



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## Architecting on AWS Essentials

### Class Duration

35 hours of live training delivered over 5 days.

### Student Prerequisites

- Basic AWS services familiarity (EC2, S3, VPC)
- Software development experience
- Understanding of cloud computing concepts
- Basic networking knowledge

### Target Audience

Software engineers and solution architects looking to design robust, scalable solutions on AWS. Ideal for professionals who need to understand architectural best practices, the Well-Architected Framework, and modern cloud design patterns to build enterprise-grade applications on Amazon Web Services.

### Description

This comprehensive 5-day course provides software engineers with the essential knowledge and skills to architect robust, scalable solutions on Amazon Web Services. Students will master the AWS Well-Architected Framework and its six pillars, learning to design resilient compute architectures, optimize storage and data solutions, and implement secure network designs.

The course combines theoretical foundations with practical application, covering modern architectural patterns including serverless designs, microservices, and AI-powered applications. Students will learn cost optimization strategies, infrastructure as code practices, and operational excellence through monitoring and CI/CD pipelines.

Through hands-on exercises and real-world scenarios, participants will gain confidence in making architectural decisions that align with AWS best practices. The course also introduces emerging technologies including generative AI services and responsible AI considerations, preparing engineers for the future of cloud architecture.



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## Learning Outcomes

- Apply all six pillars of the AWS Well-Architected Framework to solution design
- Conduct Well-Architected reviews using AWS tools and specialized lenses
- Design resilient compute architectures using EC2, Auto Scaling, and load balancing
- Architect serverless solutions with Lambda, API Gateway, Step Functions, and EventBridge
- Design optimal storage solutions including S3, RDS, Aurora, and DynamoDB architectures
- Implement advanced VPC networking with multi-AZ and multi-region patterns
- Design hybrid connectivity solutions using VPN, Direct Connect, and Transit Gateway
- Apply security best practices using AWS WAF, Shield, and Security Hub
- Implement cost optimization strategies and effective tagging practices
- Deploy infrastructure as code using CloudFormation, CDK, and Terraform basics
- Design CI/CD pipelines with AWS CodePipeline and CodeBuild
- Implement comprehensive monitoring with CloudWatch and distributed tracing with X-Ray
- Architect AI-powered applications using Amazon Bedrock and SageMaker AI

## 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
- AWS CLI installed and configured
- Code editor (VS Code recommended)
- Git for version control
- Web browser for AWS Console access



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## Training Topics

### AWS Well-Architected Framework

- Six pillars deep dive: operational excellence, security, reliability, performance efficiency, cost optimization, sustainability
- Well-Architected Tool usage and best practices
- Conducting Well-Architected reviews
- Specialized lenses: Responsible AI and Generative AI
- Review remediation strategies

### Resilient Compute Architecture

- EC2 instance families and Graviton processors
- Placement groups and availability strategies
- Auto Scaling groups and scaling policies
- Elastic Load Balancing with ALB and NLB
- Target groups and health checks

### Serverless Architecture Patterns

- AWS Lambda function design and best practices
- API Gateway REST and HTTP APIs
- Step Functions state machines and workflows
- EventBridge event-driven architectures
- Serverless application patterns and anti-patterns

### Storage and Data Architecture

- S3 storage classes and lifecycle policies
- Cross-region replication and versioning
- RDS and Aurora database selection criteria
- DynamoDB design patterns and performance
- ElastiCache caching strategies

### Data Lake and Analytics

- S3-based data lake architecture
- AWS Lake Formation permissions and governance
- Amazon Athena query optimization
- Data partitioning and compression strategies
- ETL patterns with AWS Glue



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

### Advanced Network Architecture

- Multi-AZ and multi-region VPC design
- VPC peering and Transit Gateway architectures
- Hybrid connectivity with VPN and Direct Connect
- Route 53 DNS architecture and routing policies
- Network security and micro-segmentation

### Security Architecture

- AWS WAF rule sets and rate limiting
- AWS Shield Standard and Advanced protection
- Security Hub compliance monitoring
- IAM roles and policies architecture
- Encryption at rest and in transit strategies

### Cost Optimization and Management

- Cost allocation tags and resource grouping
- Reserved Instances and Savings Plans strategies
- AWS Cost Explorer and budgets
- Right-sizing recommendations
- FinOps practices and governance

### Infrastructure as Code

- CloudFormation templates and stacks
- AWS CDK with TypeScript/Python
- Cross-stack references and nested stacks
- Terraform basics for multi-cloud scenarios
- GitOps workflows and best practices

### CI/CD and DevOps

- CodePipeline multi-stage workflows
- CodeBuild project configuration
- Blue/green and canary deployment patterns
- Integration with third-party tools
- Automated testing strategies

### Operational Excellence

- CloudWatch dashboards and custom metrics
- CloudWatch alarms and automated responses



To discuss this course and customizations:  
Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

- AWS X-Ray distributed tracing
- Logging strategies with CloudTrail and VPC Flow Logs
- Incident response and troubleshooting

#### AI and Machine Learning Architecture

- Amazon Bedrock foundation models
- SageMaker AI model deployment patterns
- AI/ML workflow orchestration
- Responsible AI implementation strategies
- Generative AI application architectures