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Updated on 09/10/2025

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# Cumulus Linux NetDevOps Training

3 days (21 hours)

## Overview

Cumulus Linux is a Debian-based network Linux distribution that transforms switches into open, programmable NetDevOps infrastructures. It combines the flexibility of Linux with the performance of modern network environments.

Our Cumulus Linux NetDevOps training course teaches you how to install, configure and administer Cumulus Linux in DevOps environments.

You'll see how to manage interfaces, automate configuration, integrate Cumulus into your CI/CD pipelines and monitor your environments with Prometheus, Grafana and NetQ.

You'll also learn how to secure your infrastructures, connect Cumulus Linux with Kubernetes or OpenStack, and implement NetDevOps best practices for hybrid cloud and microservices.

On completion, you will be able to deploy a Cumulus Linux-based network, integrate it into your DevOps workflows and automate its operation.

Like all our training courses, this one uses the latest stable versions v5.14 of Cumulus Linux and v4.15 of NetQ.

## Objectives

- Understand Cumulus Linux and the NetDevOps approach
- Install and administer a Cumulus Linux network
- Automate with Ansible and Terraform
- Integrate Cumulus with CI/CD pipelines
- Monitoring with NetQ, Prometheus and Grafana
- Connect Cumulus to Kubernetes and the cloud

## Target audience

- DevOps engineers
- Systems & network administrators
- Cloud & infrastructure architects

### Prerequisites

- Linux and network basics
- Notions of DevOps & automation

## Cumulus Linux NetDevOps training program

### Introduction to Cumulus Linux and NetDevOps

- Role of Cumulus Linux in the NetDevOps approach
- History (Cumulus Networks ? NVIDIA) and scope
- Principles : SDN, automation, Linux openness
- Differences vs. network OS (IOS, JunOS, EOS)
- Use cases: datacenter, cloud, pipelines
- Workshop: Installing Cumulus Linux on a virtual switch

### Architecture and components

- Debian base, Netlink, system services
- FRR Routing: BGP, OSPF, EVPN
- Switching plan (switchd) and forwarding
- MLAG, VXLAN/EVPN concepts and uses
- Hardware integrations & supported platforms
- Workshop: Initial configuration with FRRouting

### Basic administration and management

- Linux CLI & tools: ifupdown2, iproute2, systemd
- Interfaces, VLANs, bridges: persistence and templates
- Accounts, hardening and logging
- Logs & network debugging
- Introduction to NetQ for validation
- Workshop: Creating a VLAN and validating connectivity

### Automation and Infrastructure as Code

- Automation with Ansible (roles, inventories, Jinja2)
- Declarative approach with Terraform
- Versioning config (Git/GitOps)
- Orchestrated updates & deployments

- NetDevOps best practices
- Workshop: Push network configuration via Ansible

## CI/CD integration and NetDevOps pipelines

- Pipelines (GitLab CI, Jenkins, GitHub Actions)
- Testing & linting configurations, policy as code
- Labs/simulations for automated validation
- Progressive deployments (canary) and rollback
- Semantic version management
- Workshop: Building a network CI/CD pipeline

## Network security and compliance

- SSH access, RBAC, keys and hardening
- Encryption: TLS, IPsec, MACsec (principles)
- Centralized logging, SIEM, auditing
- Compliance (ISO, RGPD, PCI-DSS): key controls
- Automating security checks
- Workshop: Implementing RBAC + access auditing

## Monitoring and observability

- Supervision: NetQ, SNMP, Prometheus, Grafana
- Network metrics & SLO/SLA-oriented alerting
- Topology validation, anomaly detection
- Observability integrations (Elastic/Loki)
- Automated troubleshooting (runbooks)
- Workshop: Grafana Dashboard for a Cumulus switch

## Cloud and containers

- Kubernetes / OpenShift integration (CNI, VXLAN overlay)
- OpenStack & hybrid environments
- Networks for microservices: patterns and pitfalls
- Scalability and edge/datacenter resilience
- Cloud-native perspectives
- Workshop: Connecting a K8s cluster to a Cumulus network

## Summary and outlook

- Summary of lessons learned & best practices
- Case studies (cloud-native DC, automations)
- Current limits and roadmap
- Industrialization/evolution strategy
- Post-training action plan

- Workshop: NetDevOps roadmap on Cumulus Linux

## Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced IT technology, or to acquire specific business knowledge or modern methods.

## Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the forthcoming course, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

## Teaching methods

Practical training: 60% hands-on, 40% theory. Training material distributed in digital format to all participants.

## Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

## Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

## Certification

A certificate will be awarded to each trainee who has completed the entire course.