HP Helion Education Services Course Overview

Eucalyptus Cloud Administrator (H8Q07S)

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

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
- 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.

Course title:	Eucalyptus Cloud Administrator
HP product number:	H8Q07S
Category/Subcategory:	Cloud
Course length:	3 days
Level:	Advanced
Delivery language:	English
To order:	You can register your interest for this course online at **http://www.hp.com.au/education** .At the site, select the course under Cloud portfolio and you will see dates for the course. Register your interest for the date of your choice.

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

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