The Status of Embedded Linux on RISC-V

Slackware

Bootable: No, chroot from Fedora Image
package management: slackpkg+pkgtools
Status: under development

OpenWRT, Buildroot Yocto/OpenEmbedded

Bootable: yes, BBL or U-boot
package management: buildtime or Opkg
Build system: Cross-compilation
Status: In maintenance

Info Source:

Slackware: https://github.com/fede2cr/slackware_riscv
https://riscv.org/exchange/software/

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The Status of Linux Distro on RISC-V

Android

Bootable: Yes, OpenSBI + U-Boot on QEMU and C910
package management: apk
Build system: Android Studio
Status: demo can run on C910, ART is underdevelopment

chromium

Chromium OS

Bootable: stage3 rootfs, need to be tested with FW
package management:
Build system: cros_sdk
Status: **stage3(console)，in reproduce, then moving forward**

Info Source:

openEuler: openEuler RISC-V SIG， 中科院软件所

Android： https://github.com/T-head-Semi/aosp-riscv

https://plctlab.github.io/aosp/create-a-minimal-android-system-for-riscv.html

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Linux distribution on RISC-V

From www.codasip.com

We would like to support more targets based on standard RISC-V Spec.

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My RISC-V dev board collections

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Part III

The software component

RISC-V®

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The Status of RISC-V Firmware and Linux

OpenSBI

Firmware for RISC-V, upstream **main** branch,
generic platform with the right **dtb** file.
NO patch required for most of platform

U-boot

The latest u-boot(upstream, **main)**with **some patches** works fine on RISC-V, can boot some **Linux** distros.

GRUB2

The RISC-V support has been merged, need some patches, but can boot some **Linux** distros now.

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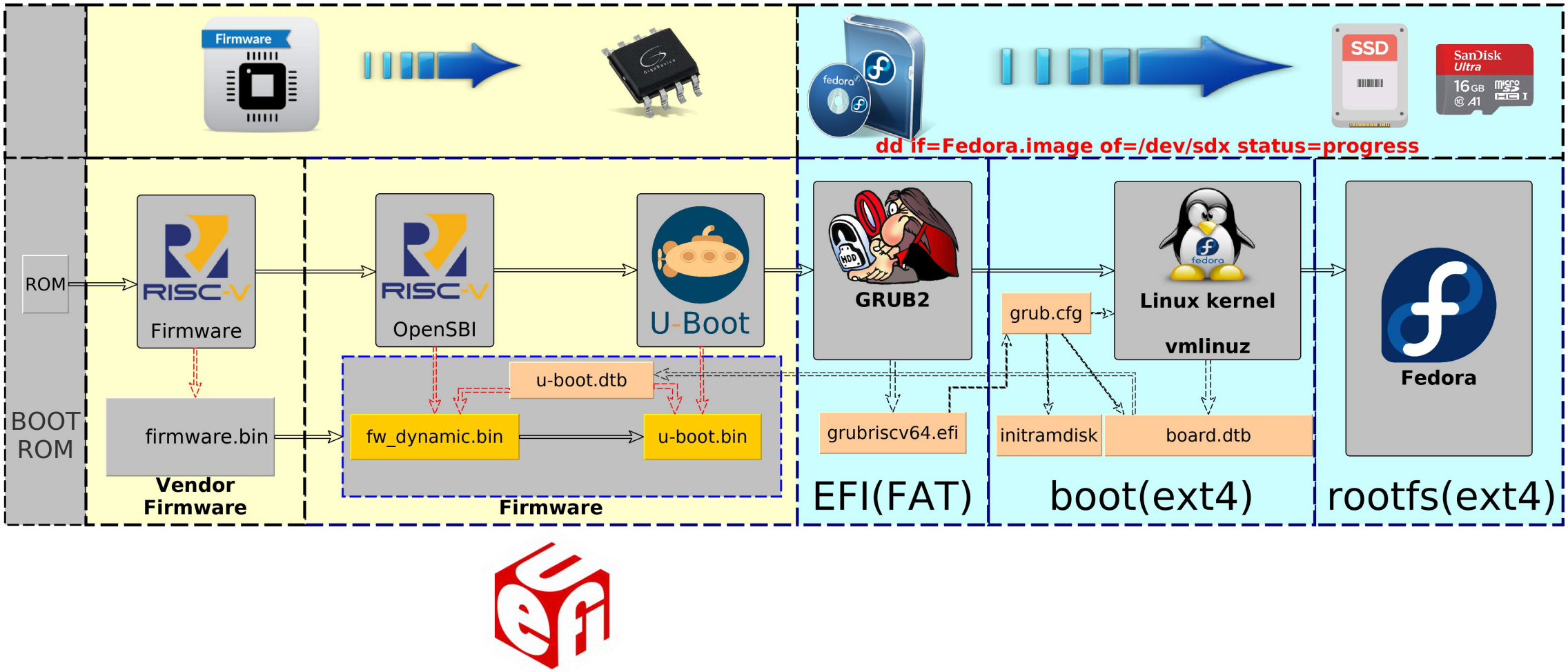
Standard boot flow for now



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Part II

Run Linux Distro on RISC-V

Development tools

Build Firmware

Flash Image to SD

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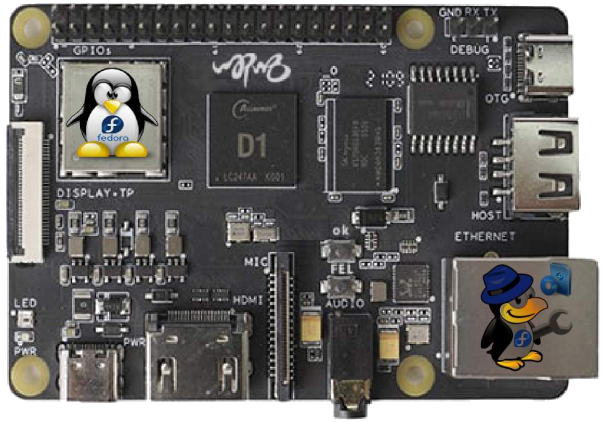
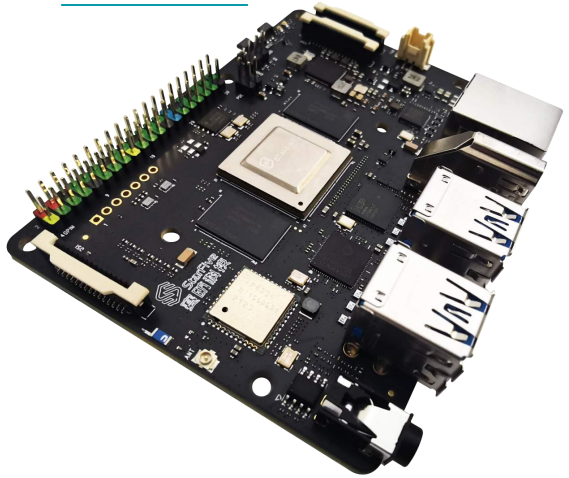
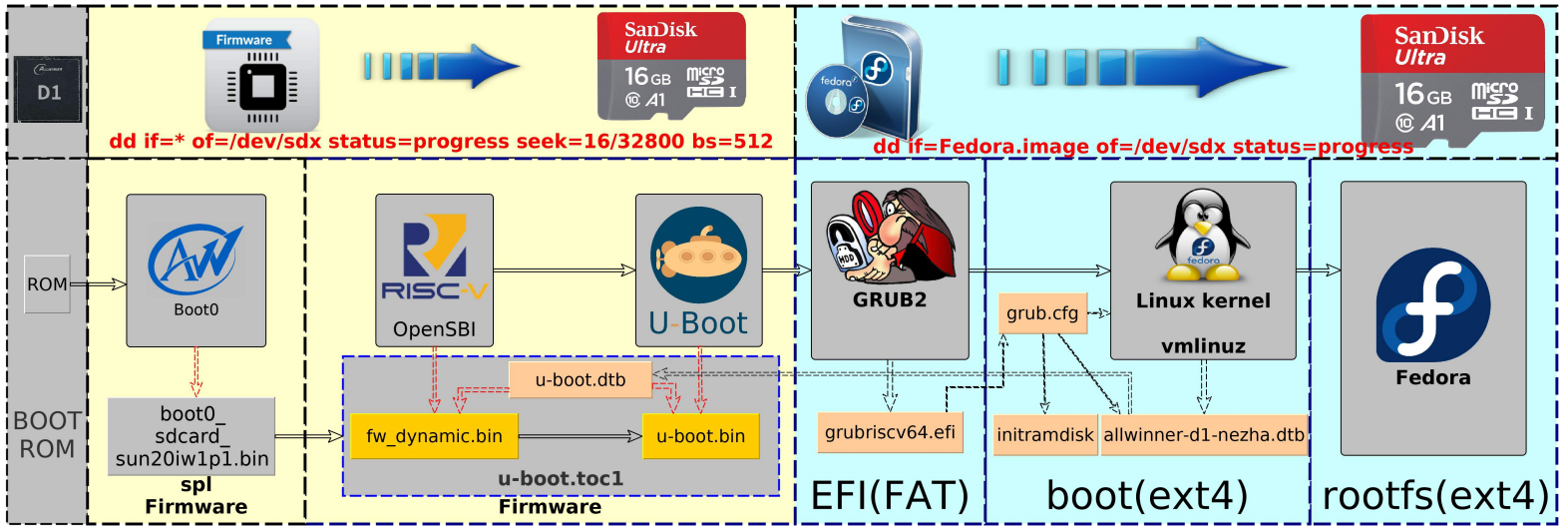
Run Linux Distro on real hardware

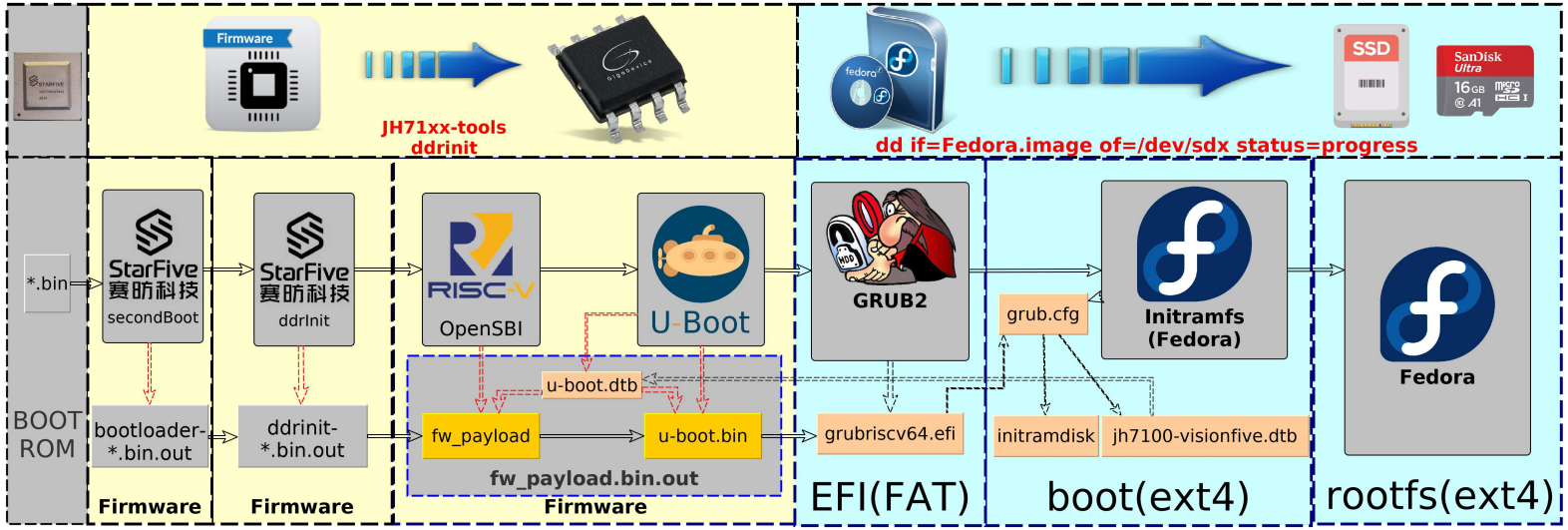


https://fedoraproject.org/wiki/Architectures/RISC-V/Allwinner



https://fedora.starfivetech.com/pub/downloads/BeagleV-release/





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Run Linux Distro on real hardware

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Part IV

Industry standard RISC-V server/PC

Specs

UEFI

ACPI

Please try Fedora for RISC-V development

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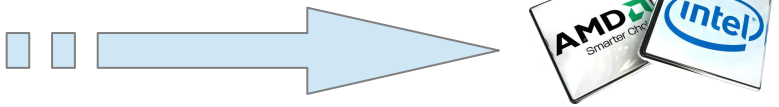
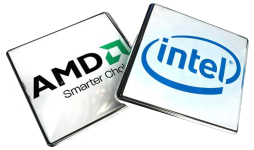
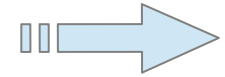
RISC-V Platform Specification





SBSA/SBBR/ACS...



a lot of different RISC-V chips

https://lists.riscv.org/g/tech-unixplatformspec

https://github.com/riscv/riscv-platform-specs

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The Status of RISC-V Firmware for PC & Server

https://linuxplumbersconf.org/event/11/sessions/114/#20210921

UEFI: Unified Extensible Firmware Interface.

HPE is currently working on the next RISC-V edk2 port release which incorporates with OpenSBI v0.9 that supports the firmware domains for HSM.
HPE is also working on RISC-V EDK2 OVMF and Starlight platforms. Contributors from HPE :

Abner Chang
Daniel Schaefer

ACPI: Advanced Configuration and Power Interface

Static tables provided by system firmware to the standard ACPI compliant OS for system info and configuration。
Contributors from Ventana Micro Systems:

Sunil V L
Rahul Pathak
Kumar Sankaran
Mayuresh Chitale

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Atish Kumar Patra

Akira Tsukamoto
Drew Fustini
Mikael Frykholm
Stefan O'Rear

Allwinner Technology
StarFive 赛昉科技
T-HEAD
UC TECHIP 优矽科技
ISCAS 中国科学院软件研究所
智能软件研究中心 Intelligent Software Research Center
RISC-V® AMBASSADOR
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TRANQUILLITY
OSL OPEN SOURCE LAB
Academic Computer Club Umeå University

... and countless other individuals and companies, who have contributed to RISC-V specifications and software eco-system!

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Alphabetical Listing by Company Name

Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

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