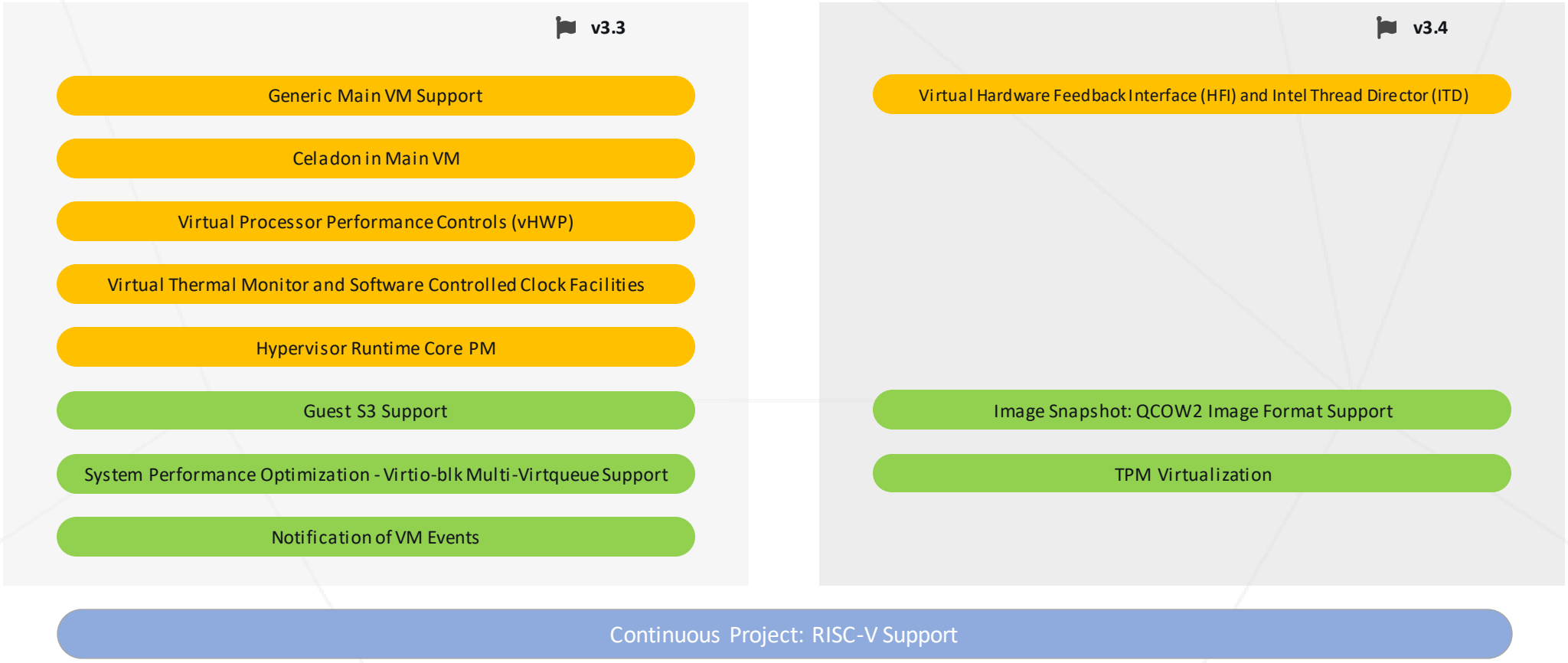
ACRN

Open Source Roadmap 2024

September 26, 2023

2024 Open Source Roadmap



Hypervisor Feature Descriptions

Timing	Feature	Description
v3.3	Generic Main VM Support	A “Service VM” has two characteristics: (1) it’s the default owner of physical resources and (2) it can invoke VM management hypercalls. We’re adding support to configure a VM with only the physical resource ownership characteristic and calling this a “Main VM”. An example scenario is a pre-launched TEE (Trusted Execution Environment) VM and a main REE (Rich Execution Environment) VM.
	Celadon in Main VM	Running Celadon in a main VM for Android-based scenarios.
	Virtual Processor Performance Controls (vHWP)	Provide virtual HWP feature to a VM so that the VM can check hardware performance ranges and adjust performance levels for performance or power consumption.
	Virtual Thermal Monitor and Software Controlled Clock Facilities	Virtualize processor thermal sensors and controls for thermal management in VMs.
	Hypervisor Runtime Core PM	Enhance processor power management in the hypervisor at runtime to reduce power consumption when a core is idle.
v3.4	Hardware Feedback Interface (HFI) and Intel Thread Director (ITD)	Provide a virtual HFI and ITD to a VM, which helps the guest OS scheduler improve overall performance and power efficiency on platforms with hybrid cores.

I/O Virtualization Feature Descriptions

Timing	Feature	Description
v3.3	Guest S3 Support	Support suspend-to-RAM of post-launched VMs running with OVMF.
	System Performance Optimization - Virtio-blk Multi-Virtqueue Support	Optimize the virtio-blk backend performance by allowing multiple virtqueues between a frontend driver and the backend.
	Notification of VM Events	Emit events (such as RTC changes and power cycles) to the monitor socket for customizing further actions upon such events.
v3.4	Image Snapshot: QCOW2 Image Format Support	Support virtio-blk backends to use QCOW2-format images for more efficient storage uses and snapshot capabilities.
	TPM Virtualization	Virtualize TPM 2.0 for multiple post-launched VMs at the same time, in support of security use cases such as remote attestation.

Continuous Project: RISC-V Support

The goal of this continuous project is to enable ACRN hypervisor on RISC-V with Hypervisor Extension. It will first refine the current architecture abstraction layer which defines the architecture-neutral APIs covering the management of cores, caches, memory, interrupts, timers, and hardware virtualization facilities. Then an implementation of those APIs for RISC-V will be introduced.

QEMU will be the first RISC-V (virtual) platform this project targets for its wide availability and flexibility. Real platforms may be selected later based on business and community interests.

For more details and the latest status, refer to https://projectacrn.github.io/latest/projects/multi-arch-support.html.