

Deploying Science Gateways Using Apache Airavata

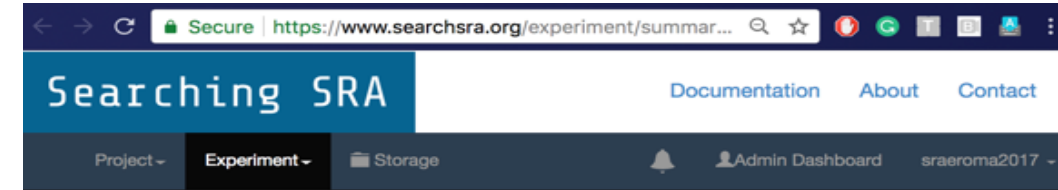
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Cyberinfrastructure Integration
Research Center Team

Gateways 2020, October 12, 2020



What is a Science Gateway?

- Web and desktop interfaces to science and engineering resources
 - Supercomputers, clusters, clouds
 - Mass storage systems, data services
 - Software, data
- Provide Software as a Service
- Capture metadata about what you do to get a result
 - Support search, replicability, extensibility
- Support collaboration
 - Share metadata



Experiment Summary Enable Auto Refresh ON OFF

Experiment ID	Test2_ec34aed9-25e3-4861-9464-c755cc517ba1											
Name	Test2											
Description												
Project	Mar-15-Jobs											
Owner	sraeroma2017											
Application	search-SRA											
Experiment Status	COMPLETED											
Job	<table border="1"><thead><tr><th>Name</th><th>ID</th><th>Status</th><th>Creation Time</th></tr></thead><tbody><tr><td>A1185529494</td><td>128</td><td>COMPLETE</td><td>04/26/2018, 12:14 PM - GMT-0400 (EDT)</td></tr></tbody></table>				Name	ID	Status	Creation Time	A1185529494	128	COMPLETE	04/26/2018, 12:14 PM - GMT-0400 (EDT)
Name	ID	Status	Creation Time									
A1185529494	128	COMPLETE	04/26/2018, 12:14 PM - GMT-0400 (EDT)									
Notifications To:												
Creation Time	04/26/2018, 12:14 PM - GMT-0400 (EDT)											
Last Modified Time	04/26/2018, 12:21 PM - GMT-0400 (EDT)											
Inputs	Fasta-Reference-File: reference Select existing Search IDs File OR Upload your own below: Uploading my own as an optional file Optional File Inputs: sra_ids.txt											
Outputs	Downloading-Details: report.txt Search-SRA-Standard-Error: search-SRA.stderr Search-SRA-Standard-Out: search-SRA.stdout											
Storage Directory	Open											
Errors												

Sharing Details

Order By

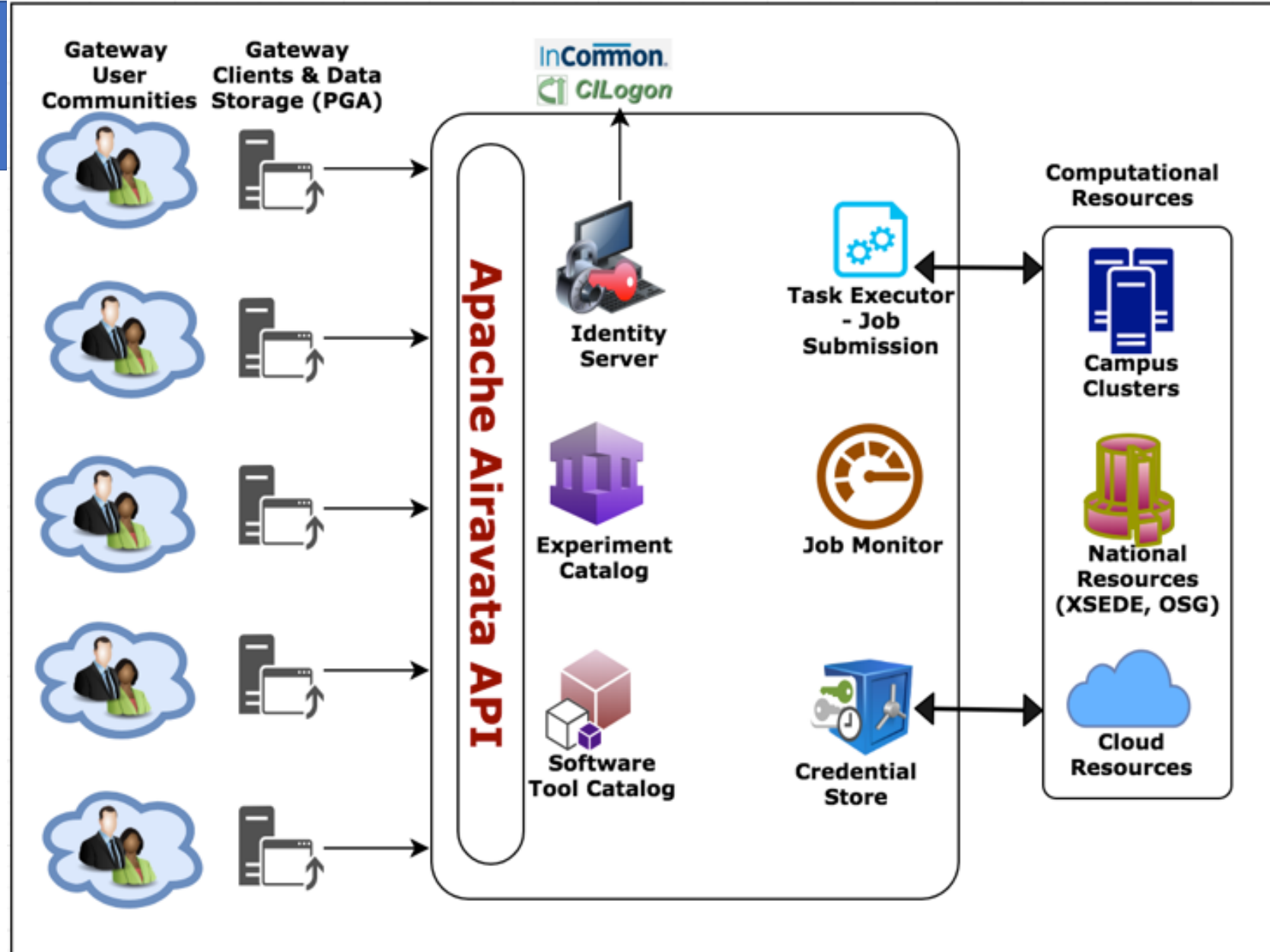
This has not been shared

[Clone](#)

[Update Sharing](#)

Our Approach

- Provide a “platform as a service” for gateways.
- Treat each gateway as a tenant
- Allow tenants to manage their own resources, users, applications
- Make it open source
 - Including “infrastructure as code” for production deployments



Tutorial Focus: Using and Extending the Django Portal for Airavata



Configure the turnkey gateway



Customize the look and feel



Make extensions



Program directly using the API

Example Collaborating Gateways

SciGaP Gateway	Field	Funding Agency
TopPIC	Mass Spectrometry-Based Proteoform Identification and Characterization	NIH
SimCCS	Carbon Capture and Sequestration Modeling	DOE
GeoGateway	InSAR and GPS data access, earthquake modeling	NASA
SimVascular	CFD modeling of human vascular system	NSF
InterACTWEL	Food-energy-water system modeling	USDA, NSF
DELTA: Descriptors of Energy Landscapes using Topological Analysis	Computational chemistry	NSF

See <https://circ.iu.edu/collaborations.html> for a full list.

When to Use Apache Airavata



Use Apache Airavata to provide
Scientific Software as a Service,
Data Analysis as a Service



Use Apache Airavata to federate
multiple, distributed computing
and storage resources



Use Apache Airavata if you want
managed middleware with
SciGaP.org services



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More Information

- My email: marpierc@iu.edu
- Apache Airavata: <https://airavata.apache.org/>
- CIRC: <https://circ.iu.edu>