Research Computing Support

Bob Muenchen (Pronounced Min’-chen)
muenchen@utk.edu
HelpDesk: 974-9900
Newsletter: http://listserv.utk.edu/archives/rcnews.html
Our Mission

• To help UT researchers use information technology and analytic methods to:
  • Acquire Data
  • Manage Data
  • Visualize & Analyze Data
  • Disseminate Results
  • Archive & Share Data
Acquiring Data

- How much to acquire?
- Survey design & web deployment
- Control lab instruments & log data: LabVIEW
- Scantron scanner
- Secondary data from data archives
  (Data Librarian, Ellie Read)
Managing Data

- Converting formats
- Merge / Concatenate / Transpose
- Convert from relational to data warehouse
- Cleaning data
- Backing up
- Archiving & Sharing Data / Results
Data Visualization & Analysis

- **Numbers**
  - Math, Statistics
  - Data Mining
  - Geographic Maps / Geospatial Analyses

- **Words**
  - Qualitative Analysis
  - Content Analysis
  - Linguistics / Sentiment Analysis
  - Latent Semantic Analysis
  - Content vs. Style
Data Analysis (continued)

- Images
  - Quantitative
  - Qualitative
- Audio & Video: Qualitative only for now
Disseminate Results

- Graphics & Visualization
- Tables
- Writing up results

[Box plots showing Current Salary distribution for 'No' and 'Yes' Minority Classification]

[Bar chart showing 95% CI Current Salary for 'No' and 'Yes' Minority Classification]
# Fully Supported Research Software

<table>
<thead>
<tr>
<th>Category</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Acquisition</td>
<td>LabVIEW, SPSS Data Collection (web survey server), Stat/Transfer</td>
</tr>
<tr>
<td>Numbers</td>
<td>Amos, Arc/GIS, MATLAB, Maple, SAS, SPSS, R, SAS Enterprise Miner</td>
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<tr>
<td>Text</td>
<td>ATLAS.ti, QDA Miner, SPSS Text Analysis for Surveys, SAS Text Miner, WordStat</td>
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<tr>
<td>Images</td>
<td>ATLAS.ti, ImageJ, QDA Miner</td>
</tr>
<tr>
<td>Audio/Video</td>
<td>ATLAS.ti</td>
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</tbody>
</table>
Hardware

- Computer Labs – 1,000 machines
- Analysis.utk.edu Terminal Server
  - Software appears to run on your computer
  - Opens/saves files stored on your computer
  - Prints to your printer
  - Supports Windows, Mac, Linux, iPad, iPhone...
Welcome

Students can use this server for free. Faculty and staff users must purchase a one-time server access license. You can purchase that at the Bookstore Technology Center, (865) 974-2930 by requesting an Analysis Server Access License, $17.

You can log in using your NetID and password on the left.

Files that are not read from or written to for a full year will be deleted from the system without notice. If you read or write to your files regularly, they will never be deleted by the system.

If you get a message asking you to verify your account when you run an application, please go here: https://trix01.labs.utk.edu/verify.asp

FAQ / Help http://www.labs.utk.edu/faq

How to use the Analysis System http://oit.utk.edu/research/HowToUseAnalysis.utk.edu.pdf

Message Center

The Message Center displays any information or error messages that may occur.
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Hardware (continued)

• **Newton Linux Cluster**
  - 2,400 cores, 17 TFLOPS
  - 128 GB of memory
  - 77 terabytes of disk space
  - Infiniband high speed interconnect
  - Maple, Mathematica, MATLAB, R, SAS, SPSS,…

• **The Kraken**
  - Cray XT5
  - 100,000 processors, soon 1 PFLOP
  - 4\textsuperscript{th} fastest computer in the world
The Newton Project: 2,400 Cores
The Kraken: 100,000 processors
RCS Stats for 2010

- Provided support to 1,714 projects
- Scored 244,649 scan sheets in 1,998 batches
- Managed 896 web-based surveys
- Years of HPC time provided: 1,222
- Maintained 30 research packages in download area, DVD and on servers
- Updated handouts and taught 50 workshops on research computing on topics including: High Performance Computing, ATLAS.ti, LabVIEW, Linux, MATLAB, Maple, QDA Miner, R, SAS, SPSS, WordStat.
OIT Customer Satisfaction Survey

- Overall satisfaction is 4.02/5.00
- All groups more satisfied with email (e.g. students 3.99 to 4.25)
- Faculty more satisfied with HelpDesk (4.36 to 4.52)
- Staff less satisfied with enterprise systems (4.25 to 3.98)
- Students
  - Web search up, 3.56 to 3.78
  - Registration down, 3.92 to 3.34
Who does research computing?

- Students: 60%
- Faculty: 44%
- Staff: 17%
<table>
<thead>
<tr>
<th>Research Computing Task</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Statistics</td>
<td>55.7%</td>
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<td>Excel</td>
<td>51.7%</td>
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<tr>
<td>Mapping</td>
<td>35.9%</td>
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<tr>
<td>Science &amp; Engineering</td>
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<tr>
<td>Programming Languages</td>
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<tr>
<td>Image Analysis</td>
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<tr>
<td>Survey Design &amp; Deploy</td>
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<tr>
<td>Graphics</td>
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<tr>
<td>Database</td>
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<tr>
<td>High Perf. Computing</td>
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Statistics

- SPSS*
- SAS*
- Stata
- R*
- JMP
- SAS Enterprise Miner*

* = fully supported
Science & Engineering

- MATLAB*
- Mathematica
- AutoCAD
- Maple*
- FEMLAB
- LabVIEW*
Text / Qualitative

- QDA Miner*
- SPSS Text Analytics for Surveys*
- ATLAS.ti*
- Nvivo
- SAS Text Miner*
- SPSS Text Workbench
- WordStat* (part of QDA Miner)
Mapping / GIS

- ESRI ArcGIS Desktop*
- Google Maps/Earth
- ERDAS
- GRASS
Image Analysis

- Photoshop
- ImageJ*
Surveys

- IBM SPSS Data Collection* (formerly mrInterview)
- SurveyMonkey
- Qualtrics
- Zoomerang
Languages (most on Newton)

- Java
- FORTRAN
- Python
- C
- C++
- Basic
- Perl
- C#
High Performance Computing

- Linux Cluster*
- MPI*
- Windows HPC Server
Graphics

- Sigmaplot
- Origin
- Gnuplot
- Tableau
Database

- Microsoft SQL Server
- MySQL
- Oracle
- SQLite
Questions?