Jetstream

A national science & engineering cloud

funded by the National Science Foundation
Award #ACI-1445604
“Long tail” of the NSF XD Ecosystem

- Capability class machines
- Traditional HPC, HTC systems
- Campus computing systems
“Long tail” of the NSF XD Ecosystem

Capability class machines

Traditional HPC, HTC systems

A self-provisioned, scalable science & engineering cloud environment
Jetstream characteristics

- First cloud for science and engineering research across all areas of activity supported by the NSF
- Interactive computing and data analysis resources “on demand”
- Focus on ease-of-use, broad accessibility
- VM library, custom VMs, or “private computing system”
- Reproducibility: Store, publish via IU Scholarworks (DOI)
Science domains

- **Biology**: iPlant and Galaxy VMs, enabling access to and use of new analytical codes in various modalities
- **Earth Science**: VMs capable of requesting NSIDC data and running common routines to enable more effective research and better analyses of data
- **Field Station Research**: VM-based data collection and analysis tools to support data sharing and collaboration
Science domains

- **GIS**: Deliver the CyberGIS toolkit and provide access to ArcGIS in a VM using IU’s existing site license
- **Network Science**: Build VMs with CShell tool builders to deliver network analysis tools interactively
- **Social Sciences**: Create VMs that allow selection of data from the Odum Institute in a way that retains provenance and version information

- **Whatever you do**, probably …unless you run large scale MPI codes!
Types of applications supported

- Interactive, VM-based work
- Persistent science gateways
- Hadoop at modest scale
Jetstream System Overview

- Geographically distributed cloud; 0.5 PetaFLOPS
- Globus for large scale file transfer, authentication
Software Stack: Metal to Atmosphere
Login using Globus Auth

Log in to use Jetstream Web App

Log in with your XSEDE credentials

Continue

Why has this page changed?
# VM Instance Sizes

<table>
<thead>
<tr>
<th>Instance Type</th>
<th>vCPUs</th>
<th>RAM</th>
<th>Storage</th>
<th>Instances/Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiny</td>
<td>1</td>
<td>2</td>
<td>20</td>
<td>46</td>
</tr>
<tr>
<td>Small</td>
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<tr>
<td>X-Large</td>
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<td>60</td>
<td>460</td>
<td>2</td>
</tr>
<tr>
<td>XX-Large</td>
<td>44</td>
<td>120</td>
<td>920</td>
<td>1</td>
</tr>
</tbody>
</table>

Node config: 2 Intel 2680 v3 “Haswell.” 2.5 GHz base frequency. Floating point intensive operations utilizing the AVX instruction set run at 2.1 GHz.
Planned Globus transfer use on Jetstream

• Globus Connect Personal in VM images
  – Being integrate with Atmosphere image management

• Globus Connect Server on object storage
  – Ceph RADOSGW
Jetstream Partner Organizations

Initial construction (funded partners)

Indiana University
Texas at Austin
TACC
The University of Arizona

The University of Chicago
Globus
Johns Hopkins University

Planned funded partners (O&M phase)

PennState
Cornell University
University of Hawaii
University of Arkansas

Unfunded partners