ERICSSON

Atlas Multi-Region Configuration User Guide

Cloud Execution Environment

USER GUIDE

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Contents

1 Introduction

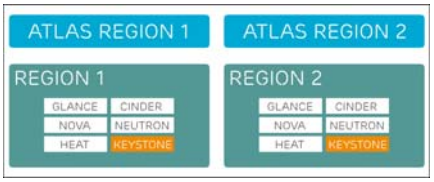
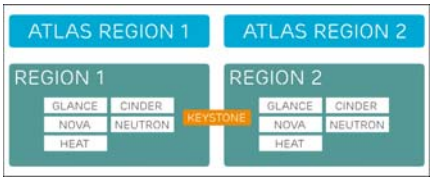
This document describes the procedures for enabling multiple Cloud Execution Environment (CEE) regions in Atlas.

CEE can be operated in a multi-region configuration. Atlas is a deployment tool, that provides a common dashboard for a group of sites or regions.

There are two main deployment configurations for multiple regions, based on the use of the OpenStack Keystone authentication service:

- Local authentication
- Centralized authentication

Table 1 Deployment Configuration Options for Multiple Regions

Deployment Configuration	**Description**
Local Authentication	 Each CEE region has a dedicated, local Keystone service. The Atlas VM is running locally.
Centralized Authentication	 The CEE regions have a common, centralized Keystone service. The Atlas VM is running separately in each region.

Both configurations have a different representation in the Atlas GUI.

1.1 Target Groups

This document is aimed at skilled professionals from the following groups:

- Cloud administrators

- Users who want to configure a CEE environment

1.2 Prerequisites

Before starting this procedure, ensure that the following conditions are met:

- CEE and Atlas are deployed and running in multiple regions
- Atlas administrator credentials are available
- The public IP address of Keystone in `RegionOne`

  Public IP address of Keystone in `RegionOne` is accessible from `RegionTwo` nodes (vCIC, Compute and Cinder). Compute and Cinder nodes of `RegionTwo` cannot be reached directly, as they do not have a public IP address, assigned for access. These nodes can only be accessed indirectly, from `RegionOne`.

1.3 Risks

Multi-region configuration is associated with the following risks:

- Connections can break down between `RegionOne` and `RegionTwo`.
- Services may need to be highlighted when configuration is done during traffic.

1.4 Limitations

Multi-region configuration has the following limitations:

Local authentication only impacts the regions having contact with Atlas. If central authentication changes the region configuration to use Keystone in region 1, this will impact HA. Redundant links may be needed.

2 Configure with Local Authentication

In this configuration each CEE region has a dedicated Keystone service running locally, and there is also an Atlas VM (Virtual Machine) running in each region.

To enable available regions in Atlas, proceed with the following steps:

Note: If `ssl` is enabled, use `https` instead of `http`.

1. Log on as an Atlas administrator, for example, `atlasadm@atlas:`

2. Open `local_settings.py` by using the command:

   ```
   atlasadm@atlas:~$ sudo nano /usr/lib/python2.7/⇒
   dist-packages/openstack_dashboard/local/local_settings.py
   ```

3. Find the following lines:

   ```
   AVAILABLE_REGIONS = [
        ('http://region1.example.com:5000/v2.0', Region1),
        ('http://region2.example.com:5000/v2.0', Region2),
    ]
   ```

4. Modify `Region1` and `Region2` with the specific region names.

5. Modify `region1.example.com` and `region2.example.com` with the region specific Keystone host IP addresses.

Note: `AVAILABLE_REGIONS` contains a list of tuples, which define multiple regions. The tuple format is:

```
('http://{{ keystone_host}}:5000/v2.0', '{{ region_name
}}').
```

Your Keystone version can vary. For Keystone API v3, use the following format:

```
('http://{{ keystone_host}}:5000/v3, '{{ region_name
}}').
```

If the regions are specified, the appropriate region can be selected in the Atlas logon form.

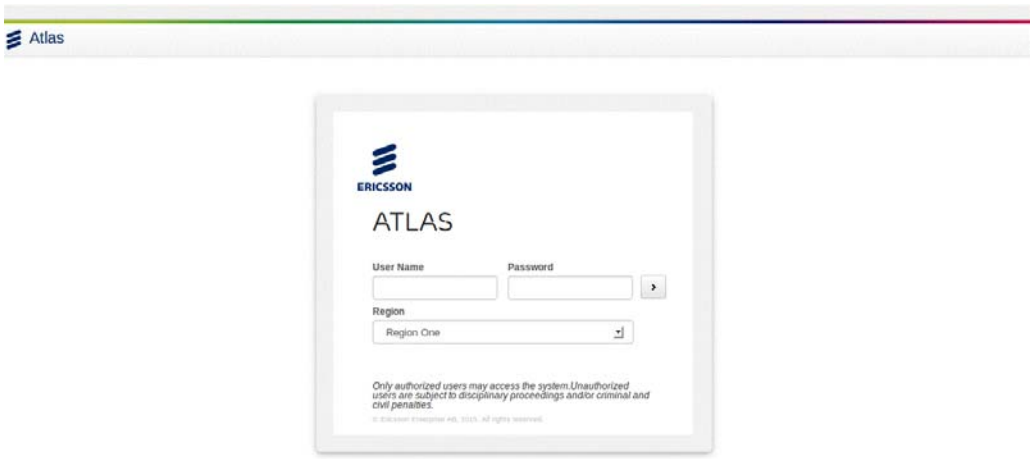


Figure 1 Logon Page with Region Selection

Once logged on to the system, switch between regions using the region switcher dropdown in the site header:

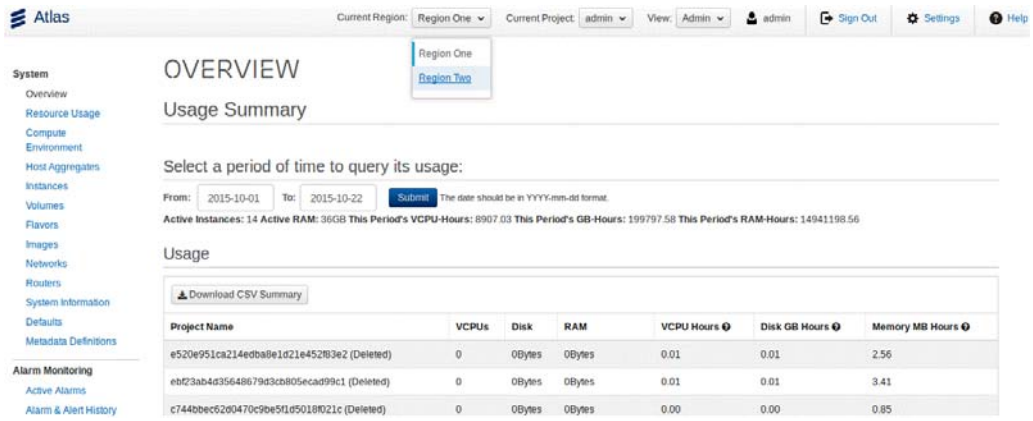


Figure 2 Region Switcher Dropdown in the Overview Page

Note: Changing region will take the user to the logon page.

3 Configure with Centralized Authentication

For centralized authentication, the CEE instances (regions) have a common, centralized Keystone service. The Atlas VMs runs separately, one in each region.

This configuration example assumes that the centralized Keystone service is hosted in `RegionOne`. This Keystone has information about available service endpoints in `RegionOne`.

Note: If `ssl` is enabled, use `https` instead of `http`.

1. Check the service endpoint information:

   ```
   root@cic-1:~# openstack endpoint list
   ```

An example of the output is the following:

```
+----------------------------------+-----------+--------------+----------------+
| ID                               | Region    | Service Name | Service Type   |
+----------------------------------+-----------+--------------+----------------+
| 8213ca63bb53485bb4cd8dab85fa1690 | RegionOne | swift        | object-store   |
| 7cb3df2268d941b19f4915b4482e5e5f | RegionOne | swift_s3     | s3             |
| 6c6632e2bb4f4a03a812f98eeabb3043 | RegionOne | ceilometer   | metering       |
| 9ae30aa4e69948d2b395dbbc3d30d0ab | RegionOne | novav3       | computev3      |
| 1a1d5268acad4fd7b7d34b3f2b5affcd | RegionOne | cinder       | volume         |
| 1b3b41bac63645a2b29539ea02071adf | RegionOne | glance       | image          |
| 9c9f9cfe08ed4ba485070a4a0f3a5b19 | RegionOne | watchmen     | fm             |
| b1037aa470d742b0b0cc1b273df63597 | RegionOne | cinderv2     | volumev2       |
| 68992f32dab341eb87c97342a64040ff | RegionOne | nova_ec2     | ec2            |
| 99c9c2dc703b44dd996658be31580e33 | RegionOne | neutron      | network        |
| b40fed3b363c4302a3027def69810784 | RegionOne | heat         | orchestration  |
| 1c13ddf09a8c43a7bf0dd9960975fb63 | RegionOne | nova         | compute        |
| 5d84215d6ba74d97b3506c335ad740fe | RegionOne | mistral      | workflowv2     |
| e6e3915e18454429bdfb3449688bd75e | RegionOne | heat-cfn     | cloudformation |
| 430ed2cea5024ff883e2e11c3f7b7787 | RegionOne | keystone     | identity       |
| e4471e2fab8340e58c7bf33e4baf4281 | RegionOne | ovft         | translator     |
| ecc6471ef2284f62ac70979f52d00874 | RegionOne | pmapi        | pm             |
+----------------------------------+-----------+--------------+----------------+
```

Example 1 Service Endpoint Information

2. Make Keystone in `RegionOne` aware of the endpoints located in `RegionTwo` by registering the endpoints, see Section 3.1 on page 5.

3. Change the `keystone_authtoken` information for all services in `RegionTwo`, see Section 3.2 on page 7.

3.1 Register Endpoints

To make Keystone in `RegionOne` aware of the endpoints located in `RegionTwo`, the endpoints must be registered in `RegionOne`. The endpoints are registered by specifying a public URL, an internal URL, an admin URL, a region name, and a service type. This is done for all services.

The `openstack endpoint list` command in `RegionTwo` can be used to check the URL information.

The following example shows the URLs associated with an endpoint in `RegionTwo`:

```
root@cic-1:~# openstack endpoint show $(openstack endpoint list | awk '/ compute / {print $2'})
+--------------+-----------------------------------------------+
| Field        | Value                                         |
+--------------+-----------------------------------------------+
| adminurl     | http://192.168.2.21:8774/v2/%(tenant_id)s     |
| enabled      | True                                          |
| id           | 1c13ddf09a8c43a7bf0dd9960975fb63              |
| internalurl  | http://192.168.2.21:8774/v2/%(tenant_id)s     |
| publicurl    | https://public.fuel.local:8774/v2/%(tenant_id)s |
| region       | RegionOne                                     |
| service_id   | 932a7ee62cd945dbb5008a968e007524              |
| service_name | nova                                          |
| service_type | compute                                       |
+--------------+-----------------------------------------------+
```

Example 2 Checking URLs Associated with Endpoints in RegionTwo

The output shows the information required to proceed with registering a new endpoint: `internalurl`, `adminurl`, and `publicurl`.

The following example shows how to register a new Nova endpoint from `RegionTwo` in Keystone, in `RegionOne`:

```
openstack endpoint create ⇒
--publicurl 'http://10.33.190.100:8774/v2/%(tenant_id)s' ⇒
--internalurl 'http://192.168.2.20:8774/v2/%(tenant_id)s' ⇒
--adminurl 'http://10.33.190.100:8774/v2/%(tenant_id)s' ⇒
--region 'RegionTwo'
compute
```

Example 3 Register a New Endpoint in RegionOne

Repeat for each Compute host.

Repeat the endpoint registration in `RegionOne`, for all the registered services, except for the identity service, by replacing **`compute`**, with a corresponding service type:

```
root@cic-1:~# openstack service list

+----------------------------------+------------+----------------+
| ID                               | Name       | Type           |
+----------------------------------+------------+----------------+
| 035b75af797643208bd5bf1e4cb54a6e | novav3     | computev3      |
| 0eee0ed8c08b432b8f03dfe79e730097 | mistral    | workflowv2     |
| 2342cc8ca0f84528a884f7a109ee1afb | cinder     | volume         |
| 477b9f0648ea4537b1fd54d4168fe24e | swift_s3   | s3             |
| 6d8bfea5c1f84aa986a9fbad3365ad76 | heat-cfn   | cloudformation |
| 7c4820d08ae64e0381ad2d52946cbf77 | heat       | orchestration  |
| 8766816cca9e47628cd27f5aab3cc819 | ovft       | translator     |
| 8aa622cc8ad84185af81c18e284e40ae | ceilometer | metering       |
| 932a7ee62cd945dbb5008a968e007524 | nova       | compute        |
| 999a96816f02478e8b889e38aa624aef | nova_ec2   | ec2            |
| a42da7ba5d774b2ba0b17bf85394f727 | swift      | object-store   |
| c65b20036edd4291812d8edf5853172a | pmapi      | pm             |
| e19a9e6195994fe6b4a40d58ca64c9e1 | keystone   | identity       |
| e51ea728a9ce4419af6c71aff344bf84 | cinderv2   | volumev2       |
| e7e7ec0e976b40d19475fce90a815d82 | neutron    | network        |
| e962e686dc42496d86f3e72ea483ce93 | glance     | image          |
| f4734e3f29ea47f3b045e0de5b84dc0f | watchmen   | fm             |
+----------------------------------+------------+----------------+
```

Example 4 OpenStack Service List

At the end of this example, Keystone has received registered endpoints for both `RegionOne` and `RegionTwo`.

3.2 Change Keystone Information for All Services

Change the `keystone_authtoken` information for all services in `RegionTwo`. This requires editing the configuration files for each of the following registered services: Nova, Neutron, Cinder, Glance, Heat, OVFT, Ceilometer, Swift, and Watchmen. Locate entries with authentication information in the configuration files of `RegionOne`. Copy that information to the configuration files in `RegionTwo`.

Note: Instead of using the internal IP address, use the public IP address of Keystone from `RegionOne`; for example, use `10.33.168.100` instead of `192.168.2.20`.

The configuration file edits must be made first on the vCIC host, then on the Compute host.

3.2.1 Edit Configuration Files on vCIC Host

This section describes how to edit the configuration files on the vCIC host.

Nova

Copy the values of the following entries for `/etc/nova/nova.conf` from `RegionOne` to `RegionTwo`:

```
neutron_admin_password=VYNe6HWY
neutron_admin_auth_url=http://10.33.168.100:35357/v2.0
auth_uri=http://10.33.168.100:5000/
```

```
auth_host=10.33.168.100
admin_password=t83EqFOT
```

Note: Check the parameters against the latest version of `config.yaml`.

Neutron

Copy the values of the following entries for `/etc/neutron/neutron.conf` from `RegionOne` to `RegionTwo`:

```
nova_admin_password =t83EqFOT
nova_admin_auth_url =http://10.33.168.100:35357/v2.0
auth_host = 10.33.168.100
admin_password = VYNe6HWY
auth_url=http://10.33.168.100:35357/v2.0
```

Copy the values of the following entries for `/etc/neutron/api-paste.ini` from `RegionOne` to `RegionTwo`:

```
auth_url=http://10.33.168.100:35357/v2.0
auth_host=10.33.168.100
admin_password=VYNe6HWY
```

Copy the values of the following entries for `/etc/neutron/dhcp_agent.ini` from `RegionOne` to `RegionTwo`:

```
auth_url=http://10.33.168.100:35357/v2.0
admin_password=VYNe6HWY
```

Copy the values of the following entries for `/etc/neutron/metadata_agent.ini` from `RegionOne` to `RegionTwo`:

```
auth_url = http://10.33.168.100:35357/v2.0
admin_password = VYNe6HWY
```

Cinder

Copy the values of the following entries for `/etc/cinder/cinder.conf` from `RegionOne` to `RegionTwo`:

```
auth_host=10.33.168.100
admin_password=d7nzpGJW
```

Copy the values of the following entries for `/etc/cinder/api-paste.ini` from `RegionOne` to `RegionTwo`:

```
auth_uri=http://10.33.168.100:5000/
service_host=10.33.168.100
auth_host=10.33.168.100
admin_password=d7nzpGJW
```

Glance

Copy the values of the following entries for `/etc/glance/glance-api.conf` from `RegionOne` to `RegionTwo`:

```
swift_store_auth_address = http://10.33.168.100:5000/v2.0/
auth_host = 10.33.168.100
admin_password = DQxrXv0S
auth_uri=http://10.33.168.100:5000/
```

Copy the values of the following entries for `/etc/glance/glance-cache.conf` from `RegionOne` to `RegionTwo`:

```
auth_url = http://10.33.168.100:5000/v2.0
admin_password = DQxrXv0S
swift_store_auth_address = http://10.33.168.100:5000/v2.0/
```

Copy the values of the following entries for `/etc/glance/glance-registry.conf` from `RegionOne` to `RegionTwo`:

```
auth_host = 10.33.168.100
admin_password = DQxrXv0S
auth_uri=http://10.33.168.100:5000/
```

Swift

Copy the values of the following entries for `/etc/swift/proxy-server.conf` from `RegionOne` to `RegionTwo`:

```
auth_host = 10.33.168.100
auth_uri = http://10.33.168.100:35357
admin_password = dBvMkLy5
```

Watchmen

Copy the values of the following entries for `/etc/watchmen-api.conf` from `RegionOne` to `RegionTwo`:

```
auth_url=http://10.33.168.100:35357/v2.0/
```

Copy the values of the following entries for `/etc/watchmen-cli.conf` from `RegionOne` to `RegionTwo`:

```
auth_url=http://10.33.168.100:35357/v2.0/
```

3.2.2 Edit Configuration Files on Compute Host

This section describes how to edit the configuration files on the Compute host.

Nova

Copy the values of the following entries for `/etc/nova/nova.conf` from `RegionOne` to `RegionTwo`:

```
neutron_admin_password=VYNe6HWY
neutron_admin_auth_url=http://10.33.168.100:35357/v2.0
```

Neutron

Copy the values of the following entries for `/etc/neutron/neutron.conf` from `RegionOne` to `RegionTwo`:

```
auth_host = 10.33.168.100
admin_password = VYNe6HWY
auth_url=http://10.33.168.100:35357/v2.0
```

3.2.3 Edit Configuration Files on Atlas

Update `/etc/hosts` with the public IP address of Keystone in `RegionOne`:

```
10.33.168.100 cic-pub-api cic-int-api cic-adm-api
```

OVFT

Copy the values of the following entries for `/etc/ovft/ovft.conf` from `RegionOne` to `RegionTwo`:

```
auth_uri = http://10.33.168.100:5000/v2.0
auth_host = 10.33.168.100
```

Heat

Copy the values of the following entries for `/etc/ovft/ovft.conf` from `RegionOne` to `RegionTwo`:

```
auth_uri = http://10.33.168.100:5000/v2.0
auth_host = 10.33.168.100
```

Note: This configuration must also be done for Atlas in `RegionTwo`.

3.3 Post-Configuration Activities

Restart all the services to apply the configurations. This must be performed for all hosts, both vCIC and Compute.

After the multi-region environment is configured, the Atlas UI shows the following information for `RegionOne`:

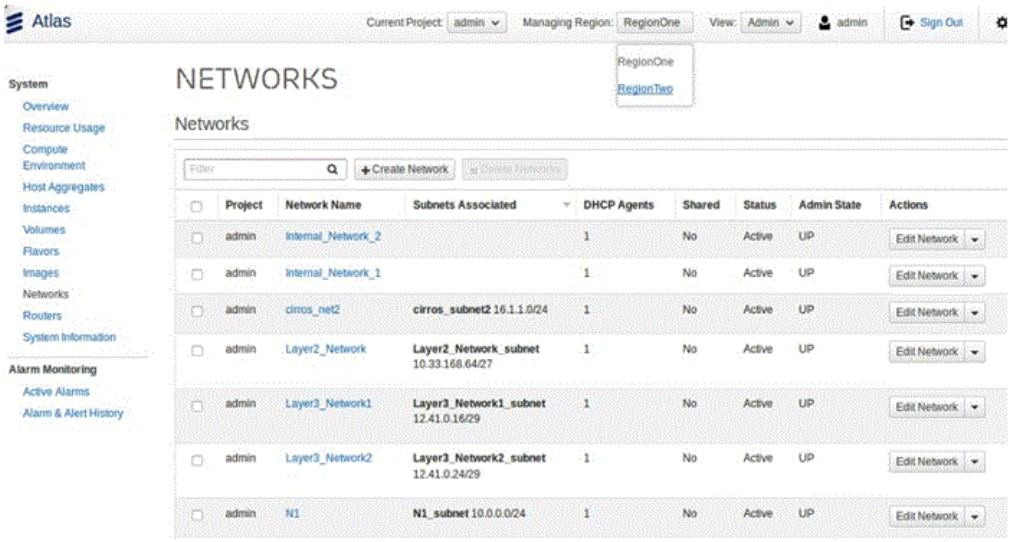


Figure 3 Networks Page, RegionOne after Multi-Region Configuration

Note: Changing region will take the user directly to the `network` page in `RegionTwo`.

For `RegionTwo`, the Atlas UI shows the following information after the multi-region environment is configured:

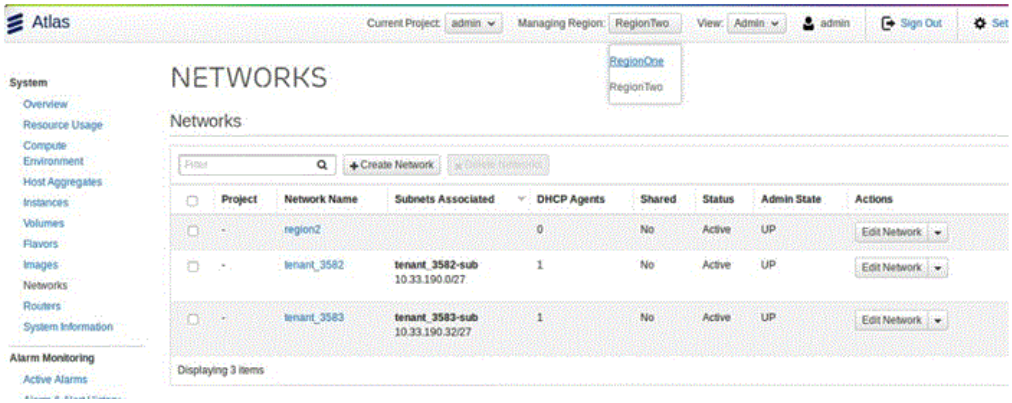


Figure 4 Networks Page, RegionTwo after Multi-Region Configuration

Note: Changing region will take the user directly to the `network` page in `RegionTwo`.