

Clouds and CI Magellan Perspective Shane Canon Lawrence Berkeley National Lab

LSN
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What are the new opportunities that will be provided by integrating Cloud and Cyberinfrastructure?

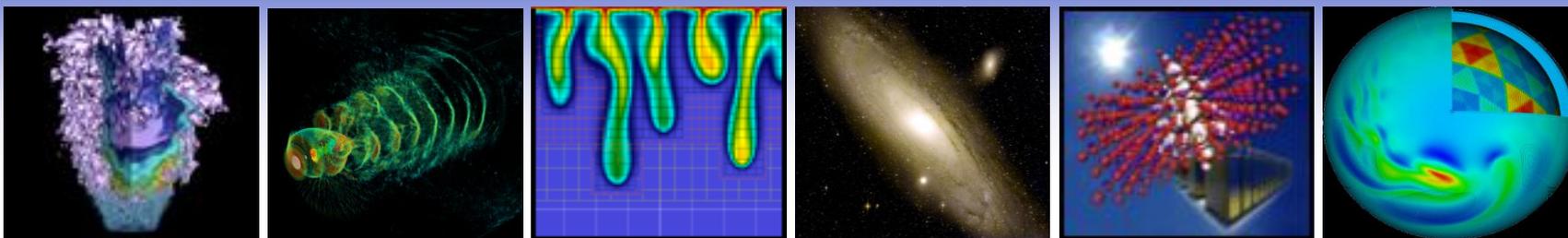
- **Easier Access to additional resources**
 - Handle Surge Cases
 - Enable real-time analysis from instruments and detectors
- **Provide redundancy for Critical Services**
 - Clouds can act as a backup resource or participate in a pool
 - Shift load during an outage or scheduled maintenance
- **Shift workloads that make economic sense to the cloud**
 - Low utilization applications (web gateways, data repos, etc)
 - CPU Intensive Apps with low concurrency and modest data needs.
- **Create a market space for Applications**
 - Clouds can host applications developed through government sponsoring allowing end-user to cover resource cost
 - Commercial clouds open the door to an incremental charging model for applications to create a sustainable model for software

What would be the key challenges, technical as well as from a users perspective?

- **Missing middle-ware to seamlessly (and easily) integrate resources**
- **User administration of Cloud resources**
- **Unpredictable or poor performance for many applications**
- **Data transfers performance to commercial providers**
- **Surprise costs – Data storage, data transfers (more than just compute)**
- **Evolving Security Model – Progress is being made but the dust is still settling.**

What are immediate (suggested) next steps, for agencies and for the community?

- **Establish peering arrangements with major providers.**
 - 3x10G ESnet peerings exist today (expandable based on mission need)
 - Need for cloud provider network troubleshooting, data transfer tool configuration, cloud performance tuning
 - Bandwidth effectively extend to backend storage infrastructure
- **Established reduced costs for data storage and transfers to commercial providers**
- **Identify applications to act as demonstration projects (and not just slam dunk ones).**
- **Investigate Operational Changes with CI to support more workloads**
 - Flexible environments
 - Flexible scheduling and policy options



Thank you!

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Magellan Report at...

<http://science.energy.gov/ascr/>

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<http://www.nersc.gov/>