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Cloud Computing Module

C3E

Certified Cloud Computing Engineer

v1.2

Part 1 - Introduction to Cloud Computing

- What is the cloud?
- History of Cloud Computing
- How Cloud Computing Works
- Advantages & Disadvantages
- Applications for Businesses
- Cloud Service Providers
 - o Amazon Web Services
 - o Microsoft Azure
 - o Google Appengine
- Cloud Computing Architecture
- Cloud Computing Terminology
 - o Communication-as-a-Service (CaaS)
 - o Infrastructure-as-a-Service (IaaS)
 - o Monitoring-as-a-Service (MaaS)
 - o Software-as-a-Service (SaaS)
 - o Platform-as-a-Service (PaaS)

Part 2 – Virtualization

- Virtualization Basics
- Objectives
- Benefits of Virtualization
- Emulation
- Virtualization for Enterprise
 - o VMware
 - o Xen
 - o KVM

Part 3 – Building Cloud Networks

- Designing and Implementing a Data Center-Based Cloud
- Industry and International Standards
- Communication Requirements for Cloud Implementation
 - o Public/Private Internet
 - o Routing to the Datacenter
 - o Switching within the Data Center
 - o Bandwidth
 - o Security
 - o Storage Options for Cloud Computing
 - NAS, SAN, CAS
 - Redundancy
 - Backup and Recovery

Part 4 – Private Clouds

- What is it?
- Advantages & Disadvantages
- Installing a Private Cloud
 - o Eucalyptus
 - o Open Nebula
 - o Open Stack

Part 5 – Amazon Web Services

- AWS Overview
- Elastic Beanstalk
- EC2 Overview
- Amazon S3
- VPC
- Cloud Front
- Elastic Map Reduce
- Cloudwatch
- Cloud Formation
- Amazon RDS
- Amazon ElastiCache
- Amazon SQS
- Amazon IAM
- Amazon SNS
- Amazon SES
- Amazon Route 53
- Amazon DynamoDB
- Amazon Storage Gateway
- Amazon SWF

Part 6 - Microsoft Azure

- Azure Introduction
 - o Azure Architecture
 - o Windows Azure
 - o Azure Roles
 - o Azure Storage
 - o SQL Azure
 - o AppFabric
 - o Microsoft Data Centers
 - o Tools and DevFabric
- Azure Web Role
 - o Configuration
 - o Endpoints
 - o Security
 - o Logging
 - o Load Balancing
- Publishing to the Cloud
 - o Developer Portal
 - o Hosted Services
 - o Storage Accounts
 - o Associated Costs
- Azure Administration
 - o Subscriptions and Administration
 - o Windows Azure OS
 - o Remote Desktop
 - o Startup Tasks

- Azure Storage
 - o Local Storage
 - o Blobs
 - o Tables
 - o Queues
 - o REST API
- Azure Worker Role
 - o Configuration and API
 - o Communications
 - o Azure Application Architecture
- SQL Azure
 - o Account Setup and Provisioning
 - o Firewall and Access Control
 - o SQL Azure Tools
 - o Database Management and Development
 - o Accessing from Application Code
 - o Data Migration
 - o Database Backups
 - o Partitioning
- Windows Azure Diagnostic Services

Part 7 – Google App Engine

- AppEngine Capabilities Overview
 - o App Server
 - o Database
 - o Authentication via Google
- Your AppEngine Account
 - o Setup
 - o Infrastructure
 - o Utilities
 - o SDK and integration
 - o Online management of your apps
- Building Web Pages and Web Services with AppEngine
- AppEngine Services
 - o Caching via Memcache
 - o External services via Urlfetch
 - o Asynchronous communication with XMPP (Jabber)
 - o Email
 - o Image processing
 - o Cron (scheduled) jobs
 - o Task queues
- The Google AppEngine DataStore
 - o Differences between DataStore and relational databases
 - o Entities and Models
 - o CRUD operations and the GQL query language
 - o Keys and Entity Groups
 - o Queries and Indexes
 - o Transactions
 - o Additional DataStore features