IT832:
Real World Xgrid Applications and Techniques

Wayne E. Beech - John Soward
University of Kentucky

http://www.uky.edu/IS/SystemsLabs/Xgrid

Legal Stuff

Typical Progression of Xgrid Use

- Become aware of Xgrid and want to use it

- Building your Xgrid
  - Dedicated vs. Cycle Harvesting
  - Controller on Mac OS X "client"

- Running demo programs

- Writing your own demo/informational programs

- Looking for projects that use your Xgrid
  - Quote from xgrid-users mailing list

UK's Primary Xgrid

- Cycle Harvesting

- 178 Macintosh computers (agents in Xgrid terms) in student labs
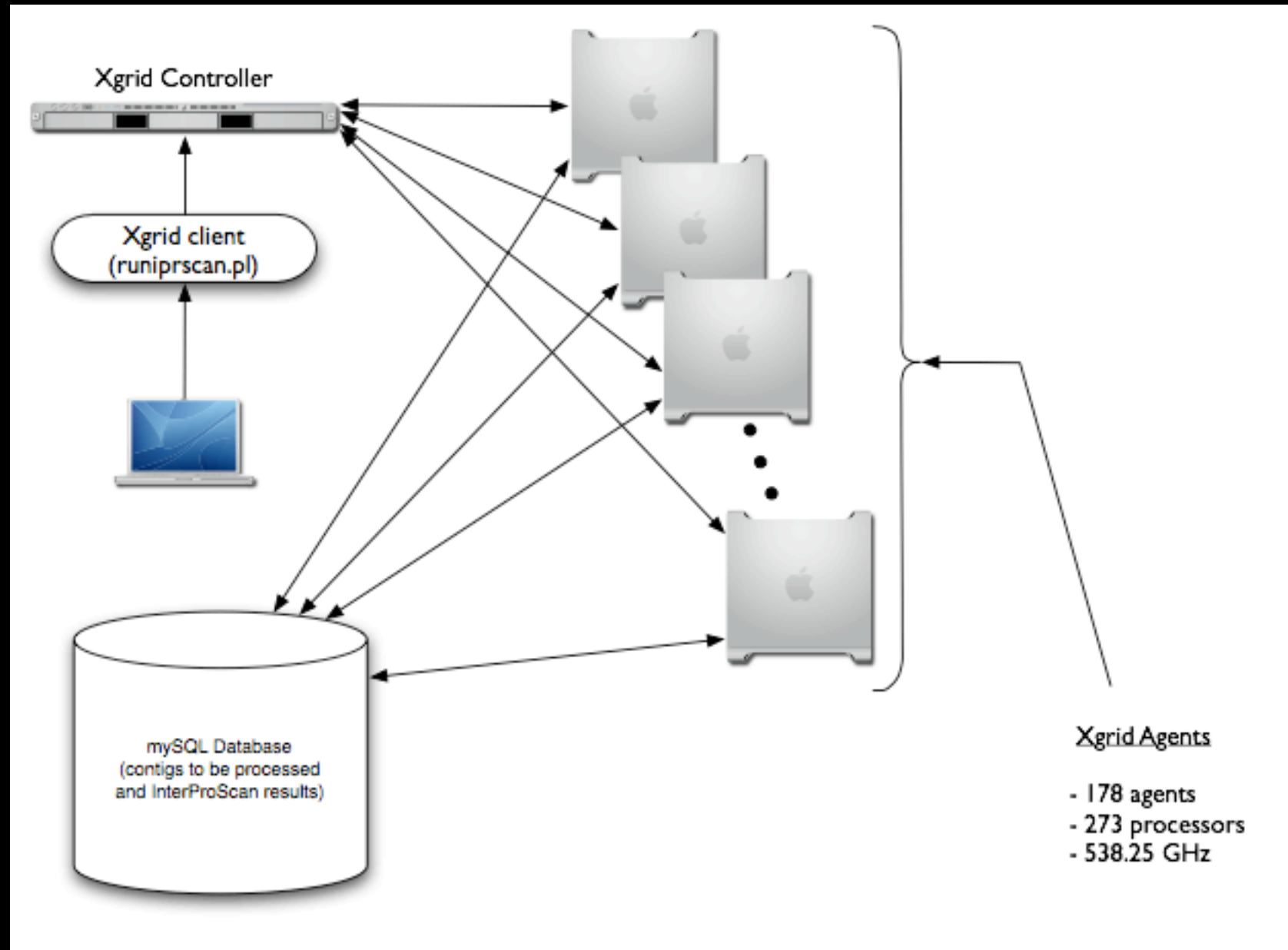
- 273 processors

- 538.25 GHz

@ UK

- http://folding.standford.edu

- Rankings as of 11/21/2006:
        Team: 115 out of 46,621 teams
  Individual: 22 out of 589,607 people

- Rankings as of 1/10/2007:
        Team: ??? out of ??,??? teams
  Individual: ?? out of ???,??? people

Epichloe Festucaë Genome Project

- 2 year grant to study Epichloe Festucaë (a fungus that grows on Fescue grass)

- A large portion of the project from a computing standpoint is the prediction of protein domains

- They quickly realized that with their current computing environment that their 2 year grant was going to need at least 3 years of computation.

Xgrid / InterPro Scan Setup

SENSORS and Wildfire Simulation Project

- Simulate sensors which take measurements related to wildfires

- One Xgrid job simulates one sensor

- Aids in both modeling prediction and "stress testing" server which collects data

Career Center Mock Interview Project

- Video tape students in mock interview

- Use Xgrid to compress and reformat video and then move it to a web server

- Not all grid projects involve 10s or 100s of computers – they have 4

- Goal in this XGrid wasn't just maximum performance, but shifting the workload to the free system.

- Apple's upcoming podcast producer remarkably similar in design....

Expanding Xgrid and Its Use at UK

- Purchased dedicated server and storage for Xgrid controller

- Installed Java agent on Sun machines

  http://sourceforge.net/projects/xgridagent-java

Working with Apple on Enhancements / Changes

- Improved Signaling - STOP vs TSTP

- Preset Environment Variables

- Xgrid Admin's Lack of Features and Poor User Interface

- Many undocumented features / functions

Tools / Utilities

- http://mekentosj.com/widgets/xgrid

- Get information on machine on which Xgrid job is running

- rsync utilities for pulling datasets and bin directories

- demo app to uber-compress a file using paq8 in chunks

- Grid watcher / feeder

- More to come, check website

Misc. Topics

- Maintaining Xgrid setup/cookies between rebuilding/radmind'ng machines

- Jobs that are good and bad to run on Xgrid

- podcast producer

- qmaster

Resources

- `http://www.apple.com/macosx/features/xgrid`

- `http://www.lists.apple.com/xgrid-users`

- `http://images.apple.com/server/pdfs/Xgrid_Admin_v10.4.pfd`

- `Developer examples from Xcode`

- `http://www.uky.edu/IS/SystemsLabs/Xgrid`

Updated versions of this presentation and other materials available at the above URL.

Contact Information

Wayne E. Beech
Systems Labs
210 McVey Hall
University of Kentucky
Lexington, KY 40506-0045
wayne@uky.edu

John Soward
Site Lab
106 Hardymon
University of Kentucky
Lexington, KY 40506-0495
soward@uky.edu

Questions and Answers