



# HP 教育訓練中心課程簡介

Fundamentals of OpenStack® Technology (H6C68S)

此為期三天的課程協助管理員和使用者的配置、管理，和使用 OpenStack 雲端服務平台。架構性的綜覽確保您對多種 OpenStack 專案及其功能的瞭解。實作練習提供您 OpenStack 環境重點的配置和操作經驗。

## 適合對象

- 規劃和管理以 OpenStack 為基礎環境的系統管理員、工程師、和顧問。

## Certifications and Related Examinations:

- EXIN Foundation Certificate in OpenStack Software

## 先修課程

HP 建議學員報名本課程前，已完成下列認證課程或具備同等經驗：

- Completion of Linux Fundamentals (U8583S)
- Completion of Linux for Unix Administrators (U2794S)
- HP Cloud Overview Seminar (HK917AAE)

## 課程目標

At the conclusion of this course, you should be able to:

- 說明 HP Converged Cloud 的架構和主要功能
- 說明 OpenStack 的架構
- 配置和使用 OpenStack

## 課程效益

- 獲得能配置、管理、和使用 OpenStack 環境的能力
- 瞭解多種 OpenStack 專案的架構，以及它們如何結合解決方案內
- 瞭解 OpenStack 在 HP Converged Cloud 環境中的角色

## 為何選擇HP教育訓練中心？

- 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

<b>Course title:</b>	Fundamentals of OpenStack® Technology
<b>HP product number:</b>	H6C68S
<b>Category/Subcategory:</b>	Cloud
<b>Course length:</b>	3 day
<b>Level:</b>	Introductory
<b>To order:</b>	To review course schedules and to register for a course, visit <a href="http://www.hp.com.tw/education">http://www.hp.com.tw/education</a>

- 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

## 課程大綱

### Module 1 – Course overview

- Set out the course objectives

### Module 2 – Introduction to OpenStack®

- OpenStack Overview
  - OpenStack high level architecture
  - OpenStack architecture overview

- OpenStack component interactions
- OpenStack API Interfaces
- HP and the Cloud
  - HP’s Contributions to OpenStack
  - HP’s OpenStack and Cloud Leadership
  - HP’s OpenStack Based Offerings
- Accessing OpenStack Services
  - Dashboard
  - CLI
  - API
- Lab Exercises:
  - Accessing the Lab VM and starting the OpenStack® environment
  - Exploring the OpenStack® command line
  - Accessing OpenStack® using Horizon GUI

### **Module 3 – Keystone – OpenStack® Identity Service**

- Keystone overview
- Keystone architecture
  - User management
  - Service management
- Using Keystone
  - Using the python-keystone client
  - Adding Users, Tenants, and Roles
  - Token Auth vs Password Auth methods
  - Configuring service credentials
  - Configuring SSL support
- Configuring Keystone
- Troubleshooting Keystone
- Lab Exercises
  - Keystone Identity Functionality
  - Horizon Identity Functionality
  - OpenStack® Service Catalog and API access

### **Module 4 – Nova – OpenStack® Compute Service**

- Nova Overview
- Nova architecture
  - OpenStack Compute component interactions
  - A look the Nova API
  - Nova-network
  - Nova volume management
- Configuring Nova
- Operating Nova
  - Creating and managing a compute node
  - Image and instance management using Nova
- Scheduler
  - Scheduling overview
  - Nova Schedulers

- Troubleshooting
- Lab exercises
  - Creating an Instance from the CLI
  - Verify the required nova services are enabled and happy
  - Run (boot) an Image
  - Manage Instances from the Horizon GUI
  - Pausing and Suspending the VM
  - Creating a Snapshot
  - Terminating Instance

### **Module 5 – Glance – OpenStack® Image Service**

- Glance Overview
- Glance architecture
  - Glance API
  - Glance Registry
  - Glance storage adapters
- Image management using Glance
  - Overview of image management
  - Supported image types
  - Creating and configuring images in Glance
  - Booting an image
  - Deleting an instance
  - Replicating images
- Troubleshooting Glance
- Lab Exercises
  - Creating a Glance Image
  - Creating an Instance

### **Module 6 – Horizon – OpenStack® Dashboard**

- Horizon overview
- Horizon Architecture
- Installing and configuring Horizon
- Common management tasks
- Troubleshooting
- Lab Exercises
  - Exploring the OpenStack® Dashboard
  - Exploring the Horizon Configuration Settings

### **Module 7 – Neutron – OpenStack® Networking Service**

- Overview of OpenStack Neutron
- Neutron Architecture and use cases
  - Single flat network
  - Multiple flat network
  - Mixed flat and private network
  - Provider router with private networks
  - Per-tenant routers with private networks
  - Open vSwitch and Linux bridge

- Linux network namespaces
- Configuring Neutron
- Using Neutron Services
- Troubleshooting Neutron
- Lab Exercises
  - Verifying Neutron configuration
  - Assembling the network map
  - Creating a VM
  - Modifying Access & Security settings
  - Connecting to the Instance
  - Associating Floating IP to the Instance
  - Examining the Network Topology

### **Module 8 – Cinder – OpenStack® Block Storage**

- Cinder Overview
- Cinder Architecture
  - OpenStack storage concepts
  - Cinder API
  - Cinder scheduler
- Cinder Configuration
- Using Cinder
  - Creating volumes
  - Configuring boot from volume
- Troubleshooting
- Lab Exercises
  - Creating a Stack Volume from the CLI
  - Creating an instance that boots from a Cinder volume
  - Using Horizon to manage Cinder Volumes

### **Module 9 – Swift – OpenStack® Object Storage**

- Swift Overview
- Swift Architecture
  - Accounts and credentials
  - Containers, objects, rings
  - Nodes: auth, proxy, storage
  - Replication
  - Updaters and auditors
  - Language Bindings
- Configuring Swift
- Using Swift
  - Accounts
  - Creating and managing objects
  - Object server management
  - Container server management
  - Account server management
  - Proxy server management
  - Ring management

- Large objects
- Monitoring
- Troubleshooting
- Lab exercises
  - Using the OpenStack® Object Storage Service
  - Exploring the Swift Configuration

### **Module 10 – Ceilometer – OpenStack® Telemetry Service**

- Ceilometer overview
- Architecture
  - Central agent
  - Compute agent
  - Collector
  - Data store
  - API server
  - Meter types and units
- Configuring Ceilometer
- Using Ceilometer
  - Using component meters
  - API and CLI queries
- Troubleshooting Ceilometer
- Lab Exercises
  - Ceilometer overview

### **Module 11 – Heat – OpenStack® Orchestration Service**

- Heat Overview
- Architecture
  - Heat Orchestration Template (HOT) format
  - Heat CFN API service
  - Heat CFN tools
  - Heat enabled images
  - User data input formats
  - Cloud-init and user-data scripts
  - Resource plugins
- Configuring Heat
- Using Heat
  - Configuring images for use with Heat
  - Creating a stack
- Troubleshooting
- Lab exercises
  - Configuring OpenStack® for Heat
  - Heat basic template example
  - Viewing the status of Stack from Horizon
  - Template Input Parameters
  - Improving Templates
  - Providing parameters to heat command line
  - Providing template outputs

- Complex Template Deployment
- Cleanup

## 更多訊息

歡迎上網查詢HP教育訓練中心所有課程相關訊息及活動請造訪: <http://www.hp.com.tw/education>

### Module 12 – Trove – OpenStack® Database Service

- Trove Overview
  - Terminology
  - Use Cases
- Architecture
- Trove Installation
- Configuring Trove
- Using Trove
  - Working with Datastores
  - Working with Instances
  - Working with Databases
- Managing Trove using Horizon
- Troubleshooting Trove
  - Using Trove with DevStack Environment
- Lab Exercises:
  - Preparing the environment for Trove
  - Creating new Datastore
  - Create trove Instance and Database
  - Managing Trove using Horizon

### Module 12 – Deployment Planning

- Planning an OpenStack deployment
- Regions, AZs, Cells, etc.
- HA considerations
- HP Services for OpenStack deployment planning

### Module 13 – New Capabilities

- Introducing capabilities under development for Juno release
- Introducing Ironic – OpenStack® Bare Metal Provisioning Service
  - Use Cases
  - Logical Architecture
  - Key Technologies
  - Deployment Architecture
  - Prerequisites for Bare Metal Deployment
  - Bare Metal Deployment Steps
- Introducing Zaqr – Multi-tenant Cloud Messaging Service
- Introducing Manilla – Shard File System Service
- Introducing Designate – DNS as a Service component
- Introducing Barbican – Key Management Service

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