# Container Adoption Boot Camp for Developers (DO720) Training

Duration: **10 Day**

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## Supporting Container Adoption Through Cloud-Native Application Development

**Container Adoption Boot Camp for Developers (DO720)** provides an intensive, hands-on learning experience focused on developing cloud-native applications with Red Hat OpenShift Container Platform.

The course introduces developers to container technologies, Kubernetes, and OpenShift before progressing into areas such as custom container image creation, application deployment, and microservices development with Quarkus.

DO720 is designed for development teams that want to accelerate their digital transformation journey by adopting shorter software development iterations, cloud-native application patterns, and microservices architectures. These practices can help organizations deliver business value more rapidly while modernizing application development processes.

Enrollment includes one year of **Red Hat Learning Subscription Standard**, which provides unlimited access to Red Hat's online training catalog, participation in up to five certification exams, and two exam retakes.

This collection of courses is based on **Red Hat OpenShift Container Platform 4.14** and **Red Hat Build of Quarkus 3.8**.

## Organizational Impact

DO720 is designed to help developers with basic to intermediate container knowledge develop the foundational and advanced skills required to build, deploy, and troubleshoot microservices applications on Red Hat OpenShift Container Platform.

Red Hat OpenShift Container Platform supports rapid application development and deployment while helping applications remain portable across different environments. The platform can also simplify scaling, administration, and maintenance processes for cloud-native applications.

These capabilities can help organizations shorten development cycles and adopt cloud-native application architectures more effectively.

## Individual Impact

After completing DO720, participants will have practical skills for developing and deploying applications on Red Hat OpenShift Container Platform.

Participants will be able to:

- Design container images for application containerization
- Build and manage custom container images
- Implement persistent data management in container-based applications
- Deploy applications to OpenShift Container Platform

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- Develop microservices with Quarkus
- Implement health checks to improve microservice reliability
- Create unit and integration tests for Quarkus microservices
- Build fault-tolerant Quarkus microservices
- Secure Quarkus microservices by using JWT and OAuth

### Recommended Next Exams

After completing DO720, participants can continue with the following certification exams:

- **Red Hat Certified Specialist in Containers (EX188)**
- **Red Hat Certified Specialist in OpenShift Application Development (EX288)**
- **Red Hat Certified Cloud-native Developer (EX378)**

## Prerequisites

Participants should have one or more of the following:

- **Red Hat Certified System Administrator (RHCSA)** certification or equivalent experience
- Completion of **Red Hat Application Development I: Programming in Java EE (AD183)** or equivalent Java EE development experience

## Who Should Attend

This course is particularly suitable for:

- Developers who want to adopt container technologies
- Application developers interested in building microservices
- Technical professionals moving toward cloud-native development practices

## What You Will Learn

The course covers the following key areas:

- Introduction to containers, Kubernetes, and Red Hat OpenShift
- Deploying and managing applications on an OpenShift cluster
- Designing and building containerized applications for OpenShift
- Developing microservice-based applications with Quarkus
- Deploying Quarkus- and Node.js-based microservices to OpenShift
- Testing, securing, and monitoring Quarkus microservices
- Implementing fault tolerance in Quarkus microservices

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## Training Outline

### Introduction and Overview of Containers

Explore how container technologies support and simplify modern application development practices.

### Podman Basics

Learn how to run and manage containers by using Podman and perform common container management operations.

### Container Images

Navigate container registries, identify appropriate container images, and manage images throughout their lifecycle.

### Custom Container Images

Build custom container images that package applications for execution in containerized environments.

### Persisting Data

Run database containers with persistent storage so that application data can remain available independently of the container lifecycle.

### Troubleshooting Containers

Analyze container logs and configure remote debugging capabilities to investigate problems in containerized applications.

### Multi-container Applications with Compose

Use Podman Compose to run and coordinate applications that consist of multiple containers.

### Red Hat OpenShift Container Platform for Developers

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Explore Red Hat OpenShift architecture, key concepts, and terminology, and prepare a developer environment for application development.

### Deploying Simple Applications

Deploy basic applications with the Red Hat OpenShift web console and command-line tools.

### Building and Publishing Container Images

Build and deploy container images and manage their lifecycle through a container registry.

### Managing Red Hat OpenShift Builds

Understand the Red Hat OpenShift build process and use OpenShift capabilities to create container images.

### Managing Red Hat OpenShift Deployments

Explore the different deployment strategies available in OpenShift and learn how to monitor application health after deployment.

### Deploying Multi-container Applications

Deploy multi-container applications with Red Hat OpenShift Templates, Helm Charts, and Kustomize.

### Introducing the Red Hat Build of Quarkus

Explore the components and design patterns used in microservices-based application architectures and become familiar with the primary capabilities of Red Hat Build of Quarkus.

### Developing Cloud-native Microservices with Quarkus

Develop microservice-based applications by using the Red Hat Build of Quarkus runtime and associated development tools.

### Testing Quarkus Microservices

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Implement unit and integration testing strategies for Quarkus-based microservices.

### Securing Quarkus Microservices

Protect communication between microservices by applying origin validation, request authentication, and authorization.

### Implementing Quarkus Microservices on Red Hat OpenShift Container Platform

Develop and deploy cloud-native Quarkus applications on Red Hat OpenShift Container Platform.

### Implementing Fault Tolerance in Microservices

Apply fault tolerance mechanisms that help microservice architectures remain resilient when failures occur.

### Monitoring Quarkus Microservices

Monitor microservice behavior and performance by using metrics and distributed tracing.