Cloud Summit 2011

UCR Status Report

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Overview

- Cluster models
  - UCR Collaborative Cluster
  - Mavericks Cluster
  - Hercules Cluster
  - IIGB Research Cluster
- HPC News
  - Updates to existing clusters
  - Move to a Distributed File System (HDFS)
- Cloud Computing
  - Current status
- Future

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Cluster Models

- Collaborative cluster
  - Built to campus standards
  - Centrally located and managed by C & C staff
- Dedicated clusters
  - Built to campus standards
  - Funded entirely by PIs, managed by C & C staff
- Departmental clusters
  - Built to PI specifications
  - Managed by PI funded staff

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UCR Collaborative Cluster

Model: Collaborative cluster

Owner: Computing & Communications

- 1 master node
- 64 compute nodes
- 4 interactive nodes
- 2 storage nodes (Sun X4500)
- 276 CPU cores (AMD Opteron)
- 552 GB RAM
- 68 TB disk
- 20 Gb/s infiniband interconnect
- 1 Gb/s ethernet interconnect

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Mavericks Cluster

Owner: Gregory Beran (Chemistry)

Model: Dedicated cluster

- 1 master node
- 14 compute nodes
- 116 CPU cores (Intel Xeon)
- 232 GB RAM
- 35 TB disk
- 1 Gb/s ethernet interconnect

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Hercules Cluster

Owner: Dmitri Morikis (Bioengineering)

Model: Dedicated cluster

- 1 master node
- 10 compute nodes
- 44 CPU cores (AMD Opteron)
- 88 GB RAM
- 3.5 TB disk
- 1 Gb/s ethernet
- 20 Gb/s infiniband

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UCR-HEP Cluster

Owner: High Energy Physics

Model: Departmental cluster

- 1 master node
- 6 grid server nodes (3 new)
- 21 compute nodes (15 new)
- 322 CPU cores (AMD Opteron)
- 616 GB RAM
- 70 TB disk (redundant)
- 1 Gb/s ethernet interconnect

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IIGB Research Cluster

Owner: Thomas Girke (Institute for Integrative Genome Biology)

Model: Departmental cluster

- 1 master node
- 36 compute nodes
- 400 CPU cores (AMD and Intel)
- 1 TB RAM
- 100 TB disk
- 20 Gb/s infiniband interconnect
- 1 Gb/s ethernet interconnect

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HPC News

Changes to clusters

- UCR-HEP cluster
  - 15 new compute nodes (16 CPU cores, 32 GB RAM, 8 TB disk)
  - 1 new master node (16 CPU cores, 32 GB RAM, 500 GB disk – mirrored)
  - 2 new server nodes (same as master)
  - Switching from attached storage arrays to a distributed file system (HDFS) spread over 18 nodes.
  - Hadoop will provide 69 TB of disk space with redundancy (138 TB raw)

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HPC News

Changes to clusters - continued

- IIGB Research Cluster
  - 4 – 8 new compute nodes will be added this year
  - Each new node will have 48 CPU cores (AMD), 64 – 256 GB RAM
  - CPU cycles offered for purchase to non-IIGB researchers
- Mavericks cluster
  - New compute nodes to be added soon
  - Details dependent on grant

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Cloud Computing

- Have just started to make campus researchers aware of the cloud as a research computing resource
- We are currently promoting Amazon EC2 and S3 (for storage)
- I have signed up for the free tier at Amazon EC2 in order to be able to guide new users.

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Future

Faculty Research Technology Group Roles

- Act as information clearinghouse for research computing resources available to UCR researchers.
- Help find the best fit between a researcher and available resources.
- Provide support for local resources
- Provide detailed information on getting connected to non-local resources
- Promote other cloud providers in addition to Amazon EC2???

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