

Introduction

This is the user doc for the cloud environment that the Neuroscience Gateway (NSG) provides for neuroscience tool developers. The SDSC cloud based developer environment allows neuroscience tool developers to create a suitable instance on the SDSC cloud and use an image that includes basic software stack and tools that neuroscience tool developers may use for their tool development work. It provides:

- Python 2.7
- Python 3
- TightVNC
- Google Chrome (for use with VNC)
- Jupyter
- Open MPI 3.1.4
- Neuron 7.7
- Singularity 3.1.0

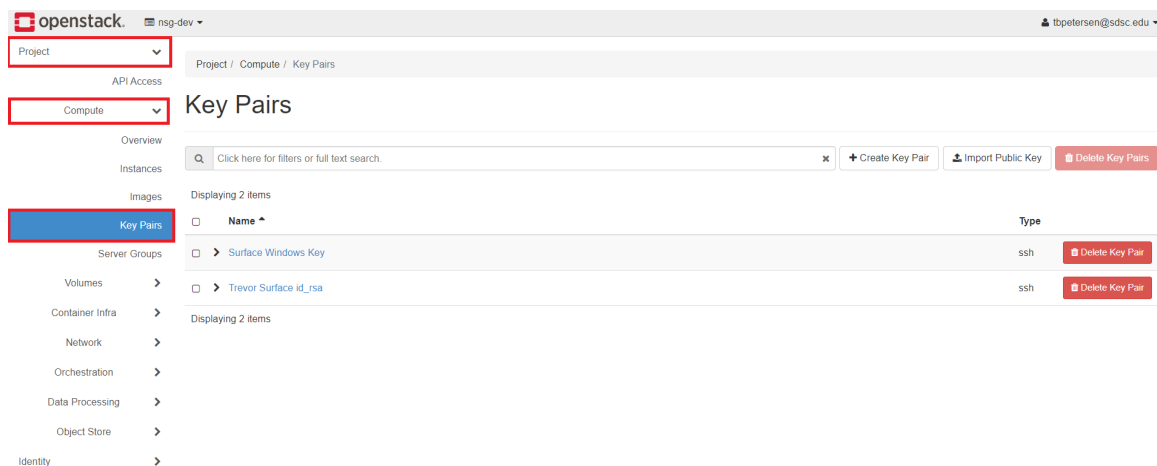
It allows developers to put software in a Singularity container, connect to a VNC server, run Jupyter Notebook etc. Based on needs of the neuroscientist tool developers, other software and features will be provided in the tool development environment.

Getting Started

Development is done on the SDSC Cloud. To access the cloud dashboard, follow [this link](#). You will log in with the username and password given to you by NSG.

Adding an SSH Key

Before launching any instances, you should upload an SSH key so that you can authenticate with them. Navigate to the **Key Pairs** page by going to **Project** -> **Compute** -> **Key Pairs** in the navigation menu on the left.



You can either create a key pair using the dashboard or upload an existing public key.

Create a Key Pair

Click **Create Key Pair** on the right side of the screen. Give it any name that you would like and select **SSH Key** as the key type. Finally, click **Create Key Pair**. Your browser will automatically download the private key for you.

Upload a Public Key

Click **Import Public Key** on the right side of the screen. Give it any name that you would like and select **SSH Key** as the key type. Then either select the public key file or paste its contents into the text box. Finally, click **Import Public Key**.

Adding an SSH Security Group

Before you are able to use your SSH key to authenticate with an instance, you will need to set up a security group that will allow SSH connections.

Navigate to the **Security Groups** page. You can do this by going to **Project -> Network -> Security Groups** in the navigation menu on the left.

Project / Network / Security Groups

Security Groups

Displaying 2 items

| Name | Security Group ID | Description | Actions |
|---------|--------------------------------------|------------------------|--------------|
| SSH | e285019b-19f0-4420-8dea-92ba8584fddd | | Manage Rules |
| default | 0ab162ae-f91c-4566-8fd3-75e67a7b1ddf | Default security group | Manage Rules |

Displaying 2 items

Click **Create Security Group** on the right side of the screen. In the popup window, name the security group "SSH" and then click **Create Security Group**. Next, click **Add Rule** on the right side of the screen. In the **Rule** dropdown, select **SSH**. Click **Add** to add the rule.

Launching a Development Instance

Development instances on the SDSC Cloud come prepackaged with software for development.

Navigate to the **Instances** page. You can do this by going to **Project -> Compute -> Instances** in the navigation menu on the left.

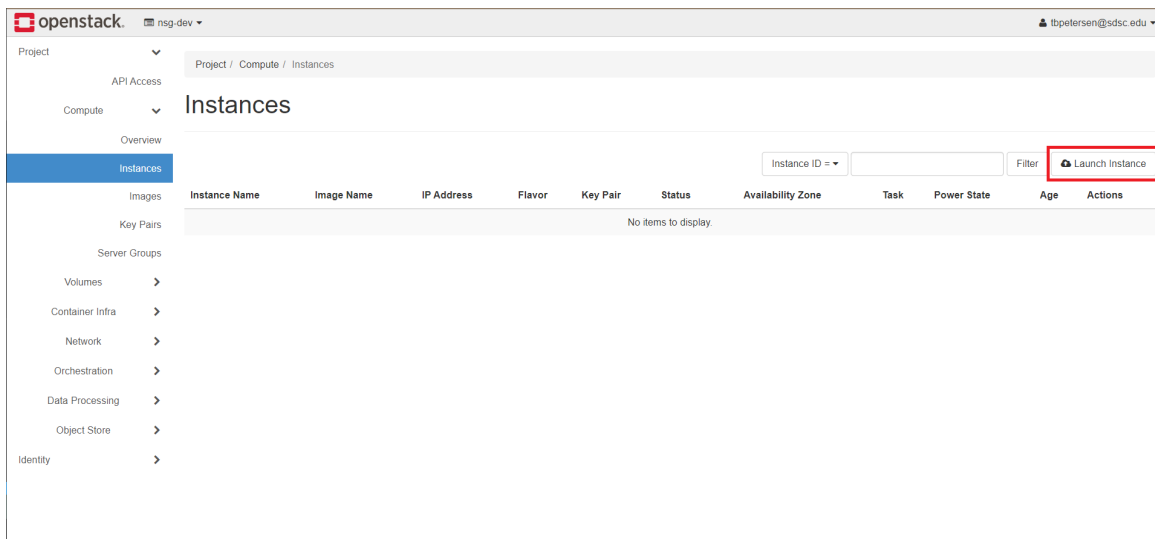
Project / Compute / Instances

Instances

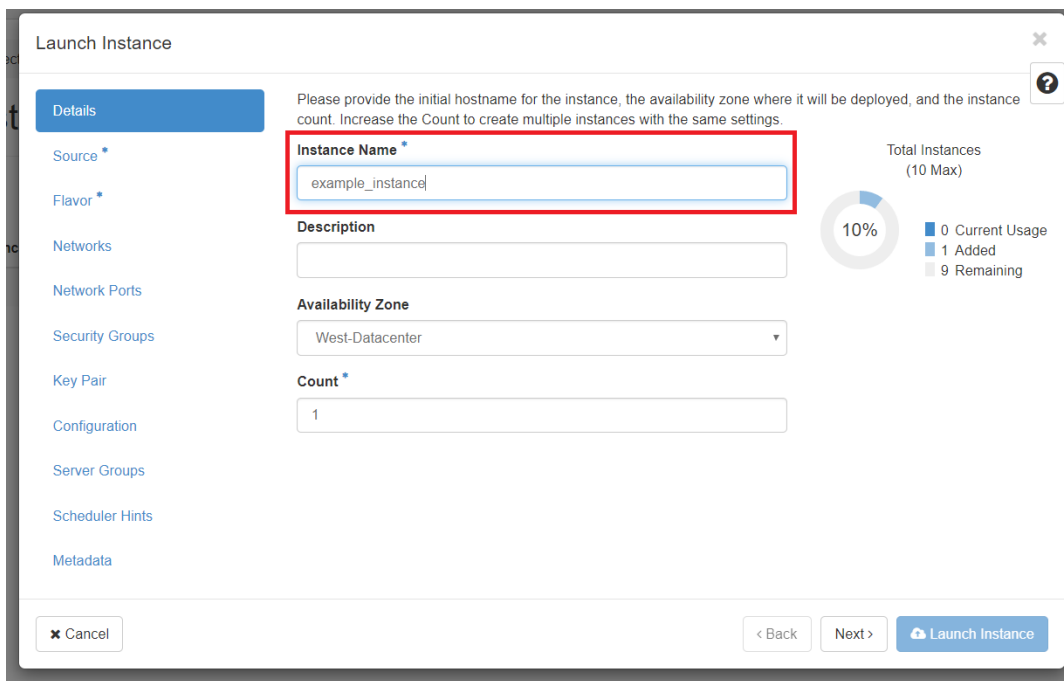
Instance ID = [] Filter Launch Instance

| Instance Name | Image Name | IP Address | Flavor | Key Pair | Status | Availability Zone | Task | Power State | Age | Actions |
|---------------------|------------|------------|--------|----------|--------|-------------------|------|-------------|-----|---------|
| No items to display | | | | | | | | | | |

Click **Launch Instance** on the right side of the screen.



In the popup window, give your new instance any name you would like.



Click on **Source** on the left. In the dropdown for **Select Boot Source**, select **Image**. Under the **Available** section, select **dev_env_0.0.1** by clicking on the up arrow at the end of the row.

Launch Instance

Instance source is the template used to create an instance. You can use an image, a snapshot of an instance (image snapshot), a volume or a volume snapshot (if enabled). You can also choose to use persistent storage by creating a new volume.

Source *

Select Boot Source: Image

Create New Volume: Yes No

Volume Size (GB) *: 1

Delete Volume on Instance Delete: Yes No

Device Name: vda

Allocated

| Name | Updated | Size | Type | Visibility |
|---|---------|------|------|------------|
| Select an item from Available items below | | | | |

▼ Available 10

Click here for filters or full text search.

| Name | Updated | Size | Type | Visibility |
|---------------------|------------------|----------|------|------------|
| > CentOS 7.8 x86_64 | 4/28/20 9:49 AM | 8.00 GB | raw | Public |
| > CentOS 8.1 x86_64 | 3/13/20 10:16 AM | 10.00 GB | raw | Public |
| > dev_env_0.0.1 | 3/31/20 9:37 AM | 20.00 GB | raw | Shared |

Click on **Flavor** on the left. Select the flavor with the CPU and RAM configuration that meets your needs by clicking on the up arrow at the end of the row. For this example, I will use **m1.medium**.

Launch Instance

Flavors manage the sizing for the compute, memory and storage capacity of the instance.

Allocated

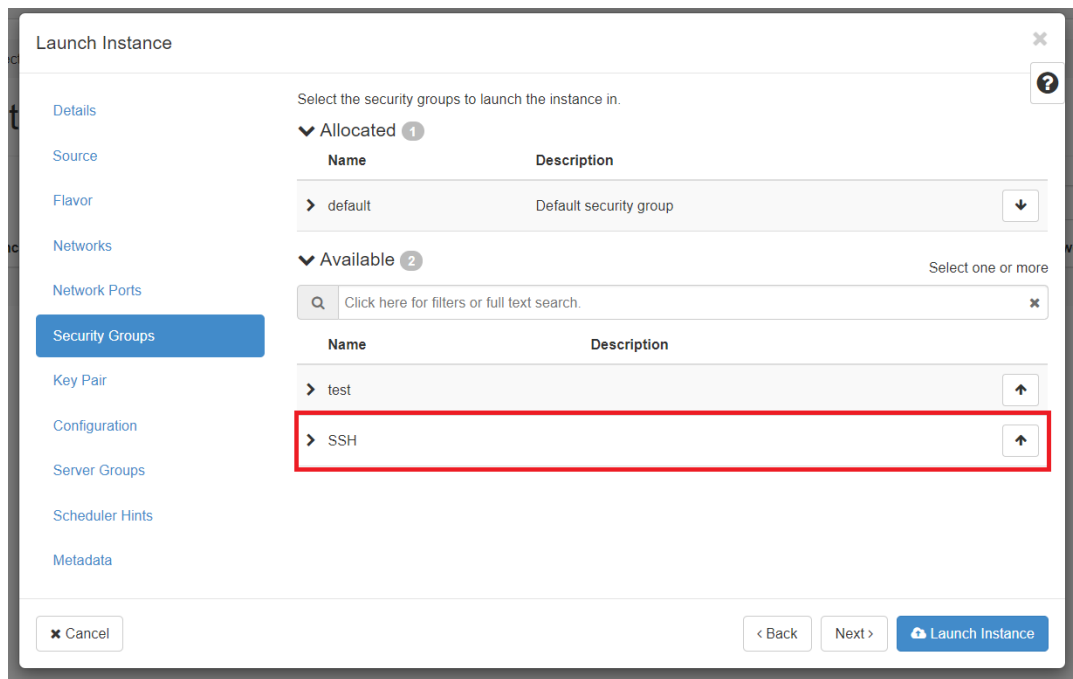
| Name | VCPUS | RAM | Total Disk | Root Disk | Ephemeral Disk | Public |
|---|-------|-----|------------|-----------|----------------|--------|
| Select an item from Available items below | | | | | | |

▼ Available 16

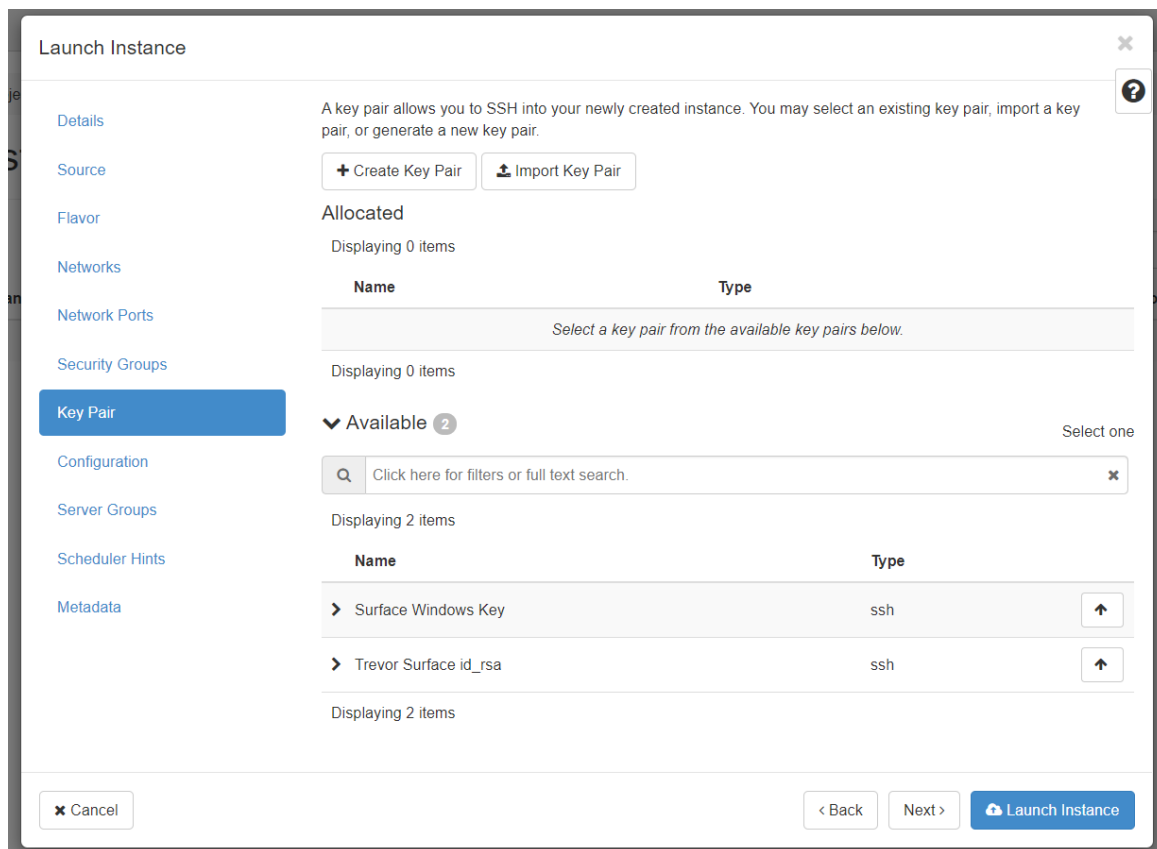
Click here for filters or full text search.

| Name | VCPUS | RAM | Total Disk | Root Disk | Ephemeral Disk | Public |
|--------------|-------|-------|------------|-----------|----------------|--------|
| > c1.large | 2 | 4 GB | 20 GB | 20 GB | 0 GB | Yes |
| > m1.medium | 1 | 4 GB | 20 GB | 20 GB | 0 GB | Yes |
| > c1.xlarge | 4 | 8 GB | 20 GB | 20 GB | 0 GB | Yes |
| > m1.large | 2 | 8 GB | 20 GB | 20 GB | 0 GB | Yes |
| > m1.xlarge | 4 | 16 GB | 20 GB | 20 GB | 0 GB | Yes |
| > r1.large | 2 | 16 GB | 20 GB | 20 GB | 0 GB | Yes |
| > c1.2xlarge | 8 | 16 GB | 20 GB | 20 GB | 0 GB | Yes |
| > m1.2xlarge | 8 | 32 GB | 20 GB | 20 GB | 0 GB | Yes |
| > 1xe.medium | 1 | 32 GB | 20 GB | 20 GB | 0 GB | Yes |

Click on **Security Groups** on the left. Select the **SSH** security group that you created earlier by clicking on the up arrow at the end of the row.



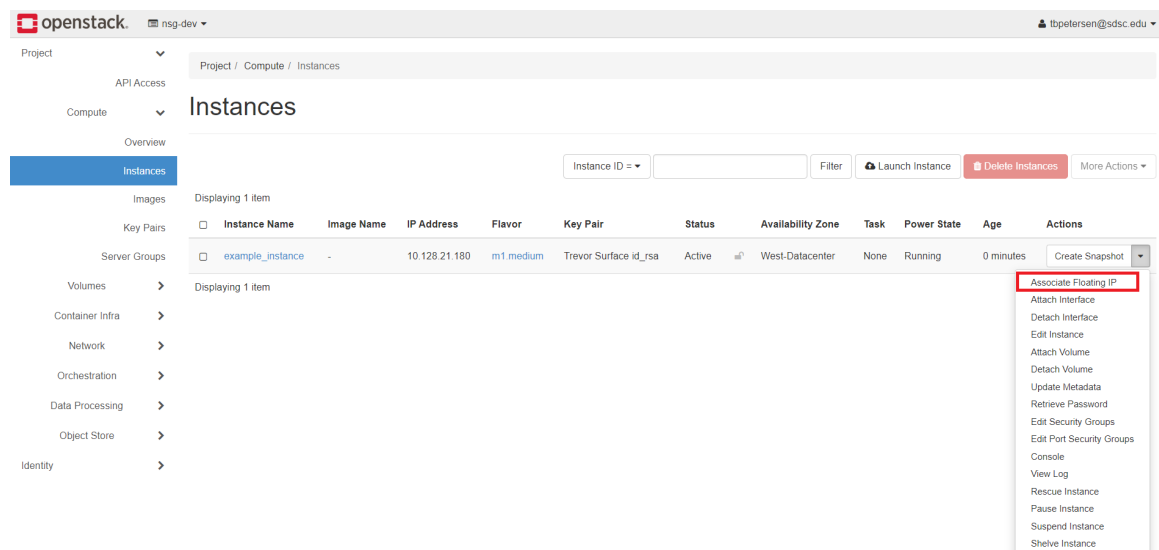
Click on **Key Pair** on the left. Select the SSH Key that you created earlier by clicking on the up arrow at the end of the row.



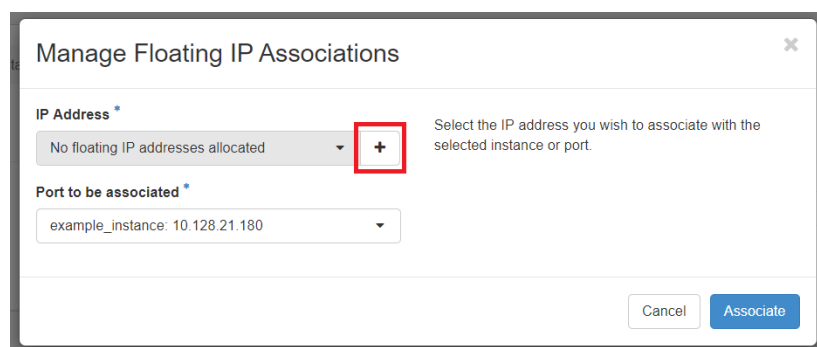
Click **Launch Instance** on the bottom right of the popup to finish.

Getting a public IP Address

Your newly created instance will not be able to be reached until you give it a public IP address by **Associating a Floating IP** with it. From the instances page, find the instance that you would like to add an IP to. Click the dropdown arrow at the end of the row and click **Associate Floating IP**.



In the **IP Address** field, click the + at the end.



In the popup window, click **Allocate IP**. Then click **Associate** in the bottom right of the popup window.

Your instance should now be accessible at the associated IP address. Note that this is the IP address that starts with **132.*** not **10.***.

Connecting to an Instance

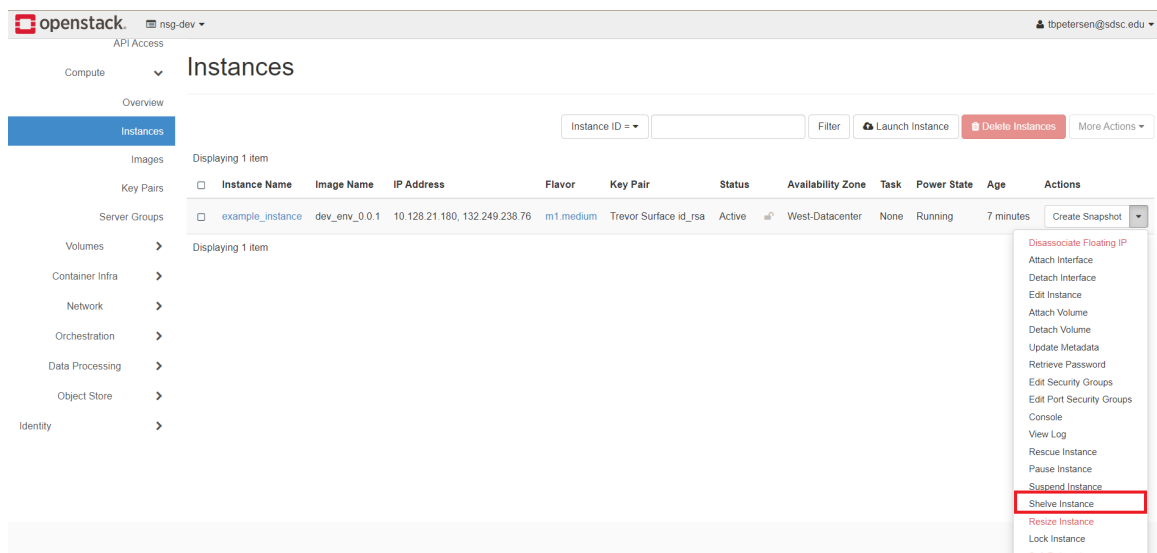
You should be able to connect to your instances using the SSH key that you selected when created the instance.

For help connecting from Mac or Linux, look [here](#). For help connecting from Windows, look [here](#).

Shelving an Instance

Instances should only be kept running when they are being used. When instances are not in use, they should be *shelved*. Shelved instances are essentially paused until they are needed again. Data stays on shelved instances and is not lost.

From the instances page, find the instance that you would like to shelve. Click the dropdown arrow at the end of the row and click **Shelve Instance**.

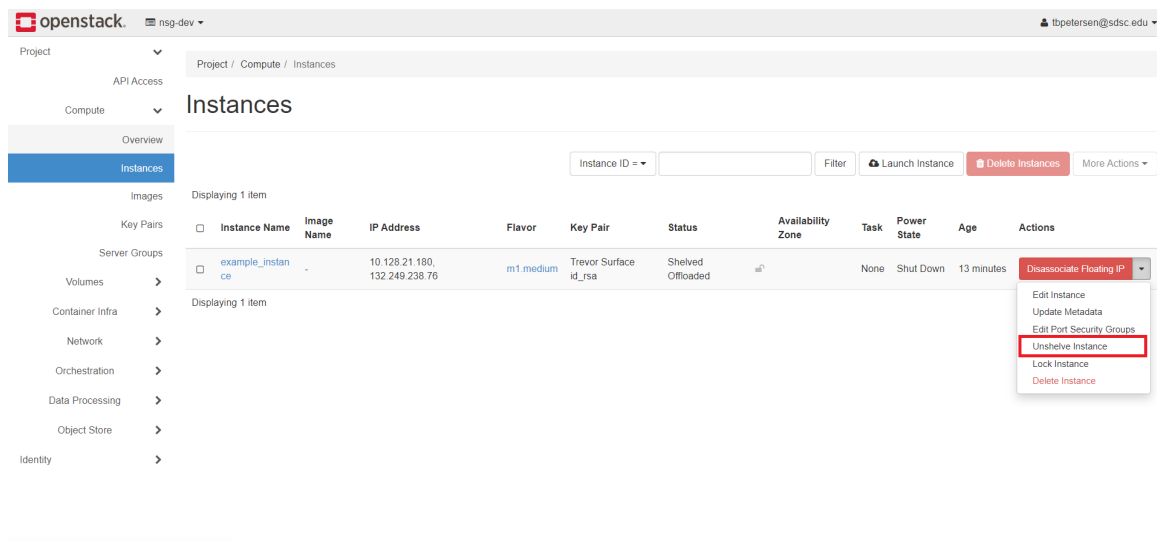


The screenshot shows the OpenStack dashboard with the 'Instances' page selected. The instance 'example_instance' is listed with a status of 'Active' and 'Running'. The 'Actions' dropdown menu is open, showing various options. The 'Shelve Instance' option is highlighted with a red box.

| Instance Name | Image Name | IP Address | Flavor | Key Pair | Status | Availability Zone | Task | Power State | Age | Actions |
|------------------|---------------|-------------------------------|-----------|-----------------------|--------|-------------------|------|-------------|-----------|--|
| example_instance | dev_env_0.0.1 | 10.128.21.180, 132.249.238.76 | m1.medium | Trevor Surface id_rsa | Active | West-Datacenter | None | Running | 7 minutes | Create Snapshot Shelve Instance Unshelve Instance Resize Instance Lock Instance Soft Reboot Instance |

Unshelving an Instance

From the instances page, find the instance that you would like to unshelve. Click the dropdown arrow at the end of the row and click **Unshelve Instance**.



The screenshot shows the OpenStack dashboard with the 'Instances' page selected. The instance 'example_instance' is listed with a status of 'Shelved Offloaded'. The 'Actions' dropdown menu is open, showing various options. The 'Unshelve Instance' option is highlighted with a red box.

| Instance Name | Image Name | IP Address | Flavor | Key Pair | Status | Availability Zone | Task | Power State | Age | Actions |
|------------------|------------|-------------------------------|-----------|-----------------------|-------------------|-------------------|------|-------------|------------|--|
| example_instance | - | 10.128.21.180, 132.249.238.76 | m1.medium | Trevor Surface id_rsa | Shelved Offloaded | West-Datacenter | None | Shut Down | 13 minutes | Disassociate Floating IP Edit Instance Update Metadata Edit Port Security Groups Unshelve Instance Lock Instance Delete Instance |

More Information and Guides

For more information and guides on how to use the SDSC cloud, see the [SDSC Cloud Wiki](#).