KVM Forum 2016 - Keynote

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KVM Forum 2016
State of KVM

- 6 architectures
  - All in-tree, all actively maintained
  - ARM, ARM64, MIPS, PPC, x86, s390
- 2 main userspace implementations
  - All architectures supported in QEMU
  - All except s390 in kvmtool
- Since 4.2: 6 releases, 1222 commits, ~15 companies
- New co-maintainer: Radim Krčmář!
Commits in each release (non-merge)
Commits by architecture since July 2015

- ARM/ARM64: 441 commits
- x86: 403 commits
- S390: 201 commits
- MIPS: 109 commits
- PPC: 98 commits
- Generic: 95 commits
Main contributors

- Red Hat: maintenance, x86
- Linaro+ARM: ARM/ARM64
- IBM: PPC, s390
- Imagination Technologies: MIPS
- Intel, AMD: x86 hardware enablement
- Google, Kingsoft Cloud, Samsung, Virtuozzo,...
Commits by employer (non-merge, since Jul ’15)

- Linaro/ARM: 339
- IBM: 244
- Red Hat: 210
- ImgTec: 100
- Intel: 87
- Others: 164
Highlights: x86

- VT-d posted interrupts
- AVIC (AMD APIC virtualization)
- Nested virtualization: nested VPID, security
- More Hyper-V
- Split irqchip
- >255 vCPUs
Highlights: ARM

- Debug support
- Virtualization Host Extensions (kernel at EL2)
- Virtual PMU
- 16K pages
- VGIC rewrite
- MSI support
Highlights: POWER

- POWER8 micro-threading
- IOMMU hypercalls
- Dynamic DMA windows
Highlights: s390

- Guest runtime instrumentation
- PCI passthrough (KVM-VFIO)
- Nested virtualization (vSIE)
- Preparing for CPU model support
Highlights: MIPS

- Many cleanups
- 64-bit host support
- Preparing for hardware virtualization extensions
Performance

- “Improving vmexit latency one patch at a time—since 2006”
- Context tracking optimizations
- Adaptive low-latency halt
- Optimized TSC deadline timer
Security

- Virtualization provides the best isolation
- Secure boot
- Kernel hardening and KVM
- AMD Secure Encrypted Virtualization (SEV)
kvm-unit-tests

- 220 commits in the last year
- “Standalone test” infrastructure
- PPC64 port and initial RTAS test
- http://www.linux-kvm.org/page/KVM-unit-tests
It’s not just KVM!

- **VFIO**
  - No-IOMMU mode (for DPDK)
  - Intel Integrated Graphics Device assignment
  - In the pipeline: mediated device framework (vGPU, s390 virtual channel I/O)

- **virtio/vhost**
  - Polling support
  - Xen support

- **Real-time**
Thanks!