Jetstream2 Gateways Introduction

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Science Gateways Webinar - Hosted by SGX3
About Jetstream2

- NSF-funded production cloud environment
- Ease-of-use focus, rapid on-ramp to ACCESS
- On-demand interactive computing and persistent services for science gateways
- Enables configurable environments; programmable cyberinfrastructure
- Building on the success of Jetstream1
  - The 63 science gateways that utilized Jetstream indirectly supported over 183,197 people.
  - Six year of operations an overall availability of 98.54%, incl. planned and unplanned outages
  - An uptime of 99.9967% where the system was operating but at a reduced capacity
Gateways use JS2 in several ways:

- Gateway web hosting
- Datasets and Database hosting
- Gateway Security Services
- Integrated JupyterHub
- Interactive Computing
- Elastic Virtual Clusters
Jetstream2 Features

• Primary Cloud (IU)
  • 400 compute nodes -- AMD EPYC 3rd Generation Milan CPUs – 128 cores per node + 512gb RAM
  • 90 GPU nodes – NVIDIA A100 40gb
  • 32 Large Memory nodes – up to 1TB of RAM

• Regional Clouds available by invitation/request (Arizona State, Cornell, Hawaii, TACC)

• Default VM root disks and storage are NVMe. Large dataset storage available on HDDs

• Filesystems-as-a-service – natively shared filesystems between VMs

• Load-balancing-as-a-service recently deployed

• Shared application store with common applications (NVIDIA HPC Toolkit, multiple compilers, R/Rstudio, Matlab, Anaconda, etc)

• Federated JupyterHubs, Virtual Clusters, and orchestration are all available with features being added and refined

• Support for commercial cloud integration and funding when using Jetstream2 coming this year
Jetstream2 Allocation/Usage Considerations

- No scheduled downtime for upgrades
  - Upgrades are done while the system stays live overall
  - 99.87% availability for 9-7-22 to 3-31-23
- Persistent IP addresses (for the life of an allocation if desired)
- No runtime limits – VMs can exist as long as there is an active allocation with SUs available
- No allocation limits for SUs – if you can justify it and we can provide it, we do
- Instance, core, and ram limits are flexible and extendable – if you can justify it and we can provide it, we do
- Storage allocations are reasonably generous – 1TB default up to 50TB in volume, shared, or object storage
Gateways using Jetstream2

- Presently 56 gateways on Jetstream2
- Gateway users per allocation range from single digits to over 60,000
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