What I’ll cover

• IQSS services
• Research Computing Environment (RCE)
IQSS technical services

- Research Computing Environment (RCE): cluster computing for statistical research
- Dataverse: storage of research data sets
- OpenScholar: hosting of personal / project web sites
- Computer lab services
  - Concourse level of this building (CGIS Knafel)
  - Statistical software and other software for research
- Research Technology Consulting
  - rtc.iq.harvard.edu
- Statistical training
  - In training room in Concourse level lab
Getting help

Any questions, e-mail support@help.hmdc.harvard.edu

Web sites:
  RT (Request Tracker): help.hmdc.harvard.edu
  IQSS: iq.harvard.edu
  IQSS IT support: support.hmdc.harvard.edu
RCE in detail

- **RCE** = Research Computing Environment, remote infrastructure and scalable computing power for research analysis
- **Used to run common statistical applications**
  - R, GAUSS, Mathematica, MATLAB, Octave, SAS, S-PLUS, Stata
- **RCE has three types of nodes**
  - **Login servers**
    - User logs in via NX (similar to VNC) and gets a desktop session
    - User can launch an application directly from the desktop
  - **Compute-on-demand servers**
    - ~50 compute cores on about a dozen servers
    - User has special “RCE Powered Applications” menu to launch applications on machines with large memory resources (up to 256GB)
  - **Batch servers**
    - ~300 compute cores on 50+ servers
    - Used typically for non-interactive, long-running, scalable jobs
    - Most jobs use R
**RCE architecture and configuration**

**Key Applications**

- R
- GAUSS
- Mathematica
- MATLAB
- Octave
- SAS (COD only)
- S-PLUS
- Stata (SE and MP)

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**Diagram Notes:**

- User
- Secure login via NX
- Request remote job
- Allocate and manage resources
- Interactive nodes
- Login nodes
- Compute-on-demand nodes
- Batch nodes
- Disk storage
- Tape backup

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**Research Computing**

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Download and install NX client

• Select the appropriate client for your OS
  • Windows, Linux, Mac OS X, Solaris
  • http://www.nomachine.com/download.php
Logging onto an RCE login node

- Click on the desktop icon created when configuring NX
- Use your login username and password obtained when signing up for an RCE account
RCE desktop
Running apps on login server
Running apps on cod (large memory) servers
Apps on the RCE
Getting accounts

• How can I get an account?
  • RCE
    – support@help.hmdc.harvard.edu
    – http://support.hmdc.harvard.edu
    – Must be sponsored by an IQSS faculty or contact me
Other topics of interest

• Securing confidential data
  • **Level 3** vs. Level 4 vs. Level 5

• Future work
  • Security
  • Expansion into the cloud
    – Amazon EC2 and other sources
  • Updating the underlying OS
    – RHEL5 -> RHEL6
  • Updating the user interface
    – Single application mode
    – Mobile access