

# QEMU support for Xtensa

- Git tree (view): <http://jcmvbkbc.spb.ru/git/?p=dumb/qemu-xtensa.git;a=summary>
- Git tree (clone): <git://jcmvbkbc.spb.ru/dumb/qemu-xtensa.git> / <http://jcmvbkbc.spb.ru/dumb/qemu-xtensa.git>
- Toolchain build scripts (view): <http://jcmvbkbc.spb.ru/git/?p=dumb/xtensa-toolchain-build.git;a=summary>
- Toolchain build scripts (clone): <git://jcmvbkbc.spb.ru/dumb/xtensa-toolchain-build.git> / <http://jcmvbkbc.spb.ru/dumb/xtensa-toolchain-build.git>
- Kernel and rootfs binary archive: [http://jcmvbkbc.spb.ru/~dumb/ws/osll/qemu-xtensa/20110829/xtensa-dc232b\\_kernel\\_rootfs.tgz](http://jcmvbkbc.spb.ru/~dumb/ws/osll/qemu-xtensa/20110829/xtensa-dc232b_kernel_rootfs.tgz)

## Now active

- cache option implementation;
- debug option implementation;
- [cycle accurate pipeline](#);

## Implementation status

- core/basic opcodes implementation;
  - [+] and/or/xor/neg/abs;
  - [+] shifts;
  - [+] add[x\*]/sub[x\*]/add.n/addi.n;
  - [+] call0, callx0, j, b\*;
  - [+] l32\*, s32\*;
  - [+] accurate SR write semantics;
- options
  - [+] windowed registers;
    - [+] call\*/callx\*, retw, rotw, rfw, rfwu;
    - [+] accurate overflow triggering;
  - [+] loop option;
  - [+] extended L32R option;
  - [-] MAC16;
  - [-] coprocessors;
    - [-] floating point;
    - [+] boolean registers/commands;
  - [+] memory protection;
    - [+] no-MMU mode;
    - [+] region protection (with/without translation);
    - [+] MMU mode;
  - cache options;
    - [-] memory attributes;
    - [-] memory access timing;
  - [-] debug option;

- exceptions;
  - [+] debug (only external);
  - [-] break;
  - [+] window overflow/underflow;
  - [+] user/kernel (invalid insn, privileged insn, alignment, division by 0,...);
  - [+] relocatable vectors;
  - [+] external interrupts;
  - [+] timer interrupts;
    - [-] correct opcode timings?;
    - [+] qemu timer to avoid busy looping in waiti;
- gdbserver;
  - [+] read/write register, ~~xml-register-map~~ (not used by gdb);
  - [+] correct SR mapping;
  - [+] debug exception, single step mode;
  - [+] hw/sw breakpoints;
  - [+] gdbserver for different processor types;
- sample evaluation board;
  - [+] memory mapping, ELF loader;
  - [-] standard peripherals;
  - [+] dc232b;
- simulation quality;
  - [+] pass command line arguments to argc/argv SIMCALLs (DAN branch only);
  - [+] TB chaining;
  - cycle accuracy;
    - [-] pipeline/SYNC group;
    - [-] memory access;
    - [-] exceptions;
- [+] external configuration (a-la xtensa overlay)?
- [+] automatic regression test suite;

## Events

- 2011.04.20: C++ 'hello world' is working in qemu (stdio, stdlib, simcalls, windowed registers, loops, ext l32r) (:
- 2011.04.26: multithreaded ThreadX application is working in qemu (timer interrupts)
- 2011.04.30: preparation for qemu mainline submission started
- 2011.05.04: first RFC patchset sent to qemu-devel  
<http://lists.nongnu.org/archive/html/qemu-devel/2011-05/msg00242.html>
- 2011.05.18: first PATCH patchset sent to qemu-devel  
<http://lists.nongnu.org/archive/html/qemu-devel/2011-05/msg01525.html>
- 2011.06.19: [linux boots](#), issues on userspace application startup
- 2011.06.22: successfull userspace app startup in linux
- 2011.06.29: xtensa linux session on qemu-xtensa is available at ssh -p 3333  
xtensa@jcmvbkbc.spb.ru with the following private key:

```
-----BEGIN RSA PRIVATE KEY-----
MIIEpQIBAAKCAQEAA2ycE9iuEtWoN0myLsx5aiEAPDx//MJlmMrx6o6qAUTj+wivk
kaKQE1yCZMUa/B40BMUST9KffHqIcV9jxDFjagM/dfbdbTxeiiNEKyjBsEidEoU
ytM5fkpHFyg1DmCvkXdoUAAzeVCy5ILh6ZhqpQpe68Pb8vQLdj9QmwcV0pS7d97q
```

```

0MbGadIRdg0dlVAYQ/Rju8D+k9yygFn/TwZlTiT/gLEpk/D4dq+8D1UlFNvohUH4
3VY/gVJ0CuEQx10wS+NTJLSz25Z2eTaNTEE4sqqAy2zlBe23Ef4vQo0mWvmBBIkA
x6dPBqKsQZCW6gGcsHk7fMw0K4H1RSOLRiAuQwIDAQABAoIBAQDZQ1m743DxmW37
2dilfwYpxbgo0oR33dxfuF0tJj+IRoTqYzF64DsNtszesjoKcLcJc4av9B0BCMLz
/Cmg04Zfd1Dw1iK3RP5E3KmcUA+X49xQhZEPc1CwT1sjLg1Lb7ce885KYaimQMbZ
nJfzSd0QZqPPcKEBv8gNNr/msby0ySFZ06sQNpSzaboD0u7TdsYz22BDaZ0E+4C
Vg0LgFHo9qEM05PlTELrVrd0JjVRF5Mn9SEsXsqWKFzLFMNRkk63Fd3j34St+Z6U
VFc50AMEoJt8pPEFNwpbzK0CZyYhWi02US2A8d5aPgodb1WQ0H1Jdg03u9b5YsJN
hcGjtDwhAoGBA05/ySbW59vfUkmwI/s5WL3KgfdkzIUGKdG3yPL3MpUgnr0PPcnT
xZi67BWCPS0ac4AlKjMJ0Px85XZQChjEh43CH3cgLf9bzneTTC+LiHq7GfvoQITd
TOZTHFu1z6SCgUtTnUwQFdXZHJDs0C21VENcS/N0XudXLY0nIBwWKwzHAoGBA0s7
zfBA2I0Fim30HNaMjMUYvtpo+QONGSwQJrw91rEbyrCd/09rUD5YLddPRhwq1jYJ
qRDGN6gqANRiTkJsZyvQz81aEqLp3WmG4hPWitymhlpgQ4mFmZU88IMYaQ9Dh8Vp
Dv6kT6zraAzBKc5nezjKisDIitVzieDbly4TWMX6lAoGAJsh0zGsL3vwsPGDpKPQF
Uy93/00+Qi9jY3/wRFogNpHMxMSBNq2iJxjWRRUdn5T6jS798ri47CXfJmMTkT18
EXgsp7F70r96DoW8UM8pJ1P/gLAetbxKwfVn2h3xev3hyn75SCIhetnIRGTN4XDo
F+ANVbRprLLGECCZnxEXvocCgYEAhLnfvvm3sK3+p2oul1gCbYtC1JV607DwTQ5n
7Lqvkort2K2tSrBwPF0gsGXIV0hMSX016YM0EFJy2WMGaTAlHnHZbjKua0yUw2AZ
27un6kwDbqb2NHgvaidsRYXWcYhW6SoYDdHEKvtAYEH1RsLYofiWRaR5wIj/72nF
ZZQ9pQkCgYEA7I004D9SvsVytaen4RdmbpXYhontoYTorL343B/hAXYgGENKEfTK
VfbweLGQ6Ga8K99YARbx2/3F0YqbGKUtUpgxVwhquyBtcUxq6+vr4riUP6M2Zw55
y3Cqme66+P08Ka0NjjWxb+ksg00hgcmEhlnz+3MWN0DiacxHffH0ChM=
-----END RSA PRIVATE KEY-----

```

- 2011.07.18: issue with gdb not able to read privileged SRs root-caused: <http://sourceware.org/ml/gdb/2011-07/msg00073.html>
- 2011.07.19: tensilica guys suggested the following solution for gdb:

I guess you can just make sure you don't mark new registers as PRIVILEGED in `./gdb/xtensa-config.c`

- 2011.07.24: second PATCH patchset sent to qemu-devel <http://lists.nongnu.org/archive/html/qemu-devel/2011-07/msg02529.html>
- 2011.09.01: third PATCH patchset sent to qemu-devel <http://lists.nongnu.org/archive/html/qemu-devel/2011-08/msg03888.html>
- 2011.09.02: fourth PATCH patchset sent to qemu-devel <http://lists.nongnu.org/archive/html/qemu-devel/2011-09/msg00165.html>
- 2011.09.06: fifth PATCH patchset sent to qemu-devel <http://lists.nongnu.org/archive/html/qemu-devel/2011-09/msg00695.html>
- 2011.09.10: fifth PATCH patchset hit the qemu mainline: <http://lists.nongnu.org/archive/html/qemu-devel/2011-09/msg01298.html>

qemu

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Permanent link: <http://wiki.osll.ru/doku.php/etc:users:jcmvbkbc:qemu-target-xtensa?rev=1315684936>

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