Status of KVM on PowerPC
KVM Forum 2008

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Agenda

- Milestones reached
- Server vs. embedded virtualization
- Major requirements
- Planned milestones
Milestones reached

- No hardware support on PowerPC 440
  - Compress privilege levels
    - Implies instruction emulation
  - Shadow TLB
  - Interrupt delivery

- Virtio support
  - pci-emulation
  - virtio-block
  - virtio-net
Milestones reached

- Performance measurement
  - Exit statistics
  - Profile host

- MMU optimizations
  - Strategic TLB selection
  - Experimental large page support

- Paravirtualized IRQ handlers
  - Native IRQ handlers have a lot of privileged instructions
  - Important to speed up non virtualization assisted hardware
  - Device tree to announce hypervisor features
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Server vs. Embedded virtualization

- Different consolidation scenarios
  - Classic utilization consolidation not important
  - Consolidation interesting when combining virtualization & emulation
    - AMP to SMP migration
    - Support discontinued HW along new SW stack
  - Uniting formerly exclusive SW
Server vs. Embedded virtualization

- Multicore enablement
  - Port old SW with minimal investment
  - Allows running new SW along in host or other guests
Server vs. Embedded virtualization

- Secure monitoring
  - Allowing complex watchdogs
  - Protect and hide monitoring software
- Sandboxing untrusted code
Server vs. Embedded virtualization

- Shared use cases but with different focus
  - Hot standby to save power&space and for debugging
  - Flexible resource management for QOS
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Major requirements

- Reduce performance tradeoff
  - Hardware virtualization support

- RT support
  - RT is important in embedded market
  - Leverage various RT Linux work

- Standardization
  - Power.org TSC – Embedded hypervisor
  - several hypervisors and operating systems to coordinate
  - ABI/API coordination
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Planned milestones

- More functionality
  - Merge exit accounting with kvmtrace
  - Support gdb stub
  - Leverage RT-Linux

- Hardware support is coming
  - Power ISA 2.06 scheduled for 4Q 2008
  - We will exploit that instructions to reduce our performance tradeoff
  - Support when hardware arrives

- Standardization
  - Push TSC results to ePAPR
Questions