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# Eucalyptus Install

Pains and Gains

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## 1 What is Eucalyptus?

Here it is from the horse's mouth...

*...Elastic Utility Computing Architecture for Linking Your Programs o Useful Systems - is an open-source software infrastructure for implementing "cloud computing" on clusters. The current interface to EUCALYPTUS is compatible with Amazon's EC2 interface, but the infrastructure is designed to support multiple client-side interfaces. EUCALYPTUS is implemented using commonly available Linux tools and basic Web-service technologies making it easy to install and maintain.*

## 2 Prerequisites

One VM(I did it on a VM you don't need to) with the following software requirements  
One Machine running the dom0.

### Software Prerequisites

- Java 6
- ANT (the latest the better)
- Curl
- OpenSSL
- xenstore
- Gnutls
- dhcp3
- ec2-api-tools
- ec2-ami-tools
- rsync
- ssh

## 3 Assumptions

Call the VM - 'gamgi'

Call the dom0 - 'frodo'

/etc/hosts are configured to look at each other.

Both run Debian Etch.

Both are on the same network (LAN).

gamgi is configured as static ip, how I did it is out the scope. Please Google :)

NOTE: In my case gamgi does not run on the frodo

## 4 Environment

Set the following environment variables, to permanently set them add to .bashrc file.

```

JAVA_HOME=/opt/SDK/jdk (g)
ANT_HOME=/opt/ANT (g)
EC2_HOME=/root/Amazon/ec2-api-tools-1.3-30349 (g)
EC2_AMITOOL_HOME=/root/Amazon/ec2-ami-tools-1.3-26357 (g)
PATH=$PATH:$JAVA_HOME/bin:$ANT_HOME/bin:$EC2_HOME/bin:$EC2_AMITOOL_HOME/bin
(g)
EUCALYPTUS_SRC=/root/eucalyptus-1.4 (g)
EUCALYPTUS=/opt/eucalyptus (g) (f)
AXIS2C_HOME=$EUCALYPTUS/packages/axis2c-1.5.0 (g) (f)
LD_LIBRARY_PATH=${AXIS2C_HOME}/lib:$LD_LIBRARY_PATH (g) (f)

```

(g) – Set on *gamgi*

(f) – Set on *frodo*

## 5 Installation

NOTE: all the following steps are out on *gamgi* as mentioned on the prompt.

1. Install dhcp3 server

```

gamgi $ apt-get install dhcp3-server
gamgi $ /etc/init.d/dhcp3-server start

```

There was an issue starting the server follow the steps given below to resolve the issue.

```

gamgi $ vi /etc/default/dhcp3-server

```

and the file to look like this

```

#On what interfaces should the DHCP server (dhcpd) serve DHCP...
#Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACES="eth0"

```

And then ...

```

gamgi $ vi /etc/dhcp3/dhcpd.conf

```

Uncomment the following lines...

```

subnet 10.40.26.0 netmask 255.255.255.0 {
}

```

edit to your subnet and netmask. And then restart the server.

```

gamgi $ /etc/init.d/dhcp3-server start

```

This did the trick for me and I hope it does for you as well. If not call god google :)

- Download the eucalyptus sources and dependencies from <http://eucalyptus.cs.ucsb.edu/downloads> to you root directory and jump to step 3 or follow the instructions as given below.

```
gamgi $ wget http://eucalyptus.cs.ucsb.edu/downloads/51
gamgi $ mv 51 eucalyptus-1.4-src.tar.gz
gamgi $ wget http://eucalyptus.cs.ucsb.edu/downloads/50
gamgi $ mv 50 eucalyptus-1.4-src-deps.tar.gz
```

What follows are the toils of installing the eucalyptus.

- Extract the zip as given below.

```
gamgi $ tar zxvf eucalyptus-1.4-src.tar.gz
gamgi $ cd eucalyptus-1.4
gamgi $ tar zxvf ../eucalyptus-1.4-src-deps.tar.gz
```

- Create packages directory in the \$EUCALYPTUS and extract axis into it.

```
gamgi $ mkdir -p $EUCALYPTUS/packages
gamgi $ cd $EUCALYPTUS/packages
gamgi $ tar zxvf ~/eucalyptus-1.4/eucalyptus-src-deps/axis2-1.4.tgz
```

Now starts the toil of eucalyptus install. Go grab a coffee you might need some caffeine in your system.

- Install httpd

```
gamgi $ cd $EUCALYPTUS_SRC/eucalyptus-src-deps/
gamgi $ tar zvxvf httpd-2.2.8.tar.gz
gamgi $ cd httpd-2.2.8
gamgi $ CFLAGS="-DBIG_SECURITY_HOLE" ./configure \
> --prefix=$EUCALYPTUS/packages/httpd-2.2.8 --with-included-apr
gamgi $ make ; make install
```

- Install Axis2C

```
gamgi $ cd $EUCALYPTUS_SRC/eucalyptus-src-deps/
gamgi $ tar zvxvf axis2c-src-1.5.0.tar.gz
gamgi $ cd axis2c-src-1.5.0
gamgi $ ./configure \
> --with-apache2=$EUCALYPTUS/packages/httpd-2.2.8/include \
> --prefix=${AXIS2C_HOME}
gamgi $ make ; make install
```

- Install Rampart/C

```
gamgi $ cd $EUCALYPTUS_SRC/eucalyptus-src-deps/
gamgi $ tar zvxvf rampartc-src-1.2.0.tar.gz
```

```
gamgi $ cd rampartc-src-1.2.0
gamgi $ ./configure --prefix=${AXIS2C_HOME} --enable-static=no \
> --with-axis2=${AXIS2C_HOME}/include/axis2-1.5.0
gamgi $ make ; make install
```

And then you need to edit \$AXIS2C\_HOME/axis2.xml. The following line

```
<!--phase name="Security"/-->
```

should look like this

```
<phase name="Security"/>
```

8. This is what at times will take you for spin, the installation of libvirt, do the following before the 'actual install'.

```
gamgi $ apt-get install debhelper python-dev libstdl1.2-dev \
> bcc dpatch lsb-release libncurses5-dev xllproto-core-dev \
> transfig tetex-bin tetex-extra gs-common gcc make g++ \
> autogen gettext autoconf automake libncurses5-dev libxml2 \
> libxml2-dev libreadline5-dev dpkg-dev xen-utils-3.0.3-1 \
> xen-utils-common libc6-xen locales cvs libtool
gamgi $ wget http://backports.mithril-linux.org/pool/main/x/xen-3/libxenstore3.0\_3.2.1-2~bpo4+1\_i386.deb
gamgi $ dpkg -i libxenstore3.0_3.2.1-2~bpo4+1_i386.deb
gamgi $ wget http://backports.mithril-linux.org/pool/main/x/xen-3/libxen-dev\_3.2.1-2~bpo4+1\_i386.deb
gamgi $ dpkg -i libxen-dev_3.2.1-2~bpo4+1_i386.deb
gamgi $ apt-get install gnutls
gamgi $ apt-get install libgnutls
gamgi $ apt-get install libtls
gamgi $ apt-cache search gnutls
gamgi $ apt-get install libgnutls13
```

Now you think all is well. And then while you try to 'make' libvirt there is a nasty bug wherein you would get "ULLONG\_MAX is undefined" do the following to get around it. It works for me.

```
gamgi $ vi \
> $EUCALYPTUS_SRC/eucalyptus-src-deps/libvirt-0.4.6/src/storage_conf.c
and put the following between lines 49-50 ...
```

```
/* Work around broken limits.h on debian etch */
defined __GNUC__ && defined _GCC_LIMITS_H_ && ! defined ULLONG_MAX
# define ULLONG_MAX ULONG_LONG_MAX
#endif
```

and now you are ready. Go ahead and build libvirt.

```
gamgi $ cd $EUCALYPTUS_SRC/eucalyptus-src-deps/
gamgi $ tar zvxf libvirt-0.4.6.tar.gz
gamgi $ cd libvirt-0.4.6
gamgi $ ./configure --prefix=$EUCALYPTUS/packages/libvirt-0.4.6 --
without-storage-disk --without-storage-iscsi --without-storage-fs --
without-storage-lvm --without-libvirtd --without-remote --without-lxc
--without-kvm --without-qemu --without-sasl --without-openvz
gamgi $ make ; make install
```

9. Now you are ready to build eucalyptus from source.

```
gamgi $ cd $EUCALYPTUS_SRC
gamgi $ ./configure --with-axis2=$EUCALYPTUS/packages/axis2-1.4 \
> --with-axis2c=$EUCALYPTUS/packages/axis2c-1.5.0 \
> --with-libvirt=$EUCALYPTUS/packages/libvirt-0.4.6/ \
> --prefix=$EUCALYPTUS
gamgi $ make ; make install
```

10. Congrats, now lets move on to configuration. You need eucalyptus on multiple machines, do the following

```
gamgi $ $EUCALYPTUS/usr/sbin/euca_conf -d $EUCALYPTUS \
> $EUCALYPTUS/etc/eucalyptus/eucalyptus.conf
```

Now you need to push the compiled software to the other nodes on the cluster using rsync.

```
gamgi $ rsync -a $EUCALYPTUS/ frodo:$EUCALYPTUS/
```

this will prompt you for the password of frodo

11. Now its time to tell every node what its going to do or its responsibility is, *gamgi* is both the cloud controller as well as the cluster controller, and is its own node controller as well.

*frodo* is node controller. So the following command will set this up.

```
gamgi $ $EUCALYPTUS/usr/sbin/euca_conf -cc Y -cloud Y -nc N \
> $EUCALYPTUS/etc/eucalyptus/eucalyptus.conf
```

The following will add the list of nodes that are going to be node controllers, in our case its *frodo*

```
gamgi $ $EUCALYPTUS/usr/sbin/euca_conf -nodes "frodo" \
> $EUCALYPTUS/etc/eucalyptus/eucalyptus.conf
```

And then frodo is set to node controller status

```
gamgi $ ssh frodo "mkdir -p /usr/local/instances/; \
> $EUCALYPTUS/usr/sbin/euca_conf -cc N -cloud N -nc Y -instances \
> /usr/local/instances $EUCALYPTUS/etc/eucalyptus/eucalyptus.conf"
```

## 12. Start the Eucalyptus

```
gamgi $ $EUCALYPTUS/etc/init.d/eucalyptus start
frodo $ $EUCALYPTUS/etc/init.d/eucalyptus start
```

**NOTE:** You need install bridge-utils on frodo and a dridge defined before you start of. And that should match the VNET\_BRIDGE variable in your \$EUCALYPTUS/etc/eucalyptus/eucalyptus.conf file.

## 13. Now connect to...

<https://gamgi:8443/>

Login with admin/admin and then you could change the admin password once you are in. And in the "Configuration" tab and Click on the cluster to add *gamgi*.

And then change Walrus URL to point to gamgi's ip.

You need to propagate the cryptographic keys to all the nodes on the cluster.

```
gamgi $ $EUCALYPTUS/usr/sbin/euca_sync_key -c \  
> $EUCALYPTUS/etc/eucalyptus/eucalyptus.conf
```

## 14. Now let's go ahead and create some images. Before that you need to get the certificate. On the web console go the "Credentials" tab and click "Download Certificates" button. Create a *.euca* directory in */root* and move the just downloaded zip file there and unzip it. Then do. *I am doing all this in gamgi itself but feel free to do it on you linux box.*

```
gamgi $ source $HOME/.euca/eucarc
```

or add the following line to *.bashrc* and them source it

```
. $HOME/.euca/eucarc
```

## 15. Before you go ahead you need to install the ec2-amitools and ec2-apitools. and set EC2\_HOME and EC2\_AMITool\_HOME.

Now you could go [here](#) and do as mentioned. You will have some images bundled.