



COVA CCI Update meeting

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COVANode, CCI

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OLD DOMINION
UNIVERSITY

Protected Data Research Infrastructure ✓



Available for regional research opportunities:

- **COVA Share – CCI Research and Academic Environments**
- **RRCE - Regulated Research Computing Environment**



COVA SHARE CCI CAPABILITIES OVERVIEW

COVA CCI: Southeastern Virginia's engine for research, innovation and commercialization of next-generation cybersecurity technologies

Two *flexible* computing environments available for CCI-related projects:

- **CCI-A - COVA Share Instructional Lab**
 - Virtual hands-on lab
- **CCI-R - COVA Share Research Lab**
 - Confidential data research

Dedicated staff available to support CCI activities

Coastal Virginia Center for Cyber Innovation

Vision: Secure the nation's critical infrastructure and strengthen Virginia's economy through the commercialization of findings from cutting-edge cybersecurity research focused on the **maritime, defense, and transportation industries.**

COVA CCI is southeastern Virginia's engine for research, innovation, and commercialization of next-generation cybersecurity technologies particularly in the areas of **Cyber Physical Systems Security (CPSS), 5G, and Artificial Intelligence (AI)**

- Maritime
- Defense
- Transportation



COVA SHARE INSTRUCTIONAL LAB

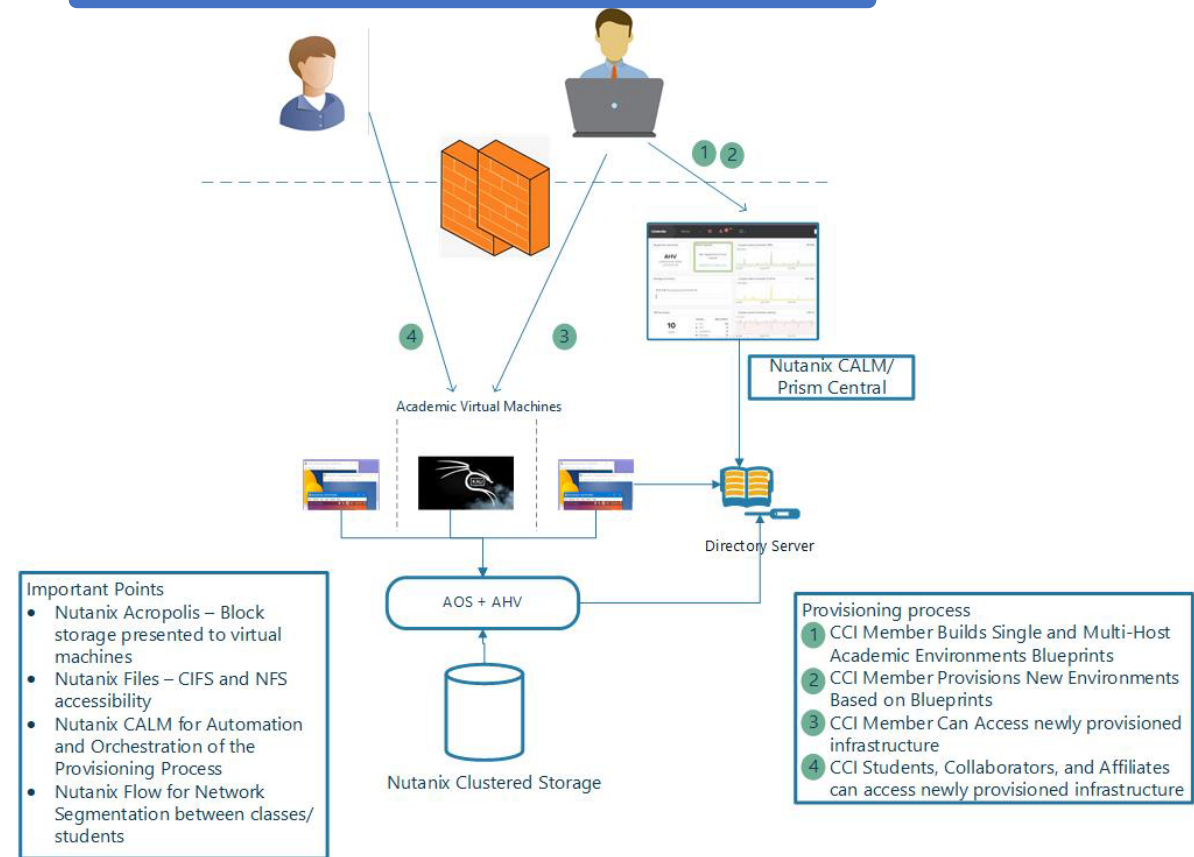
Cyber Focused VDI Environment

- Self-service provisioning
- Instructor-driven blueprint development
- Persistent semester-based labs
- GPU Capability – Nvidia A100's

Goal is to provide students with hands-on access to cyber technologies

- Flexible hands-on resources
- Penetration testing
- Configurable networking
- Honeypot

COVA SHARE – Instructional Lab



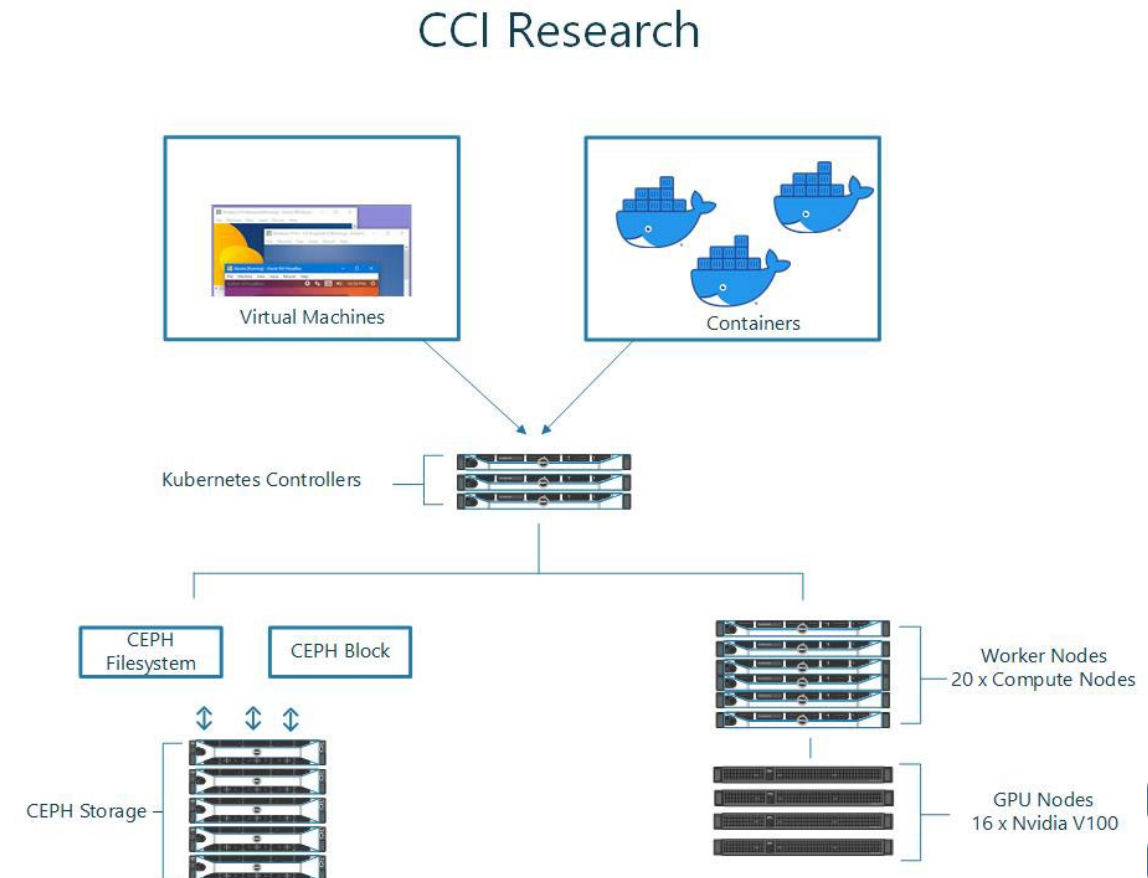
COVA SHARE CCI-R LAB

Resources

- Computational Nodes
 - Total Cores: 640
 - Total RAM: 2.5TB
- Storage
 - 46 TB Usable
- GPU Nodes
 - NVidia V100 GPUs with NVLink
 - NVidia A40, A100, L40S GPUs

Capabilities

- Compute environment built on Kubernetes
- Data Analytics
- Machine Learning/AI
- Expanded GPUs



COVA SHARE ENHANCEMENTS

CCI-A

- Expanded CCI Academic environment with additional computational nodes and decommissioned older nodes
- Continue to Improved Student Experience
 - Built custom interface for Cybersecurity students to improve ease of use
 - Continued enhancement to improve visibility and user experience

CCI-R

- Positioned as AI development environment
 - KubeFlow, Nvidia Nemo
- Expanded GPU capability
 - Nvidia A100
 - Nvidia L40s



RESEARCH AI STRATEGY

Tier 1 – HPC Clusters

- Small data set, learning environment
- Jupyter notebook
- Fine-tune and run model on small scale

Tier 2 – CCI-R

- Large, more complex workflow
- Kubeflow and Nvidia Nemo in CCI Research environment
- Support for variety of models
- Support for fine tuning, RAG

Tier 3 – AWS/GCP

- From large scale all the way to no code and chatbot solutions
- Build and scale generative AI
- Variety of model types



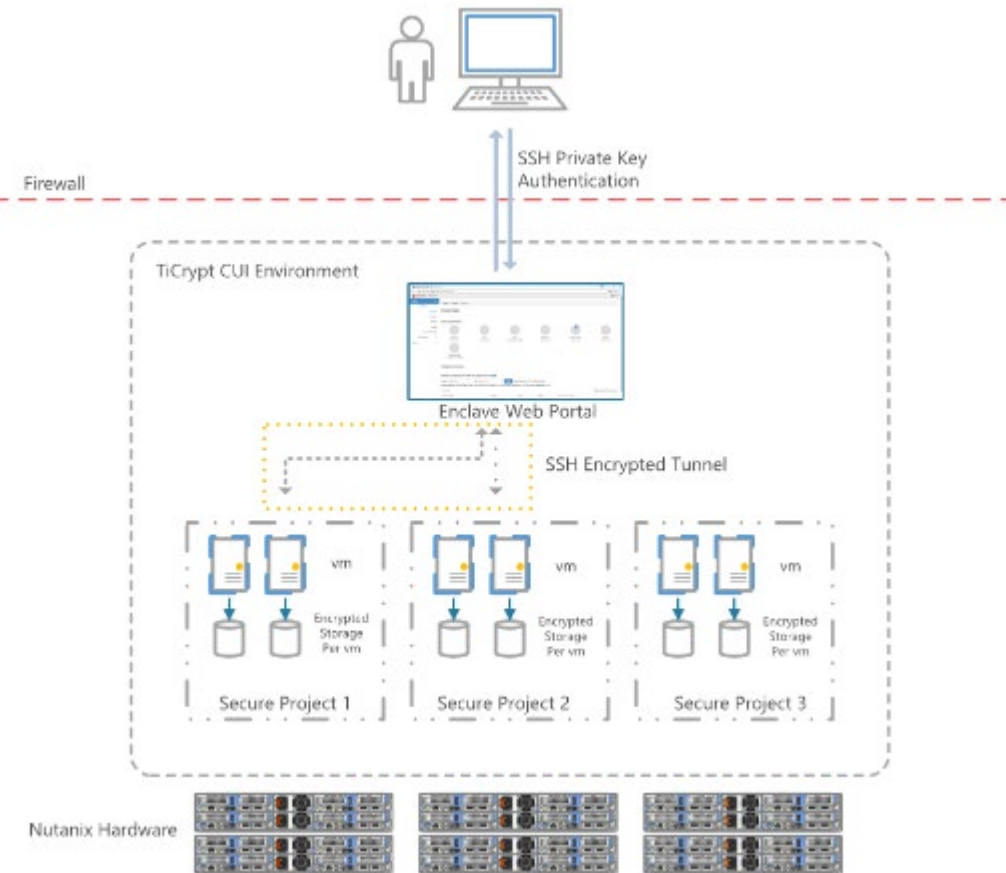
PROTECTED DATA: RRCE

RRCE

- The *Hampton Roads Biomedical Research Consortium*, Office of Research, VMASC, and ITS support a state-funded partnership between ODU, EVMS, and Sentara to advance biomedical research in Hampton Roads region. HRBRC addresses health disparities, jumpstart bio-related scientific research. <https://hrbrc.org/>
- Office of Research oversees Department of Defense contracts involving Controlled Unclassified Information

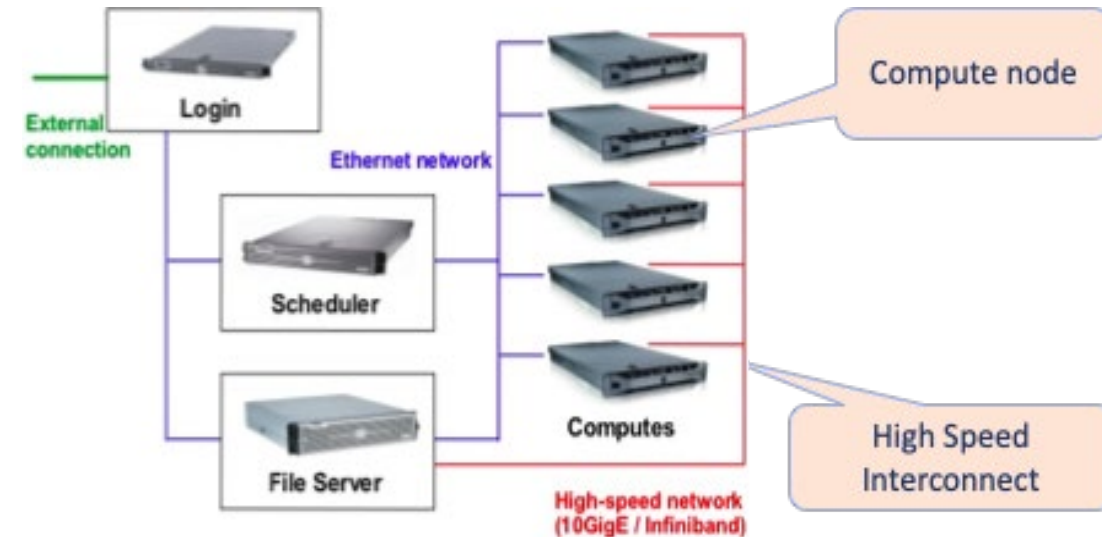
Capabilities:

- Projects containing **CUI** and **HIPAA** data sets
- Facilitate research with restricted / controlled data
- High speed connectivity between ODU, VMASC and EVMS
- Virtual Lab environment with GPU capability



HIPAA CLUSTER: RRHPC

- RRCE HIPAA Cluster
 - Hybrid virtual/physical cluster
 - Multi-GPU support
 - Nvidia A100s
 - High speed networking and storage
- Status
 - Currently installing hardware
 - Developing software environment



PROTECTED DATA PLATFORM MATRIX

	HPC	CCI-R	RRCE	ACCORD	MUSA
Non-sensitive & public data	✓	✓	✓	✓	X
Confidential: Intellectual Property (unregulated)	✓	✓	✓	✓	X
FERPA	X	✓	✓	✓	X
PHI (de-identified), EAR	X	X	✓	✓	X
IPI (Identifiable Private Information)	X	✓	✓	✓	X
HIPAA	X	X	✓	X	X
CUI* / ITAR	X	X	✓	X	X
Classified	X	X	X	X	✓



PROTECTED DATA & RESEARCH COMPUTING SERVICES

Research Cloud-Computing Support (RCS) provides **platform & support services** suitable for conducting research with protected data.

Contact RCS to get support for your research:

- ITSResearchandCloudComputing@odu.edu
- <https://odu.edu/facultystaff/research/resources/computing>





COVA CCI Update meeting

Doug Streit, Co-Chair, IT Committee,
COVA Node, CCI
June 10, 2022



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