Red Hat and Condor Project Collaboration

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- **Defining technologies...**
  - Grid/ Distributed computing (UW/Condor)
  - Real-time
  - Virtualization
  - Distributed computing / Messaging (built on AMQP) [www.redhat.com/mrg](http://www.redhat.com/mrg), [qpid.apache.org/](http://qpid.apache.org/), [www.amqp.org](http://www.amqp.org)
  - Stateless (ability to execute from read only image/device) [et.redhat.com](http://et.redhat.com)
  - FreeIPA (Identity, Policy Audit) [www.freeIPA.org](http://www.freeIPA.org)
  - etc....

- The combination of these types of technologies, in a standard Linux distribution, will provide a new generation of compute platforms.
Red Hat Enterprise MRG

• Defining technologies...
  - Grid (UW/Condor)
  - Real-time
  - Messaging (built on AMQP)

• The combination of these types of technologies, in a standard Linux distribution, are providing a new generation of compute platforms.
Condor Week 2007
- Red Hat/Condor collaboration
  * Condor as open source
  * Red Hat Madison office

Red Hat and Condor Project Collaboration
Foundation

• Condor Project and Red Hat work to release Condor source
• Red Hat builds team on-site with Condor Project
• Building on Condor Project’s production expertise
  - Always be compiling
  - Automate testing
  - Ok, how about more!
• Be flexible on all levels, even the source
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**Red Hat and Condor Project Collaboration**

**Condor 7.0 Release**
- 1st release with source
- Condor into Fedora
- Beta MRG release
Collaborative Development

• EC2 through the Grid Universe
  - Get access to the Cloud from a Condor pool

• Development also means testing
  - Red Hat QE
  - Put through paces: Job Hooks, continue VM Universe, HA Schedd, HA Central Manager, ...

• Job Hooks
  - Produced AMQP based submission of jobs directly to slots

• New ways to instrument Condor
  - Allow integration with MRG's management infrastructure
• Grid Management
  • QMF based
  • Pools modeled
  • Grids modeled
  • Data via AMQP
  • We're just one consumer
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Condor Week 2008
-EC2
-Management

Red Hat and Condor Project Collaboration
Features

• Red Hat developed features
  • Always with the Condor team!
  • Just primarily driven by Red Hat

• Concurrency Limits

• Partitionable Slots

• Job Router Hooks
Concurrent Limits

- Turn anything into a claimable resource
- Popular for licenses
- Useful for scale
- Clever to limit users
- Part of Negotiator configuration
  - MATLAB_LIMIT = 50
  - FILER_A_LIMIT = 2500
  - CONCURRENCY_LIMIT_DEFAULT = 150
- Part of a Job
  - concurrency_limits = matlab
- See Jaime's tutorial for more details
Partitionable Slots

- Size the slot to the job
- Job can claim all the CPUs, or half the memory
  - Owner gets charged for the CPUs
- Pack more jobs onto a machine
- Need resource estimates
  - Condor roughly gives some
  - You might know better – using history
  - Sometimes you know exactly – Virtual Machines

- Startd configuration component
  - SLOT_TYPE_<n>_PARTITIONABLE = TRUE

- Job component
  - request_memory = 1024MB
Job Router Hooks

• Job Router
  · Transform a Vanilla Universe job into a Grid Universe job

• Job Hooks
  · Run an arbitrary program at key points during a job's execution

• Job Router Hooks
  · Run an arbitrary program at key points when transforming a job

• MRG Feature – Vanilla -> EC2 submission
  · Uses EC2, S3 and SQS
  · Chat with Rob Rati

• Condor Project – Vanilla -> VMware submission
  · Announced to condor-users, talk to Varghese Mathew
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Condor 7.2 Release
- UW&Red Hat features
- Red Hat MRG 1.1 GA
Broadening Collaboration

- Continuing since before 7.0
- Work together on enhancement planning
- Work together on release
- Work together on community support
- Engage forming developer community
Condor Project and Red Hat Collaboration

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Condor Week 2009

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Future

• It has been a great, productive few years
  • Lessons learned by all

• More work with UW on Condor enhancements
  • Bring KVM to VM Universe, exploit libvirt functionality
  • See Todd's talk at the end of the day

• More work with UW on Condor community support
  • Both the user and developer communities
  • See Todd's talk at the end of the day
Future

• Continued MRG integration
  • User-centric UI (even submission)
  • Enhanced management
  • Admin reports
  • Enhanced diagnostics

• Windows
  • Wait, what? Windows!
  • As execution nodes
Thank You

We are still hiring, contact matt@redhat.com