LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

Adv Certificate in Cloud Infrastructure & Virtualization

Practitioner Level

LAPT — London Academy of Professional Training

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Reference IT-NIC-P • IT Centres

UKPRN 10067351 • Registered in England and Wales, company 4984798

6	30	180	440	60%	Lifetime
SUBJECTS	CHAPTERS	CLASSES	TOTAL MARKS	PASS MARK	VALIDITY

AT A GLANCE

REFERENCE	**IT-NIC-P**
AWARD	**Certificate**
ASSESSMENT	**440 marks — 264 to pass (60%)**
PREREQUISITES	**None**
VALIDITY	**Lifetime**
AWARDING BODY	**LAPT — London Academy of Professional Training**

CURRICULUM

1 Cloud Infrastructure Fundamentals

5 chapters · 30 classes · **65 marks**

- **1 Understanding Cloud Computing and Virtualization** — 6 classes
  - 1.1 Defining Cloud Computing and Its Essential Characteristics
  - 1.2 Exploring Service Models in Cloud Computing
  - 1.3 Investigating Deployment Models in Cloud Environments
  - 1.4 Understanding the Basics of Virtualization
  - 1.5 Analyzing the Benefits and Challenges of Cloud Adoption
  - 1.6 Applying Virtualization Techniques in Cloud Infrastructure
- **2 Key Components of Cloud Infrastructure** — 6 classes
  - 2.1 Understanding Cloud Infrastructure Components
  - 2.2 Exploring Virtualization in Cloud Computing
  - 2.3 Identifying Key Cloud Service Models
  - 2.4 Analyzing Storage Solutions in Cloud Infrastructure
  - 2.5 Evaluating Network Configurations for Cloud Environments
  - 2.6 Applying Security Practices in Cloud Infrastructure
- **3 Virtualization Technologies and Platforms** — 6 classes
  - 3.1 Understanding Virtualization Concepts
  - 3.2 Exploring Hypervisor Types and Their Functions
  - 3.3 Installing and Configuring Virtual Machines
  - 3.4 Managing Virtual Resources Efficiently
  - 3.5 Comparing Virtualization Platforms
  - 3.6 Applying Best Practices in Virtualization
- **4 Cloud Deployment Models and Architecture** — 6 classes
  - 4.1 Understanding Cloud Deployment Models
  - 4.2 Exploring Public Cloud Architecture
  - 4.3 Examining Private Cloud Infrastructure
  - 4.4 Analyzing Hybrid Cloud Solutions
  - 4.5 Investigating Community Cloud Features
  - 4.6 Comparing Deployment Models for Business Needs
- **5 Managing and Optimizing Cloud Resources** — 6 classes
  - 5.1 Understanding Cloud Resource Allocation
  - 5.2 Identifying Inefficient Resource Use
  - 5.3 Implementing Auto-Scaling Strategies
  - 5.4 Monitoring Performance and Resource Utilization
  - 5.5 Applying Cost Management Techniques
  - 5.6 Optimizing Workloads for Performance

2 Cloud Solution Design

5 chapters · 30 classes **90 marks**

- **1 Understanding Cloud Solution Architectures** — 6 classes
  - 1.1 Exploring Key Cloud Infrastructure Components
  - 1.2 Analyzing Cloud Resource Virtualization Techniques
  - 1.3 Understanding Cloud Network Architectures
  - 1.4 Designing Resilient Cloud Solutions
  - 1.5 Implementing Cloud Security Controls
  - 1.6 Evaluating Cloud Architecture Performance
- **2 Designing Scalable and Resilient Cloud Solutions** — 6 classes
  - 2.1 Understanding Cloud Scalability Concepts
  - 2.2 Analyzing Factors of Resilient Cloud Design
  - 2.3 Exploring Auto-Scaling Techniques
  - 2.4 Implementing Load Balancing Strategies
  - 2.5 Designing Fault-Tolerant Architectures
  - 2.6 Evaluating High-Availability Solutions
- **3 Security and Compliance in Cloud Solution Design** — 6 classes
  - 3.1 Understanding Cloud Security Fundamentals
  - 3.2 Exploring Compliance Requirements in the Cloud
  - 3.3 Identifying Security Challenges in Cloud Design
  - 3.4 Implementing Best Practices for Cloud Security
  - 3.5 Designing Compliance-Ready Cloud Solutions
  - 3.6 Evaluating Security Tools for Cloud Environments
- **4 Integration of Hybrid and Multi-Cloud Environments** — 6 classes
  - 4.1 Understanding Hybrid and Multi-Cloud Fundamentals
  - 4.2 Analyzing Cloud Service Integration Strategies
  - 4.3 Designing Secure Connectivity for Hybrid Cloud
  - 4.4 Implementing Resource Management Across Multiple Clouds
  - 4.5 Integrating Monitoring and Management Tools
  - 4.6 Optimizing Workloads for Hybrid and Multi-Cloud Environments
- **5 Optimizing Performance and Cost in Cloud Solutions** — 6 classes
  - 5.1 Understanding Cloud Performance Metrics
  - 5.2 Identifying Cost Drivers in Cloud Solutions
  - 5.3 Analyzing Resource Utilization for Optimization
  - 5.4 Implementing Auto-scaling for Efficient Performance
  - 5.5 Balancing Performance and Cost with Right-sizing
  - 5.6 Applying Best Practices in Cost Management

3 Performance Analysis

5 chapters · 30 classes **90 marks**

- **1 Understanding Cloud Performance Metrics** — 6 classes
  - 1.1 Introduction to Cloud Performance Metrics
  - 1.2 Analyzing CPU Utilization in Cloud Environments
  - 1.3 Evaluating Memory Usage and Bottlenecks
  - 1.4 Assessing Network Performance and Latency
  - 1.5 Understanding Storage I/O and Throughput Metrics
  - 1.6 Interpreting and Applying Performance Data
- **2 Tools for Monitoring Cloud Infrastructure** — 6 classes
  - 2.1 Introduction to Cloud Infrastructure Monitoring Tools
  - 2.2 Understanding Metrics for Performance Analysis
  - 2.3 Exploring Cloud-Based Monitoring Services
  - 2.4 Setting Up and Configuring Monitoring Tools
  - 2.5 Analyzing Performance Data and Identifying Bottlenecks
  - 2.6 Applying Insights to Optimize Cloud Performance
- **3 Analyzing Virtualization Performance** — 6 classes
  - 3.1 Understanding Virtualization Performance Metrics
  - 3.2 Identifying Key Performance Indicators in Virtual Environments
  - 3.3 Analyzing Network Performance in Virtualized Systems
  - 3.4 Assessing CPU and Memory Utilization in Virtual Machines
  - 3.5 Evaluating Storage Performance and I/O Throughput
  - 3.6 Applying Tools and Techniques for Virtualization Performance Monitoring
- **4 Optimization Techniques for Cloud Performance** — 6 classes
  - 4.1 Understanding Cloud Performance Metrics
  - 4.2 Identifying Bottlenecks in Cloud Systems
  - 4.3 Analyzing Workloads for Performance Gains
  - 4.4 Implementing Autoscaling for Resource Optimization
  - 4.5 Leveraging Caching Strategies for Faster Response Times
  - 4.6 Evaluating Cost-Performance Trade-offs in the Cloud
- **5 Troubleshooting Performance Issues in Cloud Environments** — 6 classes
  - 5.1 Understanding Cloud Performance Metrics
  - 5.2 Identifying Common Performance Bottlenecks in Cloud Systems
  - 5.3 Analyzing Network Latency Issues
  - 5.4 Troubleshooting Storage Performance Problems
  - 5.5 Optimizing Virtual Machine Resource Allocation
  - 5.6 Implementing Effective Performance Monitoring Strategies

4 Practical Applications

5 chapters · 30 classes **65 marks**

- **1 Understanding Cloud Service Models** — 6 classes
  - 1.1 Explore Cloud Service Models
  - 1.2 Investigate Infrastructure as a Service (IaaS)
  - 1.3 Understand Platform as a Service (PaaS)
  - 1.4 Analyze Software as a Service (SaaS)
  - 1.5 Compare Service Models for Strategic Decisions
  - 1.6 Apply Service Models to Real-World Scenarios
- **2 Deploying Virtual Machines in a Cloud Environment** — 6 classes
  - 2.1 Understanding Virtual Machine Basics
  - 2.2 Exploring Cloud Environment Essentials
  - 2.3 Selecting the Appropriate Cloud Service Provider
  - 2.4 Configuring Virtual Machine Settings
  - 2.5 Deploying Virtual Machines on the Cloud
  - 2.6 Optimizing and Monitoring Virtual Machine Performance
- **3 Cloud Networking and Connectivity Solutions** — 6 classes
  - 3.1 Understanding Cloud Networking Basics
  - 3.2 Exploring Virtual Private Clouds (VPCs)
  - 3.3 Configuring Cloud Router and Network Gateways
  - 3.4 Implementing Load Balancing Solutions
  - 3.5 Securing Cloud Connectivity with VPNs
  - 3.6 Optimizing Network Performance in Cloud Environments
- **4 Implementing Storage Solutions in the Cloud** — 6 classes
  - 4.1 Understanding Cloud Storage Types and Their Uses
  - 4.2 Configuring Object Storage Services
  - 4.3 Implementing Block Storage Solutions
  - 4.4 Deploying File Storage Services
  - 4.5 Optimizing Cloud Storage Performance and Cost
  - 4.6 Applying Data Security and Compliance in Cloud Storage
- **5 Monitoring and Optimizing Cloud Resources** — 6 classes
  - 5.1 Introduction to Cloud Resource Monitoring Tools
  - 5.2 Analyzing Metrics for Performance Optimization
  - 5.3 Implementing Auto-Scaling for Efficient Resource Use
  - 5.4 Configuring Alerts for Proactive Resource Management
  - 5.5 Identifying and Resolving Bottlenecks in the Cloud
  - 5.6 Case Study: Applying Optimization Techniques to a Cloud Environment

5 Security in Cloud Computing

5 chapters · 30 classes **65 marks**

- **1 Principles of Cloud Security** — 6 classes
  - 1.1 Understanding Cloud Security Fundamentals
  - 1.2 Identifying Cloud-specific Security Risks
  - 1.3 Exploring Cloud Security Models
  - 1.4 Analyzing Data Protection Strategies in the Cloud
  - 1.5 Implementing Access Control Mechanisms in Cloud Environments
  - 1.6 Evaluating Compliance and Governance in Cloud Security
- **2 Identity and Access Management in the Cloud** — 6 classes
  - 2.1 Understanding Identity and Access Management Concepts
  - 2.2 Exploring Cloud-Based Identity Solutions
  - 2.3 Implementing Single Sign-On (SSO) in Cloud Environments
  - 2.4 Configuring Multi-Factor Authentication (MFA) for Stronger Security
  - 2.5 Managing Role-Based Access Control (RBAC) to Secure Cloud Resources
  - 2.6 Monitoring and Auditing Cloud Identity Access Management
- **3 Data Protection and Privacy in Cloud Computing** — 6 classes
  - 3.1 Understanding Data Protection in the Cloud
  - 3.2 Exploring Privacy Laws Relevant to Cloud Services
  - 3.3 Implementing Cloud-Based Encryption Techniques
  - 3.4 Assessing Data Breach Risks in Cloud Environments
  - 3.5 Configuring Secure Access Controls in Cloud Platforms
  - 3.6 Evaluating Compliance with Data Protection Standards
- **4 Network Security and Threat Mitigation in Cloud Environments** — 6 classes
  - 4.1 Understanding Cloud Network Security Fundamentals
  - 4.2 Identifying Common Threats in Cloud Environments
  - 4.3 Implementing Firewall Policies for Cloud Networks
  - 4.4 Configuring Security Groups and Network Access Control Lists
  - 4.5 Analyzing and Responding to Network Security Incidents in the Cloud
  - 4.6 Evaluating Cloud Network Security Solutions
- **5 Security Management and Incident Response in Cloud Computing** — 6 classes
  - 5.1 Understanding Cloud Security Fundamentals
  - 5.2 Identifying Risks in Cloud Environments
  - 5.3 Implementing Security Controls in Cloud Platforms
  - 5.4 Monitoring Security Metrics in Cloud Systems
  - 5.5 Responding to Security Incidents in Cloud Infrastructure
  - 5.6 Developing a Cloud Incident Response Plan

6 Virtualization Techniques

5 chapters · 30 classes **65 marks**

- **1 Introduction to Virtualization Concepts** — 6 classes
  - 1.1 Understanding Virtualization: Key Concepts and Benefits
  - 1.2 Exploring Virtualization Types: Hypervisors and Virtual Machines
  - 1.3 Differentiating Between Full Virtualization and Paravirtualization
  - 1.4 Analyzing the Role of Virtualization in Cloud Computing
  - 1.5 Identifying Virtualization Use Cases and Industry Applications
  - 1.6 Evaluating Virtualization Tools and Platforms
- **2 Virtual Machine Architecture and Management** — 6 classes
  - 2.1 Understanding Virtual Machine Architecture: Components and Functions
  - 2.2 Analyzing the Hypervisor Role in Virtualization
  - 2.3 Configuring Virtual Machine Resources: CPU, Memory, and Storage
  - 2.4 Exploring Virtual Networking: Bridging, NAT, and Host-Only Networks
  - 2.5 Implementing VM Security Strategies: Best Practices
  - 2.6 Managing Virtual Machines: Tools and Techniques
- **3 Hypervisor Technologies: Types and Functions** — 6 classes
  - 3.1 Understanding the Concept and Role of Hypervisors
  - 3.2 Comparing Types of Hypervisors: Type 1 vs Type 2
  - 3.3 Exploring Type 1 Hypervisor Technologies and Use Cases
  - 3.4 Examining Type 2 Hypervisor Technologies and Use Cases
  - 3.5 Analyzing the Functions and Architecture of Hypervisors
  - 3.6 Implementing Hypervisor Solutions in Virtual Environments
- **4 Storage and Network Virtualization Strategies** — 6 classes
  - 4.1 Understanding Storage Virtualization Concepts
  - 4.2 Exploring Types of Storage Virtualization
  - 4.3 Implementing Network Virtualization Fundamentals
  - 4.4 Configuring Storage Virtualization in Cloud Environments
  - 4.5 Applying Network Virtualization Techniques
  - 4.6 Evaluating the Benefits and Challenges of Virtualization Strategies
- **5 Advanced Virtualization: Security and Best Practices** — 6 classes
  - 5.1 Understanding Advanced Virtualization Security Concepts
  - 5.2 Identifying Threats and Vulnerabilities in Virtual Environments
  - 5.3 Implementing Access Control and Authentication in Cloud Infrastructure
  - 5.4 Exploring Network Security Practices for Virtual Machines
  - 5.5 Safeguarding Data with Encryption and Backup Strategies
  - 5.6 Applying Security and Compliance Best Practices in Virtualization