Deploying a Production Gateway with Airavata

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Pre-requisites

1. Size small (recommended) CentOS 7 VM. Even a ‘tiny’ VM is sufficient. (VM creation steps: Addendum 1)
2. An email account (recommended not to use personal email) for the gateway portal to use for portal user notifications.

Create a Gateway Request

1. Create a user account in https://scigap.org/.
2. Verify your email, using the verification link sent to your email.

3. Login and create a gateway request by providing required information.

3. When creating the gateway request:
   a. **Gateway Name**: Name of your gateway, recommended to have a short string value.
   b. **Gateway Contact Email**: Your contact email, in case the Airavata team needs to contact you.
   c. **Public Project Description**: Describe your intentions. Are you planning to manage a production quality gateway in the future, nature of your research, etc.

4. When Airavata admins approve the request, you will be notified via email and can login to provide the rest of your information.
   a. **Gateway URL**: You will need one from a domain provider and point it to your VM instance IP address.
   b. **Project Details**: IMPORTANT - Provide your VM IP address and SSH user where you would be deploying the gateway. The Airavata team requires this in order to register your VM.

5. You would receive email notification when changes take place for your request. When the gateway request status changes to CREATED, you can deploy the gateway.

6. Login to [https://scigap.org/](https://scigap.org/) and use the information provided in ‘Gateway Credential’ to deploy the gateway with Airavata production server.

## Gateway Deploy Steps

Note: The steps below are done in your local machine (laptop/desktop).

### Install Ansible & Python

1. Install Ansible
   a. Note: the following assumes a Bash shell

2. Download and install the latest version of Python 3.6
   a. See [https://www.python.org/downloads/](https://www.python.org/downloads/) or use your system’s package manager

3. Create a virtual environment in this directory
   a. `cd airavata/dev-tools/ansible`
   b. `python3.6 -m venv ENV`

4. Source the environment (you’ll need to do this each time before using Ansible commands)
   a. `source ENV/bin/activate`

5. Install Ansible and any other dependencies
   a. `pip install -r requirements.txt`
Deploy the Gateway

1. Clone Airavata from git
   a. `git clone https://github.com/apache/airavata.git`
2. Navigate to
   a. `cd airavata/dev-tools/ansible/inventories/scigap`
3. Copy directory ‘SGCI-SSC’ and create a new directory and give a preferred name.
   E.g.: ‘airavata-test’
4. In your airavata-test directory open hosts.
   a. Under [pga] change the existing IP and login user with your Rodeo instance IP and SSH login user.
5. Login to `https://scigap.org/` using your created account. In your listed gateway request make sure
   a. Gateway request status: CREATED.
   b. Click open View Credentials.
   c. This will open Gateway credentials window.
6. In your airavata-test directory go to group_vars/pga directory open vars.yml and provide:
   a. `vhost_servername`: (This is the ‘Gateway URL’ in ‘Gateway Credentials’ window.)
   b. `admin_username`: (When your gateway request is in CREATED this is the ‘Admin Username’ in ‘Gateway Credentials’)
   c. `admin_password`: (This is ‘admin_password’ under ‘SciGaP Admin Comments’)

![Gateway Credentials](image)
e. **Image II – SciGaP Admin Comments**

f. `oauth_client_key`: (This is the ‘Oauth Client Key’ in ‘Gateway Credentials’)
g. `oauth_client_secret`: (This is the ‘Oauth Client Secret’ in ‘Gateway Credentials’)
h. **Auth_options:**
   i. `- name:` (Provide a preferred name for the gateway)
   ii. `gateway_id`: (This is the ‘Gateway Name’ in ‘Gateway Credentials’)
   iii. `gateway_data_store_resource_id`: (This is `gateway_data_store_resource_id` under ‘SciGaP Admin Comments’)
   iv. `gateway_data_store_ssh_public_key`: (Comment this line)
   v. `admin_emails`: (Provide your gateway admin’s email to receive notifications when users accounts are created. You can add many with comma separation.)
   vi. `portal_email_username`: (This is for gateway to send emails to gateway users. When this account is created to make sure to turn off less secure app access)
   vii. `portal_email_password`: (Password of the above portal email)
   viii. `portal_title`: (Preferred title for the gateway portal)

7. **Run the Ansible**
   a. `ansible-playbook --vault-password-file=vault-password.txt -i inventories/scigap/CHANGEME pga.yml`
   b. `CHANGEME` is the directory you created copying SGCI_SSC directory.

8. Once the installation is done login to the gateway using the admin username and the password.
   IMPORTANT: Change the password in your first login.
Gateway Configuration

1. Create a new gateway account and confirm the user receiving email notifications for account verification.
2. Provide the newly created user account with gateway admin role.
3. Login as the new user, navigate the Admin Dashboard → Credential Store
   a. Click ‘Generate a new token’.
   b. This will create a token + public key pair to use in gateway SSH communications with compute resources as well as storage resources.
   c. Copy the ‘Public Key’ and add it to your compute resource (XSEDE cluster, campus cluster, etc.) login account and your VM login account (Centos VM under login user pga).
4. Navigate to Admin dashboard → Gateway Management
   a. Select the token just generated as the ‘base Credential Store Token’
   b. Click ‘Set’
   c. Click ‘Add a Compute Resource Preference’
   d. Select your XSEDE resource/cluster and enter details
      i. **Login username:** (This is the login username used for SSH login to the cluster)
      ii. **Preferred Batch Queue:** (Select the queue for job submission)
      iii. **Scratch Location:** (Parent directory for gateway job working directory creation)
      iv. **Allocation Project Number:** (This is applicable for XSEDE clusters)
      v. Click ‘Set preferences’
      vi. Click ‘Add a Storage Resource Preference’
      vii. Select your VM IP address and enter details
         1. **Login username:** (This is the login username used for SSH login to the cluster)
         2. **File System Root Location:** /var/www/portals/gateway-user-data/CHANGEME (CHANGEME is the gateway name you have in ‘Gateway Credentials’)
         3. Click ‘Set preferences’
5. For more details on configuring a gateway:
Addendum I

Instructions for creating a VM in the Rodeo cluster at TACC

Requesting SGCI Hosting Services

Our hosting service provides a limited amount of space on the Rodeo system at the Texas Advanced Computing Center (TACC). It is available free of charge to US-based gateway projects for up to 6 months of time.

Rodeo is a powerful cloud resource that allows for the full customization of computational environments and lets users create virtual machines, host data, and provide services of benefit to the science gateway community.

Each project approved for hosting time via SGCI will be given a quota of 3 VMs with each VM consisting of 2 VCPUs, 20 GB of Disk, and 4 GB of RAM in addition to a single public, floating IP with your own private project network. Additional configurations are available upon request.

A basic security group allowing traffic on the standard web ports (80 and 443) will be provided with additional configurations available upon request. Additional storage is available (either in the form of volumes or larger instances) upon request.

The Rodeo environment is meant as a test/sandbox environment and does not have any backup capabilities. Please ensure you have backed up any code and services you deploy on the system. Also, the system may be unavailable at times due to maintenance periods. Interested? Apply using the form on the SGCI Web Site.

Setting Up Account & VMs on Rodeo

1. In order to access Rodeo, you will need to create an account at: https://sgci.agaveapi.co/create_account

   IMPORTANT: Please remember your account credentials from this step and please keep your credentials secure. No administrator will ever ask you for your credentials.

2. Navigate to https://rodeo.tacc.utexas.edu enter your username and password that you used in Creating a SGCI Account. Enter "SGCI" for the Domain field.
3. Upon successful login, you will be presented with your project's dashboard.

4. This view provides a high-level overview of your allocation on Rodeo.

5. In order to create the instance, you will need to navigate to the Instance under the Compute menu.
6. From the Instances page, click the Launch Instance button.
7. You will be presented with the Launch Instance wizard which will require filling out few form fields. Give a name to the instance the name, e.g.: airavata-test-gateway
8. When launching an instance select “m1.small” from Flavor, “Boot from image” from Instance Boot Source, and “Centos 7” from Image Name.
9. After populating the Details tab, click the Access & Security tab.
10. If you already have an SSH key pair, you can import them by clicking the plus (+) button next to the drop-down menu for Key Pair.
11. You can also receive instructions on how to generate a key pair if you do not have one already.

12. The wizard will walk you through how to generate a key pair if you need one. This allows you to access your instance. Password login to the admin account is disabled for security purposes.

13. Once you have configured your Key Pair, you will add your instance to the “default” security group by checking the box under Security Groups.
14. Once the Access & Security information has been collected move to the next tab labeled Networking to confirm the networking settings.
15. There should be only one Available Network. Your instance should be associated with the SGCI: Sample Hosting Project Network.
16. Once the network has been associated you can click the blue “Launch” button. Your instance will be created and available shortly for access.
17. Click on **Instances** and then in the **Actions** column select **Associate Floating IP** for your instance and select 129.114.6.253 (which was the only option).
18. Click on **Access & Security** and for the default Security Group select **Manage Rules**.

![Access & Security](image)

a. Click the **Add Rule** button and select the **HTTP** rule from the **Rules** dropdown and then click **Add**.
b. Note: in general, we run the portal under HTTPS but it can be helpful to have HTTP access when initially installing the portal and before the SSL certificate is set up.

19. SSH into rodeo@129.114.6.253 and confirm access.