Zero-to-Production-Grade Azure Infrastructure: From Landing Zones to Automated Delivery

6-Day Course Table of Contents & Day-Wise Agenda (48 Hours Total)

Day 1: Azure Platform Foundations & Enterprise Landing Zone Design

Module 1: Azure Architecture and Well-Architected Framework

- The five Well-Architected Framework pillars and architectural design trade-offs
- Reference architectures and how to explain and defend design decisions to stakeholders
- Documenting Architecture Decision Records (ADRs) and conducting Well-Architected reviews

Module 2: Azure Landing Zone (ALZ) Design (In Detail)

- **Core Concepts:** Platform vs. application landing zones, Cloud Adoption Framework (CAF) design principles, the 8 design areas, and starting small while growing
- **Management & Monitoring:** Central Log Analytics, Azure Monitor Baseline Alerts (AMBA), diagnostic settings via policy, and multi-subscription patching
- **Security & Business Continuity:** Defender for Cloud plans, Key Vault placement, policy-driven security baselines, regions/availability zones, and Backup/Site Recovery placement
- **Cost Management:** Budgets per subscription/customer, cost allocation using tags, and showback/chargeback models
- **Application Landing Zones & Brownfield Alignment**: Online landing zones, guardrails for app teams, onboarding new customers/apps, and aligning/migrating existing brownfield subscriptions without disruption

Module 3: Monitoring and AI Operations

- Central monitoring, telemetry, and operational insights using Azure Monitor and Log Analytics

Module 4: Disaster Recovery with Azure Site Recovery

- Replication configuration, recovery plans, non-disruptive test failovers, and full failover/failback execution

Hands-On Lab Deliverables

- Design a multi-customer ALZ management group hierarchy, policy/RBAC.
- Azure Backup and Site Recovery

Day 2: Enterprise Networking

Module 5: Hub-Spoke Architecture (In Depth)

- **Hub design:** shared services, VPN/ExpressRoute gateways, and Azure Firewall placement
- Spoke design per customer and environment
- VNet peering, gateway transit, routing traffic through the hub, scaling patterns, and comparison with Virtual WAN

Module 6: Load Balancing and DDoS Protection

- Implementing Azure Load Balancer (public/internal), Application Gateway, Front Door, Traffic Manager, and Gateway Load Balancer
- Service selection criteria, health probes, and end-to-end TLS/HTTPS configuration
- Azure DDoS Protection setup, tuning, and monitoring

Hands-On Lab Deliverables

- Load Balancer and Application Gateway with Web App Firewall.
- Deploy a hub-spoke network with Azure Firewall, forced tunneling, gateway transit, and Private DNS.

Day 3: Azure DevOps with GitHub & GitHub Actions

Module 7: Source Control and Branching

- Branching strategies, Pull Request, Merge Request (MR) workflows, branch protection rules.
- Repo security settings and roles and permissions

Module 8: CI/CD Pipelines – In Detail

- Multi-stage pipelines, reusable templates, protected environments and manual approvals
- Passwordless authentication to Azure via OpenID Connect (OIDC), artifact management, versioning, and pipeline health

Hands-On Lab Deliverables

- Version Control with Git in Azure Repos
- Create service connection with Azure using different methods.
- Build a multi-stage templated pipeline using OIDC, quality gates.

Day 4: Design Secure Pipeline, Testing and Release Strategies

Module 9: Design secure pipeline using Key Vault

- Reading secrets, keys, and certificates from Azure Key Vault in GitLab pipelines while keeping secrets out of logs

Module 10: Testing and Deployment Strategies

- Quality gates, automated testing, blue-green, canary, and rolling deployments
- App Service deployment slots, feature flags, and emergency hotfix paths

Module 11: Landing Zone Deployment and Operations

- Running the ALZ Accelerator (Terraform Azure Verified Modules)
- Bootstrapping, customizing defaults, and subscription vending as code

Hands-On Lab Deliverables

- Integrate Azure Key Vault with Azure DevOps
- Perform testing (security, open source dependency, code quality)
- Build a multi-stage templated pipeline implementing canary and blue-green strategy for version release.

Day 5: Infrastructure as Code & Lift-and-Shift Automation

Module 12: Terraform and Bicep

- Reusable modules, secure remote state, per-customer variable structures, and Azure Verified Modules (AVM)
- Importing existing infrastructure with aztfexport and automated drift detection pipelines

Module 13: Lift and Shift as Code

- Building golden VM images and publishing to Azure Compute Gallery
- Packaging workloads with Azure Container Registry (ACR) and Helm
- Sandbox-to-customer environment promotion workflows and workload migration with Azure Migrate

> **Hands-On Lab Deliverables**
>
> - Terraform Installation guide and prepare environment for IaC.
> - Deploy Azure Resources using terraform template.
> - Deploy Azure Resources using bicep template.

Day 6: Cloud-Native Compute, AI Agents, Operations & Data Governance

Module 14: Azure Compute Resources (AKS/ACA/App Service)

- Cluster design and networking, system/user node pools, cluster upgrades, Entra Workload Identity, and ingress
- Serverless computing architecture in detail, triggers and bindings, hosting plans, Durable Functions, VNet integration, and deploying from GitLab.
- Azure Container Apps, App Service, and Logic Apps — architecture and selection criteria
- Auto-scaling strategy for AKS/ACA

Module 15: Migrating Agents to Microsoft Foundry

- Moving existing AI agents (e.g., OpenAI Codex-based agents) into Microsoft Foundry, including deployment and testing

Module 16: Microsoft Purview Information Protection & DLP

- Designing and applying Sensitivity Labels (Information Protection)
- Configuring and enforcing Data Loss Prevention (DLP) policies

> **Hands-On Lab Deliverables**
>
> - Deploy an AKS cluster with Workload Identity and a VNet-integrated Azure Function/Container App.
> - Migrate, deploy, and test an AI agent in Microsoft Foundry.
> - M365 Purview Sensitivity Labels and DLP policies.