

uCertify

Course Outline

Hands-On Kubernetes, Service Mesh and Zero-Trust



04 Aug 2025

1. Exercises, Quizzes, Flashcards & Glossary
Number of Questions
2. Expert Instructor-Led Training
3. ADA Compliant & JAWS Compatible Platform
4. State of the Art Educator Tools
5. Award Winning Learning Platform (LMS)
6. Chapter & Lessons

Syllabus

Chapter 1: Preface

Chapter 2: Docker and Kubernetes 101

Chapter 3: PODs

Chapter 4: HTTP Load Balancing with Ingress

Chapter 5: Kubernetes Workload Resources

Chapter 6: ConfigMap, Secrets, and Labels

Chapter 7: Configuring Storage with Kubernetes

Chapter 8: Introduction to Service Discovery

Chapter 9: Zero Trust Using Kubernetes

Chapter 10: Monitoring, Logging and Observability

Chapter 11: Effective Scaling

Chapter 12: Introduction to Service Mesh and Istio

Chapter 13: Traffic Management Using Istio

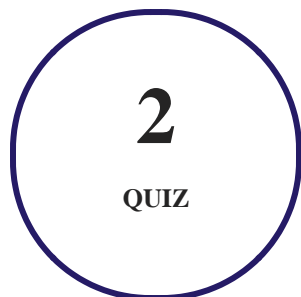
Chapter 14: Observability Using Istio

Chapter 15: Securing Your Services Using Istio

Videos and How To

1. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



2. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

3. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

4. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

5. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**

1. Best Postsecondary Learning Solution

- **2015**

1. Best Education Solution
2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

6. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

Chapter 2: Docker and Kubernetes 101

- Introduction
- Introduction to Docker
- Introduction to Kubernetes
- Installing Kubernetes
- Kubernetes client
- Strategies to validate cluster quality
- Conclusion
- Points to remember

Chapter 3: PODs

- Introduction
- Concept of Pods
- CRUD operations on Pods
- Accessing PODs
- Managing resources
- Data persistence

- Health checks
- POD security
- Conclusion
- Points to remember
- Questions

Chapter 4: HTTP Load Balancing with Ingress

- Introduction
- Networking 101
- Ingress specifications and Ingress controller
- Effective Ingress usage
- Advanced Ingress
- Alternate implementations
- API gateways
- Securing network
- Best practices for securing a network
- Conclusion
- Points to remember
- Questions

Chapter 5: Kubernetes Workload Resources

- Introduction
- ReplicaSets
- Deployments
- DaemonSets
- Kubernetes Jobs
- Conclusion
- Points to remember
- Questions

Chapter 6: ConfigMap, Secrets, and Labels

- Introduction
- ConfigMap
- Secrets
- Managing ConfigMaps and Secrets
- Applying and modifying labels
- Labels selectors
- Defining annotations

- Conclusion
- Points to remember
- Questions

Chapter 7: Configuring Storage with Kubernetes

- Introduction
- Storage provisioning in Kubernetes
- StatefulSets
- Installing MongoDB on Kubernetes using StatefulSets
- Disaster recovery
- Container storage interface
- Conclusion
- Points to remember
- Questions

Chapter 8: Introduction to Service Discovery

- Introduction
- What is service discovery?
- Service registry

- Registration patterns
- Service discovery in Kubernetes
- Advance details
- Conclusion
- Points to remember
- Questions

Chapter 9: Zero Trust Using Kubernetes

- Introduction
- Kubernetes security challenges
- Role-based access control (RBAC)
- Introduction to Zero Trust Architecture
- Zero trust in Kubernetes
- Conclusion
- Points to remember
- Questions

Chapter 10: Monitoring, Logging and Observability

- Introduction

- Kubernetes observability deep dive
- Exploring metrics using Prometheus and Grafana
- Logging and tracing
- Defining a typical SRE process
- Responsibilities of SRE
- Selecting monitoring, metrics and visualization tools
- Conclusion
- Points to remember
- Questions

Chapter 11: Effective Scaling

- Introduction
- Needs of scaling microservices individually
- Principles of scaling
- Challenges of scaling
- Introduction to auto scaling
- Types of scaling in K8s
- Best practices of scaling

- Conclusion
- Points to remember
- Questions

Chapter 12: Introduction to Service Mesh and Istio

- Introduction
- Why do you need a Service Mesh?
- What is a Service Mesh?
- What is Istio?
- Istio architecture
- Installing Istio
- Cost of using a Service Mesh
- Customizing the Istio setup
- Conclusion
- Points to remember
- Questions

Chapter 13: Traffic Management Using Istio

- Introduction

- Traffic management via gateways
- Controlling Ingress and Egress traffic
- Shifting traffic between versions
- Injecting faults for testing
- Timeouts and retries
- Circuit breaking
- Conclusion
- Points to remember
- Questions

Chapter 14: Observability Using Istio

- Introduction
- Understanding the telemetry flow
- Sample application and proxy logs
- Visualizing Service Mesh with Kiali
- Querying Istio Metrics with Prometheus
- Monitoring dashboards with Grafana
- Distributed tracing
- Conclusion

- Points to remember
- Questions

Chapter 15: Securing Your Services Using Istio

- Introduction
- Identity Management with Istio
- Authentication with Istio
- Authorization with Istio
- Security architecture of Istio
- Conclusion
- Points to remember
- Questions

You can't stay away! Get



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