CONECT

COre National Ecosystem for CyberinfrasTructure

SURA IT Committee - June 7, 2022

CONECT Team

National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign

Florida International University

Indiana University

Pittsburgh Supercomputing Center

San Diego Supercomputing Center

University of Chicago/Argonne National Lab.

CONECT Overview

CONECT will do exactly as our name describes - ***connect*** these national cyberinfrastructure systems and services though an integrated operational framework.

The primary stakeholders of CONECT are Resource Providers (RPs). The initial resource providers will be those allocated by XSEDE/ACCESS. When this transition is complete (by September 1) we will turn our attention to including a more diverse set of resource providers. We also provide a suite of services for ACCESS researchers and other ACCESS Service Tracks.

Four areas of concentration - Plus an extra item!

1. Operations Support
2. Data and Networking
3. Cybersecurity
4. STEP - Student Training and Engagement Program
5. Resource Provider Coordination

Operations Support Overview

Team

JP Navarro, UChicago (team co-lead)
Winona Snapp-Childs, IU (team co-lead)
Eric Blau, UChicago
Kyle Chard, UChicago
Cassian D'Cunha, FIU
David Hancock, IU
Lee Liming, IU
Liz Pantalone, PSC
Marlon Pierce, IU
Jennifer Schopf, IU
TBD, NCSA

1.2. Operations Support

1.2.1. Technology Integration and Operations

1.2.2. Information Sharing and Concierge Services

Integration Roadmaps

“.. a tailored set of tasks that take a class of cyberinfrastructure to a specified operational status”

Followed by a cyberinfrastructure owner/operator
Defined by operational status stakeholders

ACCESS will define several roadmaps for classes of CI and operational statuses that it cares about

- ★ **ACCESS awardees need to define two initial roadmaps by July 1**

Roadmaps can be defined for non-ACCESS CI and operational statuses

- ★ CONECT Concierge Integration Experts will be available for Operational Roadmap Integration Services

Roadmap Example 1

Title: ACCESS Allocated Production Compute/Storage V1

Followed by: Compute/Storage operators in coordination with ACCESS

Achieves: ACCESS allocated production status

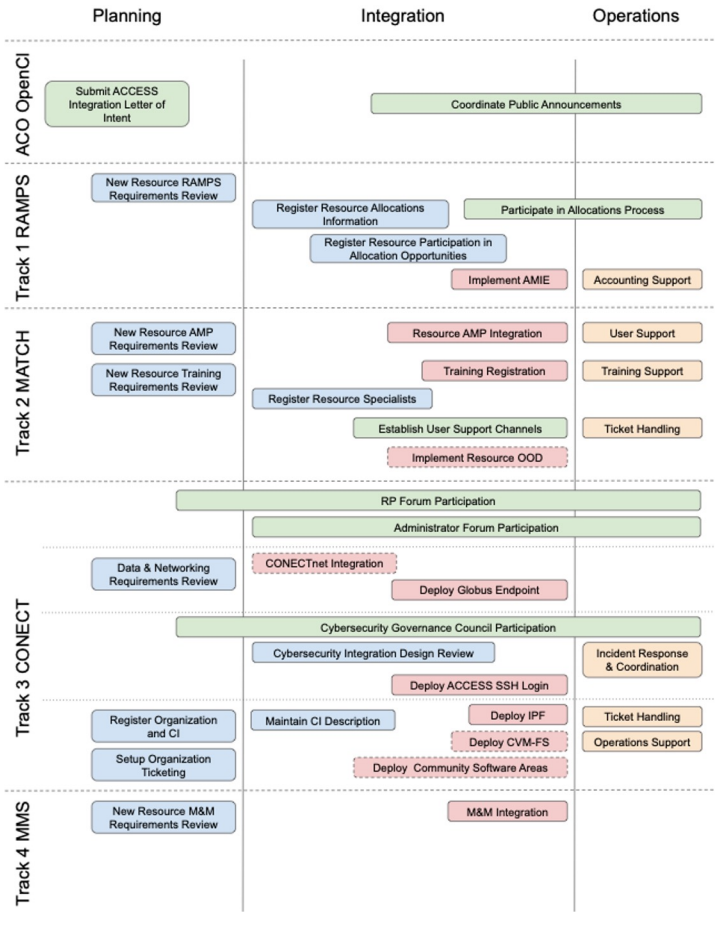
Key

Colors for task types

Coordinate | Design | Technology | Support

Borders for requirements

Requirement | Recommendation



Operations Support Technology Stack

- ➔ Ticket System (operated in coordination with MATCH)
- ➔ AI Chatbot (operated in coordination with MATCH)
- ➔ Operational Monitoring
- ➔ Operational Logging
- ➔ Operational Usage Tracking
- ➔ Software distribution repositories
- ➔ Software sharing service (CVM-FS)
- ➔ Source repositories (GitHub)
- ➔ Configuration management repositories

Data and Networking Overview

Team

Dave Wheeler, NCSA (Team Lead)
Kathy Benninger, PSC (Co-lead)
Rich Angeletti, PSC
Michael Douglas, NCSA
Tom Hutton, SDSC
Dr. Julio Ibarra, FIU
Matt Kollross, NCSA
Michael Lambert, PSC
Italo da Silva Brito, FIU

Data and Networking - Priorities

Transition XSEDE data and networking infrastructure for use by ACCESS RPs and researchers, with graceful termination of any services that will not be carried forward into ACCESS

Work with RPs to provide efficient, resilient data transfer capability

Strive to improve data transfer performance between RP instruments, resources, centers, and campuses, working with Internet2 and the Engagement and Performance Operations Center (EPOC) at IU

Investigate new data transfer applications and networking technologies for advantages they could bring to ACCESS

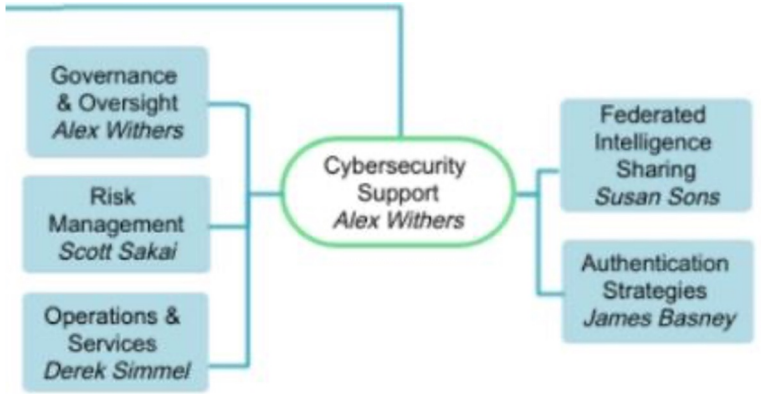
STEP for the next generation of CI professionals

Data and Networking - Focus areas

Seek to expand the list of supported file transfer applications
Engage with Internet2
Work with RPs to optimize their connectivity (may include EPOC engagement)
    Network configuration information from RPs
    Expand perfSONAR testing
Metrics collection and analysis with Metrics and Monitoring Services (Track 4)
DNS
Investigate technologies with potential for improving data transfer experience:

Cybersecurity Overview

Alex Withers (lead), NCSA
Susan Sons, IU
Scott Sakai, SDSC
Derek Simmel, PSC
Jim Basney, NCSA
Shane Filus, PSC
Adrian Crenshaw, IU
Jacob Gallion, NCSA
Terry Fleury, NCSA
Chris Clausen, NCSA



Areas

- **Governance and Oversight**
- Risk Management
- **Operations and Services**
- Federated Intelligence Sharing
- **Authentication Strategies**

TrustedCI Framework

www.trustedci.org/framework
Trusted CI, the NSF Cybersecurity Center of Excellence

Mission Alignment

Mission Focus

Stakeholders & Obligations

Information Assets

Asset Classification

Governance

Leadership

Risk Acceptance

Cybersecurity Lead

Comprehensive Application

Policy

Evaluation and Refinement

Controls

Baseline Control Set

Additional & Alternate Controls

Resources

Adequate Resources

Budget

Personnel

External Resources

Cybersecurity Governance Council (CGC)

CGC works in cooperation with the ACCESS Executive Council (EC) to provide the oversight of cybersecurity operations and the formation and dissemination of cybersecurity policies.

These policies will encompass requirements, procedures, and guidelines for ACCESS services, infrastructure, and Resource Providers (RPs).

The CGC also works to share cybersecurity information, discuss and disseminate new cybersecurity threats and vulnerabilities and exchange best practices.

Membership in the CGC will consist of a representative from each RP and Track and a representative from the ACCESS Coordination Office (ACO).

Cybersecurity Services

Federated threat intelligence collection and sharing (ResearchSOC).

Vulnerability management: scanning and assistance with remediation.

NIST 800.3x style risk assessments.

Central log collection.

Incident response and handling.

Management of all security supporting infrastructure (including IAM infrastructure).

Security architectural design and review.

Authentication services: CILogon, COManage, InCommon, SciTokens, etc.

Resource Provider Collaboration

- SP Forum -> RP Forum
  - maintain the community-organized forum (if they are willing)
  - RP coordinator role to be filled by Tim Boerner
- RP Coordinator is the liaison to RPs for information/consulting on integration with CONECT
- RP Coordinator develops relationships with new/potential RPs
  - inform integration roadmaps for existing and new RP types
  - increase adoption by new RP types
- To Consider: How broadly should the RP Forum’s role be scoped?

Student Training and Engagement Program

- STEP-1 (May 2023): 15 students will be recruited to participate in a two-week, coordinated workshop for fundamental CI training
- STEP-2 (June – August): 6 students will continue, paired with one of the CONECT teams. The students will receive intermediate training, work on projects full-time with mentors, and attend a national conference (e.g., PEARC).
- STEP-3 (September – May): 2 students will receive advanced training and continue to work on projects with mentors on a part-time basis during the academic year. These students will attend a second national conference (e.g., SCXY).
    - Students in cybersecurity will work with CONECT cybersecurity professionals to help protect ACCESS's CI– a highly complex and heterogeneous environment that is constantly under attack –by managing vulnerabilities, analyzing security log data, and performing security vetting tasks.
    - Students in operations will create and monitor the information sharing platform technology stack, aid the curation of assets for the AI-chatbot, and use APIs to push information to various platforms.
    - Students in data and networking will install and use perfSONAR, learn networking best practices, Linux systems management, testing methodologies, and identification and resolution of networking performance issues.

Questions?