Cloud Contraptions
TRAINING & CONSULTING

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

AWS Cloud Foundations

Class Duration

35 hours of live training delivered over 5 days.

Student Prerequisites

- General networking knowledge (TCP/IP, DNS, HTTP/HTTPS)
- Basic understanding of systems administration
- Familiarity with command-line interfaces
- Software development experience (any language)
- No prior AWS or cloud computing experience required

Target Audience

This course is designed for software engineers who are new to Amazon Web Services and cloud computing. Participants should have general networking and systems knowledge but no prior AWS experience. The course provides a solid foundation for engineers transitioning to cloud-native development or expanding their skill set to include cloud services.

Description

AWS Cloud Foundations provides software engineers with comprehensive knowledge of Amazon Web Services fundamentals and core services. The course begins with cloud computing concepts and AWS global infrastructure, progressing through hands-on experience with essential AWS services including compute, storage, networking, and security. Participants will learn to navigate the AWS ecosystem using multiple interfaces, implement security best practices with IAM, design resilient architectures, and manage costs effectively.

The curriculum covers serverless computing, containerization, database services, and monitoring solutions essential for modern cloud applications. Students will gain practical experience with infrastructure as code tools and explore emerging AI/ML services. By course completion, participants will be equipped to design, deploy, and manage basic AWS solutions while following security and cost optimization best practices.

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Learning Outcomes

- Explain cloud computing concepts and articulate the AWS value proposition to stakeholders
- Navigate and utilize the AWS Management Console, CLI, and CloudShell effectively
- Configure AWS Organizations and implement billing alerts for cost management
- Design and implement comprehensive IAM strategies including users, groups, roles, and policies
- Apply the AWS shared responsibility model and security best practices across services
- Deploy and manage EC2 instances with Auto Scaling Groups and Elastic Load Balancing
- Implement serverless solutions using AWS Lambda and container services (ECS, Fargate)
- Design storage solutions using S3, EBS, and EFS with appropriate lifecycle policies
- Architect VPC networks with proper subnet design, security groups, and routing
- Configure monitoring and alerting solutions using CloudWatch and CloudTrail
- Create infrastructure as code templates using CloudFormation and AWS CDK
- Evaluate and implement AWS AI/ML services for application enhancement

Training Materials

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

Software Requirements

- AWS account with appropriate permissions
- Modern web browser (Chrome, Firefox, Safari, Edge)
- AWS CLI v2 installed locally
- Text editor or IDE (VS Code recommended)
- SSH client for EC2 connectivity
- Git for version control (optional but recommended)

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Training Topics

Cloud Computing and AWS Fundamentals

- Cloud computing models and service types
- AWS value proposition and business benefits
- AWS Global Infrastructure architecture
- Regions, Availability Zones, and edge locations
- AWS service categories and pricing models

AWS Account Setup and Navigation

- Creating and configuring AWS accounts
- AWS Organizations for multi-account management
- Billing alerts and cost monitoring setup
- AWS Management Console navigation
- AWS CLI installation and configuration
- CloudShell overview and usage

Identity and Access Management (IAM)

- IAM users, groups, and roles architecture
- Policy creation and management
- Least privilege access principles
- Multi-factor authentication (MFA) setup
- IAM best practices and common pitfalls
- Service-linked roles and cross-account access

Security and Compliance

- AWS shared responsibility model
- Security best practices across services
- AWS CloudTrail for API auditing
- AWS Config for compliance monitoring
- Encryption at rest and in transit
- Security groups and network ACLs

Compute Services

- EC2 instance types and selection criteria
- Graviton-based instances and performance benefits
- Auto Scaling Groups configuration
- Elastic Load Balancing (ALB and NLB)

- AWS Lambda serverless computing
- Container services: ECS, Fargate, and EKS overview

Storage Services

- Amazon S3 buckets and object management
- S3 storage classes and cost optimization
- Versioning and lifecycle policies
- Elastic Block Store (EBS) volume types
- Elastic File System (EFS) for shared storage
- Storage security and access patterns

Database Services

- Amazon RDS for relational databases
- DynamoDB for NoSQL applications
- Amazon Aurora performance features
- Database backup and recovery strategies
- Read replicas and multi-AZ deployments
- Database security and monitoring

Networking Fundamentals

- VPC design principles and architecture
- Subnet planning and CIDR blocks
- Route tables and internet gateways
- Security groups vs. Network ACLs
- NAT gateways and instances
- VPC peering and transit gateways

Content Delivery and DNS

- Amazon CloudFront CDN configuration
- Origin types and caching strategies
- Amazon Route 53 DNS management
- Health checks and failover routing
- SSL/TLS certificate management
- Global content distribution strategies

Monitoring and Observability

- CloudWatch metrics and alarms
- Custom metrics and dashboards

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- Log aggregation with CloudWatch Logs
- CloudTrail event monitoring
- X-Ray distributed tracing
- Performance monitoring best practices

Cost Management and Optimization

- AWS Cost Explorer usage analysis
- Budget creation and alerting
- Resource tagging strategies
- Reserved Instances and Savings Plans
- Spot Instances for cost reduction
- Cost allocation and chargeback

Infrastructure as Code

- AWS CloudFormation templates
- Stack management and updates
- AWS CDK introduction and benefits
- Template best practices
- Version control for infrastructure
- Automated deployment strategies

AI and Machine Learning Services

- Amazon Bedrock for generative AI
- Amazon Q Developer for code assistance
- Amazon SageMaker AI overview
- Amazon Rekognition for image analysis
- Amazon Comprehend for text analysis
- ML service selection criteria

Architectural Best Practices

- Well-Architected Framework pillars
- High availability design patterns
- Disaster recovery strategies
- Scalability and elasticity principles
- Microservices on AWS
- Event-driven architectures

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DevOps and Automation

- Source control integration (GitHub, GitLab, Bitbucket, and AWS CodeCommit), CodeBuild, CodeDeploy
- CI/CD pipeline creation
- AWS Systems Manager automation
- Configuration management
- Blue-green deployments
- Infrastructure testing strategies

Migration and Emerging Services

- Migration strategies (7 Rs) overview
- AWS Migration Hub overview
- Application modernization approaches
- Internet of Things (IoT) services overview
- Edge computing with AWS Wavelength