IceCube

Operating a Data Center at the South Pole
Icecube operations overview
Computing infrastructure at the South Pole
The data center
Seasonal planning
Operational challenges
Questions / Discussion
Day-to-day operation

Remote Logins

South Pole

Once a year

UW-Madison
The Infrastructure

- 130 server class machines (Intel & AMD)
  - 350 CPU cores, 0.5TB RAM, 250 spinning disks
- UPS, Network switches and a firewall
- Storage arrays (~30TB)
- Tape libraries
- Other support electronics for the detector
The IceCube Lab

- Heart of the IceCube data acquisition
- Originally was a dormitory for USAP participants
  - Official operations started in Jan 2007
- Powered by the station power plant
  - Consumes about 50kw out of 650+250kw available station power
- Cooled via pumping outside air into the building
Seasonal planning

- Training winter over operators
- Updating the test system in Madison to reflect changes in the ICL
- Detailed documentation
- Logistics - planning for spares, upgrades, additions, etc.
Operational Challenges

- Low humidity = high ESD
- Power stability
- Cooling
- Planning for spares
- Remote management & administration
- Making functional changes after station close