Introducing Eucalyptus 2.0

Eucalyptus 2.0 is an open source Linux-based software architecture that implements scalable, efficiency-enhancing private and hybrid clouds within an organization's IT infrastructure. Eucalyptus provides Infrastructure as a Service (IaaS). This means that users can provision their own collections of resources (hardware, storage, and network) via Eucalyptus' self-service interface on an as-needed basis. A Eucalyptus cloud is deployed across an enterprise's “on-premise” data center and is accessed by users over enterprise intranet. Thus, with a Eucalyptus private cloud, sensitive data remains secure from external intrusion behind the enterprise firewall.

Eucalyptus was designed from the ground up to be easy to install and as non-intrusive as possible. The software framework is highly modular, with industry-standard, language-agnostic communication. Eucalyptus is also unique by providing a virtual network overlay that both isolates network traffic of different users and allows two or more clusters to appear to belong to the same Local Area Network (LAN). Eucalyptus also interoperates seamlessly with Amazon's EC2 and S3 public cloud services and thus offers the enterprise a hybrid cloud capability.

Initially developed to support the high performance computing (HPC) research of Professor Rich Wolski's research group at the University of California, Santa Barbara, Eucalyptus is engineered based upon design principles that ensure compatibility with existing Linux-based data center installations. Eucalyptus can be deployed without modification on all major Linux OS distributions, including Ubuntu, RHEL/CentOS, openSUSE, and Debian. Ubuntu distributions now include the Eucalyptus software core as the key component of the Ubuntu Enterprise Cloud.

Who Should Read this Documentation?

This documentation is for Eucalyptus administrators who wish to deploy and manage the Eucalyptus cloud platform; and for users who wish to run and manage instances of Linux-based virtual machines (VMs) within a Eucalyptus cloud.

What's in this documentation?

This online documentation contains instructions for administrators and users of Eucalyptus 2.0 open core software. While user-oriented instructions contained herein apply generally to all client tools capable of interacting with Eucalyptus, the primary focus is on the use of Euca2ools (Eucalyptus command line tools).

Contacting Eucalyptus

Please send any questions, corrections, comments, or suggestions for Eucalyptus documentation to documentation@eucalyptus.com.

Features of Eucalyptus

Major features of the Eucalyptus cloud platform include:

- AWS-compatible API
- Hypervisor-agnostic architecture (currently supports Xen and KVM hypervisors).
- Walrus: An S3-compatible bucket storage manager. (Walrus handles storage of user data as well as filesystem images, kernels, and ramdisks.)
- EBS support over AoE and iSCSI
- Multiple network modes to accomodate different network architectures.
- Web UI and command-line tools for cloud administration and configuration.
- Massively scalable architecture: Cloud requests are serviced asynchronously with minimal locking using eventual consistency for scale.
- Installation from binary packages for CentOS, openSUSE, Debian, and Fedora. Also available on Ubuntu as Ubuntu Enterprise Cloud (UEC).

Eucalyptus users interacting with the cloud have a variety of features at their disposal for implementing, managing, and maintaining their own collections of virtual resources (machines, network, and storage). These features include:

- SSH Key Management - Eucalyptus employs public and private keypairs to validate user's identity when logging into VMs via SSH. Eucalyptus users can add, describe and delete keypairs.
- Image Management - Before running instances, VM images must be prepared for use in the cloud. Eucalyptus users can bundle, upload, register, describe, download, unbundle, and deregister VM images.
- Linux-based VM Management - Eucalyptus lets users run their own VM instances in the cloud. Users can run, describe, terminate, and reboot a wide variety of Linux-based VM instances that were prepared using Eucalyptus' Image Management functions.
- IP Address Management - Depending on the networking mode, users may have access to elastic IPs — public IP addresses that users can reserve and dynamically associate with VM instances. Eucalyptus users can allocate, associate, disassociate, describe, and release IP addresses.
- Security Group Management - Security groups are sets of firewall rules applied to VM instances associated with the group. Eucalyptus lets users create, describe, delete, authorize, and revoke security groups.
- Volume and Snapshot Management - Eucalyptus lets users create dynamic block volumes, which are analogous to raw block storage devices that can be used with VM instances. Users can create, attach, detach, describe, bundle, and delete volumes. Users can also create and delete snapshots of volumes and create new volumes from snapshots.

See the features specific to the latest release in a summary or in the ChangeLog.

What's New In Eucalyptus 2.0

Eucalyptus 2.0 adds these new features to the Eucalyptus cloud platform:

- iSCSI support for EBS volumes
- Virtio support for VMs on hypervisor
- New command-line tools for administrators
- Back-end (Cluster and Node Controller) scale improvements

Also see ChangeLog for a more detailed list of changes between different releases.