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CI Systems PYIV Accomplishments and PYV Planned Activities

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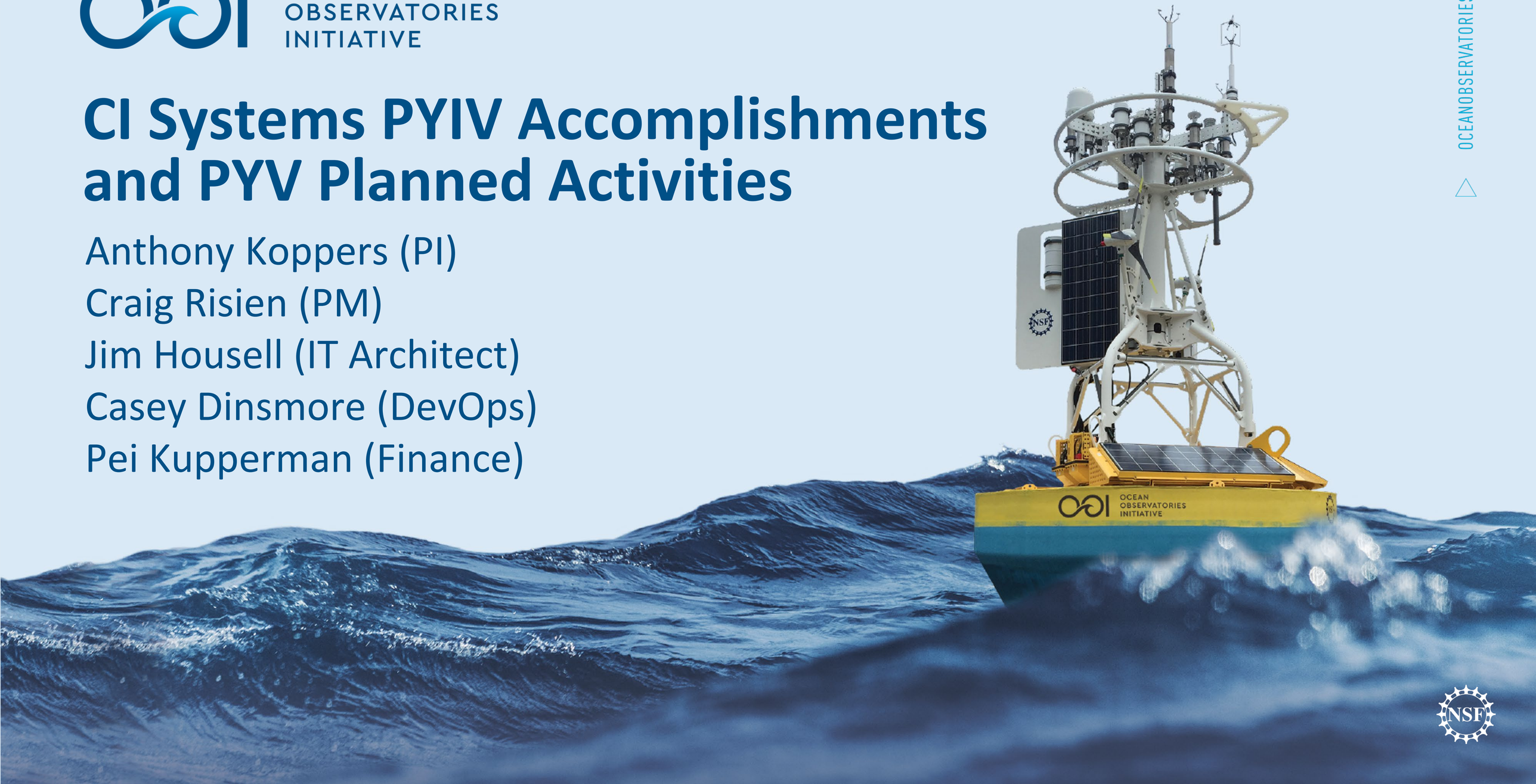

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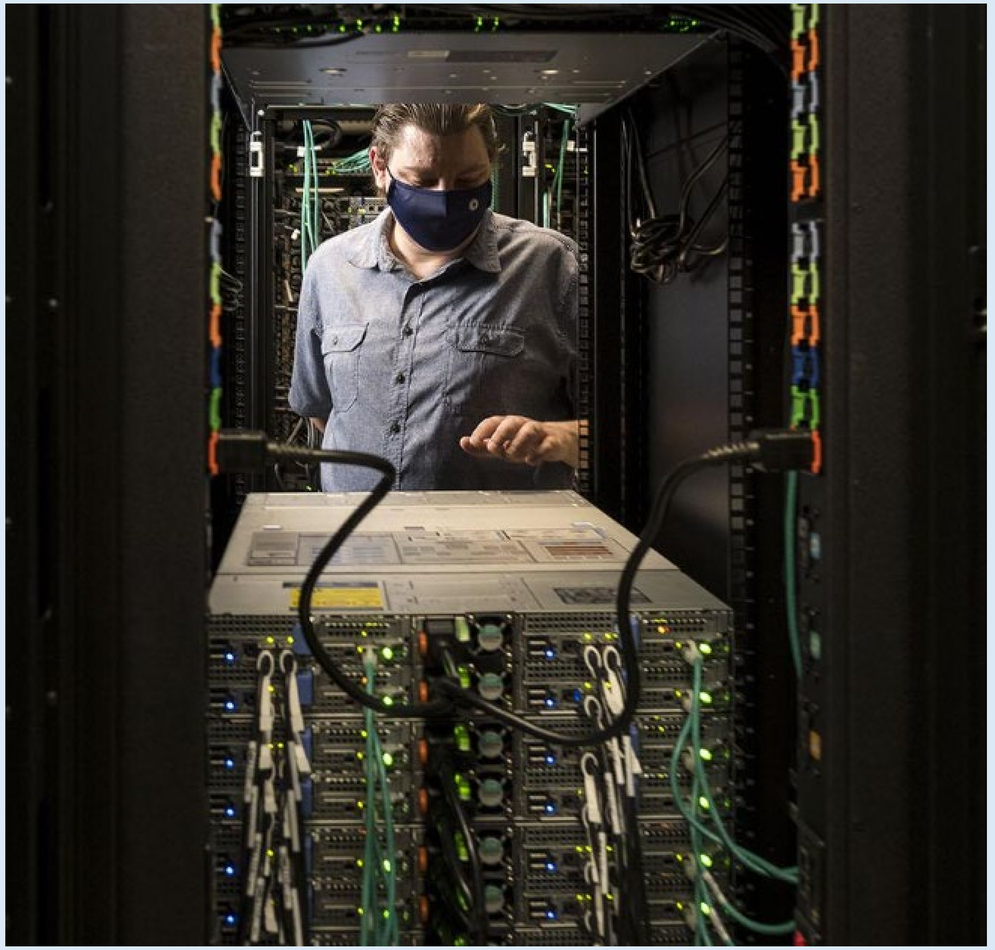
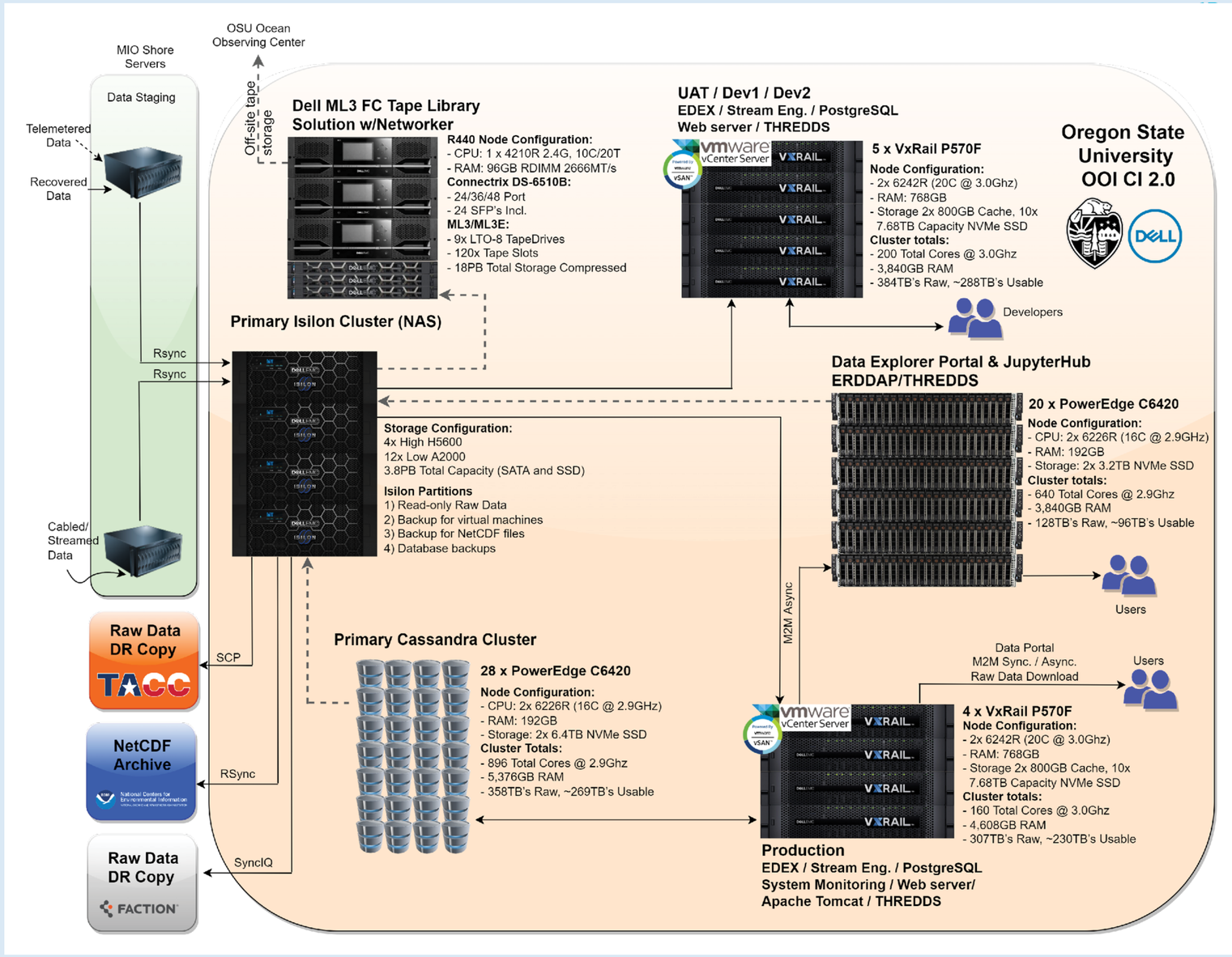
OSU Data Center

- Provide a low-risk and cost-effective OOI Data Center.
- Introduce large increases in compute power, modernize storage solutions, and improve backup and disaster recovery.
- Provide a secure data store with multiple layers of redundancy to significantly reduce system downtime.
- Achieve a seamless transition from the OOI-CI operations at Rutgers University to OSU in Year 1.
- Focus on extensibility in Years 2 & 3 by considering both bare-metal and/or cloud-like solutions based on OOI usages and needs.



OSU Data Center

- OOI system of record on July 30, 2021
- Isilon Storage: 3.81PB
- VxRail Compute: 360 Cores in 9 nodes; 8.4TB RAM (being increased to 9.9TB RAM); 684TB Storage 194 Virtual Machines (Prod, UAT, Dev1, Dev2)
- DataExplorer / JupyterHub: 640 Cores; 3.8TB RAM; 128TB Storage
- Prod. Cassandra Cluster: 896 Cores; 5.4TB RAM; 360TB Storage
- 2 x Palo Alto Networks Next-Gen Firewalls
- 14 x Dell 100GbE PowerSwitches



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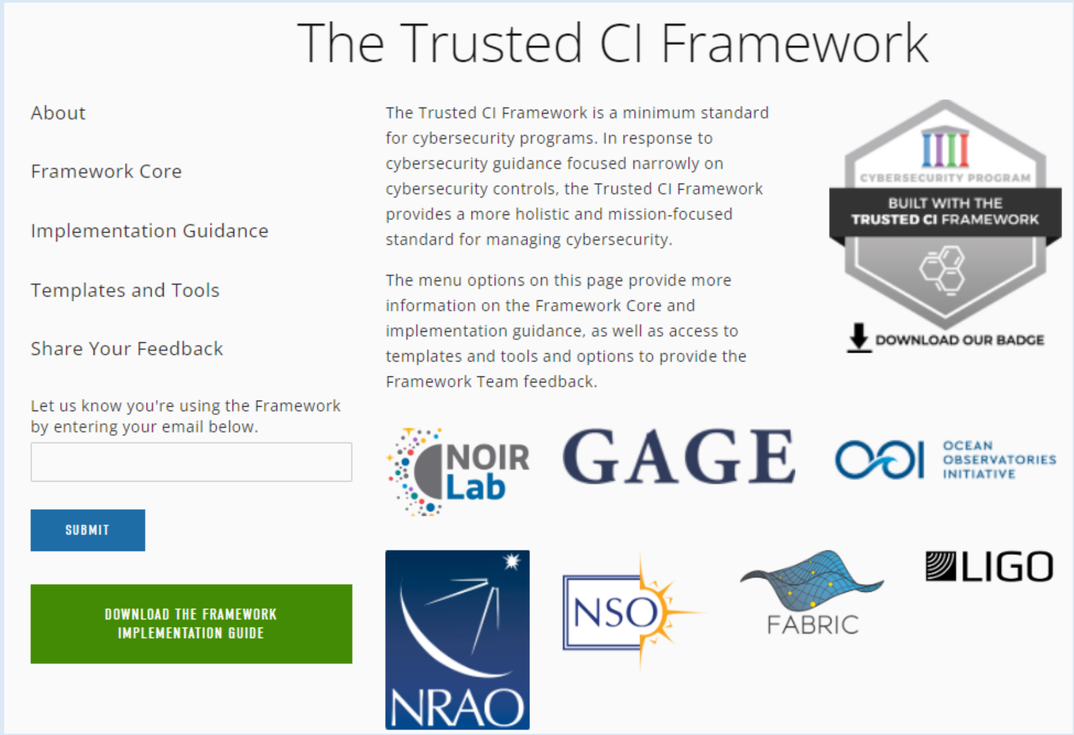
CI Systems PYIV Accomplishments

Cybersecurity

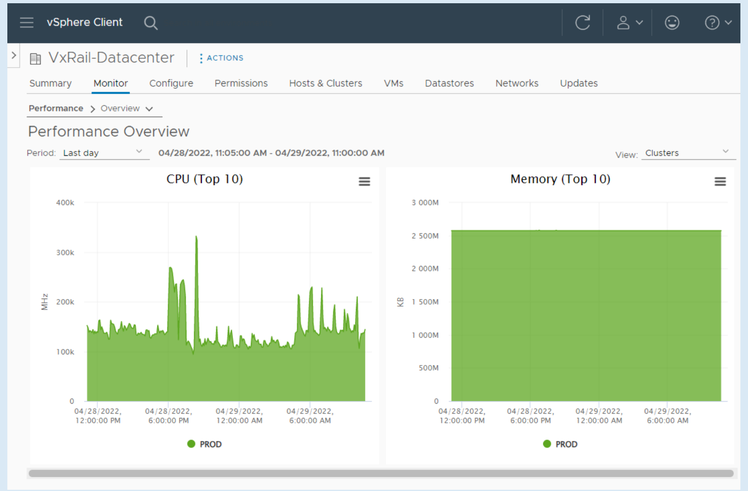
- Member of Trusted CI's (TCI) first Framework cohort.
- Worked with TCI to adopt and implement the TCI Cybersecurity Framework.
- Participated in TCI study of Operational Technology security at NSF facilities.
- Submitted a Cybersecurity Strategic Plan to NSF.
- Implemented Duo MFA for CI VPN connections to Palo Alto firewalls.
- Applied CIS (Center for Internet Security) v8 IG1 Critical Security Controls.
- Implemented internal and external vulnerability scanning using Tenable.io

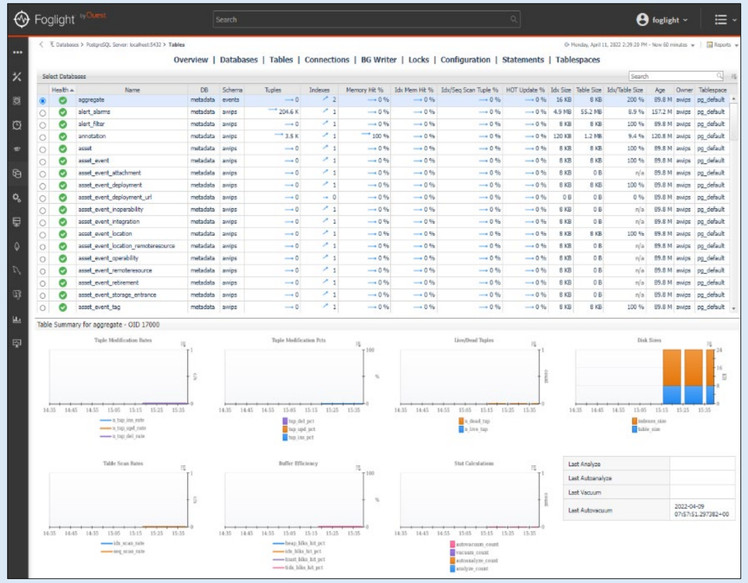


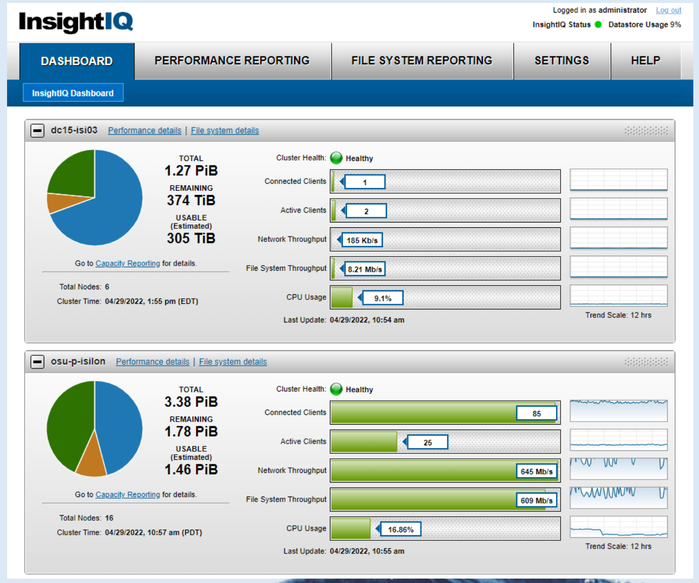
CI Systems PYIV Accomplishments

System Monitoring

- Zabbix, Grafana, and Nagios for overall data center monitoring.
- Quest Toad Edge and Foglight for DB management and monitoring.
- InsightIQ for Isilon performance monitoring and reporting.
- VMware vSphere for VxRail management and monitoring.
- Panorama for firewall management and monitoring.







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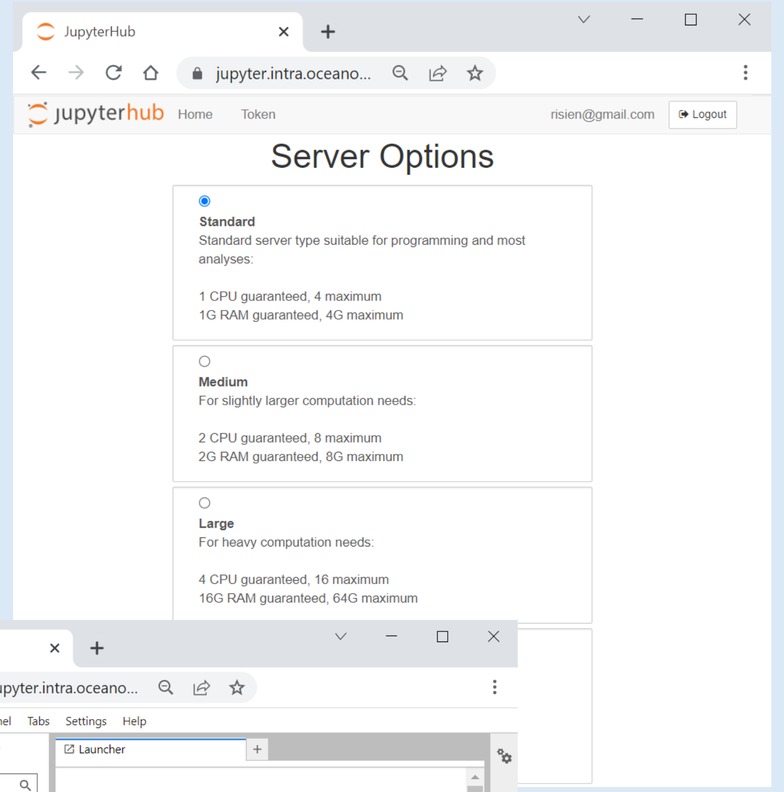
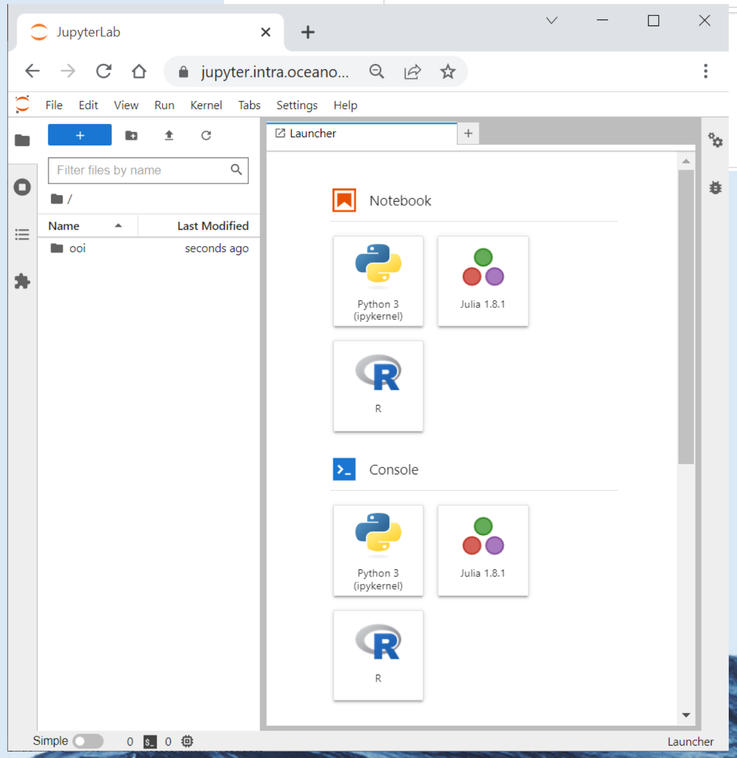
CI Systems PYIV Accomplishments

Kubernetes JupyterHub POC

- Created a 3-node Kubernetes cluster running JupyterHub.
- Implemented CILogon to provide an identity and access management platform for research collaborations.
- Variety of server sizes based on project requirements.
- Local, read-only access to raw data and NetCDF files (Gold copy THREDDS server).





Data Protection

- Incremental, differential and full tape backups.
- Copied all OOI raw data (~250TB) -- except for HDCAM data (~500TB) -- to the NSF supported Texas Advanced Computing Center (TACC).

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CI Systems PYV Planned Activities

Keeping to Enhance Cybersecurity

- Continue working with Trusted CI.
- Apply appropriate CIS (Center for Internet Security) v8 IG2 controls.
- Endpoint management solution (e.g. BigFix) to help us to efficiently patch, manage, and secure our system.
- Log monitoring and analysis.
- Develop Incident Response (IR), Disaster Recovery (DR) and Acceptable Use (AU) policies.

Releasing the JupyterHub beta

Completing NOAA-NCEI and TACC deep store data archiving

Upgrading Cassandra to version 4.x

Adding Virtualized Data Explorer development environment

Continuing System maintenance and support

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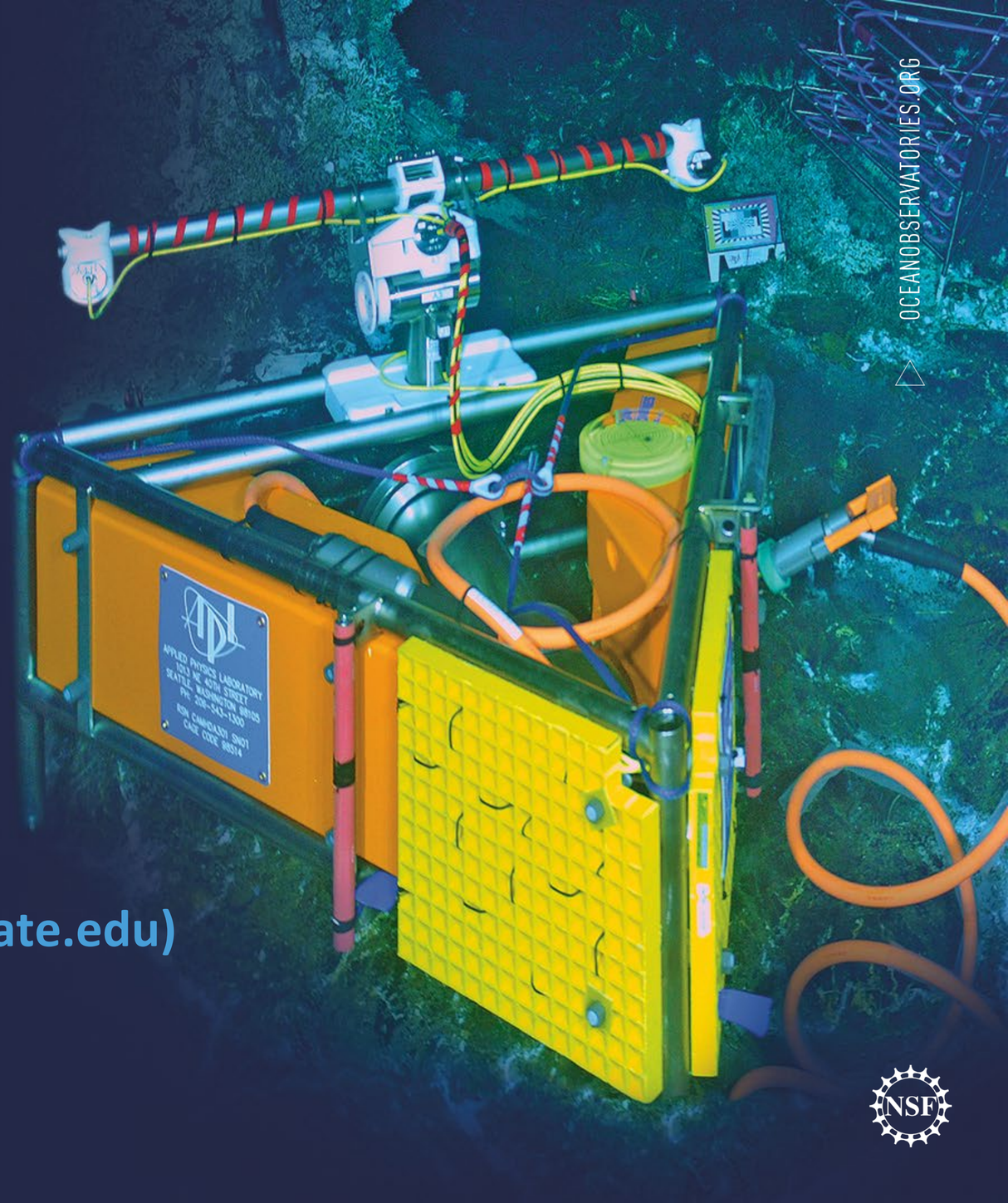

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Questions?

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