Strategic Value and Sustainable Cost Structure of Advanced Computing

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Medical College

- We are in Manhattan
  - and Doha, Qatar
- Most of Cornell is in Ithaca
- 404 MD, 6?? Graduate Students in NYC
- ~900 Clinical and ~250 Science Faculty
- 18 domestic and 8 international affiliates
  - New York Presbyterian
  - Memorial Sloan Kettering Cancer Center
  - Methodist Hospital
  - Weill Bugando
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ITS/POIS

- ~250 IT Employees
- 6000-10,000 Users
- 20,000 Devices
- 19 Enterprise Class Systems
- 3 Data Centers
  - 700 Servers, ½ Virtual
  - <1PB Storage
  - No HPC
- 2GPS Internet Connection
  - 25% mean utilization
  - 10% is for BitTorrent
  - 1% is for Adult Content
What Keeps Me Up At Night?

**People**
- 10 Difficult Faculty/Staff
- My Boss
- His Boss
- The Hospital
- The Board
- Congress
- Chairs/Senior Faculty
- Other Faculty/Staff
- Qatar
- Students
- My Staff

**Other Nouns**
- Lack of Group Empathy
- Security Threats
  - External: >1 attack/min
    - that we know about
  - Internal: see column 1
- Project Overload
  - Staff burnout/Retention
  - Operating/Capital mismatch
- Usability
  - Legitimate whining
  - Transaction costs
  - Right thing ≠ Easy thing
What are we doing at WCMC?

• New Data Center
  – First attempt to centralize HPC
• Hybrid-Cloud Collaboration with Ithaca
  – Sharing resources and expertise with Ithaca
    • RedCloud, RedCloud Secure
• HPC Co-op
  • Group purchasing
  • Subsidy once 50% of capital is purchased
  • Heavy operating subsidy
    – System administration
    – Data center; networking
• Layered Security
  • Research Network
  • Virtual Desktops
  • Identity Management
• Operational Excellence Initiative
  – ITIL/Service Now
  – Project Management Office
  – Governance Committees
  – Architectural Standards
What are we NOT doing?

• Never enough communication
  – Essential to balance standards with flexibility
  – Essential to fair pricing
  – Essential to obtain buy in

• Never enough collaboration
  – NYP, MKSCC

• Never enough funding

• Never enough “free”
Are we doing the right thing?

- Is Precision Medicine just for the 1%?
- Will HPC further the digital divide?
- Is big data destroying privacy?
- Is HPC environmentally sustainable?
- Can collaboration really overcome the mythical man-month?