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 checklist: Patch review check list
- Patch/pull request checklist: Patch/pull request check list

Phase 1

Goal: linux mainline contains the latest linux-xtensa updates, builds and works.

- compilable with latest GCC
- overlays to cover: FSF, dc232b, more TBD
- tests to pass: builds, boots, LTP
- boards to focus on: ISS, ML605
- configurations: UP, linux-next specific, more TBD

Plan

- [+] Prepare for linux-next participation
  - [+] Make mainline build for ARCH=xtensa in defconfig, allnoconfig, allmodconfig
    - [+] fix remaining issues with allmodconfig
    - qemu needs proper handling for guest ioctls triggered via simcalls
  - [+] Make built images work (qemu, FSF)
- [+] Build userspace
- Automated build/test scripts
  - [+] build/test status/logs
  - expect script to run LTP
- Analyse reference tree
  - proper bugfixes
  - new cores (dc233c, test_hifi_c3, s*)
  - new platforms (lx*, ml605, s*)
  - SMP and its fixes
  - XCC fixes
- Issues

Work items

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
```

Support for Tensilica FPGA boards

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

In the mainline:

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

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 s32c1i feature flag in cpuinfo
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 s32c1i sanity check
219b1e4 xtensa: add s32c1i-based atomic ops implementations
e5a9f6a xtensa: add s32c1i-based bitops implementations
71872b5 xtensa: add s32c1i-based spinlock implementations
599bf77 xtensa: fix mb and wmb definitions
```

TIE coprocessors

23ae3f723c8996d47ef205e98cb7732bbde4775f

Highmem

Non-functional. Doing from scratch.

Interrupt management

Done, in the mainline:

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

Medium level interrupts in less hacky way

~~489fb47c75772e3a41ef3e988eb0c0e512592085~~

Done, in the mainline:

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

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
```

ptrace (support latest GDB)

617244763e19a4eebb4fabe41ba56eb1ccbdb049, 23ae3f723c8996d47ef205e98cb7732bbde4775f, ~~ff1b10f85a1176d1eb8df433434b717f6f0841d4~~ (already upstream), ~~a2b61af3328025d6069e8bf9ff36f5288e11dba9~~

Support for building with XCC

simdisk

~~1a955825662fa378d447b91485d9fe2438124b0a, 8bcbc3adb5c5bfdbd96078c1e68916be859c832d~~

Done, in the mainline:

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

Various fixes made for debuggability

oprofile

~~8c502ca703956e56bf191774e4169752f0f71c8e, 7dd1d39e70769f2dd7a6a508d58b187ed8d1cb95~~

Done, in the mainline:

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

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()
```

Cache aliasing aware mmap

Done, in the mainline:

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

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