested, based on the examples	Added application for testing most of the XMEGA NVM driver on hardware (currently the Xplain board). Files added under xmega/drivers/nvm/unit_tests/: unit_tests.c, atxmega128a1_xplain/conf_board.h, atxmega128a1_xplain/conf_clock.h, atxmega128a1_xplain/conf_test.h, atxmega128a1_xplain/conf_usart_serial.h.



Known Issues

ID	Component	Summary
491	avr32	avr32/services/netwo rk/can/can.c: Missing function prototypes (can_enable_interrupt () can_clear_status())
323	avr32	Display - LCD display - ET024006DHU driver does not compile unless the user has manually configured the it.
322	avr32	EBI SMC driver does not compile unless the user has manually configured the chip select.
321	avr32	The MACB driver doesn't build successfully under AVRStudio5's Application Builder unless manually configured by the user.
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error



Changes between version 2.4.0 and version 2.3.2 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
341	avr32	Add avr32/drivers/freqm driver	Add the frequency meter FREQM driver for UC3 devices.
379	avr32	avr32 boards: homogeneous board UART definition and initialization	Homogeneous board UART definition and initialization.
406	avr32	Add demo application for UC3-A3 Xplained	Add demo application for UC3-A3 Xplained. This application demonstrates the QTouch functionality of the UC3-A3 Xplained board. On power-on, the board will initialize the required touch libraries, showing the current touch state of the slider and touch button on the board LEDs. Files: avr32\applications\u c3-a3_xplained-demo.
431	avr32	Add demo application for UC3-L0 Xplained	This application demonstrates the QMatrix functionality of the UC3-L0 Xplained board. On power-on, the board will initialize the required touch libraries, showing the current touch state of the slider and touch button on the board LEDs. Files: avr32\applications\u c3-l0_xplained-demo.
353	common	common/services/usb: add information in CDC examples concerning .inf file usage	Add information concerning CDC .inf file usage.
404	common	common/services/usb: add notification of SOF events to the USB class interface	Improve USB interface API to notify a Start Of Frame (SOF) event to the class. This can be used to synchronize transfer on a SOF event, like CDC Class. Modified files: avr32/drivers/usbb/u sbb_device.c, avr32/drivers/usbb/u sbb_device.h, avr32/drivers/usbc/u sbc_device.c, common/services/usb/ class/cdc/device/udi _cdc.c, common/services/usb/ class/hid/device/gen eric/udi_hid_generic .c, common/services/usb/ class/hid/device/kbd /udi_hid_kbd.c, common/services/usb/ class/hid/device/mou se/udi_hid_mouse.c, common/services/usb/ class/msc/device/udi _msc.c, common/services/usb/ class/phdc/device/ud i_phdc.c, common/services/usb/ udc/udc.c, common/services/usb/ udc/udd.h, common/services/usb/ udc/udi.h.
411	mega	Add makefile.in for mega	Moving xmega makefile from /xmega/utls/make to /common/utls/make since this makefile will be used for mega as well as xmega.
412	mega	Add MEGA-1284P Xplained example to ASF	Add demonstration application for MEGA-1284P Xplained board. Add 'mega' folder to ASF. Move XMEGA makefile.in from xmega folder to common folder so it can be shared by MEGA and XMEGA. Added compiler.h for MEGA.
460	mega	mega support: Add megaAVR code example for setting clock settings (F_CPU)	Adding code example for setting clock settings (F_CPU) on megaAVR and show advantage when interfacing avr-libc delay functions in util/delay.h.
468	mega	Board support for mega devices on STK600	Adding support for megaAVR on STK600.

Bug Fixes

ID	Component	Summary	Description
261	avr32	Restore avr32/drivers/adcifa example 1	This example was removed from the ASF 2.3.1 release due to bug#263.
263	avr32	UC3C parts should target a 'ucr3fp' architecture in GCC config.mk file.	Fixed by changing 'ARCH' argument in GCC config.mk file to 'ucr3fp'.
407	avr32	Restore the UC3C-EK CAN LIN Loopback demo	Was removed in ASF release 2.3.1 due to bug#263.
400	avr32	avr32/drivers/usbb: wrong sleep mode used in USB self-powered and High-speed	Fix wrong sleep mode in USB self-powered and High-speed mode. This issue occurs only with the USB certification tool from usb.org.
401	avr32	avr32/drivers/usbb: fix transfer error in case of multiple transfers	Fix transfer error in case of multiple transfers at the same time on different endpoints.
402	avr32	avr32/drivers/usbb: send ZLP on an IN endpoint fails	Fix the transmission of a ZLP on an IN endpoint.
405	avr32	avr32/drivers/usbb: remove compilation warning under gcc	Remove compilation warning with GCC.
165	common	Improve the common USB Device CDC class implementation	The new USB device CDC class implementation improves the rate transfer in Full Speed and High Speed device modes and simplifies the user application (external FIFO is not required anymore). A new example is provided on the UC3C-EK, EVK1101 and EVK1104 boards.
403	common	common/services/usb - the enumeration can fail depending on the memory mapping	Fix USB enumeration stability, remove the dependency on the memory alignment.
21	documentation	Doxygen documentation: some image links are broken	Some pictures are missing from from the on-line Doxygen documentation.
264	xmega	XMEGA-A1 Xplained demo not compiling	Added XMEGA-A1 Xplained demo application, with support for both the XMEGA-A1 Xplained and the Xplain boards.
423	xmega	XMEGA TC drivers incorrect Capture Compare enable using TC1	Fixed tc_enable_cc_channel s function to enable CC proper channels when using TC1. Modified file: xmega/drivers/tc/tc.c



Known Issues

ID	Component	Summary
491	avr32	avr32/services/netwo rk/can/can.c: Missing function prototypes (can_enable_interrupt () can_clear_status())
323	avr32	Display - LCD display - ET024006DHU driver does not compile unless the user has manually configured the it.
322	avr32	EBI SMC driver does not compile unless the user has manually configured the chip select.
321	avr32	The MACB driver doesn't build successfully under AVRStudio5's Application Builder unless manually configured by the user.
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error



Changes between version 2.3.2 and version 2.2.3 releases of the ASF

New Features and API Changes

ID	Component	Summary	Description
112	avr32	wdt_enable() with different definitions in different files	There were a different API for interfacing the watchdog timer on different versions of the wdt module on UC3. This has now been fixed by merging wdt.h and wdt4.h into a single file -> wdt.h. The function wdt_enable() now expects a wdt_opt_t struct when it is called. WDT examples have been updated accordingly. Files under avr32/drivers/wdt: wdt.h, wdt.c, wdt4.c, example/wdt_example.c, example_wdt4/wdt_example.c.
384	build system	Pass -pipe as an argument to the GNU toolchain	Pass -pipe as an argument to the GNU toolchain when building a project. This causes GCC to use pipes instead of temporary files, which will reduce the overall I/O of the build machine. Modified files: avr32/utls/make/makefile.in, xmega/utls/make/makefile.in.
391	build system	Add possibility to set debug info and optimization to zero to speed up build speed	This patch adds two symbols checked by the arch generic Makefile.in, BUILD_DEBUG_LEVEL and BUILD_OPTIMIZATION. These symbols can be used to override the debug level and optimization settings for a project. This can be used to increase the speed of the build process. Modified files: avr32/utls/make/makefile.in, xmega/utls/make/makefile.in.
239	common	Add the possibility to deprecate functions in compiler.h	Added the possibility to set a function as deprecated by adding the symbol <code>__DEPRECATED__</code> in front of the function declaration. The usage is: <code>__DEPRECATED__ uint8_t some_deprecated_function(void)</code> . The result of this is that you will get a compile time warning when calling this function. Updated the files avr32/utls/compiler.h, xmega/utls/compiler.h.
338	xmega	Add new xmega/drivers/wdt	Added XMEGA watchdog module driver and examples.



Bug Fixes

ID	Component	Summary	Description
262	avr32	CAN Software Stack Example 1 - UC3C-EK - does not exit from static sleep mode	Fix entry in static mode by enabling CAN asynchronous wakeup source. Improve the exit out of the CAN static sleep mode. Modified files: avr32/services/network/can/example1/can_example1.c
325	avr32	avr32/drivers/adcifa : adcifa_configure() function does not write in the FreeRunning Mode bitfield.	Fixed by using the correct FreeRunning Mode mask (AVR32_ADCIFA_CFG_FRM).
368	avr32	wdt (watchdog) driver wdt4 is incorrectly called with integer instead of struct	Fixed a bug where the function wdt_reset_mcu() calls wdt_enable(0) where wdt_enable expects a pointer to a wdt_opt_t struct. Files under avr32/drivers/wdt: wdt.c, wdt4.c.
381	avr32	AVR UC3 DACIFB software driver reload timer value calculation mistake.	Fixed by changing the formula of the timer reload computation value. Files: avr32/drivers/dacifb/dacifb.c
425	avr32	dacifb_example1.c issues: inline documentation should be improved, remove unnecessary call to init_dbg_rs232().	Inline documentation has been improved and the call to init_dbg_rs232() has been removed. Files: avr32/dacifb/example1/dacifb_example1.c
426	avr32	The UC3C-EK target is missing for the CAN example 1	The UC3C-EK target has been restored for the CAN example 1 (avr32/services/network/can/example1).
209	avr32	avr32/drivers/wdt - all source code uses non-conforming data types.	Fixed the UC3 wdt driver to conform with the ASF coding style. Files under avr32/drivers/wdt: wdt.h, wdt.c, wdt4.c.
361	avr32	CAN Wake up interrupt handler is registered in INTC but the interrupt is not enabled in canif.h	Fixed by enabling by default the CAN Wakeup interrupt in CANIF_enable_interrupt(ch) macro. Files: avr32/drivers/canif/canif.h.
417	build system	The command ""make clean"" may fail under windows."	The command ""make clean"" may fail under Windows. Fixed by using the options /S /Q with rmdir. Impacted: avr32/utils/make/makefile.in, xmega/utils/make/makefile.in."



Known Issues

ID	Component	Summary
169	avr32	PolarSSL needs to be updated to version 1.0.0 to solve build error



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