



HP Helion Education Services Course Overview

Eucalyptus 1 Seat Flex Training Course (H8Q08S)

The Eucalyptus Administrator course is aimed at administrators and operators of the Eucalyptus cloud platform.

Prerequisites

- LPIC or RHCSA equivalent is recommended.
- Students should be comfortable with using a command line and have a working knowledge of server virtualization.
- Students should also have familiarity with networking configuration, file systems and storage systems.
- Prior knowledge of cloud computing and Amazon Web Services (AWS) is beneficial.

Course objectives

- Key architectural and functional concepts: the components and underlying architecture of Eucalyptus 4 as well as the basic functionality of the platform
- Installation and configuration: how to install and configure Eucalyptus 4 in a proof-of-concept environment
- Management and maintenance: managing entities and resources in the cloud, including basic usage, and performing other administrative functions on the platform

Technical Requirements Online

1. Access to the Adobe Connect platform
 - a. Install the add-on
 - b. Test your setup
 - c. Headset / speakers with optional microphone for enhanced participation
2. VNC access outside of your network on TCP port 5901
3. Optional SSH access outside of your network on TCP port 22

Why education services from HP?

- Named a 2014 IDC MarketScape leader* in IT education in Cloud, Security, Big Data, Storage, ITIL/ITSM, Project Management training, after being recognized in 2013 for being an IDC MarketScape leader in IT education overall
- Global reach through 90 training centers in 45+ languages, with access to over 800+ experienced instructors
- Job-focused courses on HP technologies leading to HP ExpertOne certifications
- Wide range of education consulting services tailored to your specific needs to prepare you for IT transformation projects

Course title:	Eucalyptus 1 Seat Flex Training Course
HP product number:	H8Q08S
Category/Subcategory:	Cloud
Course length:	3 days
Level:	Advanced
Delivery language:	English
To order:	You can order this course online at http://www.hp.com/learn . At the site, select a country, then choose "registration" or "Book a course" and fill out the online registration form.

- Flexibility to learn through a wide variety of delivery modalities: traditional ILT (Instructor-led), VILT (Virtual instructor-led), SPEL (Self paced e-learning), games and simulations

* IDC MarketScape: US Cloud , Security, Big Data, Storage, ITIL/ITSM, Project Management Training Ecosystem, August 2014 Vendor Assessments, IDC #250180, IDC #250186 , IDC #250181, IDC #250182, IDC #250185, IDC #250178, #239139.

Detailed course outline

Module 1 – Introduction to Eucalyptus & Cloud

- The Definition of Cloud Computing
- On-Demand
- Broad Network Access
- Resource Pooling
- Rapid Elasticity
- Measured Service
- Programmatic Access
- Service Models
- Deployment Models

- Virtualisation Enables Cloud
- Virtualization vs. Cloud
- Summary of Cloud Characteristics
- Eucalyptus' Origins
- Eucalyptus Defined
- Amazon Web Services
- Amazon Web Services Compatibility
- Useful Links

Module 2 – Eucalyptus Architecture

- Key Concepts
- High Level Architecture
- Cluster / Availability Zones (AZs)
- Cloud Controller (CLC)
- Object Storage Gateway (OSG)
- User Facing Services (UFS)
- Management Console
- Storage Controller (SC)
- Cluster Controller (CC)
- Node Controller (NC)
- Deploying Eucalyptus - Host Placement
- Deployment Scenario 1
- Deployment Scenario 2
- Deployment Scenario 3
- Software Limits

Module 2a – Eucalyptus Services

- Services
- Compute (EC2)
- Object Storage (S3)
- Auto Scaling
- CloudWatch
- Elastic Load Balancing
- IAM (Identity & Access Management)
- Tokens Service
- DNS
- Imaging Service

Module 3 – Eucalyptus Installation

- Deployment Planning
- Hardware & OS
- Prerequisites
- Installation Methods - Packages
- Installation Methods - Automation
- Lab Installation
- Installation & Setup Procedure
- Package Names

- Installing the Cloud Controller and UFS
- Installing the OSP and Cluster Components
- Installing the Node Controller
- Post-Installation Tasks
- Configure Networking
- Networking Parameters in eucalyptus.conf
- Configuring Java
- Configuring the Service Interface
- Configuring the Cluster Controller
- Configuring the Node Controller
- Configuring the Node Controller (Cont.)
- Starting & Stopping
- Start Services
- Before Registering
- Register Components
- Register Nodes
- Runtime Configuration
- Download Credentials
- Configure the Storage Controller
- Configure the Object Storage Provider
- Install Service VM Images
- Verify Service State
- Configure Limits
- Configuring DNS
- Configuring the Imaging Service
- Configuring the Load Balancing Service
- Verify Resources
- Runtime Configuration – Further Examples

Module 3 Lab – Eucalyptus Installation

- Tasks
- Solutions

Module 4 - Eucalyptus Networking

- Networking Modes
- Changes in 4.x
- MANAGED and MANAGED-NOVLAN Logical Topology
- MANAGED & MANAGED-NOVLAN Physical Example
- Edge Logical Topology
- Edge Physical Example
- Public and Private IP Addresses
- IP Addressing - Example
- Private Network Overlay
- Private Network Configuration
- MANAGED Mode VM Isolation
- MANAGED -NOVLAN Mode VM Isolation
- EDGE VM Isolation

- MANAGED(-NOVLAN) Multi-Cluster - Single Physical Network
- MANAGED(-NOVLAN) Multi-Cluster - Two Physical Networks
- EDGE Multi-Cluster - Single Physical Network
- EDGE Multi-Cluster - Multiple Physical Network
- MANAGED(-NOVLAN) Requirements
- Edge Requirements
- Choosing a Network Mode
- Network Mode Configuration - MANAGED(-NOVLAN)
- Network Configuration Example - MANAGED(-NOVLAN)
- Network Mode Configuration - Edge
- Network Mode Example - Edge
- Edge Implementation
- Reloading Network State - Edge

Module 4 Lab – Eucalyptus Networking

- Tasks
- Solutions

Module 5 – Eucalyptus Block Store

- Eucalyptus Block Store (Overview)
- EBS Use Cases
- Characteristics
- Provisioning EBS Volumes
- EBS Snapshots
- Snapshot Use Cases
- Snapshot Provision
- EBS - The Underlying Technology
- Volume Creation (DAS)
- Volume Attachment
- SAN-based Volume Creation & Attach
- Device Pass-through
- EBS Usage
- Snapshots – How They Work
- EBS Snapshot Operations
- EBS Snapshots & SANs
- EBS Snapshot Provision
- Configuring the Storage Controller
- Choosing a Storage Backend
- Storage Properties
- Storage Backends
- Best Practices
- Storage Networking
- Management

Module 5 Lab – Eucalyptus Block Storage

- Tasks
- Solutions

Module 6 - Eucalyptus Object Storage

- Object Storage Overview
- Eucalyptus Object Storage
- Object Storage Use Cases
- Features & Characteristics
- Using Object Storage
- Eucalyptus Object Storage Technology
- Eucalyptus OSG
- Eucalyptus OSP
- Eucalyptus OSG Operation - RiakCS
- Eucalyptus OSG Operation - Walrus
- Configuring Object Storage
- Registering Components
- Configure Provider Parameters (RiakCS)
- Best Practices
- Resource Limits
- Detailed Architecture

Module 6 Lab – Eucalyptus Object Storage

- Tasks
- Solutions

Module 7 – Identity & Access Management (IAM)

- Eucalyptus IAM
- Concepts
- Detailed Concepts
- Accounts
- Account structure
- Account Administration
- Users
- Groups
- Eucalyptus Account – The Special(s)
- Special Powers
- Creating & Deleting Accounts
- Managing Groups
- Managing Users
- Credentials
- Paths
- Eucalyptus Resource Names
- Components of Eucalyptus Resource Names
- IAM and S3 ERN Examples
- EC2 ERN Examples

Module 7 Lab – Eucalyptus IAM

- Tasks
- Solutions

Module 8 – Eucalyptus Tools

- euca2ools
- Supported Services
- Installing euca2ools
- Configuring euca2ools
- Order of Precedence
- User Credentials
- Multi-cloud Access
- Multi-cloud Access - Use Case Example
- euca2ools.ini - User Configuration
- euca2ools.ini - Region Configuration
- Interacting with Multiple Clouds
- Administrator Actions
- Eucalyptus Admin Tools
- Eucalyptus Admin Tools - Examples

Module 8 Lab – Eucalyptus Tools (euca2ools)

- Tasks
- Solutions

Module 9 – Eucalyptus Management Console

- Management Console Overview
- Installing the Management Console
- Configuring the Management Console
- Optional Configuration
- Starting the Management Console
- Login & Use
- Configuring SSL
- Load Balancing Multiple Consoles
- Performance Optimisation
- Login Profile

Module 9 Lab – Eucalyptus Management Console

- Tasks
- Solutions

Module 10 - Images & Instances

- Eucalyptus Machine Images (EMIs)
- Image Characteristics
- Image Format
- Image Format Ingress
- Launching Instances
- Instance Store & EBS-backed
- Images - Administrative Considerations
- Image Conversion
- Imaging Service
- Imaging Worker
- Creating & Importing Images

- Image Registration
- Launch Permissions
- Cloud Properties
- Instance Types
- Ephemeral Storage
- Instances
- Instance Creation
- Instance Artifacts
- Running Instances
- Controlling Instances
- Node Controller Storage
- Overcommit
- Node Controller Configuration
- Instance Configuration
- Eucalyptus Metadata Service
- Accessing Metadata
- Metadata Keys
- User Data

Module 10 Lab – Images & Instances

- Tasks
- Solutions

Module 11 – Instance Security

- Instance Security
- Security Groups
- Security Group Characteristics
- Security Group Defaults
- Security Group Management
- Manipulating Security Groups
- Keypairs
- Keypairs with Linux
- Keypair Retrieval in Linux
- Keypairs with Windows
- Security Best Practices

Module 11 Lab – Instance Security

- Tasks
- Solutions

Module 12 - Permissions

- Access Management Controls
- IAM Policies
- Why use Policies?
- IAM Policy Components
- Policy Document
- Policy Document Example
- ARNs, Paths and Policy Scope

- Permissions Evaluation
- Policy Generation
- Managing Policies
- Cluster Policies
- Quotas
- Quota Policy
- Quota Keys
- Quota Evaluation
- Roles
- Why use Roles?
- Roles & Instance Profiles

Module 12 Lab – Permissions

- Tasks
- Solutions

Module 13 - Reporting

- Reporting
- Reporting Architecture
- Data Warehouse (Bodega)
- Data Warehouse (Bodega) Cont.
- Exporting Data from the CLC
- Importing Data & Generating a Report

Module 13 Lab – Eucalyptus Reporting

- Tasks
- Solutions

Module 14 – Logging & Troubleshooting

- Logging
- Log Rotation
- Fault Logs
- Interrogating System State
- Audit Logging
- Tracing Activity
- Tracing An Instance Launch
- Debugging Servos
- Troubleshooting Image Conversion
- Worker Time Sync
- Component Connectivity
- Sosreports
- Triage Tips
- Functional Testing

Module 14 Lab – Eucalyptus Troubleshooting

- Tasks

For more information

To locate country contact information and to learn more about education services, please visit our worldwide web site at <http://www.hp.com/learn>.

