SciCloud Manual V 1.4:

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The Scientific Computing Cloud (SciCloud) is setup as a Eucalyptus system at kuu cluster at university of Tartu (katel42.hpc.ut.ee). This document provides details for using SciCloud resources.

1. To login to the cloud first you must apply for an account at

https://katel42.hpc.ut.ee:8443/

Since the resources on the cloud are limited, this is a manual process. Contact Satish.srirama@ut.ee in person after creating a request at the linked page.

2. Once you have the access, you can use any of the available customized images.

3. Description of the existing images
   a. emi-B8641400 - ubuntu.euca-k42/ubuntu.9-04.x86-64.img.manifest.xml
      i. This is a valid Ubuntu Linux image. There are some known troubles with this image while creating modified images.

4. Getting started with instances
   a. First download your credentials from the SciCloud
   b. Prepare .euca folder
   c. Extract your credentials to the folder
   d. Set your environment
      bash-3.2$ source eucarc
   e. Register your key with the system. This key is required for later access. Execute this command only once. If you repeat it you get an empty file. So save your key in a safe place.
      bash-3.2$ euca-add-keypair keyname > keyname.private
   f. Running an instance
      bash-3.2$ euca-run-instances -k keyname -n 1 -t m1.small emi-54A61302
   g. To view all the running instances
      Bash-3.2$ euca-describe-instances
h. Connecting to the instance

bash-3.2$ ssh -i keyname.private root@172.17.36.214

i. Copying data to the instance with scp

bash-3.2$ scp -i keyname.private -r ./euca root@172.17.36.214:/mnt

j. Terminating a running instance, where i-xxxxx are running instances. You can see them with euca-describe-instances command

bash-3.2$ euca-terminate-instances i-xxxxx i-xxxxx

k. More help is available at http://open.eucalyptus.com/wiki/EucalyptusGettingStarted_v1.6

5. Managing basic images - Remember you should be a administrator of the Eucalyptus


b. Follow the instructions for uploading Debian image. I think the commands are self descriptive. Similarly, you can follow the steps for other Linux versions.

    tar zxvf euca-debian-5.0-x86_64.tar.gz

    euca-bundle-image -i euca-debian-5.0-x86_64/xen-kernel/vmlinuz-2.6.27.21-0.1-xen --kernel true
    euca-upload-bundle -b debian-kernel-bucket-k42 -m /tmp/vmlinuz-2.6.27.21-0.1-xen.manifest.xml
    euca-register debian-kernel-bucket-k42/vmlinuz-2.6.27.21-0.1-xen.manifest.xml

    (set the printed eki to $EKI)
    export EKI=eki-82F716C6

    euca-bundle-image -i euca-debian-5.0-x86_64/xen-kernel/initrd-2.6.27.21-0.1-xen --ramdisk true
    euca-upload-bundle -b debian-ramdisk-bucket-k42 -m /tmp/initrd-2.6.27.21-0.1-xen.manifest.xml
    euca-register debian-ramdisk-bucket-k42/initrd-2.6.27.21-0.1-xen.manifest.xml

    (set the printed eri to $ERI)
    export ERI=eri-7D5916AD

    euca-bundle-image -i euca-debian-5.0-x86_64/debian.5-0.x86-64.img --kernel $EKI --ramdisk $ERI
euca-upload-bundle -b debian-image-bucket-k42 -m /tmp/debian.5-0.x86-64.img.manifest.xml
euca-register debian-image-bucket-k42/debian.5-0.x86-64.img.manifest.xml

IMAGE  emi-0B2D1557


**Working with customized images.**

1. Follow the SciCloud Manual V 1.3. This should give the basics for working with SciCloud and Eucalyptus systems in general.

2. To ease the development of new images, we have created euca base images for Ubuntu. These images already have euca2ools installed on them.
   a. emi-262D1205 - ubuntu.euca-k42.3GB-base/image.manifest.xml
      i. Base image already equipped with euca2ools to create 3GB images from.
   b. emi-54A61302 - ubuntu.euca-k42-scicloud2/image.manifest.xml
      i. Image meant for SciCloud testing. Also a base image from scientific computing.
   c. emi-139415D8 - ubuntu.euca-k42.3GB-scicloud2/image3G.img.manifest.xml
      i. 3GB base image for scientific computing.

3. Preparing customized images from euca base images
   a. Start an instance from the respective image
   b. ssh to the instance
   c. Update your instance i.e. install any interesting software. (* Remember that you will lose all your data if the instance gets shutdown)
   d. Copy your .euca folder to the /mnt of the instance
      ```bash
      bash-3.2$ scp -i keyname.private -r ../.euca root@172.17.36.214:/mnt
      ```
   e. Prepare the eucalyptus environment.
      ```bash
      bash-3.2$ source eucarc
      ```
      Ensure that you have bash shell. Take care of this especially with centos images.
   f. Now to bundle your instance
      i. For bundling Ubuntu image
euca-bundle-vol --cert ${EC2_CERT} --privatekey ${EC2_PRIVATE_KEY} --user 000202048240 --ec2cert ${EUCALYPTUS_CERT} --no-inherit --kernel eki-EA7E180D --ramdisk eri-E57B17F1 -d /mnt/tmp -s 1024

Do not forget the -d parameter, as the image is copied to the folder and generally it is huge (around 1 GB)

Define -s parameter. Or else the system tries to copy 10 GB of the data to the new image root file system. This is default value. Generally this is heavy in terms of our configuration.

While uploading your current image to the SciCloud, remember that only your root (/) filesystem will be copied by default. So your data in the /mnt is lost. To some extent this is useful as you do not want to share your private keys with everybody who uses the image later.

g. Now upload the bundle to the SciCloud

bash-3.2$ euca-upload-bundle -b bucketName -m image.manifest.xml

Follow the naming conventions described in 4 for the bucketName.

h. Register your image with Eucalyptus

bash-3.2$ euca-register bucketName/image.manifest.xml

i. Now you can create instances from your modified image.

j. To remove an image deregister it and delete the bucket

i. euca-deregister emi-B5291033

ii. euca-delete-bundle -a $EC2_ACCESS_KEY -s $EC2_SECRET_KEY --url $S3_URL -b bucketName -clear

4. Naming conventions for the images

a. We have named the euca base images as “$OS.euca-k42.4GB”

b. The project is further divided for the time being into following domains. $Project follows the name of the domain

i. Scientific computing - scicloud

ii. Mobile Enterprise - mobile

iii. Enterprise computing - enter

iv. Others - other

c. So the name of your customized image becomes “$OS.euca-k42-$Project-$YourTrial”
i. When the image is a 3 GB image then the naming convention changes into: “$OS.euca-k42.3GB-$Project-$YourTrial”

ii. When the euca base image (see a.) has been used to create the sub-image, then the naming convention changes into: “$OS.euca-k42b.3GB-$Project-$YourTrial” (NB! This also implies to images created from other k42b images)

d. The naming conventions are followed just to distinguish the images easily.