Cloud Contraptions
TRAINING & CONSULTING

To discuss this course and customizations:
Call: +1 434-509-6890 or Email: sales@cloudcontraptions.com

Designing Well-Architected Solutions on AWS

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 who design systems on AWS. Engineers new to AWS should start with AWS Cloud Foundations. Teams building generative AI can go deeper with Generative AI on AWS with Amazon Bedrock, and teams with X-Ray SDK instrumentation can add Migrating from AWS X-Ray SDKs to OpenTelemetry.

Description

This course teaches software engineers to design AWS solutions with the Well-Architected Framework. Students apply its six pillars to compute, serverless, data, and network designs. Each module covers the trade-offs, such as when to pick EC2, containers, or Lambda. Later modules cover cost optimization, infrastructure as code, CI/CD, and observability with OpenTelemetry and CloudWatch. The course ends with architectures for generative AI on Amazon Bedrock and SageMaker AI.

Learning Outcomes

- Apply the six Well-Architected pillars to solution design.
- Run Well-Architected reviews with the Well-Architected Tool and lenses.
- Design resilient compute with EC2, Auto Scaling, and load balancing.
- Choose between ECS, EKS, Fargate, and Lambda for a workload.

Copyright 2026 Cloud Contraptions LLC – All Rights Reserved

To discuss this course and customizations:
Call: +1 434-509-6890 or Email: sales@cloudcontraptions.com

- Design serverless applications with Lambda, API Gateway, Step Functions, and EventBridge.
- Design storage and data solutions with S3, RDS, Aurora, and DynamoDB.
- Build S3-based data lakes with Iceberg tables, Glue, and Athena.
- Design multi-AZ, multi-Region, and hybrid VPC networks.
- Secure workloads with IAM, AWS WAF, Shield, GuardDuty, and Security Hub.
- Apply cost optimization and tagging practices.
- Deploy infrastructure with CloudFormation, the CDK, and Terraform.
- Build CI/CD pipelines with CodePipeline and CodeBuild.
- Instrument applications with OpenTelemetry, ADOT, and CloudWatch Application Signals.
- Design generative AI applications on 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

Training Topics

AWS Well-Architected Framework

- The six pillars
- Operational excellence and security
- Reliability and performance efficiency
- Cost optimization and sustainability
- Using the Well-Architected Tool
- Conducting Well-Architected reviews
- The Serverless Applications lens

Copyright 2026 Cloud Contraptions LLC – All Rights Reserved

- Generative AI and Responsible AI lenses
- Remediation planning

Resilient Compute Architecture

- EC2 instance families and Graviton
- Placement groups and availability
- Auto Scaling groups and scaling policies
- Application and Network Load Balancers
- Target groups and health checks
- Choosing EC2, containers, or Lambda
- ECS, EKS, and Fargate

Serverless Architecture Patterns

- Lambda function design
- API Gateway REST and HTTP APIs
- Step Functions workflows
- Event-driven design with EventBridge
- Serverless patterns and anti-patterns

Storage and Data Architecture

- S3 storage classes and lifecycle policies
- Cross-Region replication and versioning
- Choosing RDS or Aurora
- DynamoDB design patterns
- ElastiCache caching strategies

Data Lake and Analytics

- S3-based data lake architecture
- Apache Iceberg with Amazon S3 Tables
- Lake Formation permissions
- Athena query optimization
- Partitioning and compression
- ETL with AWS Glue

Advanced Network Architecture

- Multi-AZ and multi-Region VPC design
- VPC peering and Transit Gateway
- VPN and Direct Connect

Copyright 2026 Cloud Contraptions LLC – All Rights Reserved

To discuss this course and customizations:
Call: +1 434-509-6890 or Email: sales@cloudcontraptions.com

- Amazon VPC Lattice
- Route 53 routing policies
- Network micro-segmentation

Security Architecture

- AWS Organizations and Control Tower
- IAM roles and policies
- AWS WAF rules and rate limiting
- AWS Shield Standard and Advanced
- Threat detection with GuardDuty
- Findings in AWS Security Hub
- Encryption at rest and in transit

Cost Optimization and Management

- Cost allocation tags
- Reserved Instances and Savings Plans
- Cost Explorer and budgets
- Right-sizing with Compute Optimizer
- Cost Optimization Hub
- FinOps practices

Infrastructure as Code

- CloudFormation templates and stacks
- AWS CDK in TypeScript or Python
- Cross-stack references and nested stacks
- Terraform basics for multi-cloud
- GitOps workflows

CI/CD and DevOps

- CodePipeline multi-stage workflows
- CodeBuild projects
- Blue/green and canary deployments
- GitHub Actions with OIDC federation
- Automated testing strategies

Operational Excellence and Observability

- CloudWatch dashboards, metrics, and alarms
- Automated responses with EventBridge

Copyright 2026 Cloud Contraptions LLC – All Rights Reserved

To discuss this course and customizations:
Call: +1 434-509-6890 or Email: sales@cloudcontraptions.com

- Automation with Systems Manager
- OpenTelemetry with ADOT
- AWS X-Ray as the trace backend
- X-Ray SDK maintenance mode
- SLOs with CloudWatch Application Signals
- CloudTrail and VPC Flow Logs
- Incident response and troubleshooting

AI and Machine Learning Architecture

- Amazon Bedrock models
- Knowledge Bases and Guardrails
- Agents on Amazon Bedrock AgentCore
- SageMaker AI deployment patterns
- AI/ML workflow orchestration
- Responsible AI practices
- Generative AI application architectures

Copyright 2026 Cloud Contraptions LLC – All Rights Reserved