

东亚时区RISC-V双周会

2024年09月19日·第088次

<https://github.com/cnrv/RISCV-East-Asia-Biweekly-Sync>

Host: 许一凡

Organizer: PLCT Lab plct-oss@iscas.ac.cn

会议议程(15:00 - 16:00)

- 自我介绍、等待参会者接入、非技术话题八卦(没有的话就直接跳过)
- RVI 的更新和八卦(基本上跟东亚双周会群内消息同步)
- Unratified Specs 的参考实现进展
- 东亚地区小伙伴的项目更新
- 自由讨论

RISC-V International 同步、全球开源社区八卦(陈逸轩)

- [加速 RISC-V 处理器验证：协同仿真策略](#)
- [Lauterbach 为 Renesas 32 位-RISC-V 微控制器添加debug和trace支持](#)
- [SiFive 强调推动 RISC-V 应用于人工智能的关键拐点，并推出用于人工智能工作负载加速的 Intelligence XM 系列](#)
- RVI sig-academia-training 正在准备组织全球 hackathon

任务列表: <https://eval.comparch.edu.cvut.cz/>

课程资源: <https://comparch.edu.cvut.cz/>

RISC-V 德语社区的同步与八卦(罗云翔)

1. ELIV - International VDI Congress

The World's Largest Congress for Automotive Electronics, Software and Applications

October 16 -17 | Bonn

<https://www.vdiconference.com/eliv/>

2. ACC

November 18 - 19 | Munich, Germany

<https://www.automotive-computing-conference.com/>

Quintauris " Gear Up for Innovation:

Disrupting Automotive Semiconductors with RISC-V ”

3. 3 steps to shrinking your code size, your costs, and your power consumption

<https://codasip.com/2024/09/16/3-steps-to-shrinking-your-code-size-your-costs-and-your-power-consumption/>

Main Topics:

- AI Automotive
- Digital Homologation
- Software for the SDV
- Open Source Software
- Cockpit & Customer Experience
- E-Vehicle Mobility
- Automated Driving
- Mobility System Architecture
- Electronics Technologies
- Processes
- Cloud & Connect
- Security



Automotive Computing Conferences
MUNICH (GER) | DETROIT (US)

JOIN ACC GERMANY IN 2024

RISC-V BoF

What's new in trunk compare to GCC 14 for RISC-V?

- Better constant synthesis
- More vectorizer support
 - Early exit loop
- More saturation operation support
- Stack-clash protection support
- bf16 support
- Lots of improvements to utilize Ztso more

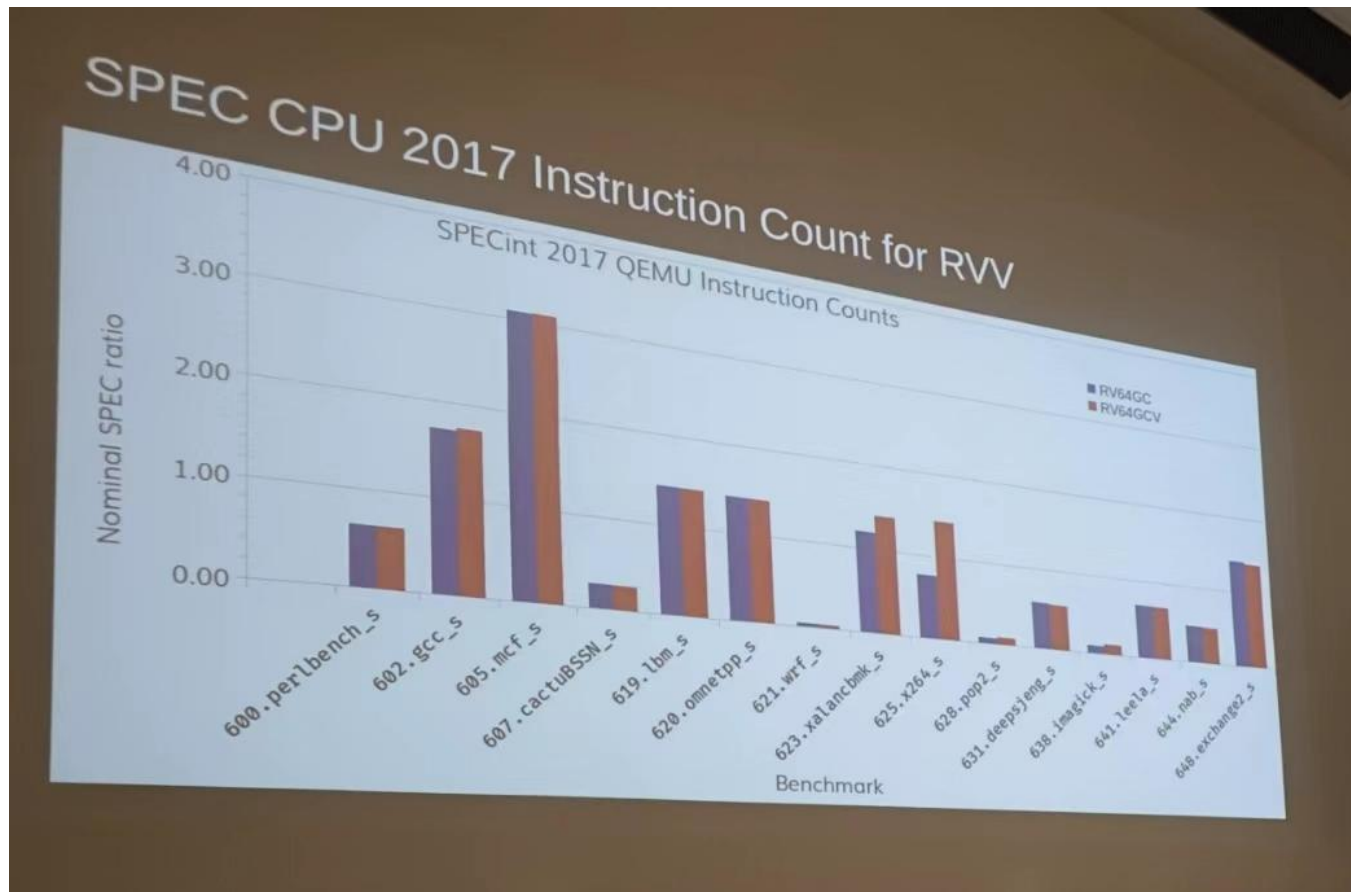


RISC-V BoF

What's planned to be included GCC 15?

- Hardware CFI support
 - Kito has a talk for this
- Function multi-version
 - `target_clone`, `target_version`
- Fixed-length vector calling convention
- Codegen improvements for vector (based on BPI evaluation)
 - Improve VXRm handling
 - zero-strided load vs scalar load + vector splat
 - segmented addressing (tunable? `TARGET_` flag, ??)
 - misaligned vector handling
- Evaluate short-circuit settings
- More if-conversion, particularly the min/max case in deepsjeng
- Long branch codegen adjustments
- Account for compressed instructions in length computations

RISC-V BoF



V8 for RISC-V 更新(邱吉、陆亚涵)

1. 5858573: [riscv] Optmiz builtins by Zicond | <https://chromium-review.googlesource.com/c/v8/v8/+5858573>
2. 5856680: [riscv] optimize indirect jump(jump to label) | <https://chromium-review.googlesource.com/c/v8/v8/+5856680>(**sun fengrui**)
3. 5855677: [riscv] Skip mjsunit/wasm/simd-fp16 | <https://chromium-review.googlesource.com/c/v8/v8/+5855677>
4. 5844044: [riscv] Add static_cast<uint32_t> in set_target_constant32_at | <https://chromium-review.googlesource.com/c/v8/v8/+5844044>

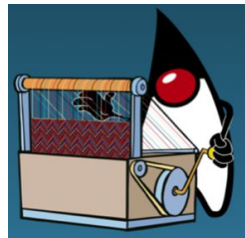
OpenJDK for RISC-V 杨飞

Allow yielding while holding monitor (Motivation: <https://bugs.openjdk.org/browse/JDK-8337395>):

- Only the “lightweight locking mode” (LM_LIGHTWEIGHT) is changed
 - Legacy locking mode (LM_LEGACY) will continue to pin carriers if selected
- LM_LIGHTWEIGHT
 - No pointer to Java stack in object’s header
 - Freeze copies LockStack to heap, thaw copies it back
 - Slow case: Make owner be the Thread.tid, no extra overhead on freeze/thaw
- Contended monitorenter calls into runtime
 - Preempt at monitorenter instead of blocking on carrier
 - Copy Java frames to the heap, same as normal freeze
 - Add virtual thread to the monitor’s waiter queue
 - Return from monitorenter “as if” monitor had been acquired
 - Preempt stub resets stack, equivalent to returning from normal freeze
 - Return back to Java in “BLOCKING” state
 - Unmount, transition to “BLOCKED” state

```
synchronized byte[] getData() {  
  
    byte[] buf = ..  
    int nread = socket.getInputStream().read(buf);    // Can block here  
    ...  
}
```

RISC-V changes reviewed & merged to openjdk loom project repo: <https://github.com/openjdk/loom/pull/212>



RuyiSDK (Xi Jing, PLCT)

- RuyiSDK V0.18
 - 进一步完善了 [issue #181](#) 的修复: 先前虽然修复了代码块的折行缺字问题, 但不经意间也让长度超过一行的 Markdown 列表项、块状引用等内容被截断了。
 - 完成了 [issue #193](#): 为方便发行版的打包工作, 移除了对 python-frontmatter 这一第三方库的依赖。
 - 软件源的更新
 - 更新了 WPS Office 到上游最新版本。
 - 更新了 RV64ILP32 裸机工具链 toolchain/gnu-plct-rv64ilp32-elf 到当前最新版本。
 - 更新了 Milk-V Duo 的支持:
 - 新增打包了 Milk-V Duo 官方实例代码库 source/milkv-duo-examples。您可在一个新的目录下, 用 ruyi extract 命令解压它。
 - 新增打包了 Milk-V 官方提供的 Milk-V Duo 宿主工具链如下。请注意: 它们是 RuyiSDK 授权对上游 <https://github.com/milkv-duo/host-tools> 仓库进行的重新打包; 且上游仅提供了 x86_64 架构的二进制。
 - toolchain/gnu-milkv-milkv-duo-bin: 适用于 Linux glibc 环境。
 - toolchain/gnu-milkv-milkv-duo-elf-bin: 适用于裸机环境。
 - toolchain/gnu-milkv-milkv-duo-musl-bin: 适用于 Linux musl 环境。
 - 更新了 Milk-V Duo 官方系统镜像包到上游最新版本。RuyiSDK 授权对这些镜像进行了重新打包, 以便后续所有通过 RuyiSDK 渠道分发的系统镜像都能以 ruyisdk 用户名与密码登录, 方便您的评估。
- 操作系统支持矩阵
 - 新增: [Microchip PIC64GX Curiosity Kit](#) Ubuntu 24.04.1 LTS
 - 更新: BPI-F3 [Armbian Noble](#) 这是支持矩阵仓库第一个使用自动化工具完成的测试报告

openEuler RISC-V (周嘉诚)

Status / 20240919

- Following releases in 2H24
 - Late Sep. - The next non-LTS release, 24.09
 - Late 2H24 - 24.03 follow-up community release for supporting more devices w/ *vendor kernels, proprietary drivers, etc.*
 - Late Dec. - 1st Service Pack of 24.03 LTS
- Updates
 - OpenAtom Campus Tour: Live courses for openEuler RISC-V available now [\[Link\]](#)
 - firefox & thunderbird: upgrade to latest ESR
 - mesa: upgrade to 24.2.1
- Fundamental packages in 24.03 [\[Full List in Chinese\]](#)
 - glibc 2.38, binutils 2.41, gcc 12.3.1, llvm 17.0.6
 - openjdk 8u402-b08 / 11.0.23 / 17.0.11 / 21.0.3
 - python 3.11.6, perl 5.38.0
 - go lang 1.21.4, rust 1.77.0
- Features:
 - 6.6-based [common kernel](#) for Qemu, SG2042 (Pioneer) & TH1520 (LPi4A)
 - UEFI-supported Hardware & QEMU images
 - Penglai TEE-enabled firmware variants
- Images:
 - UEFI Install ISO for SG2042 (Pioneer)
 - Standard & Netinst variants available
 - UEFI qcow2 Image w/ Penglai TEE
 - Legacy-boot Images for Pioneer & LPi4A
 - *Other images coming in the next community release*

Fedora for RISC-V status update (20240919)

- **RPM packaging**

- Koji Status: Rawhide(F41)
- **F39: 22465/22787 [98.59%] srpm [stop]**
- **F40: 20165/23898[85.11%] srpm**
- **F41: 22221/23938[93.62%] srpm**
- **<https://openkoji.iscas.ac.cn/pub/stats/>**

- **main package version:**

- Toolchain: gcc-14.0.1-0.15.3、glibc-2.40.9000-1、binutils-2.43.1-1[up-to-date]
- libffi-3.4.6-2(up-to-date)
- **java-1.8.0-openjdk**
- **java-11-openjdk,java-17-openjdk,java-21-openjdk**
- **java-latest-openjdk**
- perl-5.40.0-509(up-to-date)
- **python3.13-3.13.0~rc1-3(updating)**
- **llvm-18.1.8-2(up-to-date)**
- golang-1.22.4-4(up-to-date)
- rust-1.80.0-2(up-to-date)

- **Desktop support Fedora Rawhide:**

- **DONE:** XFCE/LXDE/LXQT/Cinnamon/Sway/Budgie/Sugar/GNOME/Mate
- **Testing:** KDE/Deepin
- **Key Desktop App**
 - firefox-128.0-4[DONE]
 - libreoffice-24.2.4.2-2[DONE]
 - Thunderbird-115.11.1-1[DONE]
 - chromium-126.0.6478.182-2[DONE]

- **Image :**

- <https://images.fedoravforce.com/>
- <https://openkoji.iscas.ac.cn/pub/dist-repos/dl/>
- <https://mirrors.iscas.ac.cn/fedora-riscv>

- **ROS/ROS2 upgraded to F41**

- **[Sail](#) for F40[UPSTREAMING]**

- **function testing for F41:**

- **Podman[pass], Image: [fedora-rv64](#) (f41)**
- Ceph[ONGOING]
- K8s[ONGOING]

Debian for RISC-V(干波)

- Official port update
 1. [libxml2](#) was still waiting to migrate
 2. waiting [libcbor](#) to migrate
 3. [gnome](#) related package concerned
- debci
 1. Rust-* packages was on reject_list on [riscv64](#)
 2. Preparing p550 for debci
- Some works
 - 1.lem [upload to [unstable](#), [upstream](#)], libcbor[[help](#), [upstream](#)], vdo [[issue](#)]
 2. ample [qa [upload](#)], tksheet[[upload](#)], xwayland-run[[upload](#)]

RevyOS (程龙灿)

- New image (20240819)
 - <https://mirror.iscas.ac.cn/revyos/extra/images/sg2042/20240819/>
 - Kernel version: 6.6.46
 - supported devices: Milk-V Pioneer / sg2042 evb / sg2042 evb2
 - SG2042刷写教程
- **ROS2**
 - RevyOS 目前维护着两个ros发行版:Humble and Jazzy
 - jazzy build 1109/1185 (93%)
 - humble build 1406/1584 (88%)
 - "Bullseye" 迁移到 "Bookworm." 迁移完成
 - <https://mirror.iscas.ac.cn/revyos/revyos-ros2/>
 - ci测试情况:

pass: (39428/39496)

146failed,102skip

总计5.98h

RevyOS supported devices

[Image download directory](#)

- 1、LicheePi 4A
- 2、LicheePi Cluster 4A
- 3、beaglev-ahead
- 4、Milk-V Pioneer
- 5、Milk-V Meles
- 6、LicheeConsole4A
- 7、RISC-V Book
- 8、LicheeBook

SD card support

- 1、LicheePi 4A
- 2、beaglev-ahead
- 3、Milk-V Meles
- 4、LicheeConsole4A

Mainline support

- 1、LicheePi 4A
- 2、Milk-V Pioneer

FW相关更新（王翔）

❖ opensbi

- 给SSE添加mask/unmask支持
- 修复fw_base.S启动时特别晚进入的核心可能死锁的BUG
- 修复__always_inline重复定义的bug
- 为每个核心分配更多的堆空间，在DT (/chosen/opensbi,config/heap-size) 中增加DT大小的配置
- 增加editorconfig配置基础的代码风格

香山开源RISC-V处理器 - ICT / PCL

香山开源技术讨论群：
879550595 (QQ)

- 功能

- 前端：
 - 修复 ICache ECC Code 未正确更新的 Bug (#3492)
 - 修复 RAS 推测栈导致的卡死 Bug (#3514)
 - 修复 ITTAGE useful 更新条件错误的问题 (#3564)
 - 修复 Zcmop 扩展中的指令被译码为非法指令的 Bug (#3570) (OpenXiangShan/rocket-chip #10)
- 后端
 - 持续推进功能 Bug 修复, 共修复 30 余例 H 扩展、Debug 扩展、V 扩展、特权级功能相关的 Bug
 - 支持可恢复非屏蔽中断 (Smrnm) 拓展 (#3480)
 - 添加 CMO 指令拓展 (Zicbom, Zicboz) 拓展权限检查及 CSR 相关支持 (#3559)
 - 支持加载常数和特殊偏序比较拓展 (Zfa)(#3439)
- 访存与缓存
 - TP 修复 hardcoding 问题, 实现对 sv48 的正确支持 (#3487)
 - 修复 L2 Cache 中 mergeA 导致预取不及时的性能 Bug (待性能评估)
 - 修复 PCredit 仲裁相关, 导致 PCredit 丢失或重复分发的 Bug (#3513、#3552)
 - 修复 L2TLB 返回的异常处理生成和仲裁逻辑 (#3453、#3588)
 - 完成 CHI2AXI 转接桥设计 (OpenNCB), 搭建 CoupledL2-OpenLLC-OpenNCB 测试框架
 - 添加 non-data error 的处理流程, 访问不存在外设时将返回 DECERR (#3458)
 - 完成 CMO 扩展对 CSR 的修改要求与指令异常条件的整理, NEMU 上实现相关的 CSR 寄存器与指令异常检查
 - 完成 svpbmt 扩展使能信号 PBMTE 的代码实现 (#3521)

- 性能

- TP meta on L2: 相关代码完成到较新 master 的迁移, 出现 TP 预取数量大幅下降现象, 修复中
- CI 新增性能回归测试, 会在每周五自动测试 SPEC06 的性能分数 (#3533)
-

- 时序

- 向量访存添加 OG2 (#3482)
- 优化 Rab 状态机转移至 idle 逻辑 (#3517)
- 增加加法器以优化分支计算模块计算 target 时序, 删除冗余判断逻辑 (#3520)
- 将访存 issue queue 入队数从 2 降为 1, 缓解时序压力 (#3471)
- 完成对 L2 Cache tagArray 的拆分, L2 Cache 模块内部关键路径时序优化至 -40ps

- 面积

- L2 Cache 上使用 SRAM 搭建 Queue, 对 data SRAM 进行拆分。时序评估正常, 面积有所优化, 功耗增加过多
- 整理、裁剪 MemBlock 中的冗余信号, 主要包括 exceptionVec 和 fuType 等 (#3560)

Chisel and Additional Technology / Sequencer

- 提交人不在线
-
- T1
 - 重构Mask Unit单元
 - 初始化FPGA仿真
 - 进一步后端评估
- Chisel
 - Scala3的初步支持
 - rocket-uncore 提供axi版本的统一-debug module plic aclint的支持

自由讨论 / AOB