

# Status of KVM on PowerPC

## KVM Forum 2008

Christian Ehrhardt  
IBM Linux Technology Center



# 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



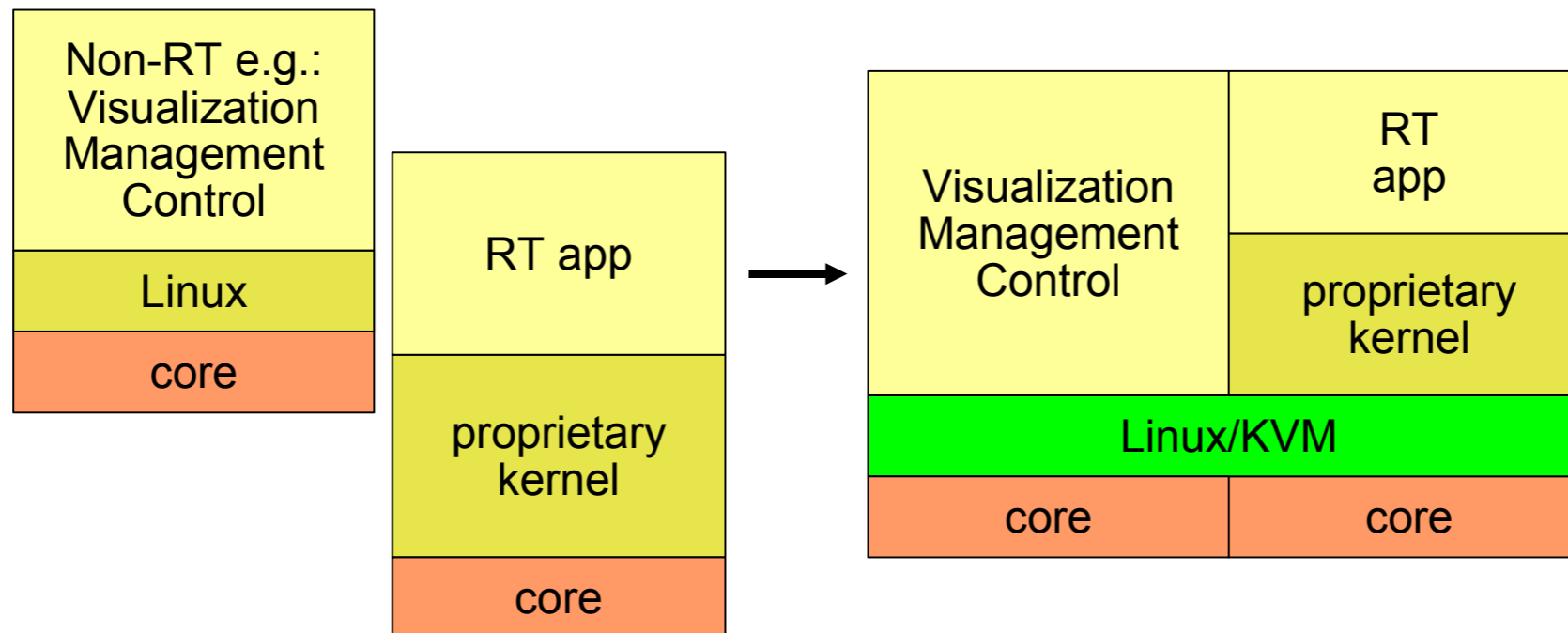
# Agenda

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

# Server vs. Embedded virtualization

## ■ Different consolidation scenarios

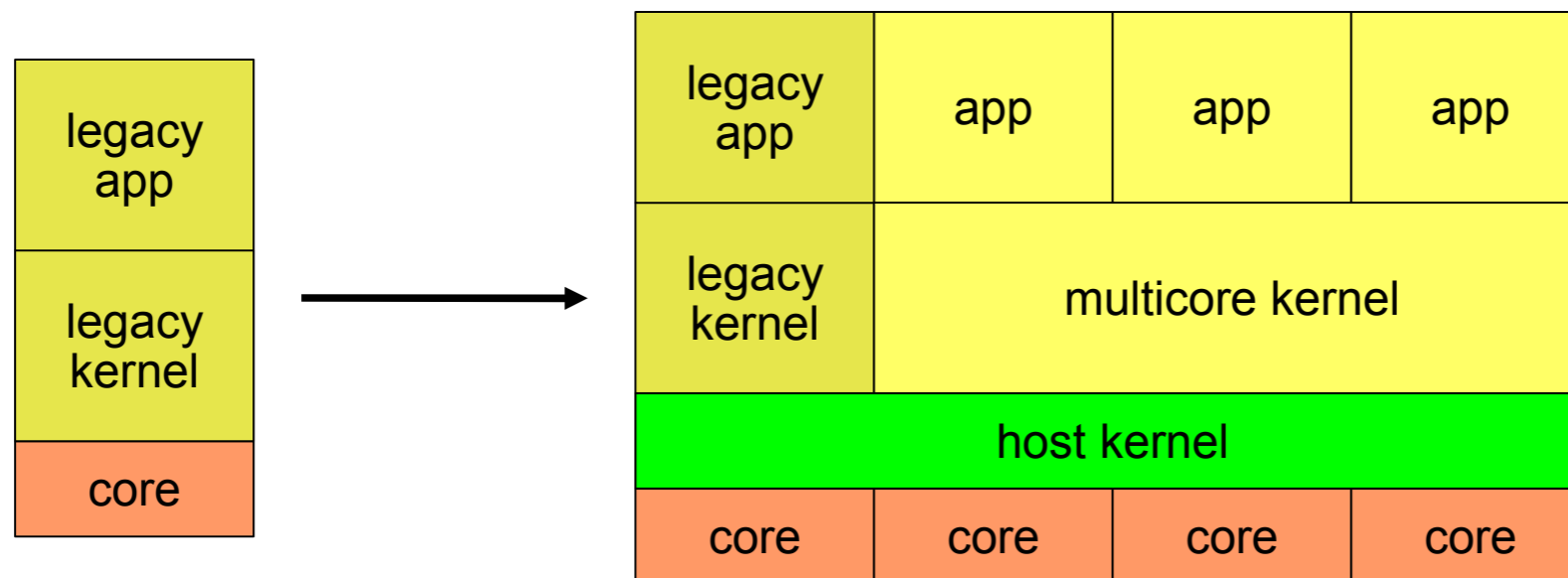
- Classic utilization consolidation not important
- Consolidation interesting when combining virtualization&emulation
  - AMP to SMP migration
  - Support discontinued HW along new SW stack
- Uniting formerly exclusive SW



# Server vs. Embedded virtualization

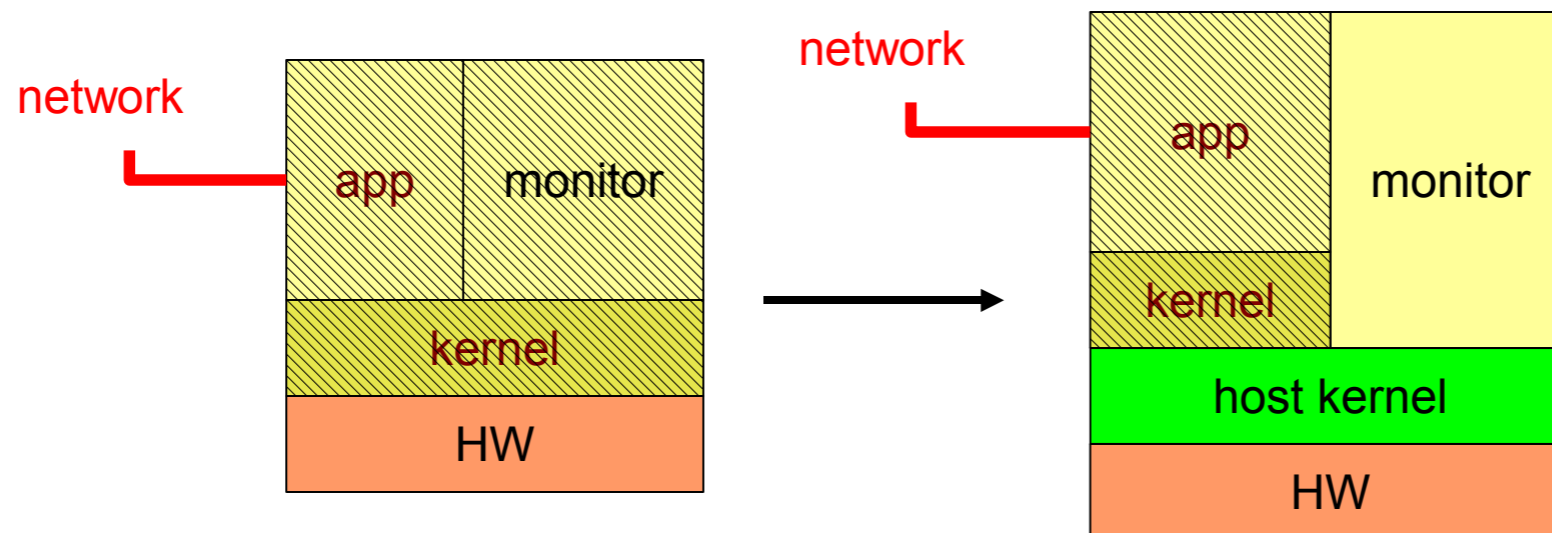
- Multicore enablement

- Port old SW with minimal investment
- Allows running new SW along in host or other guests



# Server vs. Embedded virtualization

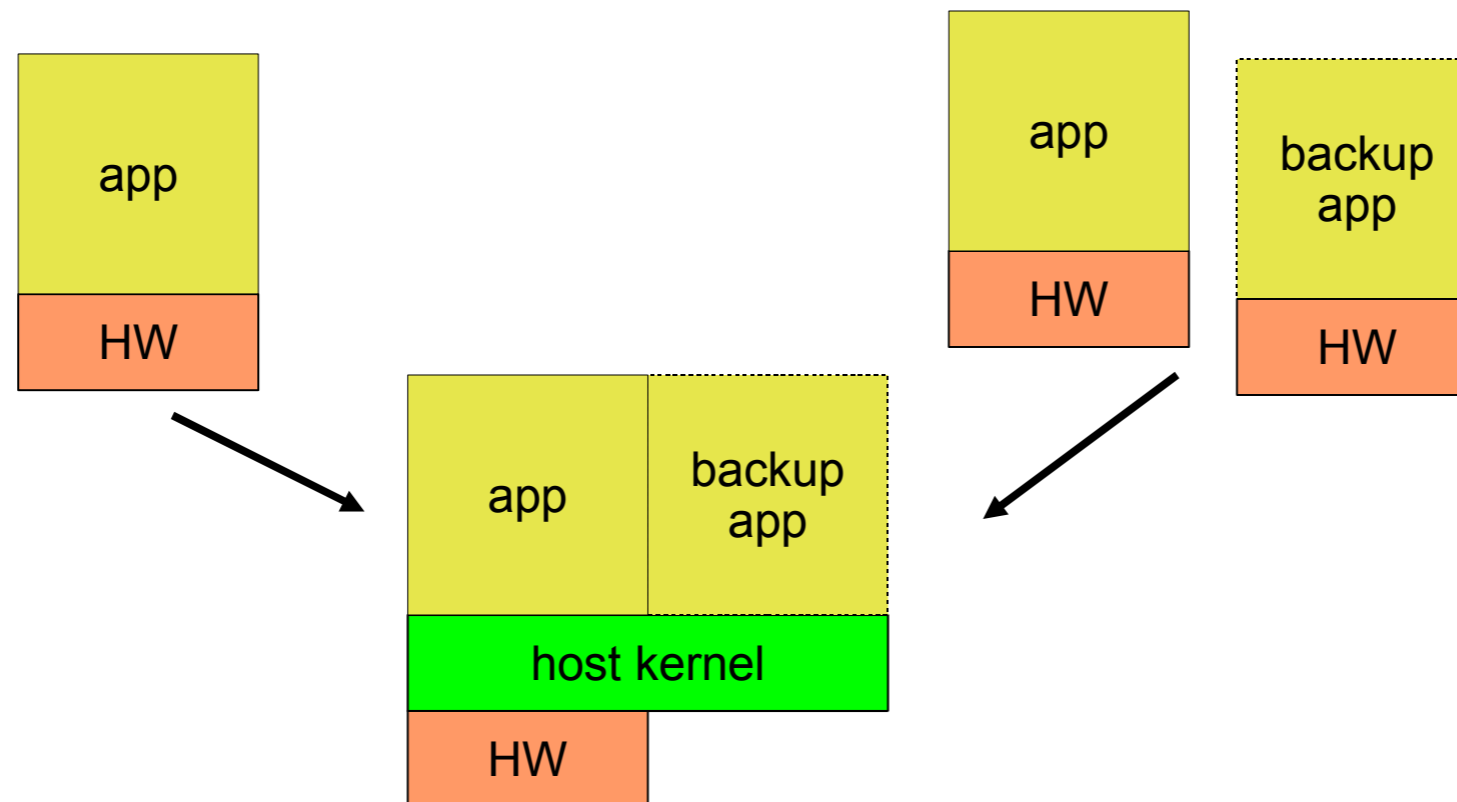
- Secure monitoring
  - Allowing complex watchdogs
  - Protect and hide monitoring software
- Sandboxing untrusted code





# 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



# Agenda

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



# 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

# Agenda

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



# 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



**KVM Forum**  
Napa 2008

