3.1.2 FastStart Guide

2012-10-26 Eucalyptus Systems

Contents

Welcome

Welcome to the FastStart Guide. This guide provides instructions for installing Eucalyptus in two different configurations:

- Cloud-in-a-box: a Eucalyptus cloud with all components on a single machine
- Frontend and Node Controllers: a Eucalyptus cloud with all Frontend 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

Test that each machine allows SSH login and that root access is available (sudo is okay).

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 CD or DVD. This media type, either CD or DVD, will be used for installation on all physical machines in your cloud.

Install FastStart

FastStart allows you to install the various Eucalyptus components in different configurations. You can choose the configuration option at boot time.

1. Make sure the FastStart media is in the media drive and boot the computer from that drive.
2. Wait for the Eucalyptus boot screen to appear, and then select the appropriate option:
   a) Choose **Cloud-in-a-Box** if you want your entire Eucalyptus cloud installed on this single system.
   b) Choose **Node Controller** if you want to set up Eucalyptus across multiple physical systems. Node Contollers should be configured first.
   c) Choose **Frontend** if you want to set up Eucalyptus across multiple physical systems and you've already installed all of your Node Controllers.
3. You may safely accept all defaults, except for the network interface configuration. At the page where you set your hostname, click the **Configure Network** button.
   The Network Connections window displays.
4. In the Network Connections window, select the network interface and click **Edit**.
   The **Editing System Interface** window for the connection displays.
5. In the Editing System Interface window, click **Connect automatically**.
6. Click the **IPv4 Settings** tab and do the following:
   a) Change the Method from "Automatic (DHCP)" to "Manual". **It is not recommended to run Eucalyptus under DHCP.**
   b) In the **Address** area, click **Add** and fill in the system's IP address and gateway. (Netmask should be filled automatically.)
   c) In the **DNS servers** field, enter the IP address for your DNS servers, comma-delimited (for example, 8.8.8.8, 8.8.4.4).
7. Click **Apply** and finish with the installation.
8. Repeat on each machine you will use for FastStart.

Now that FastStart has been installed on all systems, you are ready to configure your systems. For a multi-system install, proceed to *Node Controller Configuration* (after which you will configure the Frontend). For a cloud-in-a-box install, proceed directly to *Frontend Configuration*.

Configure the Node Controller(s)

The Eucalyptus Node Controller controls virtual machine activities, including the running, verification, and termination of virtual machine instances. **Note that in the Cloud-in-a-Box configuration, this is handled automatically, and you may move on to *configure the Frontend.***

To configure the Node Controller(s):

1. Boot the system. At the login prompt, log in as the root user. The Node Controller configuration script will run automatically.
2. Answer "yes" at the prompt to configure NTP.
3. Accept the default value for networking mode, MANAGED-NOVLAN.
4. Accept the default value for public ethernet interface, which will be the NIC you originally configured during the system setup.
5. The script should now be complete. If you need to change any value for any reason, you may do so by running the command **eucalyptus-nc-config.sh** as root.

You are now ready to *configure the Frontend*.

Configure the Frontend Components

In FastStart, all Eucalyptus components besides the Node Controller are called the Frontend. In a multiple system install, the Frontend lives on its own system; in Cloud-in-a-Box, the Frontend and the Node Controller live on the same system. The Frontend is the entry point to the cloud for both administrators and users.

To configure the Frontend:

1. Boot your Frontend or Cloud-in-a-Box system, depending on your configuration. Log in as root at the prompt.
2. You will be asked a number of configuration questions. If you are an experienced user of Eucalyptus, you may enter whatever values you choose; please consult the administrator's guide for details on specific parameters. **If you are not an experienced user, we strongly recommend that you accept all default values.**
3. When asked for a range of public IP addresses, enter two IP addresses with a dash between them (e.g.: 192.168.1.200-192.168.1.240). New virtual machines created by Eucalyptus will receive public IP addresses from within this specified range.
4. If you are configuring a standalone Frontend, you will now be asked to enter the IP addresses for all of your Node Controllers. Enter them one by one; as each Node Controller attaches, you will be presented with an ssh connection prompt. Enter the root password for each Node Controller. When you're finished adding Node Controllers, press enter. **Note: the Cloud-in-a-Box configuration does not require this step.**
5. You will now be asked whether your want to create an EMI for your cloud. Again, we recommend that you accept the defaults. For details on creating EMIs, please consult the administrator's guide.
6. Finally, you will be asked if you want to install a graphical user interface on this system. The default choice is no. Experienced Linux users who would like to test the Eucalyptus web interface on this system may want to choose "yes" here instead; otherwise, users will need to connect from a separate system.

The installation is now complete. If you need to configure your frontend again, you may do so at any time by running the command **eucalyptus-frontend-config.sh** as root.

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. To get these credentials, copy `/root/credentials.zip` from the Frontend server.

Launch the Default FastStart Image

Your FastStart installation includes a default CentOS 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, set up your environment variables by sourcing the eucarc file. On the Frontend enter the following command: `source /root/credentials/admin/eucarc`.

To launch the default image created by FastStart:

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

```
euca-describe-images
```

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

```
IMAGE eki-D313397A
centos-6-x86_64-small/vmlinuz-2.6.32-279.11.1.el6.x86_64.manifest.xml
508678674223 available public x86_64 kernel instance-store
IMAGE emi-72613A2E centos-6-x86_64-small/centos-6-x86_64-small.img.manifest.xml
 508678674223 available public x86_64 machine eki-D313397A eri-F9A83F12
instance-store
IMAGE eri-F9A83F12
centos-6-x86_64-small/initramfs-2.6.32.279.11.1.el6.x84_64.img.manifest.xml
508678674223 available public x86_64 ramdisk instance-store
```

2. Create a key pair using the `euca-add-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-add-keypair euca-demo > euca-demo.private
```

   

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

3. Change permissions on the private keypair file so that only you can access and change it:

```
chmod 0600 euca-demo.private
```

4. 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.

5. 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.

6. 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.

Finding More Information

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 *CLI 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.
- The Eucalyptus community mailing list is community@lists.eucalyptus.com. This list is used for user discussions, problem reports, and other communications. Information on how to subscribe is available at *http://lists.eucalyptus.com/cgi-bin/mailman/listinfo/community*