Training: CompTIA
# CompTIA Cloud+ Prep Course

## TRAINING GOALS:

With CompTIA Cloud, you can unlock a diverse range of career paths, from systems administration and support to cloud engineers, creating opportunities for advancement and specialization in the rapidly evolving IT industry. CompTIA Cloud is a global IT certification validating candidates have the core skills necessary to establish, maintain, troubleshoot, and cloud networks in any environment, regardless of technology and platform.

This course can prepare you for the CompTIA Cloud (Exam CV0-004) certification examination and a job role in cloud administration. It utilizes a learning progression model to help you learn and build skills related to the course objectives and job task requirements. This learning methodology uses a series of steps to contextualize what you're learning, elaborate on areas where additional instruction is needed, and provide relevance through practice and personalized feedback. You'll then apply what you learned and demonstrate the skills you've gained through a series of lab activities and quizzes.

On course completion, you will be able to:

- Deploy, manage, and troubleshoot cloud resources.
- Deploy, manage and troubleshoot cloud networks.
- Conduct cost analysis.
- Manage source code using Git.
- Manage cloud automation and scripting logic.
- Use common DevOps tools.
- Optimize cloud workloads.
- Manage cloud vulnerabilities.
- Use cloud monitoring tools.
- Configure and manage security configuration.
- Implement Security best practices.
- Manage cloud backup and restore options.

Skills you'll learn



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- Analyze cloud models and design solutions to meet business requirements for effective cloud architecture.
- Execute workload migrations, implement infrastructure as code (IaC), and provision cloud resources to support deployment.
- Manage and optimize cloud environments by scaling, performing backups, and ensuring recovery operations.
- Implement security measures, address vulnerabilities, and ensure compliance with standards like PCI DSS and ISO 27001.
- Apply DevOps fundamentals, including source control, CI/CD pipelines, automation, system integration, and DevOps tools.
- Diagnose and resolve deployment, network, and security issues to troubleshoot cloud environments effectively.

Job roles that benefit from Cloud+ skills

- Solution Architect
- Cloud Systems Administrator
- Cloud Specialist
- System Engineer
- System Analyst
- Cloud Architect
- Cloud Engineer
- IT Manager

*Each participant in an authorized training CompTIA Cloud+ Prep Course held in Compendium CE will receive a free CV0-004 CompTIA Cloud+ Certification Exam vouchers.*

## CONSPECT:

- Understanding Cloud Architecture Concepts
  - Recognize Cloud Concepts and Service Models
    - Cloud Service Models
    - Compare Cloud Service Models
    - Software as a Service
    - Platform as a Service
    - Infrastructure as a Service
    - Function as a Service



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- Anything as a Service
- Largest Cloud Service Providers
- Role of Cloud Managed Service Providers
- Shared Responsibility Model

- Recognize Cloud Terms
  - Subscription Services
  - Identity Management
  - Virtualization Review
  - Deploy Cloud Resources
  - Applications
- Technologies in the Cloud
  - Artificial Intelligence
  - Machine Learning
  - Internet of Things
  - Troubleshoot the Cloud Environment
  - Troubleshooting Methodology
  - Corporate Policies, Procedures, and Impacts
  - Review the Troubleshooting Process
- Summary: Understanding Cloud Architecture Concepts

- Planning Cloud Services
  - Cloud-native Design
    - Cloud-native Design Concepts
    - Cloud-native Design Advantages and Disadvantages
    - Serverless Environments
    - Service Discovery
    - Function Design Patterns
  - Cloud Deployment Models
    - Cloud Components
    - Public Cloud
    - Private Cloud
    - Community Cloud
    - Hybrid Cloud
    - Multi-cloud
    - Virtual Private Cloud
    - Multitenancy
    - Recognize Cloud Services



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- Cloud Deployment Strategies
  - Deployment Strategies
  - Separate IT Environments
  - Application Release Models
  - Blue-Green Deployment Strategy
  - Canary Deployment Strategy
  - Rolling Deployment Strategy
  - In-Place Deployment Strategy
- Summary Planning Cloud Services

- Provisioning and Migrating Cloud Resources
  - Provision Cloud Resources
    - Compute Resources
    - Manage Virtualization
    - Provision Compute Resources
    - Provision Graphics Processing Unit Resources
    - Compute Requirements
    - Storage Requirements
    - Network Requirements
    - Deploy a Virtual Machine
    - Hyperconverged Virtualization
    - Performance Requirements
    - Compliance Requirements
    - Security Requirements
    - Availability Requirements
    - Cost Requirements
    - Applied Lab: Configure and Deploy a Virtual Machine
    - Live Lab: Provision Cloud Resources Based on Requirements - AWS
    - Live Lab: Provision Cloud Resources Based on Requirements - Azure
  - Aspects of Cloud Migration
    - Migration Types
    - Phases of Cloud Migration
    - Virtualization Migrations
    - Application Migration Strategies
  - Cloud Migration Considerations
    - Platform Compatibility Considerations
    - Cost Considerations



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- Service Availability Considerations
- Vendor Lock-in Considerations
- Compute Considerations
- Storage Considerations
- Networking Considerations
- Management Considerations
- Applied Live Lab: Deploy Cloud Resources

- Summary: Provisioning and Migrating Cloud Resources

- Comparing Cloud Storage
  - Storage Resources and Technologies
    - Disk Types
    - Storage Types
    - Tiered Storage
    - Migrate Data to the Cloud
    - Performance Implications
    - Storage as a Service
    - Software-Defined Storage
    - Cost Implications
    - Hyperconverged Storage Resources
    - Live Lab: Managing Storage Resources - AWS
    - Live Lab: Managing Storage Resources - Azure
  - Summary: Comparing Cloud Storage
- Troubleshooting Deployment Issues and Cost
  - Troubleshoot Deployment and Migration Issues
    - Troubleshoot Deployment Issues
    - Compatibility Problems
    - Resource Allocation Misconfiguration
    - Instance Configuration and Performance Testing
    - Permissions and Privilege Misconfiguration
    - Troubleshoot Services and Applications
    - Deprecation of Functionality
    - Cloud Service Outages
    - Regional Service Availability
    - Live Lab: Troubleshooting Resource Limits
  - Cost Considerations Related to Cloud Usage
    - Subscription Services Costs



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- Price Calculators and Cost Analysis
- Cloud Billing Models
- Live Lab: Conducting Cost Analysis
- Resource Allocation
- Resource Metering
- Resource Tagging
- Rightsizing
- Troubleshoot Billing

- Summary: Troubleshooting Deployment Issues and Cost

- Using Virtualization and Databases
  - Virtualization Concepts
    - Virtualization
    - Stand-Alone Virtualization
    - Deploy Virtual Machines in the Cloud
    - Virtual Machine Configuration File Templates
    - Clustering Virtualization
    - Virtual Machine Cloning
    - Network Types
    - Types of Storage
  - Containerization Concepts
    - Containerization
    - Stand-Alone Containerization
    - Deploy Containers
    - Image Registries
    - Containers in the Cloud
    - Container Management
    - Live Lab: Using Containerization
  - Database Concepts
    - Database Types
    - Relational Databases
    - Non-Relational Databases
    - Database Deployment Options
    - Migrate Databases
  - Summary: Using Virtualization and Databases
- Comprehending Cloud Networking
  - Cloud Networking Concepts



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- Networking Concepts
- Network Flow Diagram
- Public and Private Cloud Connections
- Virtual Private Network Concepts
- Virtual Private Network Designs
- Secure Shell
- Secure Shell Key-Based Authentication
- IPsec Security
- Dedicated Connections
- Applied Lab: Connecting to a Cloud VM via RDP

- Network Functions
  - Load Balancers
  - Cloud Firewalls
  - Web Application Firewalls
- Network Components
  - Switches
  - Network Segmentation and Subnetting
  - Microsegmentation
  - Routing Tables
  - Border Gateway Protocol
  - Virtual Network Interface Cards
- Network Services
  - Virtual LAN Technologies
  - Virtual Extensible LAN Settings
  - Software-Defined Networking
  - Virtual Private Clouds
  - Virtual Private Cloud Designs
  - Network Address Translation in Virtual Private Clouds
  - Transit Gateway in the Cloud
  - Content Delivery Networks
- Cloud Network Services
  - Name Resolution
  - Dynamic Host Configuration Protocol
  - IP Address Tracking
  - Network Time Protocol
  - Live Lab: Deploying and Managing Cloud Network Components - AWS



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- Live Lab: Deploying and Managing Cloud Network Components - Azure
- Troubleshoot Network Issues
  - Standard Network Troubleshooting Tools
  - DNS Service Availability
  - IP Address Service Availability
  - DHCP Service Availability
  - Network Time Protocol Service Availability
  - Hypertext Transfer Protocol Issues
  - Network Configuration Issues
  - Network Configuration Latency Issues
  - Network Bandwidth and Throughput Issues
  - Device Misconfiguration Issues
  - Protocol Incompatibility and Deprecation
  - Routing Issues
  - Network Address Translation
  - Switching Issues
  - Packet Capture and Scanning Utilities
  - Lab: Troubleshooting Network Issues - Azure
- Summary: Comprehending Cloud Networking
- Automating Cloud Resources
  - Deploy and Configure Cloud Resources Using Code
    - Infrastructure as Code
    - Configuration as Code
    - Benefits of IAC and CAC Environments
    - Live Lab: Managing Cloud Automation/ Use Common DevOps Tools - AWS
    - Live Lab: Managing Cloud Automation/Use Common DevOps Tools - Azure
    - Versioning Practices
    - Testing Procedures
    - Documentation Practices
    - Code Formats
  - Continuous Integration Continuous Deployment Pipelines
    - Continuous Integration Continuous Deployment
    - Automation Practices
    - Orchestration Practices
    - Workflow Tasks
    - Deployment Artifacts



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- Code Repositories
- Secure Code Management

- Tools Used in DevOps Environments
  - DevOps Tools
  - Ansible Orchestration
  - Ansible Playbooks
  - Docker Container Management
  - Automate Container Management
  - Kubernetes Container Orchestration
  - Elasticsearch, Logstash, and Kibana Stack
  - Grafana Visualization Tool
  - Jenkins CI/CD Tool
  - Terraform IaC Tool
- Source Control Concepts
  - Source Control
  - Version Management
  - Git Concepts and Use Cases
  - Git Repositories
  - Git Commands
  - Local Git Repository
  - Git Branching and Collaboration
  - Git Pull Request and Files
  - Code Review
  - Activity: Manage Cloud Automation and Orchestration Techniques
  - GitHub Actions
  - Live Lab: Managing Source Code Using Git
- Scripting
  - Scripting Benefits
  - Script Functions
  - Script Variables
  - Script Conditionals
  - Script Loops
  - Script Operators
  - Activity: Manage Cloud Operating System
  - Live Lab: Scripting Logic - AWS
- Integration of Systems



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- Event-Driven Architectures
- Web Services as Components
- Summary: Automating Cloud Resources

- Implementing Security Management
  - Identity and Access Management Concepts
    - Identity and Access Management
    - Secure Cloud Management Environment Access
    - Secure Access to Cloud Resources
    - Account Lifecycle Management
    - Authorization Models
    - Authentication Models
    - Auditing Methods for Access Management
    - Live Lab: Managing Security Configurations - AWS
    - Live Lab: Managing Security Configurations - Azure
    - Activity: Administer Identity and Access Management in the Cloud
  - Security Controls in the Cloud
    - Endpoint Protection Controls
    - Data Loss Prevention
    - Intrusion Prevention System Intrusion Detection Systems
    - Distributed Denial-of-Service Protection
    - Firewall Controls
    - Web Application Firewall Security
    - Network Security Group
    - Live Lab: Configuring Security Controls in the Cloud
  - Vulnerability Management Concepts
    - Vulnerability Management
    - Vulnerability Management Steps
    - Common Vulnerabilities and Exposures
    - Live Lab: Managing Cloud Vulnerabilities
  - Monitoring Suspicious Activities to Identify Common Attacks
    - Vulnerability Exploitation
    - Social Engineering and Malware
    - DDoS, Cryptojacking, and Zombies
    - Metadata
    - Responding to Security Incidents
    - Event Monitoring



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- Baseline Deviation
- Server Ports
- Unnecessary Open Ports

- Summary: Implementing Security Management

- Comprehending Security Compliance and Troubleshooting
  - Aspects of Compliance and Regulation
    - The Impact of Laws and Regulations
    - Data Privacy and Protection
    - Data Classification
    - Data Retention Policies
    - Industry Standards for Compliance and Regulation
  - Security Best Practices
    - Principle of Least Privilege
    - Zero Trust Cloud Security
    - Benchmark Practices
    - Hardening
    - Security Patching
    - Encryption
    - Encrypting Data in Transit
    - Encrypting Data at Rest
    - Secrets Management
    - Application Programming Interface Security
    - Container Security
    - File and Object Storage Security
    - Live Lab: Implementing Security Best Practices
  - Troubleshooting Security Issues
    - Authentication Issues
    - Authorization Issues
    - Network and Directory Security Groups
    - Security Groups and Access Control Lists
    - Network Access Control
    - Software Vulnerability Issues
    - Unauthorized Software
    - Data Security Issues
    - Lack of Encryption in Protocols
    - Cipher Suite Deprecations



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- Live Lab: Troubleshooting Security Issues - AWS
- Summary: Comprehending Security Compliance and Troubleshooting
- Implementing Performance and Monitoring
  - Optimize Workloads Using Cloud Resources
    - Implement Compute Resources
    - Compute Resources for Virtual Machines
    - Compute Resources for Containers
    - Compute Resources for Serverless Applications
    - Activity: Configure Cloud Storage Solutions
    - Storage Workloads
    - Network Traffic
    - Network Workloads
    - Orchestration and Workflow Optimization
    - Managed Services
    - Live Lab: Optimizing Cloud Workloads
  - Configure Appropriate Scaling Approaches
    - Scaling Approaches
    - Configuration Types for Scaling
    - Troubleshoot Auto-Scaling Issues
  - Configure Resources to Achieve Observability
    - Cloud Service Observability
    - Logging Collection
    - Log Aggregation
    - Log File Analysis
    - Log File Retention
    - Tracing
    - Optimization and Monitoring
    - Cloud Detection and Response Solutions
    - Activity: Configure Logs, Monitoring, and Alerting for Cloud Services
    - Live Lab: Using Cloud Monitoring Tools - AWS
    - Live Lab: Using Cloud Monitoring Tools - Azure
  - Managing the Life Cycle of Cloud Resources
    - The Lifecycle Roadmap
    - Major and Minor Updates
    - Patches
    - Update and Patch Testing



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- Ephemeral and Persistent Data
- Summary: Implementing Performance and Monitoring
- Managing Disaster Recovery and Business Continuity
  - Backup and Recovery Methods
    - Backup Types
    - Backup Objects
    - Backup Locations
    - Backup Targets
    - Backup Schedules
    - Data Retention
    - Data Replication
    - Data Encryption
    - Recovery Testing
    - Recovery Types and Options
    - Live Lab: Managing Cloud Backup and Recovery Options
  - Service Availability Concepts
    - Resource Availability
    - Network Configurations for Resource Availability
    - Multi-Cloud Tenancy
    - Disaster Recovery
    - Disaster Recovery Sites
  - Summary: Managing Disaster Recovery and Business Continuity

## REQUIREMENTS:

Recommended experience: 2–3 years of hands-on experience as a systems administrator or cloud engineer.

## Difficulty level

## CERTIFICATE:

The participants will obtain certificates signed by CompTIA (course completion). This course will help prepare you for the CompTIA Cloud+ certification exam, which is available through the Pearson VUE test centers.

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## TRAINER:

Authorized CompTIA Trainer.



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