



National Science Foundation Campus Cyberinfrastructure (CC*)

HTC'25 June 3, 2025

CENVAL-ARC Symposium

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Office of Advanced Cyberinfrastructure

National Science Foundation

Campus Cyberinfrastructure (CC*) Vision

- The Campus Cyberinfrastructure (CC*) program invests in **coordinated**
- **campus-level** cyberinfrastructure for
- **science impact** in research and education, especially those that
- **overcome disparities** associated with geographic location and small and under resourced institutions.

CC* supports networking, compute, storage, network innovation, staffing/training and strategy for campuses and regions!



Campus Cyberinfrastructure (CC*)

Must be SCIENCE DRIVEN

Must have a campus Cyberinfrastructure Plan (except Strategy awards)

Seek to create partnerships – researchers, educators, IT organization

Area 1: Data Driven Networking Infrastructure

Campus up to \$700K
Region up to \$1.4M

Technical solution; network management plan and diagram; leverage community

Area 2: Computing and the Computing Continuum

Campus up to \$700K
Region up to \$1.4M

Multiple science drivers and needs; architecture; 20% is shared, typically through PATH

Area 3: Network Integration and Applied Innovation

Small up to \$500K
Large up to \$1M

Networking R&D applied to the campus network with graduate student involvement

Area 4: Data Storage and Digital Archives

Campus up to \$700K
Region up to \$1.4M

Multiple science drivers and needs; architecture; 20% is shared, typically through OSDF

Area 5: Strategy

Campus up to \$100K
Region up to \$200K

A grant to help teams plan for a full proposal!
No CI plan; Funds community building activities; No hardware

- **Proposals for the Campus** must address campus-wide needs, not a single research project.
- **Proposals for the Region** must address needs of multiple small or under resourced institutions. These can be led by a regional research lead organization.
- \$15-\$20M in FY24 in expected funding

See **NSF 24-530** was the last solicitation

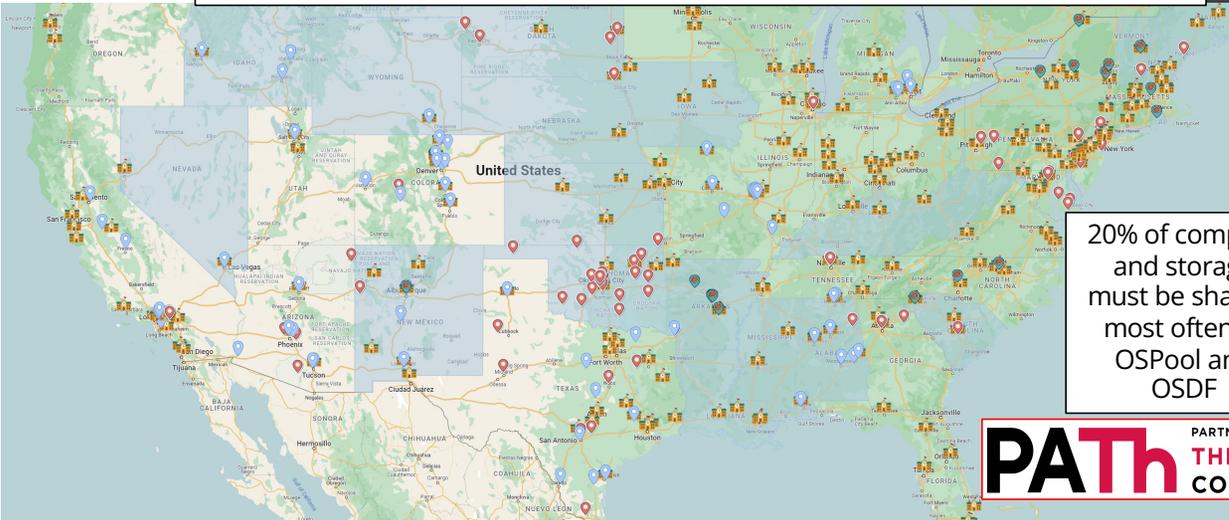
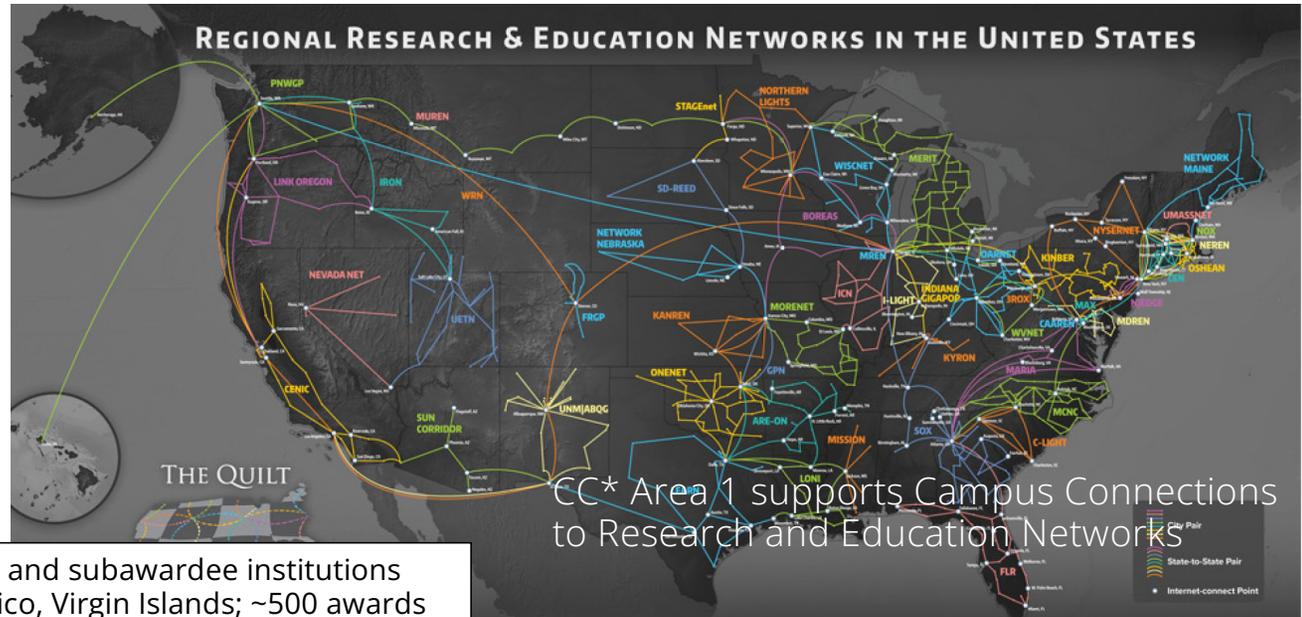
Program Officers: Amy Apon, awapon@nsf.gov and Kevin Thompson, kthompso@nsf.gov



CC* is
Coordinated
 in networking,
 compute, and
 storage



Active and Historical CC* awardee and subawardee institutions
 Not shown: Hawaii, Guam, Puerto Rico, Virgin Islands; ~500 awards



20% of compute and storage must be shared, most often to OSPool and OSDF





CC* Awardee Institutions

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION (OneNet)

📍 Oklahoma State Regents For Higher Education, Research Parkway, Oklahoma City, OK, USA

[2018453](#): CC* Regional: Small Institution Multiple Organization Regional OneOklahoma Friction Free Network (SI-MORE-OFFN)
[2018453 Quad Chart](#)

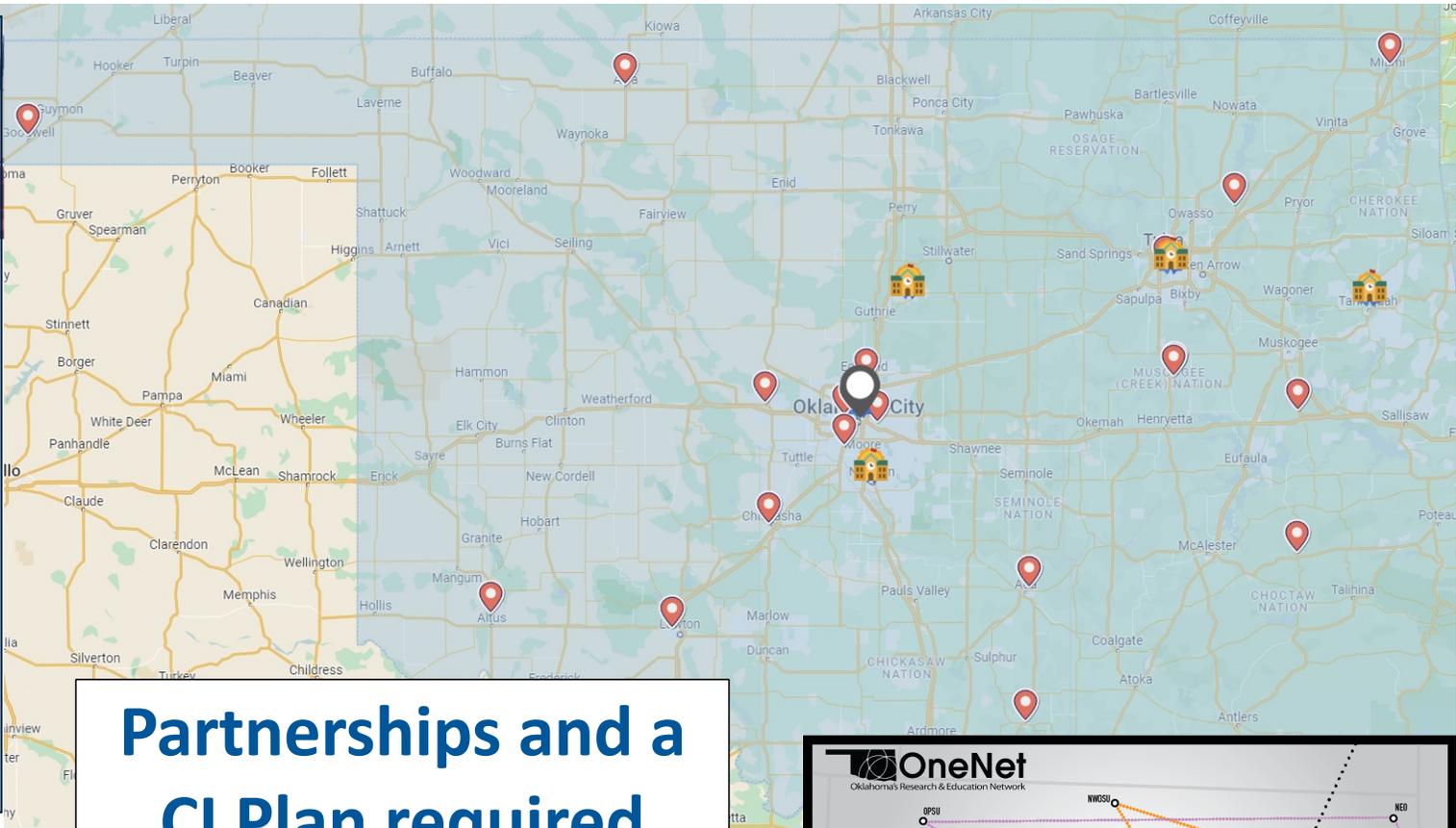
[2201442](#): CC* Regional: Campus Research & Education Multiple Organization Regional OneOklahoma Friction Free Network (CaRE-MORE-OFFN)

[2126285](#): CC* Regional: Extended Small Institution - Multiple Organization Regional - OneOklahoma Friction Free Network (ESI-MORE-OFFN)

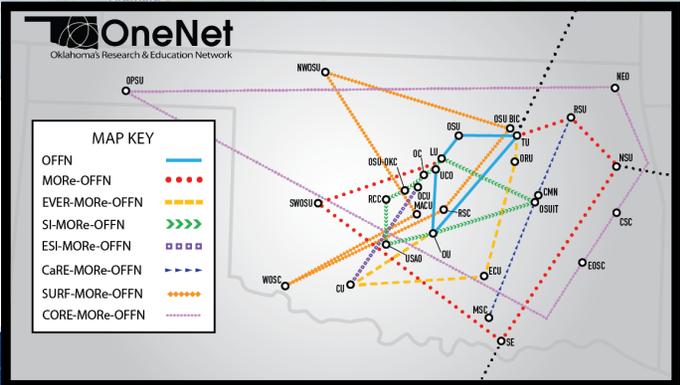
2321401: CC* Regional Networking: Setting Up Research Foundations for a Multiple Organization Regional and OneOklahoma Friction Free Network

2346397: CC* Regional Networking: Creating Opportunities for Research & Education - Multiple Organization Regional - OneOklahoma Friction Free Network - CORE-MORE-OFFN

📍 Non-profits 📍 Oklahoma 📍 EPSCoR
📍 CC* Regional Networking Exp. 📍 Select All CC* Exp.
📍 CC* Regional Networking Active 📍 Select All CC* Active
📍 REN Unknown 📍 R&E Network Collaborator Unknown



Partnerships and a CI Plan required



Active and historical CC* awards and subawardees in Oklahoma since 2012; 38 awards & subawards

<https://onenet.net/offn-supercomputers-and-fast-connectivity-making-the-impossible-practical-for-oklahomas-higher-education-institutions/>



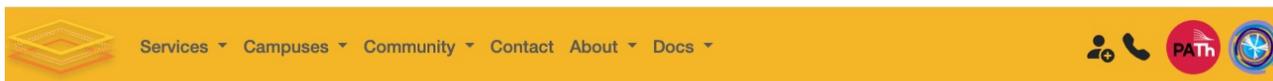
Some numbers for CC* 2020-2024

Out of ~262 awards,

- 63 in campus and regional computing – most have joined OSPool
- 21 in campus storage – most have joined OSDF
- + PATH and Pelican (funded out of CC*)
- Lets look at some of the online numbers provided by Path/Pelican...



OSPool on May 27 (osg-htc.org/services/ospool)



OSPool: Serving Open Science throughput computing

On May 27

2M jobs completed

Placed by 86 researchers

Triggering 16M file transfers

Consuming 850K core hours

[View active OSPool Projects](#)

What is the OSPool?

The OSPool is a source of computing capacity that is accessible to any researcher affiliated with a US academic institution. Capacity is allocated following a Fair-Share policy.

[Test Drive the OSPool](#)

To harness the full capacity of the OSPool you will need to obtain an account via the [OSG Portal](#).

Is my workload a match for the OSPool?

Each of your jobs must fit on a single server. It has to be portable so that it can run on a remote server. The distributed nature of the OSPool imposes constraints on the sizes of the input and output sandboxes of a job.



Who Contributes

OSPool Contributing Institutions

The **OSPool** is powered by contributions from the Open Science community, specifically the institutions listed below. The scale of research being conducted has reached new heights through the capacity provided by these institutions and the Consortium's technology suite.

Institutions provide administrative control and oversight over the services they provide. At universities, the name of the registered institution is typically the name of the university rather than the name of the department that operates the service.

All statistics listed below are a summary of the last year of contributions.

Click on a row to view institution details.

Name	Jobs Ran	Impacted Fields of Scie...	Impacted Research Pro...
Syracuse University	41,610,017	42	107
University of Wisconsin	28,329,395	53	166
University of Chicago	21,663,905	52	164
Fermi National Accelerator Laboratory	18,950,826	46	119
Montana State University	13,535,007	58	171
Purdue University	13,210,880	45	135
Indiana University	11,368,745	45	120
University of California San Diego	9,901,918	48	129
University of Michigan	8,573,061	50	143
Great Plains Network	7,386,719	49	142
Clemson University	7,203,993	52	160

As of yesterday

From my talk last year

Summary Statistics:	79	258,690,760	62	209
Summary Statistics:	67	106,976,830	56	199

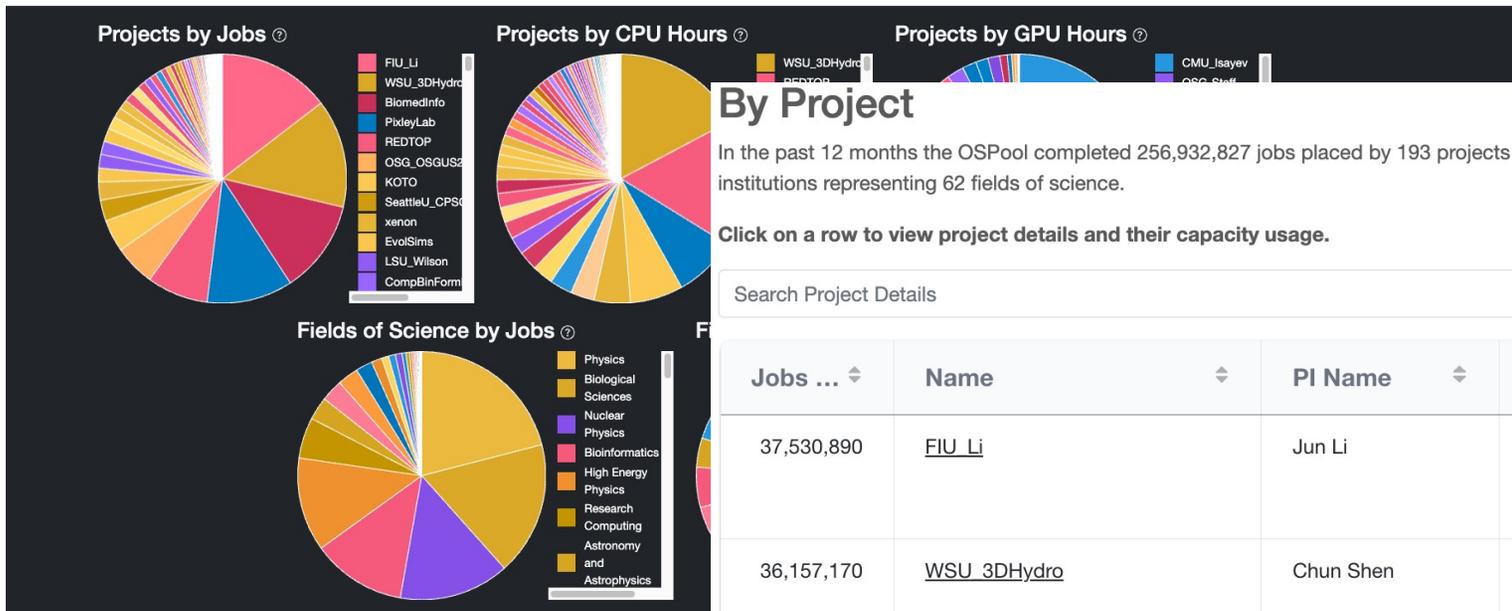


OSPool Active¹ Projects

143 OSPool Projects Active in the past 12 months

Data Timeframe: 6/2/2025 - 6/2/2024

The below projects used OSPool resources to advance their research in the past year and ran more than 100 jobs. To run your own research on the OSPool sign up now on the [OSG Portal](#).



By Project

In the past 12 months the OSPool completed 256,932,827 jobs placed by 193 projects from 113 institutions representing 62 fields of science.

Click on a row to view project details and their capacity usage.

Search Project Details

Jobs ...	Name	PI Name	Organizati...	Field Of Scien...
37,530,890	FIU_Li	Jun Li	Florida International University	Biological Sciences
36,157,170	WSU_3DHydro	Chun Shen	Wayne State University	Nuclear Physics
31,113,702	BiomedInfo	Erik Wright	University of Pittsburgh	Bioinformatics
28,763,374	PixleyLab	Jedediah Pixley	Rutgers, The State University of New Jersey	Physics
20,531,799	REDTOP	Corrado Gatto	Fermilab	High Energy Physics

By Project

In the past 12 months the OSPool completed 256,932,827 jobs placed by 193 projects from 113 institutions representing 62 fields of science.



By Pr **FIU_Li** Close

In the past institutions

Click on a

Search P

Jobs

37,530

36,157

31,113

28,763

20,531

13,692

10,784

6,991

6,049

4,582

PI
Jun Li

Description
Vector biology and genomics

Field of Research
Biological Sciences

Organization
Florida International University

Where Jobs Have Run

Where has FIU_Li been running their jobs?

Institution	Percentage
The College of New Jersey	30%
University of Michigan	15%
Michigan State University	10%
University of Hawaii System	6%
Georgia State University	5%
Others	34%

Facilities running FIU_Li's jobs ⊙

64

Resource Usage

Jobs Ran by FIU_Li

37,561,769

FIU_Li's CPU Core Hours ⊙

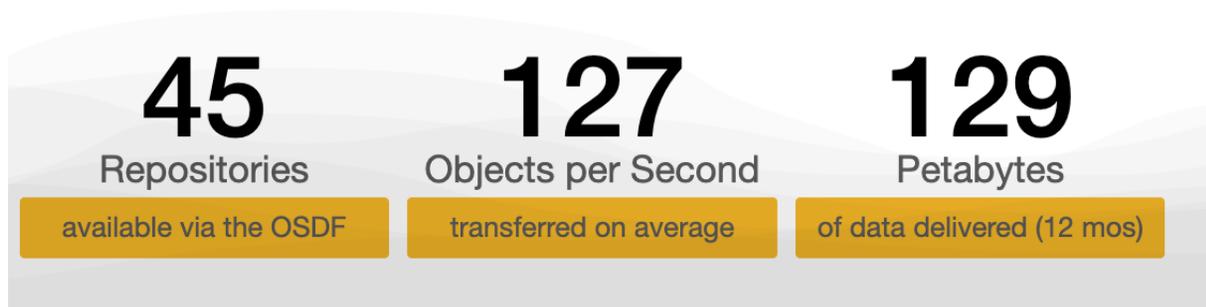
3,821,560

Close



OSDF visibility

The OSDF is a data federation, connecting independently operated storage. Visit the links above for information about data access policies, how to use the data, and more up-to-date information about what data is included.



Using the OSDF

The OSDF provides the foundational data delivery infrastructure using software provided by the [Pelican Platform](#). Communities using the OSDF build infrastructure, such as indexing, tools, or data discovery, on top of this foundation. The OSDF can be used to download data via the browser, visualization in a notebook, or as part of large-scale computational workflows:

- NCAR's Research Data Archive links directly to the OSDF as part of [their download webpage](#).
- The [SPIN4D](#) project combines AI and Astronomy to study the solar photosphere, publishing [notebooks explaining how to visualize data](#) located in the OSDF.
- The [OSPpool](#) provides a national-scale computing service, [integrating the OSDF directly](#) using the [HTCondor Software Suite](#). The [OSPpool OSDF page](#) catalogs how different OSPpool projects have utilized the service in the last year.

By Project

In the past 12 months the OSDF supported **127** projects from **75** institutions representing **28** fields of science by transferring **294,472,395** objects, totaling **57 PB**.



Some thoughts on this anniversary year

- Shout-out to Facilitation activities - innovation, impact, and model
- The aggregate impact of this project on science over decades is massive and difficult to fully comprehend
- resource sharing at the institution level enabling broader participation
- dHTC as a scalable production level capability and alternative
- There are few examples of non domain-specific research infrastructure supported by NSF in units of decades
- This is a very special group – a reminder that it always comes down to the people, their commitment, their passion
- Congrats on 40 years of



HTC Condor
Software Suite

and 20 years of

