High Performance Computing

New York Langone Medical Center Information Technologies
High-Performance Computing Facility

Sep 14th 2016

NYU School of Medicine
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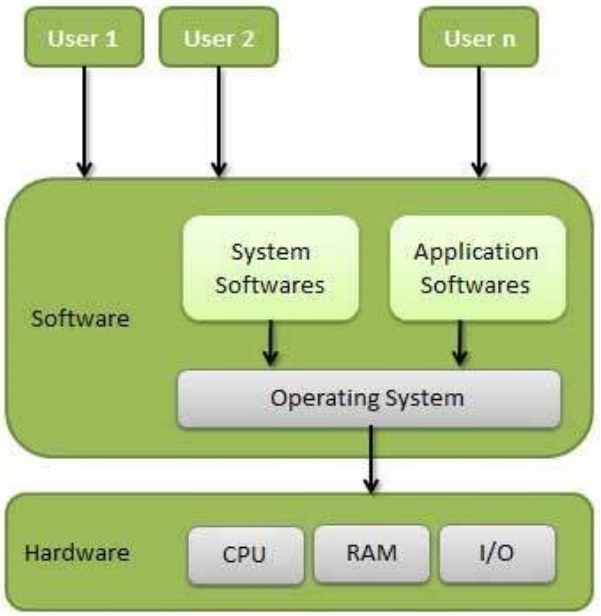
- Operating Systems



- Linux Operating Systems
  - Flexibility.
  - Open source advantages.
  - Very popular in research environments.

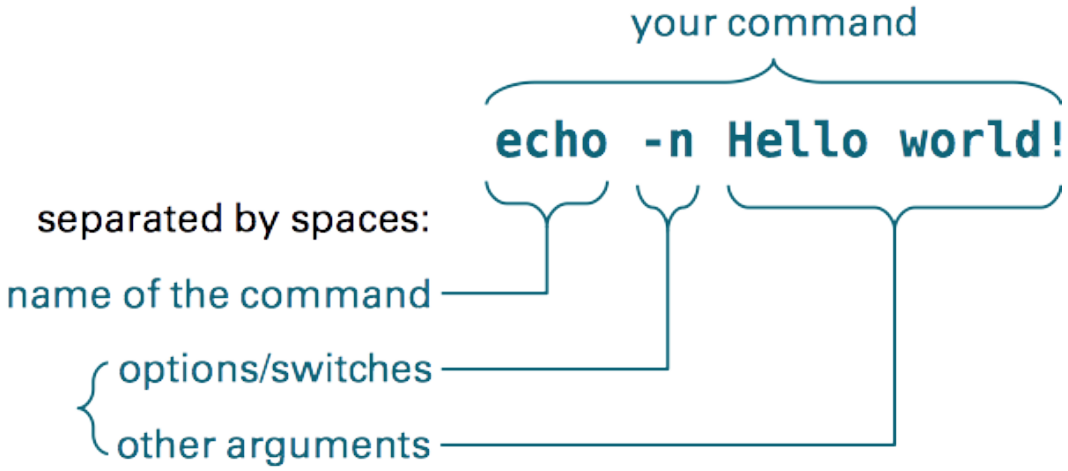
Interaction between user and OS

- Graphical User Interface (GUI)

  Point and click

- Command Line Interface (CLI)

  Issue a command (Closer to programing and automation)

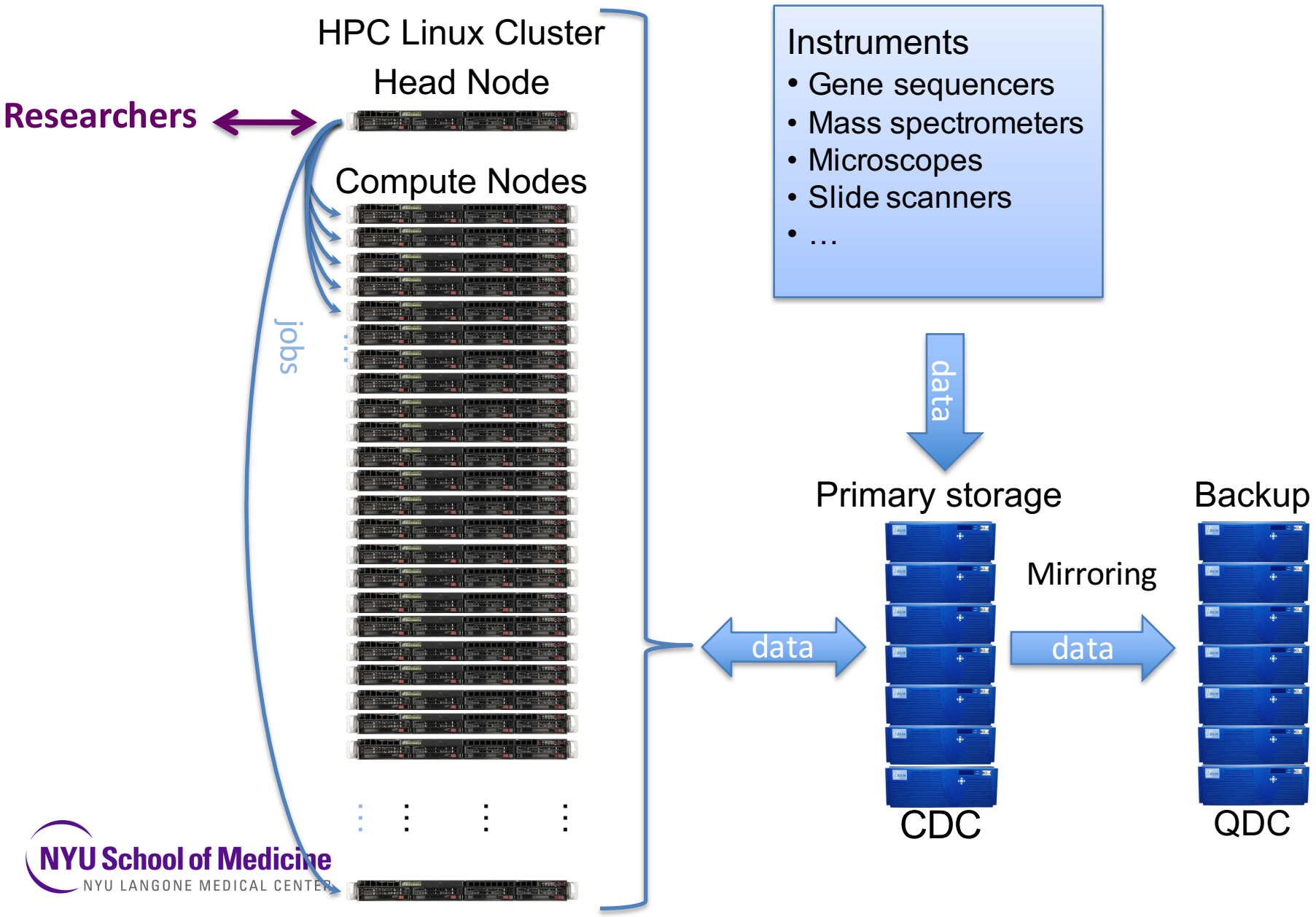


HPC

- HPC generally refers to the practice of aggregating computing power in a way that delivers much higher performance than what one could get out of a typical desktop computer or workstation in order to solve large problems in science, engineering and business.

- HPC empowers Computational Science that is considered the third pillar of Science Complimentary to Theory and Experiment.

A Typical High Performance Computing Facilities



Our High Performance Computing Facilities

- Phoenix (Computation):
  - 64 Compute nodes (32 cores, 256 GB RAM)
  - 1 High Memory node (64 cores, 1 TB RAM)
  - 5 GPU nodes (32 cores, 1 GPU K20 cards, 128 GB RAM)
- Isilon (Storage):
  - 2 × 9 HA storage nodes total of 2.1 PB of storage
- Interconnect:
  - 2 × 1 Gb/s management connection to each node.
  - 2 × 10 Gb/s data transfer connections to each node.

HPCF Equipment - Physical Location

- CDC (Carlstadt, NJ)
  - IDC6 (HPC and Storage)
  - 7 Racks
- QDC (Quincy, WA)
  - QDC3 (Storage)
  - 1 Rack

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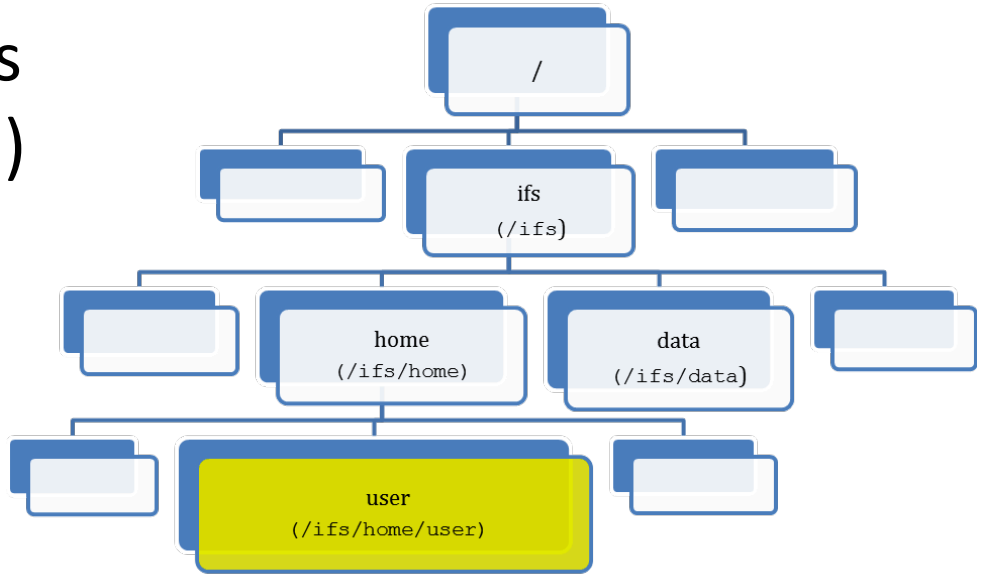
Parallel Computing

- Parallel environments
  - openmpi
- Queuing systems
  - Open Sun Grid Engine

Working in a HPC Environment

- Login:
  - Account creation.
  - ssh demo@phoenix.med.nyu.edu
  - env
  - man command. (MORE COMMAND LINE PRACTICE!!!)
  - Files and Directories
    - Editors (nano)



How to get it to work!

- Applications
- modules
- Job scripts
- Submitting a job

Monitoring and the result of job output

- qstat
- Output files
- Error files

Data transfer

- WinSCP, Filezilla, scp, …

Find more info at:
https://genome.med.nyu.edu/hpcf/wiki/Manual:Cluster_User_Guide
hpc_admins@nyumc.org