

# LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

## Adv Certificate in Cloud Infrastructure & Virtualization

*Practitioner Level*



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### LAPT — London Academy of Professional Training

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**Reference** IT-NIC-P • IT Centres

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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 classes65 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

**• 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

**• 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

**• 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

**• 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

**• 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