

Chapter Seven

Configuring The Runtime Environment

INTRODUCTION

After Eucalyptus is installed and registered, perform the tasks in this section to configure the runtime environment.

GENERATE ADMINISTRATOR CREDENTIALS

Now that you have installed and configured Eucalyptus, you're ready to start using it. To do so, you must generate credentials.

NOTE: When you run the `euca_conf --get-credentials` command, you are requesting the access and secret keys and an X.509 certificate and key. You cannot retrieve an existing X.509 certificate and key. You can only generate a new pair.

To generate a set of credentials :

```
/usr/sbin/euca_conf --get-credentials admin.zip
unzip admin.zip
```

Source the `euarc` file.

```
source euarc
```

You are now able to run Eucalyptus commands.

TIPS : When you source something remember not to change the present working directory since bash environment variable won't be available after you `cd` into another.

CONFIGURING THE STORAGE CONTROLLER (SC)

The Eucalyptus Storage Controller must be configured explicitly upon registration. This is a change from previous versions (pre-3.2) of Eucalyptus, which would configure themselves to a default configuration using a `tgtd`-based filesystem-backed storage controller to provide volumes and snapshots directly from the Storage Controller. As of version 3.2, Eucalyptus Storage Controllers automatically go to the `BROKEN` state after being registered with the CLC and will remain in that state until the administrator explicitly configures the SC by telling it which backend storage provider to use.

Configuring the SC to use the local filesystem (Overlay):

```
euca-modify-property -p zeus.storage.blockstoragemanager=overlay
```

Possible Output:

```
PROPERTY      PARTI00.storage.blockstoragemanager      overlay was <unset>
```

You can check if it has been modified by executing the command :

```
euca-describe-properties | grep blockstoragemanager
```

CONFIGURING THE DNS AND THE SUBDOMAIN

Eucalyptus provides a DNS service that you can configure to:

- Map instance IPs and Walrus bucket names to DNS host names
- Enable DNS delegation to support transparent failover in HA mode

The DNS service will automatically try to bind to port 53. If port 53 cannot be used, DNS will be disabled. Typically, other system services like dnsmasq are configured to run on port 53. To use the Eucalyptus DNS service, you will need to disable these services.

Before using the DNS service, configure the DNS subdomain name that you want Eucalyptus to handle as follows after the Eucalyptus Cloud Controller (CLC) has been started.

Log in to the CLC (the primary CLC in an HA setup) and enter the following:

```
euca-modify-property -p system.dns.dnsdomain=192.168.41.203
```

TURN ON IP MAPPING

To turn on mapping of instance IPs to DNS host names:

Enter the following command on the CLC (the primary CLC in an HA setup):

```
euca-modify-property -p bootstrap.webservices.use_instance_dns=true
```

CONFIGURE THE MASTER DNS SERVER

Note : Please read for DNS and creating a zone file before attempting to the steps given below.

- A good wiki article is available for understanding dns http://en.wikipedia.org/wiki/Zone_file .
- A you should always look @ the original documentation provided by eucalyptus http://www.eucalyptus.com/docs/eucalyptus/3.2/ig/setting_up_dns.html#setting_up_dns

Set up your master DNS server to forward the Eucalyptus subdomain to the primary and secondary CLC servers, which act as name servers.

(1) Open /etc/named.conf and set up the eucadomain.yourdomain zone.
Add the following piece of code to the named.conf file.

```
zone "zeus.nitc.ac.in" {
    type master;
    file "/etc/named/db.zeus.nitc.ac.in";
};
#forward to master dns

zone "eucalyptus.zeus.nitc.ac.in"{
    type forward;
    forward only;
    forwarders { 192.168.41.203; };
};
```

(2)Create a file /etc/bind/db.zeus.nitc.ac.in and write the following code into that file.

```
$TTL 604800
@ IN SOA zeus.nitc.ac.in. root.zeus.nitc.ac.in. (
2 ; Serial
604800 ; Refresh
86400 ; Retry
2419200 ; Expire
604800 ) ; Negative Cache TTL
;
@ IN NS ns.zeus.nitc.ac.in.
@ IN A 192.168.41.203
;Assuming the master dns being the local campus dns 192.168.254.2
ns.zeus.nitc.ac.in. IN A 192.168.41.203

eucalyptus.zeus.nitc.ac.in. IN A 192.168.41.203
```

CONFIGURING THE NODE CONTROLLER

To alleviate potential problems, we recommend performing the following steps on each NC:

1. Log in to an NC server and open the /etc/eucalyptus/eucalyptus.conf file.
2. Change the CONCURRENT_DISK_OPS parameter to the number of disk-intensive operations you want the NC to perform at once. On some Linux installations, a sufficiently large amount of local disk activity can slow down process scheduling. This can cause other operations (e.g., network communication and instance provisioning) appear to stall. Examples of disk-intensive operations include preparing disk images for launch and creating ephemeral storage. Set this value to 1 to serialize all disk-intensive operations. Set to a higher number to increase the amount of disk-intensive operations the NC will perform in parallel.
3. Set DISABLE_KEY_INJECTION=1 to disable key injection. By default, the node controller uses the filesystem to perform key injection. This is potentially an unsafe practice.

Copy one file, edit it and spread it to all other nodes.

Copy

```
scp root@vm-container-0-0:/etc/eucalyptus/eucalyptus.conf ~
```

Spread

```
for i in {0..4}; do scp ~/eucalyptus.conf root@vm-container-0-$i: \  
/etc/eucalyptus/eucalyptus.conf ; done
```

Uncomment

```
#CONCURRENT_DISK_OPS =4  
#DISABLE_KEY_INJECTION=""
```

and change their values to

```
CONCURRENT_DISK_OPS =1  
DISABLE_KEY_INJECTION="1"
```

INCREASE WALRUS DISK SPACE

The size of Walrus storage must be larger than the sum of all the uploaded images. Each uploaded image requires additional space to accommodate image decryption and the creation of temporary working files. **We recommend that the Walrus storage size be three times the size of all uploaded images.**

To increase the image cache size in Walrus:

1. Log in to the Eucalyptus Administrator Console (<https://zeus.nitc.ac.in:8443>).
2. Click Service Components in the Quick Links section.
3. The Service Components page displays.
4. Click walrus.
5. The Properties section displays.
6. Enter the new size 80 000 MB (80GB) in the space reserved for unbundling images field.
7. Click Save.

SET UP SECURITY GROUPS

In Managed and Managed (No VLAN) networking modes, you must configure the system with parameters that define how Eucalyptus will allocate and manage virtual machine networks. These virtual machine networks are known as security groups. The relevant parameters are set in the `eucalyptus.conf` on all machines running a CC. These parameters are:

- VNET_SUBNET
- VNET_NETMASK
- VNET_ADDRSPERNET

The CC will read VNET_SUBNET and VNET_NETMASK to construct a range of IP addresses that are available to all security groups. This range will then be further divided into smaller networks based on the size specified in VNET_ADDRSPERNET. Note that Eucalyptus reserves eleven addresses per security group, so these networks will be smaller than the value specified in

VNET_ADDRSPERNET.

To configure Eucalyptus to use VLANs within a specified range:

1. Choose your range (a contiguous range of VLANs between 2 and 4095).
2. Configure your cluster controllers with a VNET_SUBNET/VNET_NETMASK/VNET_ADDRSPERNET that is large enough to encapsulate your desired range.
3. We have VNET_NETMASK as 255.255.0.0 and VNET_SUBNET 10.1.0.0
4. We should have distinct VLAN Tags for each security group.
5. No of Security Groups is calculated by dividing VNET_NETMASK/VNET_ADDRSPERNET i.e $(2^{16}-2)/32=2048$. [Refer <https://engage.eucalyptus.com/customer/portal/articles/256617-calculating-security-groups>]
6. Configure your cloud controller to work within that range. Use the following commands to verify that the range is now set to be 2-2048, a superset of the desired range.
`euca-describe-properties | grep cluster.maxnetworktag`
`euca-describe-properties | grep cluster.minnetworktag`
7. Constrict the range to be within the range that the CC can support as follows:
`euca-modify-property -p cloud.network.global_max_network_tag=2050`
`euca-modify-property -p cloud.network.global_min_network_tag=2`
8. Make sure that the difference between the max and min value should be equal to 2048 (ie the no of security groups).

CONFIGURE THE LOAD BALANCER

Installing and Registering the Load Balancer Image :

Eucalyptus provides a tools for installing and registering the Load Balancer image. Once you have run the tool, your Load Balancer will be ready to use.

1. Run the following command on the machine where you installed the eucalyptus-load-balancer-image package:
`euca-install-load-balancer --install-default`

VERIFY LOAD BALANCER CONFIGURATION

If you would like to verify that Load Balancer support is enabled you can list installed Load Balancers. The currently active Load Balancer will be listed as enabled. If no Load Balancers are listed, or none are marked as enabled, then your Load Balancer support has not been configured properly.

Run the following command to list installed Load Balancer images:

```
euca-install-load-balancer --list
```

You can also check the enabled Load Balancer EMI with:

```
euca-describe-properties loadbalancing.loadbalancer_emi
```

If you need to manually set the enabled Load Balancer EMI use:

```
euca-modify-property -p loadbalancing.loadbalancer_emi=emi-12345678
```

CHANGE THE ADMINISTRATION PASSWORD

Change the default password for the administration user. You can do this using the `euare-usermodloginprofile` or by logging in to the Eucalyptus Administrator Console (<https://zeus.nitc.ac.in:8443>). The first time you log in to the console, you are prompted for a new password.