Eucalyptus 3.4.1 FastStart Guide

2013-12-11 Eucalyptus Systems

Contents

Eucalyptus Faststart Requirements

This section provides instructions for quickly installing Eucalyptus in two different configurations.

- Cloud-in-a-box: a Eucalyptus cloud with all components on a single machine
- Front-end and Node Controllers: a Eucalyptus cloud with all front-end components on a single system, and one or more Node Controllers on separate machines

Overview

Eucalyptus consists of the following components:

- Cloud Controller (CLC): this component provides EC2 functionality
- Walrus: this component provides S3 functionality
- Cluster Controller (CC): this component provides management service for a cluster in your cloud
- Storage Controller (SC): this component provides EBS functionality
- Node Controller (NC): this component controls virtual machine instances

In the Frontend+NC configuration, the CLC, Walrus, CC, and SC are installed on one machine, called the Frontend. The NC is installed on another machine, called the Node. In this configuration you can have one Frontend and one or more Nodes.

In the Cloud-in-a-box configuration, all components are installed on one machine.

Hardware Requirements

Before installing FastStart in the Cloud-in-a-box configuration, make sure you have a machine with:

- a minimum of 200GB of disk space
- a minimum of 4GB of memory
- at least one ethernet NIC

Before installing FastStart in the Frontend+NC configuration, make sure you have at least two machines with:

- a minimum of 100GB of disk space
- a minimum of 4GB of memory
- at least one ethernet NIC

Network Requirements

- You must have access to the internet.
- You must be able to assign static IP addresses within your network.
- You must set aside a static IP address for each physical system.
- You must set aside a range of available public IP addresses. Eucalyptus will assign these to VM instances.
- You must set aside a large range of available private IP addresses. These will be used by a virtual subnet. They can not overlap or contain any part of a physical network IP address space. Note: Eucalyptus will set aside, by default, the subnet 172.16.0.0 unless you choose to set different values.

A sample set of IP addresses might go as follows:

- 192.168.1.98 for the Frontend system
- 192.168.1.99 for the first Node Controller
- 192.168.1.100 for the second Node Controller
- 192.168.1.101-192.168.1.149 for the public IP address range

Software Requirements

You must have access to the **Eucalyptus FastStart ISO**. You can get the FastStart ISO from *http://www.eucalyptus.com/download/faststart*. You should then burn this ISO to a DVD. This DVD will be used for installation on all physical machines in your cloud.

Note: You can also install FastStart from a USB drive. See *Preparing a FastStart USB Installation* for more information.

Prepare a FastStart USB Installation

Although Eucalyptus Faststart is distributed as an ISO disc image, you can install it from a USB drive instead.

To install Eucalyptus Faststart, you need to transfer the Eucalyptus Faststart ISO image to a bootable USB drive using an ISO to USB conversion utility (in this example, we'll use UNetbootin), and then copy the FastStart ISO image to the root directory of the USB device.

To prepare a Eucalyptus Faststart USB drive installation:

1. Get the latest version of the Eucalyptus Faststart ISO image from *http://www.eucalyptus.com/download/faststart*.
2. Make sure you have a USB drive with at least 2GB of free space plugged into your computer.
3. Download UNetbootin for your platform (Linux, Mac OS X, or Windows) from *http://unetbootin.sourceforge.net/*.
4. Run UNetbootin.
5. From the UNetbootin dialog box, select the **Diskimage** option.
6. Make sure ISO is selected in the **Diskimage** drop-down list box.
7. Either enter the path and filename to the Eucalyptus Faststart ISO file into the text field, or click the **...** button to the right of the text field and select the FastStart ISO file that you just downloaded.
8. Leave the **Space used to preserve files across reboots (Ubuntu only)** text field at the default value of `0`.
9. The **Type** drop-down list box should be set to **USB Drive** (this is the default).
10.  **Note:** This utility will delete the contents of the selected drive.

    Make sure that the appropriate drive is selected in the **Drive** drop-down list box.
11. Click the **OK** button to begin creating the bootable USB drive.
12.  **Note:** It is not necessary to reboot after UNetbootin has finished preparing the USB device.

    When Unetbootin has finished preparing the USB device, click the **Exit** button to exit UNetbootin.
13. Once UNetbootin has finished, copy the FastStart ISO image to the root directory of the USB drive.

You've successfully created a USB installation drive for Eucalyptus Faststart. You can now boot the system that you'll be installing Eucalyptus Faststart on using this USB drive and follow the installation instructions contained in the following sections.

Install Cloud-in-a-Box

The simplest way to install Eucalyptus is to install Cloud-in-a-Box. It's not intended for production use, but it's a great way to learn the basics about how Eucalyptus works. All components are installed in a single system, and most of the configuration is handled automatically.

To install Cloud-in-a-Box:

1. Boot the target system from the Eucalyptus Faststart media. Wait for the boot screen to load. When the boot screen loads, select "Install CentOS 6 with Eucalyptus Cloud-in-a-box"
2. You may be asked to check the media, to ensure that there are no data issues. You may check the media, or you may Skip to move on to the next step. You will then be asked to select language and keyboard options. (Note that Faststart instructions are currently available in English only.)
3. Next, you will be asked for network information. For Network Interface, select your ethernet interface (usually eth0). For Mode, Static is recommended; DHCP will work in many cases, but if DHCP leases change, your Eucalyptus cloud will no longer be functional. Also enter IP address, Netmask, Default Gateway, and a comma-delimited list of DNS servers.
4. Next, you will be asked to select timezone, and after that you will be asked to enter the root password for the system.
5. Next, you will be asked for cloud configuration options. Most are defaults that you should not touch unless you are an experienced Eucalyptus administrator; see the Administration Guide for details. The one parameter you must enter here is the range of public IP addresses. New virtual instances created by Eucalyptus will receive IP addresses from within this specified range. Enter the lower and higher range of available public IP addresses, a dash between them (e.g.: 192.168.1.200-192.168.1.240).
6. Next, you will be asked for disk install options. Eucalyptus is intended to be the primary application on the system; by default, it will take up all disk space on the system. Experienced Linux admins can set up a separate partition for Eucalyptus here.
7. At this point, the Eucalyptus installation will begin. Software will be installed, and a default Eucalyptus machine image (EMI) will be built. When this process is completed, you will be prompted to reboot the system.
8. When the system reboots, you will be prompted for a series of questions during the firstboot process. You will be asked to accept the license, create a non-root login, and turn on NTP.

The installation is now complete. You may ascertain that your cloud is running by clicking on the the web browser links from the Desktop.

Tip: The "Configuration Complete" screen provides login information for the User Console and the Admin Console. Be sure to note these for later use.

Tip: Normally, you would download a credentials file and use it to configure the client tools. As part of the Faststart process, credentials are downloaded and pre-installed for you. These credentials are available under `~/credentials/` in each user's home directory on your Cloud-in-a-Box system.

Installing a Node Controller

To install a standalone Node Controller, follow the instructions below. It's strongly recommended that you install any Node Controllers before you install the Frontend.

To install a Node Controller:

1. Boot the target system from the Eucalyptus Faststart media. Wait for the boot screen to load. When the boot screen loads, select "Install CentOS 6 with Eucalyptus Node Controller".
2. You may be asked to check the media, to ensure that there are no data issues. You may check the media, or you may Skip to move on to the next step. You will then be asked to select language and keyboard options. (Note that Faststart instructions are currently available in English only.)
3. Next, you will be asked for network information. For Network Interface, select your ethernet interface (usually eth0). For Mode, Static is recommended; DHCP will work in many cases, but if DHCP leases change, your Eucalyptus cloud will no longer be functional. Also enter IP address, Netmask, Default Gateway, and a comma-delimited list of DNS servers.
4. Next, you will be asked to select timezone, and after that you will be asked to enter the root password for the system.
5. Next, you will be asked for disk install options. The Node Controller is intended to be the primary application on the system; by default, it will take up all disk space on the system. Experienced Linux admins can set up a separate partition for Eucalyptus here.
6. At this point, the Node Controller installation will begin. When this process is completed, you will be prompted to reboot the system.
7. After reboot, login as the root user, and the post-install configuration will begin. Accept the defaults for NTP configuration, networking mode, and network interface.

The installation of your Node Controller is now complete. You may now install other Node Controllers; when you've installed all Node Controllers, you may move on to install the Eucalyptus Frontend.

Installing the Frontend

To install a Frontend on a separate system, follow the instructions below. It's strongly recommended that you install any Node Controllers (NCs) before you install the Frontend.

To install the Frontend:

1. Boot the target system from the Eucalyptus Faststart media. Wait for the boot screen to load. When the boot screen loads, select "Install CentOS 6 with Eucalyptus Frontend".
2. You may be asked to check the media, to ensure that there are no data issues. You may check the media, or you may Skip to move on to the next step. You will then be asked to select language and keyboard options. (Note that Faststart instructions are currently available in English only.)
3. Next, you will be asked for network information. For Network Interface, select your ethernet interface (usually eth0). For Mode, Static is recommended; DHCP will work in many cases, but if DHCP leases change, your Eucalyptus cloud will no longer be functional. Also enter IP address, Netmask, Default Gateway, and a list of DNS servers.
4. Next, you will be asked to select timezone, and after that you will be asked to enter the root password for the system.
5. Next, you will be asked for cloud configuration options. Most are defaults that you should not touch unless you are an experienced Eucalyptus administrator; see the Administration Guide for details. The one parameter you must enter here is the range of public IP addresses. New virtual instances created by Eucalyptus will receive IP addresses from within this specified range. Enter the lower and higher range of available public IP addresses, a dash between them (e.g.: 192.168.1.200-192.168.1.240).
6. Next, you will be asked for disk install options. Eucalyptus is intended to be the primary application on the system; by default, it will take up all disk space on the system. Experienced Linux admins can set up a separate partition for Eucalyptus here.
7. At this point, the Eucalyptus installation will begin. Software will be installed, and a default Eucalyptus machine image (EMI) will be built. When this process is completed, you will be prompted to reboot the system.
8. When the system reboots, you will be prompted to accept the license for this installation.
9. You will now be asked to enter the IP addresses of the Node Controllers that you've previously configured. Enter the IP addresses, separated by spaces, for each NC that you'd like to control with your Eucalyptus frontend.
10. You will now be asked to create a non-root login, and turn on NTP. Note that NTP is required for Eucalyptus to function properly.

The installation is now complete. You may ascertain that your cloud is running by clicking on the the web browser links from the Desktop.

Tip: Normally, you would download a credentials file and use it to configure the client tools. As part of the Faststart process, credentials are downloaded and pre-installed for you. These credentials are available under `~/credentials/` in each user's home directory on your Frontend system.

Launch the Default FastStart Image

Eucalyptus provides a default image that you can use to launch an instance immediately.

Your Eucalyptus Faststart installation includes a default CentOS 6 image. This section describes how to launch an instance from this image and connect to that instance. The tasks listed in the follow sections require a network connection.

Important: Before you can use the commands that follow, your environment variables will need to be sourced from the eucarc file. This is done for you automatically, but you may do it manually if needed. On the Frontend enter the following command: `source ~/credentials/eucarc`.

To launch the default image included with Eucalyptus Faststart:

1. Find the default image by typing the following command:

```
euca-describe-images
```

   This command returns a list of images available. For new Eucalyptus Faststart installations, a default image is provided - in this example, the image ID is `emi-72613A2E`:

```
IMAGE eki-D313397A admin/vmlinuz-2.6.28-11-generic.manifest.xml 508678674223
 available public
      i386 kernel instance-store
IMAGE emi-72613A2E admin/euca-centos-5.8-2012.05.14-x86_64.manifest.xml
508678674223
      available public i386 machine eki-D313397A eri-F9A83F12 instance-store

IMAGE eri-F9A83F12 admin/initrd.img-2.6.28-11-generic.manifest.xml 508678674223
 available
      public i386 ramdisk instance-store
```

2. Create a key pair using the `euca-create-keypair` command. This command will store the public half of the key pair and keep it available for your Eucalyptus cloud instances, and will output the private half of the key pair. Save this output to a file for future use, as in the following example:

```
euca-create-keypair euca-demo -f euca-demo.private
```

   

   Tip: If you've already added a keypair, you can skip this step.

3. Run the instance with the `euca-run-instances` command, specifying the appropriate image ID and the name of the key pair you just created. For example:

```
euca-run-instances -k euca-demo emi-72613A2E
```

   This will return output similar to the following:

```
RESERVATION     r-CCE33FC0     449455269925     default
INSTANCE     i-68A24092     emi-72613A2E     0.0.0.0     0.0.0.0     pending
     euca-demo     0
m1.small     2012-05-17T10:36:46.232Z     PARTI00     eki-D313397A
eri-F9A83F12
monitoring-disabled     0.0.0.0     0.0.0.0               instance-store
```

   Note that the initial state of the instance is 'pending' while the instance is being created.

4. After a few moments, check to see if your instance is available for use yet by using the `euca-describe-instances` command:

```
euca-describe-instances  i-68A24092
```

When the instance is ready, this command will return output similar to the following:

```
RESERVATION     r-CCE33FC0     449455269925     default
INSTANCE     i-68A24092     emi-72613A2E     192.168.9.91     10.93.7.76
 running     euca-demo     0
m1.small     2012-05-17T10:36:46.232Z     PARTI00     eki-D313397A
eri-F9A83F12
monitoring-disabled     192.168.9.91     10.93.7.76
instance-store
```

Note that the instance is now listed as 'running', and there's now an IP address - in this example, 192.168.9.91. You can use this IP address to connect to the instance.

5. Connect to the running instance using SSH, specifying the private key file and the IP address of the instance. For example:

```
ssh -i euca-demo.private  192.168.9.91
```

This command returns output similar to the following:

```
Warning: Permanently added '192.168.9.91' (RSA) to the list of known hosts.
Last login: Thu May 17 03:39:58 2012 from eucahost-9-91.eucalyptus
-bash-3.2#
```

Congratulations! You've now successfully launched and connected to the default FastStart image.

Please see the *Eucalyptus User Guide* for more tutorials.

Find More Information

This topic explains what to do once you have installed Eucalyptus, including further reading and other resources for understanding your cloud.

Read More

Eucalyptus has the following guides to help you with more information:

- The *Administration Guide* details ways to manage your Eucalyptus deployment. Refer to this guide to learn more about managing your Eucalyptus components, managing access to Eucalyptus, and managing Eucalyptus resources, like instances and images.
- The *User Guide* details ways to use Eucalyptus for your computing and storage needs. Refer to this guide to learn more about getting and using euca2ools, creating images, running instances, and using dynamic block storage devices.
- The *Image Management Guide* describes how to create and manage images for your cloud.
- The *Hybrid Cloud Guide* describes how to migrate resources between your private cloud and AWS.
- The *User Console Guide* describes how to create and manage cloud resources using the Eucalyptus User Console.
- The *Euca2ools Reference Guide* describes the Euca2ools commands. Refer to this guide for more information about required and optional parameters for each command.

Get Involved

The following resources can help you to learn more, connect with other Eucalyptus users, or get actively involved with Eucalyptus development.

- The Eucalyptus IRC channel is #eucalyptus on Freenode. This channel is used for real-time communication among users and developers. Information on *how to use the network* is available from Freenode.
- Engage hosts the Eucalyptus knowledge base and discussion forum. This provides user discussions, answers to problem reports, and other communications. Engage is available at *https://engage.eucalyptus.com/*

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