

# Linux port for Xtensa

- Linux git tree: <https://github.com/jcmvbkbc/linux-xtensa>
- Build/test tools git tree: <https://github.com/jcmvbkbc/xtensa-linux-test>
- Toolchain build scripts/overlays git tree: <https://github.com/jcmvbkbc/xtensa-toolchain-build>
- [Patch review check list](#)
- [Patch/pull request check list](#)

## TODO

- coprocessors support in SMP
- TIE coprocessors (23ae3f723c8996d47ef205e98cb7732bbde4775f)
- ptrace (support latest GDB) (617244763e19a4eebb4fabe41ba56eb1ccbdb049, 23ae3f723c8996d47ef205e98cb7732bbde4775f, ff1b10f85a1176d1eb8df433434b717f6f0841d4 (already upstream), a2b61af3328025d6069e8bf9ff36f5288e11dba9)
- ticket spinlocks
- dynamic ftrace
- kprobes
- fixes for debuggability (continuous stack trace over exceptions at least)

## In Progress

- support xtfpga audio hardware in ALSA
  - clock synthesizer
  - I2S interface

## Done

### NoMMU fixes

Done, in the xtensa-fixes branch:

```
f04f3cb xtensa: nommu: move init_mmu stub to nommu_context.h
67dbc24 xtensa: nommu: provide __invalidate_dcache_page_alias stub
ae73a13 xtensa: nommu: provide _PAGE_CHG_MASK definition
1103273 xtensa: nommu: provide MAP_UNINITIALIZED definition
de03359 xtensa: nommu: don't provide arch_get_unmapped_area
4ee9b59 xtensa: nommu: don't build most of the cache flushing code
8cd28c7 xtensa: nommu: add MMU dependency to DEBUG_TLB_SANITY
93c3d27 xtensa: nommu: fix Image.elf reset code and ld script
1b929c7 xtensa: nommu: fix load address definitions
7c5b218 xtensa: nommu: fix uImage load address
e40e0ee xtensa: move vecbase SR initialization to _startup
```

```
f698bc8 xtensa: nommu: set up cache and atomctl in initialize_mmu  
48243b5 xtensa: nommu: reserve memory below PLATFORM_DEFAULT_MEM_START  
ceef25a xtensa: nommu: clean up memory map dump  
8fd689e xtensa: make PLATFORM_DEFAULT_MEM parameters configurable
```

## **Deliver signals raised in double exceptions**

Not really needed. Replaced with alignment double exception fixup, special handler for user stack alignment and deprecation of fast atomic and spill syscalls. In the mainline (v3.17-rc3):

```
c3ef1f4 xtensa: add double exception fixup handler for fast_unaligned  
e9500dd xtensa: make fast_unaligned store restartable  
3fcf096 xtensa: don't allow overflow/underflow on unaligned stack  
9184289 xtensa: deprecate fast_xtensa and fast_spill_registers syscalls
```

## **Highmem on cores with aliasing cache**

Done, in the mainline (v3.17-rc3):

```
22def76 xtensa: make fixmap region addressing grow with index  
dec7305 xtensa: allow fixmap and kmap span more than one page table  
7128039 xtensa: fix TLBTEMP_BASE_2 region handling in fast_second_level_miss  
a91902d xtensa: implement clear_user_highpage and copy_user_highpage  
32544d9 xtensa: support aliasing cache in k[un]map_atomic  
8504b50 xtensa: support aliasing cache in kmap  
270eec7 xtensa: support highmem in aliasing cache flushing code
```

## **Highmem support**

Done, in the mainline:

```
6555910 xtensa: add HIGHMEM support
```

## **Limit PHY connected to OpenCores MAC to 10/100 MBits/s speeds**

Done, in the mainline:

```
445a48c net: ethoc: don't advertise gigabit speed on attached PHY  
a13aff0 net: ethoc: set up MII management bus clock
```

## **SMP support**

Done, in the mainline:

```
99d5040 xtensa: keep a3 and excsave1 on entry to exception handlers  
5515daa xtensa: fix arch spinlock function names  
6235153 xtensa: update clockevent setup for SMP  
cbd1de2 xtensa: move built-in PIC to drivers/irqchip  
26a8e96 xtensa: add MX irqchip  
f615136 xtensa: add SMP support  
49b424f xtensa: implement CPU hotplug
```

## Clean up and fix ISS networking

Done, in the mainline:

```
3f3cd60b xtensa: ISS: clean up iss-network driver  
8c8ad85 xtensa: ISS: fix command line parameter name  
358b181 xtensa: ISS: init network interface name before the probe  
8991fd8 xtensa: ISS: drop IP setup, clean up MAC setup  
f6ac5a1 xtensa: ISS: enable iss_net_set_mac  
35e14b4 xtensa: ISS: always use fixed tuntap config  
a6e16b9 xtensa: ISS: clean up diagnostic, increase verbosity
```

## oprofile

~~8c502ca703956e56bf191774e4169752f0f71c8e, 7dd1d39e70769f2dd7a6a508d58b187ed8d1cb95~~

Done, in the mainline:

```
e6ffe17 xtensa: add support for oprofile  
74f5bf0 xtensa: fix oprofile building as module
```

## simdisk

~~1a955825662fa378d447b91485d9fe2438124b0a, 8bcbe3adb5c5bfbdb96078c1e68916be859c832d~~

Done, in the mainline:

```
b6c7e87 xtensa: ISS: add host file-based simulated disk
```

## Medium level interrupts in less hacky way

~~489fb47c75772e3a41ef3e988eb0e0e512592085~~

Done, in the mainline:

```
2d1c645 xtensa: dispatch medium-priority interrupts  
895666a xtensa: disable IRQs while IRQ handler is running
```

## Interrupt management

Done, in the mainline:

```
2206d5d xtensa: add IRQ domains support
```

## Cache aliasing aware mmap

Done, in the mainline:

```
de73b6b xtensa: avoid mmap cache aliasing
```

## Atomics (arch/xtensa/include/asm/atomic.h, bitops.h, spinlock.h) and check for S32C1I

Merged in the eb0a9bf31fdbcee9463c0f42fbf4a292ef149a7d, pick up from individual files.

Done, in the mainline:

```
2f6ea6a xtensa: display s32cli feature flag in cpufreq
733536b xtensa: save and restore scompare1 SR on kernel entry
c622b29 xtensa: initialize atomctl SR
28570e8 xtensa: add trap_set_handler function
0027312 xtensa: add s32cli sanity check
219b1e4 xtensa: add s32cli-based atomic ops implementations
e5a9f6a xtensa: add s32cli-based bitops implementations
71872b5 xtensa: add s32cli-based spinlock implementations
599bf77 xtensa: fix mb and wmb definitions
```

## Generic kernel\_thread & friends

Done, in the mainline:

```
3306a72 xtensa: switch to generic kernel_thread()
f0a1bf0 xtensa: switch to generic kernel_execve()
dc241f2 xtensa: switch to generic sys_execve()
```

## Support for Tensilica FPGA boards (xtfpca)

- [+] serial
- [+] ethernet
- [+] FLASH
- [-] audio

In the mainline:

```
0d456ba xtensa: add support for the XTFPGA boards  
5584b4d xtensa: add XTFPGA DTS
```

## Device trees support

Done, in the mainline:

```
da844a8 xtensa: add device trees support
```

## MMU v3

Done, in the mainline:

```
e85e335 xtensa: add MMU v3 support  
93e294a xtensa: document MMUv3 setup sequence
```

From:  
<http://wiki.osll.ru/> - Open Source & Linux Lab



Permanent link:  
<http://wiki.osll.ru/doku.php/etc:users:jcmvbkbc:linux-xtensa?rev=1412875306>

Last update: **2014/10/09 21:21**