Cloud Contraptions
TRAINING & CONSULTING

To discuss this course and customizations:
Call: 434-509-5680 or Email: sales@cloudcontraptions.com

Designing Azure Infrastructure Essentials

Class Duration

35 hours of live training delivered over 5 days.

Student Prerequisites

- Basic Azure services familiarity
- Understanding of cloud computing concepts
- Software development experience
- Basic networking knowledge
- Experience with command-line interfaces

Target Audience

This course is designed for software engineers, solution architects, and technical leads who need to design robust, scalable, and cost-effective Azure infrastructure solutions. Ideal for professionals transitioning from development to infrastructure design roles or seeking to enhance their cloud architecture skills with Azure-specific design patterns and best practices.

Description

This comprehensive course provides software engineers with the essential knowledge and practical skills needed to design enterprise-grade Azure infrastructure solutions. Participants will master the Azure Well-Architected Framework’s five pillars while learning to apply proven design patterns for compute, storage, networking, and security architectures.

The course emphasizes hands-on learning through real-world scenarios, covering everything from fundamental design principles to advanced topics like AI workloads and infrastructure as code. Students will gain expertise in Azure governance, landing zone concepts, container orchestration, and modern DevOps practices for infrastructure deployment.

By course completion, participants will confidently design scalable, secure, and cost-optimized Azure solutions that align with business requirements and industry best practices. The curriculum balances theoretical knowledge with practical application, ensuring immediate applicability in professional environments.

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Learning Outcomes

- Apply Azure Well-Architected Framework principles to design reliable, secure, and cost-effective solutions
- Design and implement Azure governance structures using Management Groups, subscriptions, and Azure Policy
- Architect compute solutions including VMs, App Services, serverless functions, and container orchestration
- Select appropriate storage and database platforms based on workload requirements and performance needs
- Design network topologies including hub-and-spoke architectures and hybrid connectivity patterns
- Implement zero-trust security architectures using Azure security services and identity management
- Plan business continuity and disaster recovery strategies with Azure native services
- Design monitoring and observability solutions using Azure Monitor and Application Insights
- Apply cost optimization and FinOps practices to manage Azure spending effectively
- Implement infrastructure as code using Bicep and integrate with CI/CD pipelines

Training Materials

Comprehensive courseware is distributed online at the start of class. All students receive a downloadable MP4 recording of the training.

Software Requirements

- Microsoft Azure subscription (provided)
- Azure CLI and PowerShell
- Visual Studio Code with Azure extensions
- Bicep CLI tools
- Git for version control
- Web browser for Azure portal access

Training Topics

Azure Foundation & Design Principles

- Azure Well-Architected Framework overview

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- Five pillars: reliability, security, cost optimization, operational excellence, performance efficiency
- Design methodology and assessment tools
- Architecture decision frameworks

Governance & Organization Design

- Management Groups hierarchy design
- Subscription strategy and organization
- Resource group naming and organization
- Azure Policy implementation patterns
- Template Specs and Deployment Stacks for repeatable deployments
- Landing zone concepts and design

Compute Architecture Design

- VM sizing methodologies and selection criteria
- Availability strategies with zones and sets
- App Service architecture patterns
- Deployment slots and scaling strategies
- Serverless design with Azure Functions
- Logic Apps for workflow orchestration

Container & Orchestration Design

- Event-driven container design patterns
- Azure Container Apps with KEDA autoscaling
- Dapr integration for service communication
- AKS cluster design and networking
- Container security and governance

Data & Storage Architecture

- Storage type selection (Blob, Files, Disks, Queues, Tables)
- Data redundancy strategies (LRS, ZRS, GRS, GZRS, RA-GRS, RA-GZRS)
- Database platform comparison and selection
- Azure SQL, Cosmos DB, PostgreSQL, MySQL design patterns
- Data integration with Azure Data Factory

Caching & Performance Design

- Azure Cache for Redis implementation
- CDN and caching strategies

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- Performance optimization patterns
- Data tier optimization techniques

Network Architecture Design

- Hub-and-spoke topology design
- Mesh network patterns
- Hybrid connectivity with VPN Gateway
- ExpressRoute planning and design
- Private endpoints and service endpoints

Security Architecture

- Zero-trust design principles
- Azure Firewall and WAF implementation
- Microsoft Entra ID integration patterns
- Identity and access management design
- Security monitoring and compliance

Global Load Balancing

- Azure Front Door configuration
- Traffic Manager routing methods
- Global distribution strategies
- Multi-region failover design

Business Continuity Design

- Disaster recovery planning methodology
- Azure Site Recovery implementation
- Backup strategies and retention policies
- RTO and RPO planning

Monitoring & Observability

- Azure Monitor architecture design
- Application Insights implementation
- Custom dashboards and workbooks
- Alerting and notification strategies

Cost Optimization & FinOps

- Cost management strategies
- Resource rightsizing techniques
- Reserved instances and savings plans

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- FinOps practices and governance

Infrastructure as Code

- Bicep fundamentals and best practices
- Template organization and modularity
- Terraform overview for multi-cloud
- CI/CD integration patterns
- GitOps workflows for infrastructure

AI Workload Design

- Microsoft Foundry architecture patterns
- Azure OpenAI Service integration
- AI infrastructure requirements
- Cost and performance considerations