

Genre1: Condor Grid: CSECCR

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1

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Introduction

- “Grid” as with many other technologies has many interpretations.
 - Genre0: seti@home
 - Genre1: Condor (High Throughput Computing)
 - Genre2: CSE Linux Grid
 - Genre3: NSF supported national grid (San Diego) (High Performance Computing)
 - Genre4: Service-oriented Grids (SOG)
- In this talk we will look at genre1 Condor-based grid.

2

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Topics for Discussion

- Condor
- CSECCR Grid
- Working with Condor grid
- Ganglia monitoring tool
- Sample runs

3

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Condor

- The goal of the Condor Project is to develop, implement, deploy, and evaluate mechanisms and policies that support High Throughput Computing (HTC) on large collections of distributively owned computing resources.
- Designed and maintained by University of Wisconsin, Madison, WI.

4

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CSECCR grid

- I want to acknowledge Karthikram Venkatramani for single handedly putting this grid together.
- The CSECCR grid is primarily composed of Sun Sparc's which form the compute nodes.
- The 40 compute nodes form an internal private CLASS C network with a grid front end.
- The front end has another external interface, through which jobs are submitted.
- All nodes run Solaris 8, and middleware is configured for a 'shared file system' oriented job execution.
- There are a total of around 40 CPU's and the total memory is around 2.5 GB.

5

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CSECCR Grid (contd.)

- CONDOR is the primary grid middleware.
 - This means that both the *job management* part and the *resource management* part of the grid is taken care by CONDOR daemons.
 - CONDOR has various commands which let's you submit jobs, monitor and manipulate the job queue, assign job preferences etc.
- johnlee.ccr is the name of the grid.

6

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Job Submission on Condor grid

- The `condor_submit` command is used to submit jobs to the CONDOR scheduler.
- The argument to the command is a submit script file which specifies the job preferences.
- Matchmaking in CONDOR is done on the basis of this submit file or *ClassAds*.
- Here is an example of a submit file.

7

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Job Submission (Java)

- Here are all the files involved in a Java job submission:
 - `javaloop.java` (javaloop.class generated from it)
 - `loop.sh` (execution script for the java executable)
 - `submit.javaloop` (preference file with all the resource preferences specified)
 - `foo.log` (to log any status)
 - `foo.out` (to write any output from the program)
- After preparing the executable, and submit script `condor_submit submit.javaloop`
Will submit the job.
No specific /standard naming conventions.

8

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Ganglia Monitoring Tool

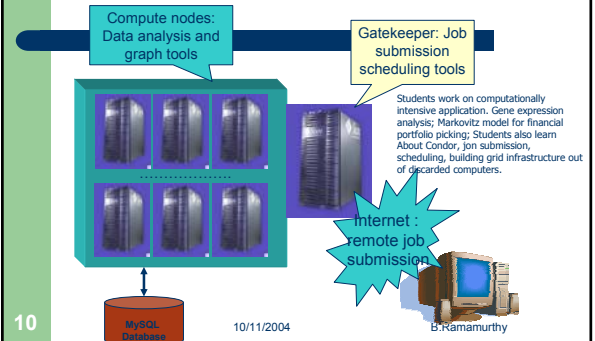
- Ganglia is a scalable distributed monitoring system for high-performance computing systems such as clusters and Grids.
- From University of Berkeley.
- <http://johnlee.ccr.buffalo.edu/ganglia> will monitor the load on the various nodes of cseccr grid.

9

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CSECCR Grid

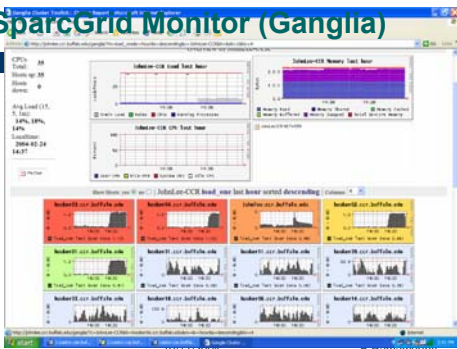


10

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SparcGrid Monitor (Ganglia)



11

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Sample Runs

- Java loop
- Markowitz model for stock picking
- We will work on projects on this framework in CSE487 Information Structures course offered next semester.

12

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