CONCEPT

Cloud Architecture Fundamentals: Designing Workloads with Well-Architected Principles

Cloud Architecture Fundamentals: Designing Workloads with Well-Architected Principles

Technical depth: Practitioner · **Practical mode:** Lab

Introduction

Organisations move workloads to the cloud expecting agility and lower cost, then meet outages, sprawl and bills far above estimate because the architecture was never designed for the platform. Lift-and-shift decisions are taken without a reference model, and availability, recovery and cost trade-offs remain implicit. This Core Concept course grounds IT teams in cloud architecture, from service models and reference architectures to hands-on work with compute, storage, networking and infrastructure as code. Participants apply each concept in labs and leave with a Cloud Reference Architecture Design for a workload from their own organisation.

Course Objectives

- Classify workloads by service and deployment model and select a migration strategy using the 7 Rs
- Apply ISO/IEC 22123-3 and the Well-Architected Framework pillars to structure architecture decisions
- Build core cloud components for compute, storage, networking and managed databases in a lab environment
- Provision repeatable environments using Terraform infrastructure as code
- Design for availability, recovery, scaling, observability and cost using defined targets
- Document a Cloud Reference Architecture Design with diagrams, decision records and a cost estimate

Target Audience

- Infrastructure and systems engineers moving on-premises workloads to the cloud
- Application developers deploying and operating services on cloud platforms
- Network and data centre specialists extending their skills to cloud networking
- IT operations and support staff responsible for running cloud environments
- Technical analysts and solution designers producing cloud options for projects

Course Outline

Day 1: Cloud Concepts and Workload Assessment

- NIST SP 800-145 Essential Characteristics, Service Models and Deployment Models
- ISO/IEC 22123-2:2023 Cloud Computing Concepts and Roles
- Total Cost of Ownership Comparison: On-Premises versus Cloud
- Workload Portfolio Assessment with the 7 Rs Migration Strategies
- Cloud Readiness Assessment Using a Cloud Adoption Framework

Day 2: Reference Architectures and Design Frameworks

- ISO/IEC 22123-3:2023 Cloud Computing Reference Architecture
- Well-Architected Framework Pillars Compared Across AWS, Azure and Google Cloud
- Landing Zone Design: Account Hierarchy, Network Topology and Guardrails
- C4 Model for Cloud Architecture Diagrams
- Architecture Decision Records and Trade-off Analysis

Day 3: Core Building Blocks in the Lab

- Compute Lab: Virtual Machines, Containers and Serverless Functions
- Storage Lab: Object, Block and File Storage Tiers
- Virtual Network Lab: Subnets, Routing, Security Groups and Load Balancers
- Managed Database Selection: Relational, NoSQL and Caching Services
- Infrastructure as Code Lab with Terraform

Day 4: Resilience, Performance and Cost

- High Availability and Disaster Recovery Patterns with RTO and RPO Targets
- Auto Scaling Policies and Load Testing
- Cloud Cost Management with the FinOps Framework
- Identity and Access Baseline under the Shared Responsibility Model
- Observability with Metrics, Logs and Traces Using OpenTelemetry

Day 5: Lab Scenarios and the Cloud Reference Architecture Design

- Three-Tier Web Application Migration Lab
- Event-Driven Data Pipeline Lab for a Logistics Operator
- Pricing Calculator Estimate for the Target Architecture
- Cloud Reference Architecture Design Drafting
- Well-Architected Review and Design Defence

Skills You Will Gain

- Cloud Workload Assessment
- Cloud Solution Design
- Cloud Networking
- Infrastructure as Code
- Resilience Design
- Cloud Cost Estimation
- Architecture Documentation

Why Attend This Course

- Return with a Cloud Reference Architecture Design for a real workload, reviewed against Well-Architected questions
- Gain hands-on familiarity with the building blocks that appear in almost every cloud design
- Recognise design choices that later cause outages, lock-in or unexpected bills
- Work alongside IT professionals from other sectors and countries facing similar migration decisions

Conclusion

Cloud delivers its promised agility only when workloads are designed for the platform rather than copied onto it. This course moves from cloud concepts and workload assessment, through reference architectures and Well-Architected principles, to hands-on work with compute, storage, networking and infrastructure as code, and then to resilience, scaling, observability and cost. The final day produces a Cloud Reference Architecture Design that participants take back to their team as a documented, defensible starting point for their next cloud project.