

Course Design Document

Cisco Cloud and Infrastructure Essentials for Engineering

Report Sections

This Report includes these sections:

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- Course Overview
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DOCUMENT INFORMATION

Document Purpose

The purpose of this document is to acquaint personnel with the high-level project and course design specifications that will guide future course design and or development activities.

Revision History

The document has been revised on these dates and for these reasons.

Date	Purpose of Revision
April 2012	Course As-Built Design Document from ANI

Contributors/Reviewers

The following individuals have or will contribute to the findings cited in this document or review of those findings.

Name	Position
Joshua Clark	Cisco Learning and Development Manager
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COURSE OVERVIEW

Course Goal and Description

A Web-based, 5-7-hour course with the goal of closing Cloud knowledge gaps within the Cisco Global Engineering organization so that all engineers possess a common foundational level of understanding regarding Cloud computing and the enabling Cisco technologies, solutions and architectures.

Course Information

The course will convey positioning information for AMs on Company X Global Sustainability Solutions implemented in the public or private sector on an ICT infrastructure.

- **Over-arching Curriculum:** N/A
- **Full Course Title:** Cisco Cloud and Infrastructure Essentials for Engineering
- **Course Acronym:** CCIEE
- **Course Version Number:** v1.0
- **New course:** Yes
- **Course Modality:** Web-Based Training through autoLearn
- **Course Duration:** 5-7 hours
(See Appendix A for actual Media Run-time by Module/Lesson)

The course is used in the following certifications, curricula, specializations, and learning maps:

Certifications:

- None

Curricula, specializations, and learning maps:

- TBD

Target Audiences

The primary target audiences for the course are:

- Cisco Software Engineers
- Cisco Hardware Engineers
- Cisco Test Engineers

Target Theaters and Locales

The primary target theaters for the course is the Global Cisco Engineering Organization

Course materials will be translated into the following languages:

- N/A

Prerequisite Skills and Knowledge

This section lists the skills and knowledge that learners must possess to benefit fully from the course. It includes recommended Company X learning offerings that the learners may complete to benefit fully from this course.

- CCENT-level understanding of general networking concepts
- Basic knowledge of compute, storage and security concepts

Assessment Strategy

This section specifies the assessment approach for the learning product.

- None

Maintenance Requirements

During final development, a maintenance release of the course was discussed to address final change requests that could not be included given expedited development for the Internal Networkers event in early May 2012. Maintenance release under consideration for CY mid-2012.

See Appendix B for Course Update Suggestions targeted for maintenance release.

COURSE FLOW AND OBJECTIVES

This section illustrates the flow of the course.

Flow of Learning Modules

Introduction to Cloud

Cisco Data Center and Cloud Offerings

Technologies that Make Cloud Work

Technical Components of Cloud – Deep Dives

Cloud and Data Center Design

Course Structure and Objectives

This section provides a high-level outline of the course Module, Lesson, and Activity components and high-level objectives.

Course Objectives:

- Explain the key concepts and business drivers for Cloud Computing.
- Explain the Cisco Cloud strategy and identify the main components of the CloudVerse platform.
- Identify and explain the underlying technologies that make Cloud Computing work.
- Identify and explain key Cisco Validated Designs that enable Cloud.
- Explain what Cloud Services can be enabled by leveraging Cisco reference architectures.

Module 1: Introduction to Cloud

Module Objective:

Describe the evolution of data centers to support businesses needs and considerations through Cloud computing.

Note This Module was designed and developed by Cisco TME Chuck Coffey.

Lesson 1: The Evolution of Data Center to Cloud

Objective: Describe how data centers evolved to support Cloud computing

Lesson 2: The Business Reasons for Cloud

Objective: Describe business trends and needs are driving the adoption of cloud

Lesson 3: Cloud Computing Introduction and Overview

Objective: Describe deployment and services models used for cloud computing and the criteria businesses use to choose which is best for their needs.

Lesson 4: Business Challenges of Adopting Cloud Computing

Objective: Describe individual factors a business must consider when adopting a cloud solution and how these factors can impact cloud adoption

Module 2: Cisco Data Center and Cloud Offerings

Module Objective:

Describe the Cisco clouds strategy, components and offerings for cloud computing architectures.

Note This Module was designed and developed by Cisco TME Chuck Coffey.

Lesson 1: Cisco Data Center and Cloud Offerings

Lesson Objectives:

- Differentiate the Cisco Cloud Intelligent Network, Unified Data Center, and Cloud Applications and Services, each as a component of CloudVerse.
- Identify Cisco solutions which may be present in cloud IaaS, PaaS, and SaaS offerings and how those offerings are provided to consumers.

- Differentiate the four service categories of Cisco Cloud Enablement; Strategy, Planning and Design, Implementation and Optimization.

Module 3: Technologies that Make Cloud Work

Module Overview: This module provides a technical overview of the UCS, Unified Fabric and storage components that comprise the foundation of the Cisco Virtual, Multi-tenant Data Center model supporting cloud solutions. The module also highlights interfaces and tools used in the management, provisioning and orchestration of cloud solutions. Several downloadable technical references are provided.

Note This module was designed and developed by vendor ANI.

Module Objectives:

- Identify the Cisco Unified Compute, Network and Storage components in a cloud data center solution and how those components support the complete Unified Data Center architecture.
- Differentiate the tools and interfaces used to provision and orchestrate resources in cloud deployments.

Lesson 1: Cloud Architectures

Lesson Overview: This cloud architecture lesson provides a technical overview of the Cisco UCS, Nexus Unified Fabric and storage components that comprise the foundation of the Cisco Virtual, Multi-tenant Data Center model supporting cloud solutions. Vblock and FlexPod Integrated Compute Stack architectures are discussed as well as an overview of data center security

Lesson Objectives:

- Describe how Cisco Unified Data Center architecture facilitates virtualization and consolidation of data center resources in order to reduce costs, and increase agility to respond to dynamic data center requirements of cloud providers.
- Identify the Cisco Unified Fabric components that facilitate data center I/O consolidation through FCoE and Nexus Switching platforms.
- Identify how the Cisco UCS platform hosts unified compute resources for the data center as well as server virtualization and consolidation.
- Differentiate how FlexPod, Vblock and the Cisco MDS platforms consolidate data center storage and the fabric over which to access storage resources.
- Identify the management and security solutions Cisco provides to optimize a unified data center.

Lesson 2: Cloud Provisioning and Orchestration

Lesson Overview: This lesson examines the CloudVerse platform including Cisco Unified Data Center as well as Cisco Intelligent Network and Application Service offerings. The lesson also highlights how Cisco CIAC and Portal Manager for Data Center Services provide portal access for cloud users to orchestrate, provision and manage cloud resources.

Lesson Objectives:

- Differentiate the Cisco Unified Data Center, Cisco Intelligent Network and Application Service offerings in the CloudVerse portfolio.
- Differentiate Cisco Cloud Portal, Cisco Process Orchestrator and Cisco Server Provisioner and the manner through which each accelerates new service delivery to end users as part of the Cisco Intelligent Automation for Cloud solution.
- Compare and contrast Portal Manager, Service Catalog, Request Center and Lifecycle Management as components in the Cisco Portal for Data Center Services.

Module 4: Technical Components of Cloud – Deep Dive

Module Overview: The individual topics within this module are those technologies, solutions, products and architectures used for creating cloud computing offerings. Each topic includes links to a variety of trainings for these technical components used for Cisco's cloud solutions.

Note This Module was designed and developed by Cisco TME Chuck Coffey.

Module Objective:

This module is only a single lesson so the lesson and module level objectives are the same.

Describe the technical components used to create Cisco's cloud solutions.

Module 5: Cloud and Data Center Designs

Module Overview: This module examines the design of a Cisco Virtual Multi-Tenant Data Center and how that data center supports both Enterprise and Service Provider service offerings. The Cisco VMDC architecture is the platform for Service Provider Infrastructure-as-a-Service and Cisco Hosted Collaboration Solutions offered in both a private and public cloud models. Lastly, the module examines Cisco Security SaaS offerings made available through Cisco Security Data Centers worldwide.

Note This module was designed and developed by vendor ANI.

Module Objectives:

- List the key components of the Cisco Virtual Multi-Tenant Data Center Design.
- Identify the service offerings available to cloud customers in a service provider or Cisco Channel Partner Infrastructure-as-a-service model.
- Identify the Cisco security solutions that are offered through a Software-as-a-Service model from Cisco Security Data Centers worldwide.
- Identify the architectural components of the Cisco Hosted Collaboration solution as it is offered through cloud service providers and Cisco Channel partners.

Lesson 1: VMDC Reference Designs

Lesson Overview: This lesson examines Integrated Compute Stacks, Unified Networking and Data Center Interconnect as the modular design components in the VMDC architecture. The UCS, Nexus, FlexPod and Vblock components are mapped to their functional role in a tiered, VMDC data center model. The lesson also provides a model for tenant types and profiles to be used in marketing and managing cloud offerings.

Lesson Objectives:

- Identify the core technology components and architecture of Cisco Data Center3.0 as those components support a virtualized multi-tenant cloud offering to SP and Enterprise cloud customers.
- Differentiate private, public, enterprise and service provider tenants in a Cisco Virtual Multi-Tenant Data Center model.
- Describe key IP traffic service patterns in a Cisco Virtualized Multi-tenant Data Center.
- Differentiate network Layer 2, 3 and network service separation when securing a multi-tenant data center hosting cloud customers.

Lesson 2: infrastructure-as-a Service

Lesson Overview: This lesson outlines the components of IaaS offerings and the consumer motivations for subscribing to those offerings. Scaling the data center to support IaaS is examined as well as possible models for consumption in both a private and public cloud context.

Lesson Objectives:

- Differentiate Infrastructure, Platform and Software as a Service cloud service offerings and the set of resources provided and managed by the service provider/customer in each offering.
- Identify the components of Infrastructure-as-a-Service provided by the service provider (network, server, compute and VM) on which a customer may host an operating system, applications and data.
- Enumerate the Cisco offerings to assist customers and service providers plan, design, implement and optimize IaaS solutions in a VMDC data center.
- Define the function of shared resource pools that support IaaS implementation for a service provider.
- Differentiate IaaS customer service classes as customers request and service provider's provision cloud resources.
- Identify how the IaaS model benefits customers seeking to supplement enterprise IT demands in these areas: Disaster Recovery, Compute-as-a-Service, CloudBurst, VDI and development testing platforms.

Lesson 3: Software-as-a-Service

Lesson Overview: Cisco provides several security SaaS offerings through Cisco Security Data Centers worldwide. This lesson examines the function of Cisco ScanSafe, IronPort and SIO and how those solutions are accessed and consumed through a Software-as-a-Service model.

- Define the enterprise and service provider data center security portfolio delivered from Cisco Security Data Centers throughout the globe.
- Differentiate the ScanSafe SaaS features that provide content visibility, zero-day threat protection, and provide secure access from mobile and Wi-Fi clients accessing cloud and enterprise resources.
- Enumerate the process through which IronPort Hosted Email Security, as a dedicated SaaS infrastructure, provides inbound and outbound filtering for SPAM as well as Anti-Virus protection, and DLP for enterprise and cloud customers.
- Describe how Cisco SIO proactively mitigates malware risks on SaaS security enabled devices throughout the globe through SIO expert analysis and a large number of collection devices.

Lesson 4: Cisco Hosted Collaboration Solutions

Lesson Overview: Cisco Hosted Collaboration Solutions must be differentiated from traditional on-premise solutions as well as UC on UCS deployments. HCS offers a public, private and hybrid as well as remote management consumption model to be offered by service providers and Cisco channel partners. The lesson details both call-flows and technology components of HCS.

- Differentiate the Cisco Hosted Collaboration Solutions from traditional on-premise or cloud based collaboration and UC solutions.
- Differentiate the private, public, hybrid and remote management deployment models for HCS.
- Differentiate the service provider, reseller and customer HCS deployment models.
- Identify the HCS call flow process from customer premise equipment to HCS in each deployment model in small, medium and large deployments.
- Identify the tools and data center resources required to deploy, manage, scale and secure HCS deployments.

APPENDIX A: COURSE MEDIA RUN-TIME


Below are actual course Run-time per lesson/module with additional, optional resource navigation estimates.

CCIEE Actual Course Run-time

Lesson	Slide count	Recording resource	Time in seconds	Seconds converted to (h:mm:ss)	Module Total	Optional, Embedded Resources
M1L1	12	JH	800	13:20		
M1L2	10	PB	459	07:39		
M1L3	13	JH	451	07:31		
M1L4	11	PB	816	13:36		
Module 1				Total:	42:06	
M2L1	20		780	13:00		
Module 2				Total:	13:00	
M3L1						
	T1	12	JH	313	05:13	
	T2	34	PB	1522	25:22	20:00 FlexPod
	T3	16	JH	771	12:51	20:00 VBlock
	T4	12	PB	337	05:37	
	T5	8	JH	161	02:41	
M3L2						
	T1	15	PB	800	13:20	
	T2	23	JH	1274	21:14	
	T3	26	PB	931	15:31	
Module 3				Total:	1:41:49	40:00
M4L1	11	JH	499	08:19		variable
Module 4				Total:	8:19	
M5L1	45		2147	35:47		20:00 VMDC
M5L2	31		1494	24:54		35:00 F&S + RefDocs
M5L3	50		2614	43:34		
M5L4	46		2114	35:14		
Module 5				Total:	2:19:29	55:00
COURSE TOTAL	268		18283	5:04:43	1:35	Optional

APPENDIX B: COURSE UPDATE SUGGESTIONS

Below are change suggestions for the next course release, as compiled during the final course development.

MOD	LES	SLIDE	LESSON DESCRIPTION	SUGGESTED BY	COMMENT
3	1	7	Cloud Technologies		Topic 2 – broken link http://www.cisco.com/en/US/partner/prod/collateral/ps10277/ps11551/data_sheet_c78-677682.html : after login, resolves to Cisco home page, not a data sheet (left out of the Resources tab)
3	1	17	Cloud Technologies		Check Link on slide for functionality
3	2		Automation and Orchestration	Reviewer Mike E.	<p>Cloud Automation Packs</p> <ul style="list-style-type: none"> Cloud Automation Packs are sets of preconfigured workflows for both common and complex computing tasks, including: <ul style="list-style-type: none"> VMware task automation Cisco UCS Manager task automation Cisco Server Provisioner task automation Automation of core and common activities that span multiple domains <p>Waiting on updated Screenshot from Mike E.</p>  <p>Update Graphic in this slide</p>
5	2		IaaS	Chuck Coffey and Eric Charlesworth Reviewer	Alpha feedback that arrived during production: IaaS lesson needs to provide better balance between SP and Enterprise. I would be happy to walk through this deck with you and / or anyone else if that would help.” The presentation with comments can be found here: http://ecm-wt.cisco.com/ciscodocs/listFolder?action=listFolder&folderId=0b0dcae1831b985f&folderTitle=Alpha%2bReviews&rootFolderId=0b0dcae18299dde5&parentFolderId=0b0dcae18299dde5&parentFolderTitle=Content%2bDevelopment . An updated version of the Alpha course file is Cloud-SB-M05L02-20120327-v1-reviewed by ERIC CHARLESWORTH
5	3		SaaS	Reviewer Laura	Add storage encryption coverage
5	3		SaaS	Reviewer Laura	Add more content on customer use of SIO through Cisco Security SaaS offerings.
5	4		HCS		Slide Title: HCS 8.0 On-Premise Equipment Overview Link to equipment overview had to be removed – no longer operational.
5	4	12	HCS		Check slide and transcript for reference to SBA (Smart Business Architecture). Remove verbiage from the slide and transcript

