Course Name: Azure Solutions Architect Expert Professional Certification Course

Course Overview

The "Azure Solutions Architect Training" course is a comprehensive program designed to equip learners with the skills required to design, deploy, and manage Azure-based cloud solutions. Spanning eight weeks, it covers Azure architecture, networking, data storage, resiliency, security, cost optimization, and advanced Azure services. With a mix of theoretical concepts, hands-on labs, and a final project, participants will master best practices for building secure, scalable, and cost-effective Azure solutions. This course is ideal for professionals aiming to enhance their cloud architecture expertise or prepare for Azure certification pathways like the AZ-305.

Course Type

Intermediate to Advanced

Course Objectives

1. Understand Azure cloud architecture and its core components.
2. Design and implement robust networking, storage, and compute solutions.
3. Develop strategies for high availability, resiliency, and disaster recovery.
4. Ensure workload security using Azure's IAM, encryption, and threat management tools.
5. Optimize costs using Azure's pricing models and cost management tools.
6. Explore advanced Azure services for multicloud, IoT, DevOps, and serverless architectures.
7. Design and present a comprehensive Azure-based solution for a real-world business challenge.

What You'll Learn

- Key Azure architecture principles, including resource grouping, governance, and management.
- Designing virtual networks, load balancing, and hybrid connectivity solutions.
- Implementing secure, scalable storage solutions and data migration strategies.
- Creating resilient architectures with disaster recovery and fault-tolerant designs.
- Leveraging Azure tools for security, monitoring, and incident response.
- Optimizing cloud costs through dynamic scaling and reserved instances.
- Building advanced Azure architectures, including multicloud and hybrid solutions.
- Presenting a complete Azure solution as a capstone project.

Duration

102 hours (including lectures, labs, and project work).

Requirements

- Access to a Microsoft Azure account for hands-on labs.

- A laptop/desktop with stable internet connectivity.

Prerequisites

- Familiarity with basic cloud computing concepts.

- Experience with IT infrastructure, networking, or database management is recommended.

- Completion of beginner-level Azure courses (like AZ-900) is a plus but not mandatory.

Target Audience

- IT professionals aiming to specialize in Azure solutions architecture.

- System administrators, cloud engineers, and developers transitioning to architecture roles.

- Learners preparing for certifications like AZ-305 (Azure Solutions Architect Expert).

- Organizations looking to upskill teams in Azure design and management.

- Professionals designing resilient, secure, and cost-effective cloud solutions.

Curriculum

Module 1: Introduction to Azure Solutions Architecture

- Overview of Azure Cloud Architecture
- Core Azure components (Compute, Networking, Storage)
- Azure Resource Manager (ARM) and its role in resource management
- Azure regions, availability zones, and resource grouping
- Introduction to Azure Governance and Management
- Role of the Azure Solutions Architect in cloud design and management

Module 2: Designing Azure Infrastructure

- Designing virtual networks (VNets), subnets, and IP addressing schemes
- Configuring load balancing and traffic management
- Azure Load Balancer
- Azure Application Gateway
- Azure Front Door
- Virtual machines (VMs) and scalable compute options
- Designing for high availability (HA) and fault tolerance
- Implementing Virtual Machine Scale Sets (VMSS)
- Networking design considerations (VPN, ExpressRoute, Network Security Groups)
- Azure Hybrid Connectivity solutions (SitetoSite VPN, ExpressRoute)

Lab:

Handson exercises on designing and implementing virtual networks and VM configurations.

Module 3: Data Storage and Migration Strategies

- Designing data storage solutions
- Azure Blob Storage, Azure File Storage, and Azure Disk Storage
- Data Lake Storage Gen2 for big data scenarios

- Azure SQL Database, Cosmos DB, and NoSQL solutions

- Database migration strategies and tools

- Azure Database Migration Service

- Liftandshift vs. refactoring approaches for databases

- Migrating large volumes of data to Azure (AzCopy, Data Box)

- Implementing Azure Backup for storage and database protection

- Azure Storage security best practices (encryption, identity and access management)

- Designing storage solutions for scalability and performance optimization

Lab:

Handson practice with data migration using Azure tools, designing storage solutions, and securing data.

Module 4: Designing for Resiliency and Disaster Recovery

- Principles of designing for resiliency in Azure

- Redundancy, failover, and georeplication

- Implementing disaster recovery with Azure Site Recovery (ASR)

- Designing for business continuity with Azure Backup and Azure Files

- Creating faulttolerant architectures for applications

- Leveraging Azure Availability Zones for high availability

- Implementing CrossRegion replication and multiregion architecture

- Design considerations for minimizing downtime during failover

Lab:

Implementing and testing disaster recovery solutions with Azure Site Recovery and Backup.

Module 5: Securing Azure Workloads

- Overview of Azure Security Framework and shared responsibility model

- Azure Identity and Access Management (IAM)

- Rolebased access control (RBAC) and policies

- Azure Active Directory (Azure AD) integration
- Network security in Azure
- Configuring firewalls and security groups
- Azure Security Center for threat management
- Network security and segmentation using NSG and NVA
- Implementing encryption for data at rest and in transit
- Azure Key Vault for managing secrets and certificates
- Azure Sentinel for security monitoring and incident response
- Designing secure application architectures in Azure
- Azure App Service security
- Azure Kubernetes Service (AKS) security best practices

Lab:

Implementing security best practices, including encryption, IAM, and network security.

Module 6: Cost Management and Optimization in Azure

- Understanding Azure pricing models and cost management tools
- Estimating costs using the Azure Pricing Calculator
- Azure Cost Management and Billing
- Implementing cost optimization strategies
- Rightsizing resources (VMs, storage, etc.)
- Using Reserved Instances (RIs) and Azure Hybrid Benefit
- Designing for cost efficiency in cloud architectures
- Scaling resources dynamically based on demand
- Using Azure spot instances for nonproduction workloads
- Managing and forecasting cloud budgets in Azure
- Monitoring and optimizing resource utilization with Azure Advisor

Lab:

Handson activity on cost estimation, resource scaling, and using Azure Advisor to optimize costs.

Module 7: Advanced Topics in Azure Architecture

- Designing multicloud architectures with Azure
- Hybrid cloud solutions (Azure Stack, Azure Arc)
- DevOps practices and tools in Azure (Azure DevOps, GitHub, Terraform)
- Advanced Azure Networking configurations (BGP routing, ExpressRoute Premium)
- Implementing Azure AI and ML services in an architecture
- Designing Azure solutions for IoT (Internet of Things)
- Leveraging serverless architectures in Azure (Azure Functions, Logic Apps)

Lab:

Implementing multicloud, hybrid solutions, and serverless architecture.

Module 8: Final Project and Review

- Review of key concepts
- Group discussions on advanced architecture design patterns

Final project: Design an endtoend Azure solution based on a realworld business scenario (participants will design infrastructure, data storage, security, resiliency, and cost optimization strategies).

Assessment: Submit final project, including architecture diagrams, solution components, and cost estimates.

Conclusion: Final Q&A and discussion on career opportunities and certifications in Azure.

Assessment:

- Weekly quizzes to reinforce learning
- Final project submission and peer review