THE DEVELOPMENT OF H EXT. BASED SOFTWARE ECOSYSTEM

Presented by:

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Background

The virtualization software has a wide audience nowadays, they have proven themselves a very important software stack, to study and industry.

Due to the absence of SoCs with H ext., these software are not properly ported to or verified on real hardware.

OBJECTIVES



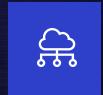
HW VERIFIED

Work closely with hardware providers, all software are well tested



UPSTREAM FIRST

Focus on contributing to upstream, affecting and benefits all distributions



SECURE SOLUTION

Secure solution on RISC-V platform based on virtualization

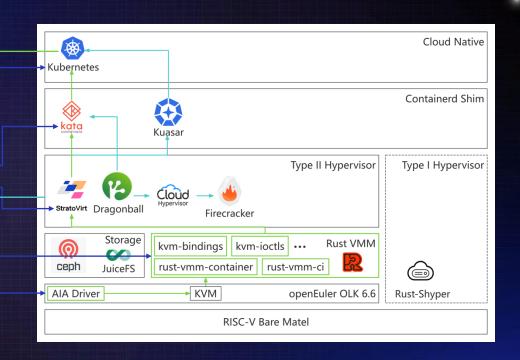
RISC-V VIRTUALIZATION ROADMAP

Stage One

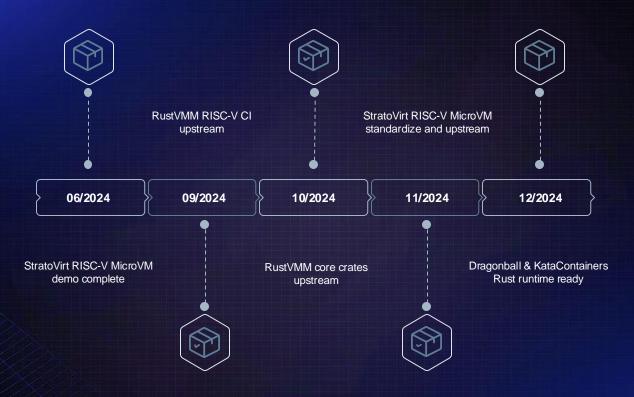
A bottom up, working and reliable software stack on RISC-V

Orchestra Stageul Wootes, Secured by Kata-Containers, prosperdus by Strato Virtualization Powered by Rust VMM Soft Ware ecosystem of On openEuler RISE-V

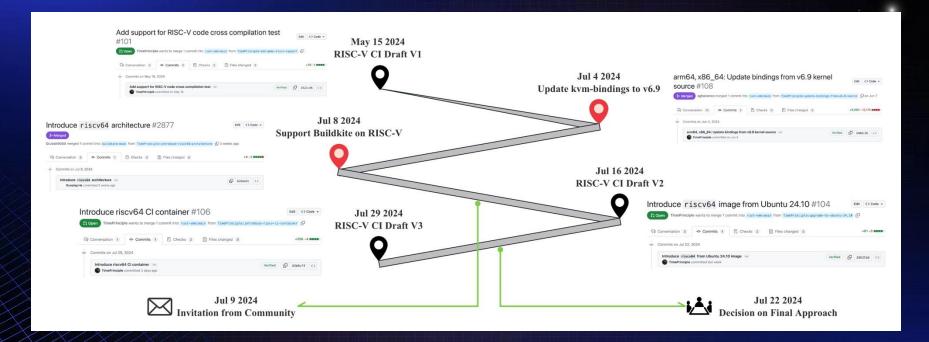
Enabling RISC-V to compete with x86 and ARM in Virtualization & CloundNative



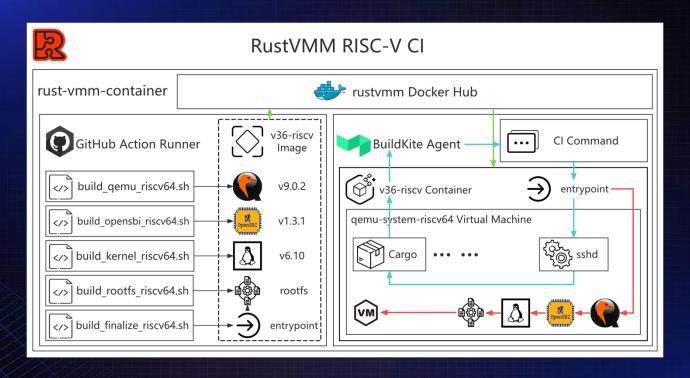
STAGE ONE TIMELINE



RUSTVMM RISC-V CI SUPPORT



DESIGN OF RUSTVMM RISC-V CI



WORK PROGRESS



AIA Driver

Backport 6.10 AIA Driver to RVCK

90%

https://github.com/RVCK-Project/kernel-6.6/pull/3

WORK PROGRESS



RustVMM

RustVMM Crates RISC-V Support 70%

- https://github.com/rust-vmm/kvm-bindings/pull/108
- https://github.com/rust-vmm/kvm-bindings/pull/106
- https://github.com/rust-vmm/rust-vmm-container/pull/104
- https://github.com/rust-vmm/rust-vmm-ci/pull/159
- https://github.com/rust-vmm/rust-vmm-ci/pull/157
- https://github.com/rust-vmm/rust-vmm-container/pull/101

WORK PROGRESS



StratoVirt

StratoVirt MicroVM, StandardVM RISC-V Support 50%

- https://gitee.com/src-openeuler/stratovirt/pulls/104
- https://gitee.com/openeuler/stratovirt/pulls/1585

STRATOVIRT ON SPACEMIT FPGA

```
Serial-COM9 ×
         23.231414] usbhid: USB HID core driver
         23.261859] riscv-pmu-sbi: SBI PMU extension is available
         23.284954] riscv-pmu-sbi: 16 firmware and 18 hardware counters
         23.452744] xt_time: kernel timezone is -0000
         23.467965] IPVS: Registered protocols (TCP, UDP)
23.487760] IPVS: Connection hash table configured (size=4096, memory=32Kbytes)
         23.529479] IPVS: ipvs loaded.
         23.547724] IPVS: [rr] scheduler registered.
23.589508] Initializing XFRM netlink socket
          23.613998] NET: Registered PF_INET6 protocol family
          23.762101] Segment Routing with IPv6
          23.785935] In-situ OAM (IOAM) with IPv6
          23.821529] sit: IPv6, IPv4 and MPLS over IPv4 tunneling driver
          23.9137691 NET: Registered PF_PACKET protocol family
         23.941291] Bridge firewalling registered
         23.9594901 can: controller area network core
         23.977849] NET: Registered PF_CAN protocol family
         24.003476] can: raw protocol
         24.015794] can: broadcast manager protocol
         24.031790] can: broadcast manager protocol
24.031790] can: netlink gateway - max_hops=1
24.054134] 8021q: 802.1Q VLAN Support v1.8
24.078046] Key type dns_resolver registered
         26.302122] Loading compiled-in X.509 certificates
         28.118556] Btrfs loaded, zoned=no, fsverity=no
28.212635] riscv-aplic 430500000.interrupt-controller: 255 interrupts forwarded to MSI base 0x0000000430600000
         28.345558] printk: legacy console [ttyS0] disabled
     28.345058] printk: legacy console [ttySU] disabled (irq = 11, base_baud = 625000) is a 16550A 28.456798] printk: legacy console [ttySO] enabled (28.456798] printk: legacy console [ttySO] enabled (28.491590] printk: legacy console [ttySO] enabled (28.491590] printk: legacy bootconsole [sbi0] disabled (28.491590) printk: legacy bootconsole (28.491590) disabled (28.491590) printk: legacy bootconsole (28.491590) disabled (28.491590) printk: legacy bootconsole (28.491590) disabled (28.491590)
      110.896085] PM: genpd: Disabling unused power domains
287.609555] Initramfs unpacking failed: invalid magic at start of compressed archive
      294.226524] Freeing initrd memory: 524288K
294.279360] Freeing unused kernel image (initmem) memory: 2320K
      294.287958] Run /init as init process
      294.292650]
                                   with arguments:
      294.296564]
                                       /init
      294.2997301
                                     with environment:
      294.3046281
                                        HOME=/
      294.3079771
                                         TERM=linux
 Init from initramfs
Running sysctl: OK
Saving 256 bits of non-creditable seed for next boot
Mounting cgroupfs hierarchy: OK
Starting iptables: OK
Starting dhcpcd...
dhcpcd-9.4.1 starting
                                                                                                                                                                                                                                                                                                     硬件环境:进迭时空高性能
  309.216253] random: crng init done
dhcp_vendor: Invalid argument
forked to background, child pid 148
                                                                                                                                                                                                                                                                                                               服务器芯片 FPGA 原型
no interfaces have a carrier
Welcome to Buildroot
 buildroot login:
```

openEuler RISC-V VIRT WG



Honghao Cheng CHonghaohao

Rust-Shyper RISC-V AIA



Ruoqing He TimePrinciple

- RVCK 6.6 AIA Backport
 - RustVMM
 - StratoVirt
 - Dragonball
 - CloudHypervisor
 - Firecracker
 - KataContainers



Xinhao Yi TexasOct

- Kubernetes component images
- Kubeadm deployment support

THANKS!

If you have any questions, you want to join us, or help us verify our work on your FPGA/HW, feel free to contact me:

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Wechat: RustPrinciple

