Introduction to Cilium (LFS146)

The course teaches the basics of Cilium and how it is used to connect, observe, and secure Kubernetes clusters, starting with the container networking challenges motivating the creation of Cilium, followed by the Cilium architecture and how it uses eBPF to address those challenges. The course also provides a step-by-step guide for installing and setting up Cilium as your CNI is included, enabling you to learn how to configure network policies to secure a network and how to use Hubble to observe network flows. Finally, the course provides hands-on experience using some of Cilium's most popular features, such as support for L7 protocol-aware network policies, transparent encryption, and cluster mesh networking. By the end of this course, you will understand how Cilium and Hubble work and how they can be used to connect, observe, and secure your cloud native environments.

Duration: 3 Day

Prerequisites for this course

In order to complete this course, learners should be able to:

- The hands-on exercises require a Kubernetes cluster pre-provisioned without a CNI plugin.
- The cluster hosts must be using a Linux kernel with socket load balancing support (kernel versions v4.19.57, v5.1.16, v5.2.0 or more recent)
- The learners' primary system should have the helm, kubectl and curl commands available.
- All exercises have been tested using local development clusters based on Kind (v0.25.0) and minikube (v1.31), as well as Azure's AKS service.

Outline for this course

Chapter 1 – Cilium Overview

Chapter 2 – Let's Install Cilium

Chapter 3 – Network Policy

Chapter 4 – Network Observability Using Hubble

Chapter 5 – Prometheus Metrics

Chapter 6 – Transparent Encryption

Chapter 7 – Replacing kube-proxy with Cilium

Chapter 8 – Introduction to Cilium Cluster Mesh