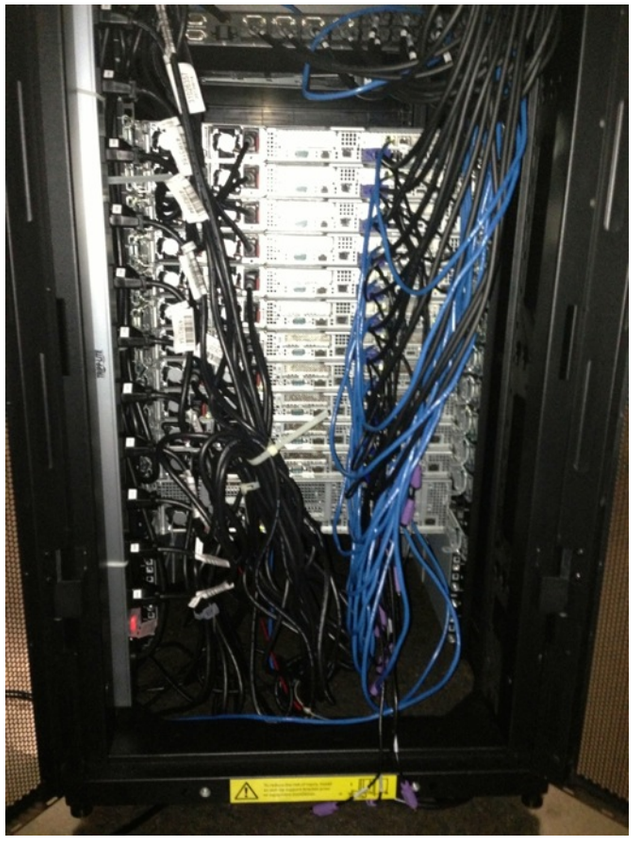
Francis Marion University
Patriot Cluster



The Team

FMU students: Will Dixon & Chad Garland

FMU Faculty: Larry Engelhardt & Ginger Bryngelson

Clemson Faculty: Galen Collier

Former FMU Faculty: Jacob Moldenhauer

The Grant

- Submitted by Jacob Moldenhauer, Feb. 2013
- Began June 2013
- $100,000 from NSF - EPSCoR “CI”
    1) Equipment
    2) Student Salaries (2 students, 10 weeks)
    3) Travel (5 trips to/from Clemson)
    4) Faculty Salaries (3 faculty, 2 weeks)
- Students paid to become experts!

The Process

- Ordered equipment
- Practiced installing software on old, slow computers (dinosaurs)
- Created tutorial programs
- Received and assembled equipment
- Installed software on the new machines
- Created a user webpage

The Hardware

- 13 Nodes
- 160 CPU Cores
- 2496 GPU Cores
- 576 GB RAM
- 13 TB ROM

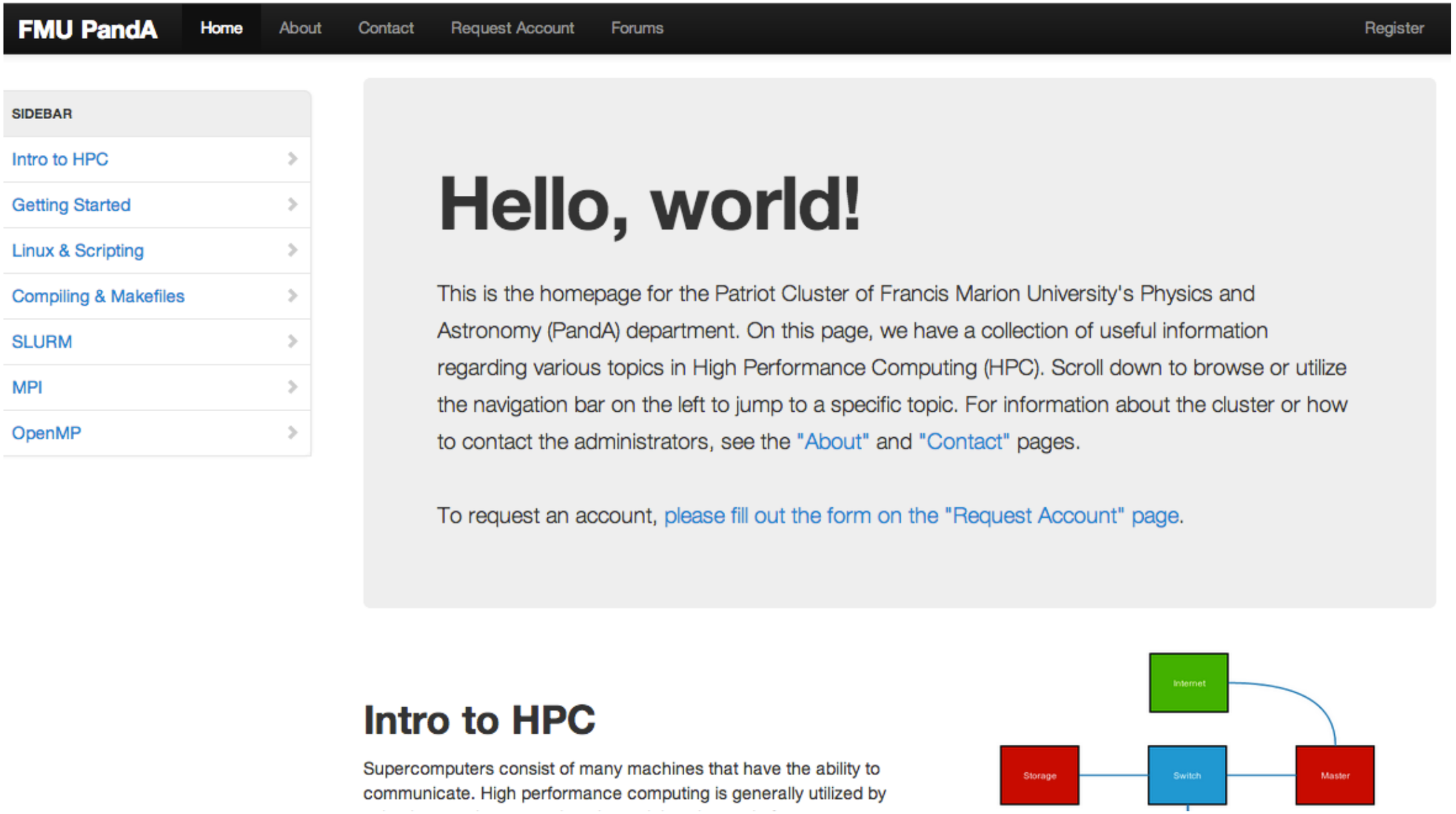
The Software

- **Languages**: Fortran, C, Java, Python, CUDA
- **Multi-core Processing**: OpenMPI and MPICH
- **Operating System**: Ubuntu 12.04 LTS Server (Linux)
- **Queue Manager**: SLURM

The Webpage

- Getting started section
- Navigation & interaction information
- Programming tutorials

www.fmupanda.com



The Purpose

- Education of Computational Physics students
  - Physics 220, 306, & 406
- Independent student research
  - Physics 397 & 420
- Faculty Research
  - Physics, Chemistry, Math, Computer Science

The Comp Physics Major

- Phys 220: Intro to Computational Physics
  - Falling ball
  - Rocket simulation
- Phys 306: Computational Physics
  - Numerical integration
  - Parallel-multi parameter optimization
- Phys 406: Advanced Computational Physics
  - Quantum spins
  - Molecular dynamics

And much, much more!

Many Educational Benefits

- Undergraduates acquire supercomputing skills
  - Parallelization & job submission
- Some learn to manage the cluster (very desirable!)
- Faculty members have access for research
- Even high school students are exposed!

Thanks!

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Welcome to the PATRIOT cluster, operated by the
Francis Marion University Department of Physics and Astronomy.

About the Patriot cluster:
160 CPU cores, 2496 GPU cores, 576 GB of RAM, Several TB of hard drives

For information on how to use the Patriot cluster, see
http://swampfox.fmarion.edu/patriotcluster

The one thing you must remember:
** ALWAYS USE SLURM TO EXECUTE ALL COMPUTATIONS! **

You have new mail.
Last login: Tue Sep 10 23:12:07 2013 from cpe-174-107-114-156.sc.res.rr.com
sgarland@master:~$
```

Questions?