



## Getting Started on Jetstream2

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# Agenda

## **Introduction to Jetstream2 (30 min)**

- ACCESS account and training allocation
- What is Jetstream2? Whom is it for?
- How to apply for an allocation - ACCESS

## **Getting access to Jestream2 (15 min)**

- Logging in to Exosphere

## **Using Jetstream2 - Hands on Demo (45 min)**

- Creating an instance
- Logging in to your instance
- Using the software collection
- Attaching volumes for data storage
- Transferring Data to and from your instance
- Saving and Sharing Images
- Web hosting - one liner
- Shelving Instance

# Accessing Jetstream2

Before you can use Jetstream2 you must first have an ACCESS ID and be on an active Jetstream2 allocation! Fill out this form to participate in the tutorial.

<https://forms.gle/gnBbx2CS1LPgm2LK7>



# Getting an ACCESS ID

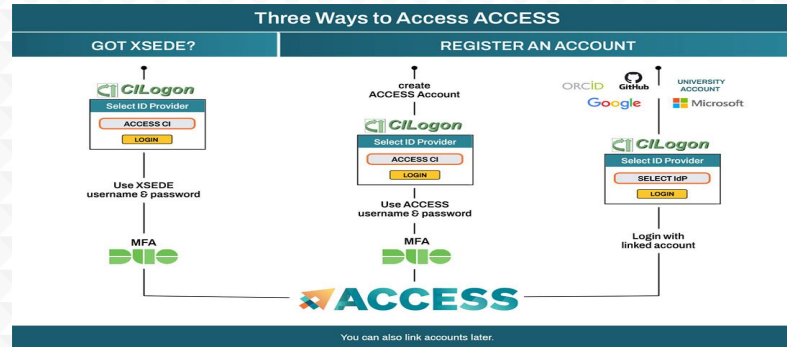


CREATE  
ACCOUNT

In order to Apply for an allocation OR be able to login to any resources an Access ID is required.

Go To

<https://operations.access-ci.org/identity/new-user>





## *AI For Everyone*

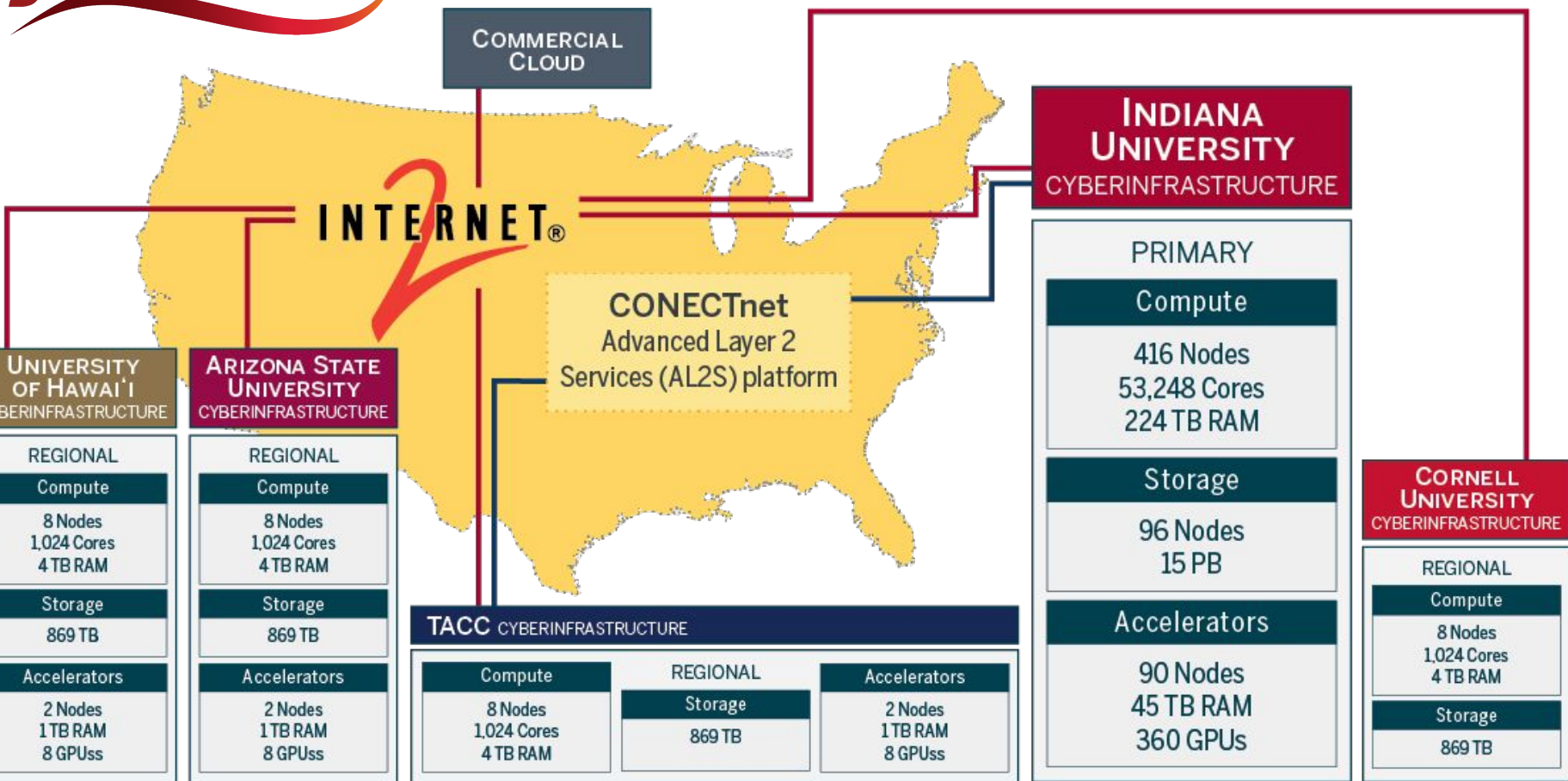
- Jetstream2 is designed to be user-friendly for educators and researchers who have limited experience with high performance computing (HPC) or cloud computing.
- NSF funded. We serve academic communities with no access to such resources
- It provides a uniquely flexible environment for researchers looking to take advantage of the latest cloud-native approaches.
- Available for Education - use it for courses!



# What's Special About Cloud Computing?

- Create your own 'virtual machine' (VM)
- Full sudo (admin) access. Use your VM how you want.
  - Install the software you need.
- On-demand resources. No sharing or queue times.
  - Keep your jobs running as long as you want.
- Interactive computing environment
  - With graphical desktop
- Full internet access with Persistent IPs

# Jetstream2



# Jetstream2 VM Sizes

- Three different resources:
  - CPU
    - Up to 64 cores, 250 GB RAM
  - Large Memory
    - Up to 128 cores, 1000 GB RAM
  - GPU
    - Up to 32 CPU cores, 125 GB RAM, and a full NVIDIA 40GB Ampere A100 GPU
  - Storage
    - Default: 1 TB
    - More on Request

View the full list:

<https://docs.jetstream-cloud.org/general/vmsizes/>





# Use Cases

- On-demand access to powerful computer for high performance analysis.
  - Useful for teaching a course in which students have this need.
- Teach a course where each student gets their own VM to work on.
  - Network security, reproducible development environment, etc.
- Write, debug, and execute code with interactive GUI applications
  - Use a GPU if needed.
- Host a file server or database. Receive, store, and serve data to colleagues.
- Host a website or web-app to share with students or colleagues.

# Accessing Jetstream2

 Go To <https://jetstream2.exosphere.app/>

Before you can use Jetstream2 you must first have an ACCESS ID and be on an active allocation with Jetstream2 resources!



# What is Access?



Advancing  
Innovation

Provides Access to National Advanced Computing Resources

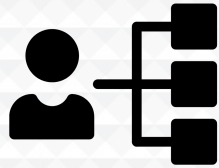
<https://access-ci.org/>

*The NSF's ACCESS (Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support) program builds upon the successes of the 11-year XSEDE project, while also expanding the ecosystem with capabilities for new modes of research and further democratizing participation.*

# Allocation Process



CREATE  
ACCOUNT



SELECT  
OPPORTUNITY



REQUEST  
ALLOCATION



RECEIVE  
CREDITS



EXCHANGE  
CREDITS

# Getting Your Own Allocation



SELECT  
OPPORTUNITY



<https://access-ci.org/>

Applying for an allocation is like applying for a small grant that provides computational resources.

The first level of application “Explore ACCESS” is a single form and only takes a few minutes. Allocations are usually approved in a few days.  
*~\$40,000 worth of cloud resources for a few minutes of effort.*





SELECT  
OPPORTUNITY

# Allocation Tiers

Explore	Discover	Accelerate	Maximize
400,000 credits	1,500,000 credits	3,000,000 credits	N/A
CV and Brief Summary	CV & 1-page proposal	3-page proposal & panel review	10 page proposal & panel review
Grad student projects	Modest resource needs	Mid-scale resource needs	Large-scale projects in need of massive amounts of computational resources
Small labs	Mid-sized projects	Multi-grant collaborative projects	
Benchmarking	Campus Champions	Science Gateways with growing communities	
Small classes	Large classes		





REQUEST  
ALLOCATION

# Allocation Details

- Allocation must be submitted by the PI of the project
- Who can be a PI?
  - Any educator or research at a U.S. academic, non-profit research, or educational institution
- What about grad students?
  - Yes! Can receive Explore tier, just need a letter of collaboration from your PI.
- Anyone with an ACCESS ID can be added to a project
  - Getting an ACCESS ID is free and easy - useful for adding students
- Allocations must be renewed annually
- Projects can be “upgraded” by applying for the next-level allocation tier

# Allocations Are Awarded Credits



- Credits are exchanged for computational time or storage on supercomputers
- For Jetstream2, 1 ACCESS credit = 1 Service Unit (SU) = 1 CPU hour
- What are some common usage scenarios?
  - Running the equivalent of a high-end laptop (8 cores, 32 GB RAM) for 40 hours a week for 2 years
    - 35,000 SUs
  - A server that can handle moderate traffic for 5 years uninterrupted
    - 175,000 SUs
  - Using an entire A100 GPU on average 40 hours a week for 2 years
    - 530,000 SUs
    - Note: We have smaller GPU instances that aren't as costly





# What Resources are Available?



EXCHANGE  
CREDITS

- Indiana Jetstream2
- Indiana Jetstream2 GPU
- Indiana Jetstream2 Large Memory
- Indiana Jetstream2 Storage



Indiana University (IU)  
Jetstream2



Johns Hopkins University  
(JHU)  
Rockfish



National Center for  
Supercomputing  
Applications (NCSA)  
Delta



Open Science Grid

Open Science Grid (OSG)



Open Storage Network  
(OSN)



Pittsburgh Supercomputing  
Center (PSC)  
Bridges-2



Purdue  
Anvil



San Diego Supercomputer  
Center (SDSC)  
Expanse



Stony Brook University  
Ookami



Texas Advanced  
Computing Center (TACC)  
Stampede2  
Ranch



Texas A&M University  
(TAMU)  
FASTER



University of Delaware  
DARWIN



University of Kentucky  
KyRIC



# Demo

# Accessing Jetstream2

 Go To <https://jetstream2.exosphere.app/>

Before you can use Jetstream2 you must first have an ACCESS ID and be on an active Jetstream2 allocation!



# Acknowledgements

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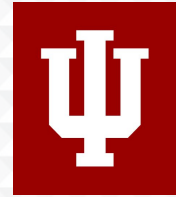
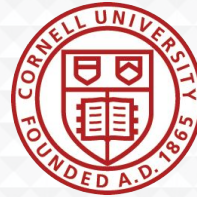
And the rest of the Research Cloud Services team

- Julian Pistorius, Nick Smith, Matt Standish, Jenn Taylor and Le Mai Weakley.



# Jetstream2 partners

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JOHNS HOPKINS  
UNIVERSITY



UCAR

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<http://jetstream-cloud.org/>  
National Science Foundation  
Award #ACI-2005506

# Documentation and Support

Jetstream2 Website

<https://jetstream-cloud.org/index.html>

Reach out to Jetstream2 support at

[help@jetstream-cloud.org](mailto:help@jetstream-cloud.org)

Documentation:

<https://docs.jetstream-cloud.org/>

Or directly to Research Cloud Services:

[rcsadm@iu.edu](mailto:rcsadm@iu.edu)

Jetstream2 Login (Exosphere)

<https://jetstream2.exosphere.app/>

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