

# Release Notes for Blackfin Linux Distribution 2009R1

**Version:** 2009R1

**Date:** Aug. 10, 2009

The latest version of this document can always be found here:

[http://docs.blackfin.uclinux.org/doku.php?id=release\\_notes](http://docs.blackfin.uclinux.org/doku.php?id=release_notes)

## Development Environments

**Tool Chain:** toolchain release 2009R1 based on GCC 4.1/4.3

**u-boot:** uboot telease 2009R1 based on uboot\_2008.10

**Host platform:** SuSE Linux 9.2 or above

**Target board:** STAMP, EZKIT and EZBRD boards

**Note:** This release source code can be used to develop application under other Linux host distributions and for other blackfin based target boards, but they are not tested by ADI.

## Deliverables

Source files

`uClinux_dist_2009R1.tar.bz2`

Compressed Linux image

`uImage-bf518-ezbrd`  
`uImage-bf526-ezbrd`  
`uImage-bf527-ezkit`  
`uImage-bf533-stamp`  
`uImage-bf533-ezkit`  
`uImage-bf537-stamp`  
`uImage-bf538-ezkit`  
`uImage-bf548-ezkit`  
`uImage-bf561-ezkit`

This document

`release_notes_2009R1.pdf`

Compressed archive of test results

```
test_results_bf518_EZBRD_2009R1.tar.gz  
test_results_bf526_EZBRD_2009R1.tar.gz  
test_results_bf527_EZKIT_2009R1.tar.gz  
test_results_bf533_STAMP_2009R1.tar.gz  
test_results_bf533_EZKIT_2009R1.tar.gz  
test_results_bf537_STAMP_2009R1.tar.gz  
test_results_bf538_EZKIT_2009R1.tar.gz  
test_results_bf548_EZKIT_2009R1.tar.gz  
test_results_bf561_EZKIT_2009R1.tar.gz
```

Summary of test results

```
test_results_summary_2009R1
```

## New features and changes

### Improve kernel

1. mainline framework
  - Upgrade kernel to 2.6.28.10
  - Update real time ADEOS patch to 2.6.28.10 kernel and merge blackfin arch specific source.
  - Remove page cache limit patch completely and reap page cache at runtime when memory is allocated.
  - Drop NP2 patch.
  - update kgdb to mainline. Support access to MMR registers and L1/L2 SRAM.
  - Add support for cpu frequency, cpu voltage and platform voltage scaling under Power Management framework.
  - Add functional power management support
2. SMP related
  - Full SMP kernel support on bf561.
  - Improve SMP IPI handler to circle all IPI messages in one loop in order to avoid dead lock.
  - Enable kgdb to support SMP kernel on bf561.
3. Blackfin arch specific
  - Port kernel to bf51x, bf526/4/2, bf538/9, mobile ddr bf54xm.
  - change L1 malloc to base on slab cache and lists. Remove the sram piece limitation and improve the performance to alloc/free sram piece data. And extend support to L2 SRAM as well.
  - Skip single step if event priority of current instruction is higher than that of the instruction under gdb single stepping. Also make kgdb code transparent to app debugging.
  - Improve double fault handling and other exception handling
  - update anomaly lists to match latest blackfin data sheets
  - Add basic irq stack checking for Blackfin
  - Convert CPLB management code from assembly to C.
  - Improve exception handling to make defered hardware error exception more exact by inserting code on every interrupt entry, which does a SSYNC (forcing all writes to complete, and all hardware errors to be signaled).

# Drivers

## 1. Changes

- Convert Blackfin GPIO driver to use common gpiolib/gpiochip infrastructure
- Cleanup and unify Blackfin IRQ and GPIO IRQ handling. Use irq\_to\_gpio where applicable.  
Remove gpio\_edge\_triggered bitfield, check irq\_desc fields instead. Remove  
gpio\_both\_edge\_triggeredb bitfield, check irq\_desc fields instead.
- Allow a gpio pin be requested both as gpio and irq.
- Add simple-gpio driver to replace dead/broken pflags driver
- enable twi\_lcd and twi\_keypad i2c driver for bf527-ezkit
- Remove pca9543 driver - people could use i2c-dev to init the pca9543 on the Micron camera head board.
- Enable ISOCHRONOUS mode in sl811 usb host driver.
- enables EPPI1 instead of PPI on bf54x.
- Transform ad73311 driver from old alsound framework to ASOC framework
- add mutichannel support for ad1980/1
- add writing support to OTP driver
- Change bfin serial driver hardware flowcontrol from poll to interrupt driven. Only CTS bit is affected.
- get dma working in bfin SPI driver for SPI flashes. Add GPIO controlled SPI Slave Select support for Blackfin?\226?\128?\153s SPI Master Driver.
- implement spi\_lock\_bus(), spi\_unlock\_bus() to SPI framework to ensure atomic SPI transfers on SPI bus, which is asked by some spi devices, such as spi mmc.
- add 4 bit SDIO support for bfin onboard sdio controller.
- Enable SDH/EMAC driver on bf51x.
- extend PPI driver to support arbitrary number of PPIS (like on BF56x/BF54x)
- Walk around most MUSB hardware anomalies. Bfin host and peripheral MUSB driver works well in both PIO and DMA mode.
- Revert the disable-interrupt probe workaround in platform ATA driver for CF/IDE/NAND add-on board because the wrong default voltage of the hardware interrupt is fixed on board.

## 2. move to mainline

- Remove old IDE driver, switch IDE devices to libata platform ata driver and CF devices to pcmcia driver instead.
- deprecate the bfin\_nand (async) driver in favor of the generic platform nand driver
- Retire old spi\_mmc driver. Turn to use the mmc\_spi driver in mainline kernel.
- Enable IS1760 USB Host Driver (added mainstream 2.6.26). Remove obsolete and “un-maintained” ehci driver

## 3. new

- Add Support for ATMEL AT25DF641 64-Megabit SPI Data Flash
- add cascaded AD73322 support on both sport0 and sport1 to transfer several PCM streams concurrently
- add SSM2602 audio codec support for BF52xC
- Port USB Video Class devices driver in mainstream to blackfin.
- Add ADV7183B support for Blackfin V4L
- Add BF54x / BF52x Rotary Input device driver
- Add framebuffer driver for the Landscape LCD EZ-Extender (ADZS-BFLLCD-EZEXT) connecting to bf526 ezbrd.
- Add an emulated serial driver based on EMUDAT/JTAG port.
- add AD7879 SPI and I2C Touchscreen driver
- add support for libertas wifi over sdio driver

- Add ENC28J60 SPI Ethernet MAC driver for bf537-stamp
- Add ADP5588 QWERTY I2C Keyboard Input device driver
- Add userspace memory dma driver
- Add ubifs rootfs support.
- Add USB Audio Gadget driver, function driver and ALSA sound card utilities
- add KSZ8893M ethernet switch driver for bf518-ezbrd. Enable VLAN support in bfin emac driver.
- Enable hardware based CTS and RTS serial flowcontrol for bf548.
- Add sport emulated spi driver
- ADP5520 Multifunction LCD Backlight and Keypad Input Device Driver
- Add a “shadow\_console”, which is a console keeps a copy of the printk buffer in a predefined portion of memory, which U-Boot can print out if it thinks there has been an error during boot.

## New supported development boards

- bf518-ezbrd
- bf526-ezbrd
- bf538-ezkit
- ADZS-BFLLCD-EZEXT
- blackfin SPORT SPI/UART/IRDA/ADF70xx add-on board
- ADP5588 add-on board
- ENC28J60 add-on board
- ADP5520 add-on board

## Application and library

1. new app
  - import genext2fs
  - import user/games/tama
  - import nano
  - Add madplay
  - Add Slave Serial Mode configuration/bootload utility for Xilinx FPGAs
  - add benchmark suite that is aimed at performing a number of simple tests of hard drive and file system performance - bonnie++
  - import directvnc
  - Add user-space tools for USB Video Class devices.
  - Add simple dynamic tick test utility
  - import pcmciautils-015 to provide userspace pcmcia support
  - add cpufrequtils
  - add lynx
  - Add Bluegiga iWarp boot mode utility
  - add boost
  - add xenomai
  - Add EDN benchmark application
  - import usbhubctrl
  - import sscep
  - import logrotate
  - Add PPI/FPGA Demo Project

## 2. new lib

- Add libbtiff
- Add ircp and libopenobex.
- import libxml2
- Port Bluetooth-alsa library to blackfin
- import of qt-embedded 4.5.0 and drop old qt/qtopia patches
- import libaio
- import giflib
- import agg lib
- import dirac lib
- Import libogg
- import libvorbis and vorbis-tools
- import libmodbus

## 3. improvement

- Enable oprofile-0.9.2.
- Remove local asterisk zaptel code, use the stuff found in the ucasterisk project instead.
- Allow nano-x to use tslib
- enable support for python built as a shared library for FDPIC
- Optimize libjpeg forward DCT for Blackfin
- kernel with a compressed initramfs is not generated by default, because booting kernel ELFs is no longer supported in uboot.
- update linphone-g729 patch against linphone-3.0.0

# Known Issues

A full list of known issues of 2009R1 release can be found at:

[http://blackfin.uclinux.org/gf/project/uclinux-dist/tracker/?action=TrackerItemBrowse&tracker\\_id=141](http://blackfin.uclinux.org/gf/project/uclinux-dist/tracker/?action=TrackerItemBrowse&tracker_id=141)

No	Issue Title
1800	kaffe.flt crash
2718	/proc/self/exe link is broken for FLAT binaries
2719	unable to strace across vforks
2745	trying to mount cifs filesystem crashes kernel with misaligned access
3715	mount jffs2 on bf548 always have Empty flash error
3908	For BF533-STAMP with AD1836/AD73311/AD1981b, there will be under run or overrun errors
3960	When generate a file into ext2 fs on one specific SD card on BF548-EZKIT, there will be data transferring error
4090	XIP can't work in flash
4108	mplayer cannot play mp3 smoothly
4141	usb gadget zero test NO. 14 fails
4289	ffmpeg cannot run on BF531
4443	bfin nand hangs under pressure on BF548-EZKIT
4564	DCPLB miss kills kernel on BF533
4842	multiple insmod of bf5xx_nand.ko panics
4832	watchdog fails to reboot bf526 ezbrd when get killed

4865	Xenomai latency test trips BUGs when CONFIG_PREEMPT set
4922	unwanted sound comes up after g_audio module is installed on BF548 and BF527
4930	USB gadget audio driver play audio not very smoothly on BF527C-EZKIT with SSM2602 audio codec
5154	running linphone through ad73322 has underrun
5192	run l2 app on bf548 ezkit frequent fails
5197	running traps test case in fdpic format would randomly make kernel reboot
5225	xenomai test failed on bf533-stamp/bf548/bf527/bf526
5396	reset button would fail to work on bf518f ezbld after several days with power on
5404	build kernel with 0x2000 as BOOT_LOAD address sometimes would fail at build-busybox-1.13.4
5408	sometimes underrun happens for audio on bf527-ezkit
5413	Jtag console doesn't work on bf561-ezkit
5414	extra return character shows up in jtag console
5425	reboot for the first time on bf548 ezkit with jffs fs as rootfs need wait 1 min

There are also some issues in the latest LTP test suite. They are recorded as bug 3594 and 4757.

## Build Procedure

1. Install Toolchain Release 2009R1
  - [Release Notes](#)
  - [Installation instructions](#)
  - [File List](#)
2. Download the source code of project uClinux-dist for Blackfin release 2009R1
  - [File List](#)
3. Follow [basic compilation](#) directions

## Reporting Bugs

1. Go to the following Blackfin uClinux bug tracker page,

[http://blackfin.uclinux.org/tracker/?atid=141&group\\_id=17&func=browse](http://blackfin.uclinux.org/tracker/?atid=141&group_id=17&func=browse)

2. If the bug is not already reported click on "Submit New" button to report new bug.

From:

<http://docs.blackfin.uclinux.org/> - Analog Devices | Mixed-signal and Digital Signal Processing ICs

Permanent link:

<http://docs.blackfin.uclinux.org/doku.php?id=uclinux-dist:release-notes:2009r1>

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