PROFESSIONAL CLOUD ADMINISTRATOR

Syllabus

Syllabus for the certification course *Cloud Provisioning and Administration* leading to the CCC Professional Cloud Administrator certification

CLOUD CREDENTIAL COUNCIL

CCC Cloud Computing PROFESSIONAL CLOUD ADMINISTRATOR Certified by EXIN

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Contents

1. Overall Purpose of the Syllabus

The purpose of this syllabus is to provide a clear statement of the knowledge and skills required by a professional cloud administrator. This syllabus informs courseware providers of the training content required for accreditation. Furthermore, it provides guidance to instructors on which areas must be emphasized to give candidates the best possible chance of exam success. Finally, the syllabus also provides candidates themselves with clarity on what they must do to pass the exam and achieve certification.

2. Structure of the Syllabus

The structure of this syllabus is as follows.

First, the role itself is briefly described in relation to the background context of cloud computing.

Then, each module has a clearly stated purpose and introductory synopsis followed by key topics.

The flow of the learning modules is designed to build both understanding of the topics and practice in applying that knowledge to the administrator role.

3. The Role of the Professional Cloud Administrator

As cloud computing continues to evolve, so does the role of the professional cloud administrator. The modules in this syllabus systematically lay out the core components of the cloud administrator function and necessary skills. However, it is worth being aware that these functions are carried out within the context of the following emerging new trends and leading administration solutions:

- The administrator role is increasingly being shifted to external cloud providers, having an impact on outsourcing and offshoring services and strategies.
- Cloud computing is encouraging a consolidation across traditional infrastructure silos (i.e. server, network, storage). However, the roles of operations manager and administrator remain separate and distinct, irrespective of cloud computing.
- Operations administrators must be knowledgeable and proficient across component infrastructure areas (i.e. server, OS, network, storage) as opposed to specializing in a single area.
- The administrative remit is broadening to include IT environments that are elastic and involve self-service administration via third parties (e.g. database administrator, products build manager, etc.) that may have limited or multi-tenant access controls available to them.

4. Syllabus – Core Skills

Module 1. Cloud Resource Administration and Provisioning

Module Purpose and Overview

- Explain cloud administration influences, roles, characteristics, deployment, and delivery models.
- Explain the goals benefits and challenges of workload analysis and capacity planning in the cloud.
- Explain the basic cloud network, compute, and storage administration technologies.
- Explain the basics of provisioning environments and platform services in the cloud.
- Explain concepts, benefits and challenges of virtual deployments in the cloud.
- Explain virtual storage provisioning design and management control concepts.
- Explain cloud marketplace administration concepts.

Key Topics

- Fundamentals of Cloud Administration
  - Cloud Definition
  - Cloud Influences and Roles
  - Cloud Computing Operational Characteristics
  - Cloud Deployment Models
  - Cloud Service Models
- Cloud Workload Analysis and Capacity Planning
  - Goals and Benefits of Workload Analysis
  - Align Workload to Cloud Deployment Model
  - Cloud Workload Patterns
  - Risks and Challenges of Capacity Planning
  - Workload Capacity Planning in the Cloud
- Administering Cloud Technologies
  - Remote Administration
  - Network Administration
  - Computing Hardware
  - Network Hardware
  - Storage Hardware
- Cloud Resource Provisioning
  - Provisioning Environments and Platform Services in Cloud
  - Provisioning Control of Virtual Capacity
  - Virtual Computing Resources Management and Issues
  - Deployment Policies and Automation
  - Storage and Compute Multi-Tenancy
- Virtual Storage
  - Management Control
  - Provisioning Design
  - Service Management
- Cloud Marketplaces
  - Marketplace Administration

Module 2. Scalable and Elastic Administration

Module Purpose and Overview

- Explain cloud concepts, benefits, risks, and challenges.
- Explain cloud scalability administration concepts.
- Explain cloud elasticity administration concepts.

Key Topics

- Cloud Scalability Administration
  - High-Availability Clustering
  - Load Balancing
  - Service Relocation
  - Cloud Balancing
  - Resource Reservation
  - Storage Workload Management
  - Direct IO Access
- Cloud Elasticity Administration
  - Workload Distribution
  - Resource Pooling
  - Dynamic Scalability
  - Cloud Bursting
  - Elastic Disk Provisioning
  - Elastic Network Configuration
  - Cross Storage Device Vertical Tiering
  - Intra Storage Device Vertical Tiering

Module 3. Cloud Interoperability and Portability

Module Purpose and Overview

- Explain the concept of portability and interoperability.
- Understand the benefits and motivation for interoperability and portability.
- Identify risks and challenges for interoperability and portability.
- Differentiate categories of interoperability and portability.
- Explain a strategic planning to achieve interoperability and portability.

Key Topics

- The Need for Interoperability and Portability
  - Interoperability and Portability Overview
  - Common Motivations for Interoperability and Portability
  - Portability and Interoperability Categories
  - Data Portability
  - Application Portability
  - Platform Portability
  - Application Interoperability
  - Platform Interoperability
  - Management Interoperability
  - Publication Interoperability
  - Interoperability and Portability Benefits
  - Interoperability and Portability Risks and Challenges
- Strategic Planning for Interoperability and Portability
  - Cloud Deployment Models That Drive the Strategy
  - Cloud Service Models That drive the Strategy
  - Common Activities in Planning Interoperability and Portability in IaaS
  - Common Activities in Planning Interoperability and Portability in PaaS
  - Common Activities in Planning Interoperability and Portability in SaaS
  - Solving the Security Problems

Module 4. Strategic Policy Design for Cloud Usage and Compliance

Module Purpose and Overview

- Explain policy management and controls for audit and compliance.
- Explain cloud service level management considerations.
- Explain metering and billing considerations for cloud
- Explain licensing and compliance management in the cloud.

Key Topics

- Policy Management and Control
  - Audit and Compliance Overview and Objectives
  - Identity Compliance and Audit Recommendations
  - Audit Monitor
  - Audit Management System
- Service Level Management
  - Overview and Objectives
  - Monitors and Agents
  - Reporting and Analysis
  - Management System
  - Service Performance Metrics

- Metering and Billing Management
  - Overview and Objectives
  - Monitors and Agents
  - Reporting and Analysis
  - Cost Management System
- Privacy and Data Management
  - Overview and Objectives
  - Licensing and Privacy
  - Monitors and Agents
  - Reporting and Analysis
  - Management System

Module 5. Business Continuity Strategies and Disaster Recovery for Cloud

Module Purpose and Overview

- Performance Explain business continuity considerations and best practices for the cloud.
- Explain the cloud disaster recovery considerations and best practices.

Key Topics

- Business Continuity
  - Guidelines
  - Business Continuity Overview
  - Business Continuity in Cloud
  - Service Level Agreement Metrics
  - Testing Programs
- Disaster Recovery
  - Disaster Recovery Overview
  - Administrator Recommendations
  - Disaster Recovery in Cloud
  - Disaster Recovery Fit for Purpose
  - Workload Considerations
  - Tools
  - Testing Programs
  - Failover
  - Backup Sites
  - Data Backup and Data Restoration
  - Backup Implementation
  - Benefit of Cloud Computing for Disaster Recovery
  - Backup in the Cloud
  - Hot Backup Site
  - Warm Backup Site
  - Cloud Backup Site
  - Backup Plan
  - Backup Automation
  - Full System Backup and Differential Backup
  - Incremental Backup
  - Difference Between Backup Types
  - Creating Backup
  - Backup Storage

Module 6. Cloud Security Fundamentals

Module Purpose and Overview

- Cloud Explain fundamental cloud concepts, threats and vulnerabilities.
- Explain the cloud security administration, including encryption, digital signatures, key management, tokenization, identity and access management, trust zones and infrastructure hardening.
- Explain the importance of security standards.

Key Topics

- Fundamental Security Threats
  - Basic Terms and Concepts
  - Threat Agents
  - Cloud Security Threats
  - Security Threat Agents
- Cloud Security Administration
  - Security Concepts
  - Cloud Security Risks
  - Encryption and Digital Signatures
  - Cryptography in Cloud Deployments
  - Encryption in Cloud Databases
  - Key Management
  - Key Management Best Practices
  - Identity and Access Management
  - Identity, Entitlement, and Access Management Implementation
  - Level of Trust with Identity and Attributes
  - Policy Management
  - Architecture for Interfacing to Access Policy Providers
  - Trust Zones
  - Infrastructure Hardening
  - Intrusion Detection/Prevention
  - Infrastructure Security
- Security Standards
  - Key IT Security Standards
  - Web Security
  - SOAP Web Services Security
  - REST Web Services Security

Module 7. Federated Controls and Strategies for Multiple Cloud and Non-cloud Administration

Module Purpose and Overview

- Explain federated identify management concepts, benefits, challenges, and best practices.
- Explain systems management concepts related to delivering a quality service.
- Explain the basic cloud network, compute, and storage administration technologies.
- Explain the basics of cloud service level management.
- Explain the cloud service brokerage model and administration capabilities.

Key Topics

- Federated Identity Management
  - Cloud Best Practices
  - Authentication and Authorization
  - Enterprise Application Recommendations

  - Policy Decision Points
  - Definitions
  - Authorization Management Best Practices
  - Access Management Best Practices
- Systems Management
  - Service Quality Metrics
  - Usage Metrics
  - Monitoring and Optimization
- Service Level Management
  - Cloud Deployment Model Considerations
  - Cloud Service Model Considerations
- Broker Platform
  - Cloud Service Model Considerations
  - Cloud Broker Metrics for Cloud
  - Business Case Justification: Cloud Management Considerations
  - Economic Model: Cloud Management Considerations
  - Vendor Management: Cloud Management Considerations
  - Cloud Service Brokerage Platform: Key Platform Highlights
  - Cloud Broker Metrics for Cloud
  - Cloud-Services Life Cycle Management
  - Service Catalog Management
  - Service User Provisioning
  - Authentication, Authorization, and Access Control
  - User and Service Administration
  - Dashboards, Auditing, and Reporting
  - Helpdesk Ticketing and Support
  - Metering, Billing Settlement, and Chargeback

Module 8. Performance Measures, Monitoring and Optimization in Production

Module Purpose and Overview

- Explain how to reduce operating costs by controlling complexity in the cloud.
- Improve performance in the Cloud.
- Monitor key performance indicators.
- Optimize resources to focus on business-critical tasks.
- Deliver self-service applications efficiently in a secure and integrated environment.
- Explain how to administer cloud resource usage.
- Explain metering indicators for billing.

Key Topics

- Lifecycle Management
  - Cloud Lifecycle Management Needs
  - Cloud Lifecycle Management Tooling Benefits
  - Cloud Lifecycle Management Roles
  - Automation in Cloud Computing
  - Cloud Automated Processes Advantage
- Management and Administration Policies
  - Reducing Complexity of Cloud Delivery and Image Management
  - Service Delivery Management
  - Virtual Image Provisioning and Management

  - Application Level and Platform Level Management
  - Infrastructure Level Management
  - Virtual Storage Management Challenges in Cloud Computing
- Monitoring and Reporting
  - Monitoring Definition and Objectives
  - Monitoring Requirements for Cloud Deployments
  - Monitoring Benefits in Cloud Computing
  - Visualize Application Performance in Real Time
  - Monitor Business Transaction Service Levels
  - Monitor Cloud Infrastructure Health
  - Isolate Latency and Bottlenecks
  - Analyze Existing Application Dependencies
  - Monitoring Alerts
- Infrastructure Benchmarking
  - Benchmarking Cloud Infrastructure Challenges
  - Best Practices to Cloud Infrastructure Benchmarking: General Approach
- Availability and Performance
  - High Availability and Seamless Failover
  - Definition, Scope, and Applicability of Quality of Service
  - High Performance
- Usage and Accounting
  - Metering and Chargeback
  - Managing Chargeback Metrics

5. Course & Exam Details

Course Details

Suggested delivery format is instructor-led classroom-based learning.

Suggested duration: Three days (approx. 21 learning hours)

Exam Details

Aspect	Details
Exam Type	Scenario Based, Complex Multiple Choice and Multiple Selection
Number of Questions	25
Duration	75 minutes
Provisions for additional time relating to language	15 minutes of additional time
Prerequisite	None. However, it is recommended to have passed *Cloud Essentials* or *Virtualization Essentials* certification.
Supervised (Proctored)	Yes
Open Book	No
Pass Score	65%
Delivery	Online