

# Red Hat, OpenShift, Kubernetes, Docker in Juniper Cloud Deployments (ROKD)

ID ROKD Prix US\$ 4 000,- (Hors Taxe) Durée 4 jours

## A qui s'adresse cette formation

Individuals responsible for working with software-defined networking solutions in data center, service provider, and enterprise network environments. It is beneficial for learning and applying the foundational knowledge of cloud technologies prior to working Contrail Networking.

## Pré-requis

- Basic TCP/IP skills
- General understanding of data center virtualization

## Objectifs

- List the various open source technologies and their basic differences.
- Describe how each open source technology plays a role in a Contrail solution.
- Describe the basic architecture of Red Hat Linux and other distributions.
- Configure namespaces and virtual networking using Linux and OVS bridges.
- Describe the function of libvirt.
- Instantiate virtual machines using Virtual Machine Manager.
- Create and import and OVS bridge into libvirt.
- Instantiate a VXLAN tunnel between OVS bridges.
- Instantiate virtual machines using virsh.
- Describe the purpose of OpenStack.
- Identify the function of each of the main OpenStack projects.
- Use the OpenStack CLI.
- Describe the OpenStack networking features available to workloads.
- Describe traditional OpenStack block and object storage.
- Describe how Ceph can be integrated with OpenStack.
- Use Ceph storage to better scale an RHOSP deployment.
- Describe the usage of TripleO in a RHOSP deployment.
- Describe the functions of the undercloud.
- Describe the functions of the overcloud.
- Describe the networks used in an RHOSP deployment.

- Describe how to deploy the undercloud.
- Describe how to deploy the overcloud while using YAML files.
- Describe the benefits of containers.
- Describe the reasons to use Docker.
- Describe the basic CLI commands for Docker.
- Describe how to run a container in Docker.
- Describe the difference between attached and detached mode.
- Describe how to interact with Dockerhub.
- Describe how to network a Docker container.
- Describe how to inspect and view the logs of a Docker container.
- Describe how to build and image using a Dockerfile.
- Describe the difference between CMD and ENTRYPOINT.
- Describe how to compose a Docker container.
- Describe how to build a private registry.
- Describe the k8s architecture.
- Describe the usage of k8s pods.
- Describe the basic usage of the k8s CLI.
- Instantiate a pod using YAML.
- Describe the function replication controllers and sets.
- Describe how to create a deployment.
- Describe networking in k8s.
- Describe how to use namespaces with k8s.
- Describe the basic differences between k8s and OpenShift.
- Describe the basic CLI commands of OpenShift.
- Describe the basic functionality of the OpenShift web UI.

## Contenu

### Course Introduction

### Open Source Cloud Technologies

- Open Source Technologies Overview
- Juniper's Usage of Open Source Technologies(Contrail, CSO, EVO, etc.)

### Linux Architecture

- Hardware, Kernel, OS Interaction
- Namespaces
- Cgroups

# Red Hat, OpenShift, Kubernetes, Docker in Juniper Cloud Deployments (ROKD)

---

- Virtual Networking

## Lab 1: Linux Namespaces and Virtual Networking

### Linux Virtualization

- QEMU/KVM
- Libvirt
- Virtual Machine Manager
- Virsh
- OVS Bridging with VXLAN tunneling

## Lab 2: Linux Virtualization

### OpenStack Fundamentals

- OpenStack Overview
- OpenStack Projects
- OpenStack CLI

## Lab 3: Exploring the OpenStack CLI

### OpenStack Configuration

- OpenStack Interface Options
- OpenStack Heat Templates
- OpenStack Configuration

## Lab 4: OpenStack Configuration

### OpenStack Networking

- Networks
- Routers
- Security Groups
- Load Balancers
- Floating IPs
- Trunks
- Network Topology

## Lab 5: OpenStack Networking

### OpenStack Storage

- Default OpenStack Storage
- Ceph Storage
- Ceph Integration with OpenStack
- Launch VMs using Ceph for Block and ObjectStorage

## Lab 6: Ceph Storage

### RHOSP

- OpenStack over OpenStack (TripleO)
- Deploying the Undercloud
- Deploying the Overcloud

- Working with YAML files and RHOSP
- Troubleshooting RHOSP after installation

## Lab 7: RHOSP

### Docker Basics

- Why Docker and Containers?
- What Is a Container?
- Docker Overview
- Working with Docker (dockerhub, installation, image versus container)
- Getting Started with the Docker CLI

## Lab 8: Getting to Know Docker

### Advanced Docker

- More Commands
- Port Mapping
- Container Details
- Passing Environment Variables
- Creating Your Own Image
- ENTRYPOINT versus CMD
- Understanding Docker Networking
- Docker Storage
- Composing Docker Containers
- Registries
- Docker Engine

## Lab 9: Composing Docker Containers

### Kubernetes Basics

- K8s Overview
- K8s Architecture
- Pods
- kubectl
- Using YAML to Create a Pod

## Lab 10: Creating a Docker Pod

### K8s Advanced Topics

- Replica Controller and ReplicaSet
- Deployments
- Networking K8s
- Services
- Working with Namespaces

## Lab 11: ReplicaSets and Networking in K8s

### Red Hat OpenShift

- OpenShift Overview
- OpenShift Flavors

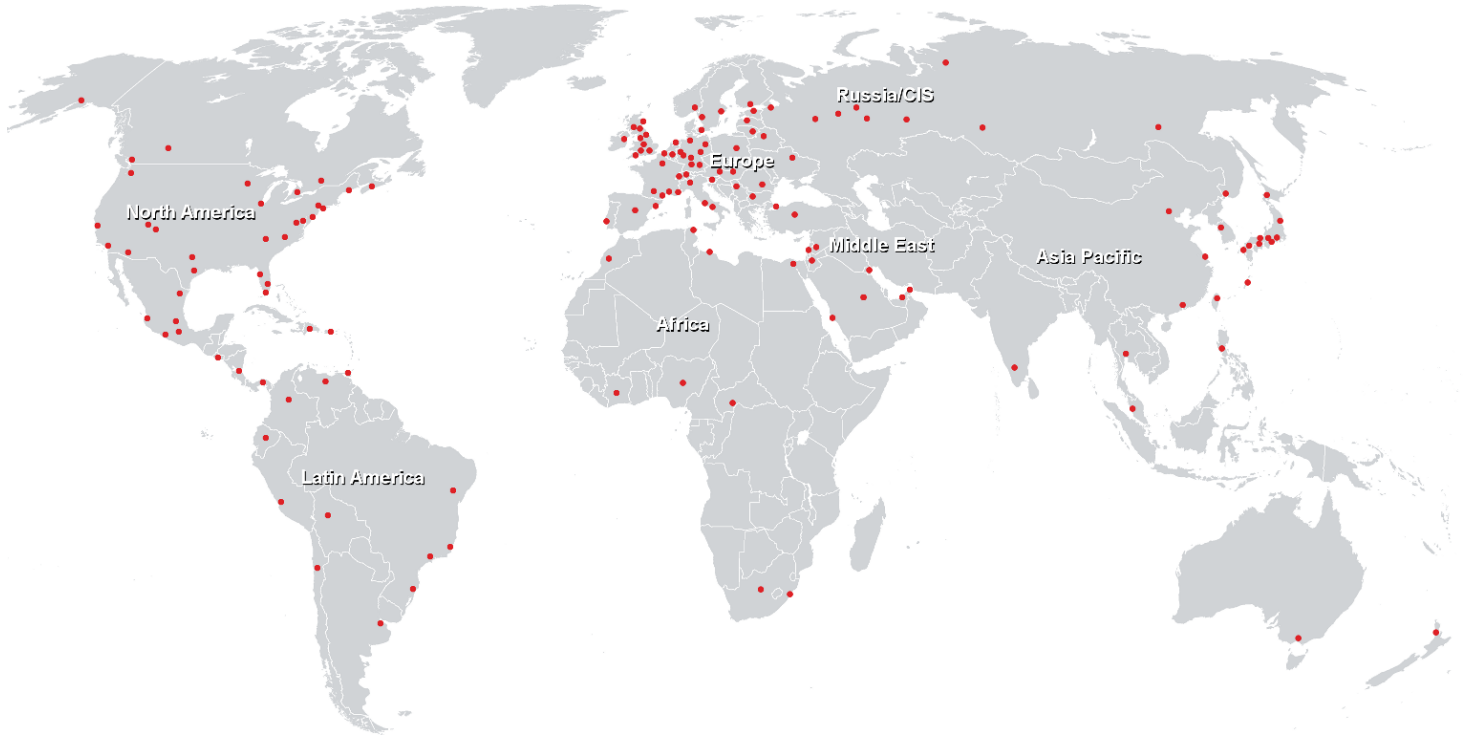
- OpenShift CLI
- OpenShift Webconsole
- Deploying Containers with OpenShift
- Behind the Scenes App Dev
- Scaling Up New Hosts

### **Lab 12: OpenShift Container Orchestration**

# Red Hat, OpenShift, Kubernetes, Docker in Juniper Cloud Deployments (ROKD)

---

## Centres de formation dans le monde entier



## Fast Lane Institute for Knowledge Transfer GmbH

Husacherstrasse 3  
CH-8304 Wallisellen  
Tel. +41 44 832 50 80

info@flane.ch, <https://www.flane.ch>