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Sign up

Cilium training

3 days (21 hours)

Presentation

This training course has been specially designed for network teams used to traditional switches, routers and firewalls, to give them the theory and practice to design and operate the network in Kubernetes clusters equipped with the Cilium CNI plugin.

During this , you'll learn how to choose architecture (tunnel or native routing, IP address management, SNAT, etc.) for the Pod overlay and Node underlay network, the mechanisms for distributing flows between Pods (ClusterIP) and how to publish applications (LoadBalancer, NodePort).

Increase your skills in controlling and filtering (Network Policy) cluster-internal and external flows, and in interacting (BGP) with the rest of the network.

All participants will have access to an individual cluster (public cloud and bare metal).

Objectives

- Understand, design, control, troubleshoot, improve the network in Kubernetes and its interconnection with the "Legacy" world (including BGP)
- Partition namespaces, filter intra- and inter-cluster applications
- Implement micro-segmentation and zero-trust network architecture
- Understand and use Cilium's standard and open source Kubernetes networking features and address commercial features
- Observe network flows

Target audience

- Legacy network teams
- DevOps

Prerequisites

- Good knowledge of conventional networks (TCP/IP, firewall, proxy, etc.).
- Get a github account (free)

Program of our Kubernetes training for network teams

The basics of Kubernetes networking

- Kubernetes network model
- Pod-to-pod communication (TP)
- What is a service?
- Communication between pods and services (TP)
- DNS resolution in Kubernetes

Advanced Kubernetes network

- How does Kubernetes Networking work at baremetal level?
- What is a CNI?
- Network policies
  - What is a network policy?
  - Examples of network policies (TP)
- External traffic to services (TP)
- Kubernetes Q&A and coaching

Cilium overview

- What is Cilium?
- Cilium architecture
- Cilium features
- Cilium installation and first steps (TP)

Advanced Cilium features and BGP load balancing

- What is eBPF? How does Cilium use eBPF?
- Cilium replaces the Kube proxy
- What is the egressGateway?
- Control outgoing flows with egressGatewayPolicy (TP)
- Specific Mac address for a pod (TP)
- Network bandwidth management with Bandwith Manager (TP)
- Transparent encryption with IPSec and WireGuard (TP)
- IP management (IPAM) with Cilium
- Cilium external connectivity (BGP, L2 announcements)

Safety with Cilium

- Network policies with Cilium
  - Network policies L3
  - L4 network policies
  - Network policies L7 (TP)

Cilium Mesh Service features

- What is a Service Mesh?
- Cilium input controller (TP)
- Cilium gateway API (TP)
- Cilium with Istio
- Cilium mTLS (TP)
- Cilium multi-cluster

Observability with Hubble

- What is Hubble?
- eBPF observability
- Visualizing network traffic with Hubble UI (hands-on)
- Network flow inspection with Hubble CLI (hands-on)
- Activate Prometheus metrics: Cilium, Hubble
- Hubble with Prometheus, Grafana (TP)

Migrate your existing clusters to Cilium

- Consider migrating your current cluster to Cilium to take advantage of these features
- Node-by-node migration without service interruption: Cilium next to the current CNI

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer 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 training to come, 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 course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

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

Validation

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

Sanction

A certificate will be issued to each trainee who completes the course.