EVE

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Overview

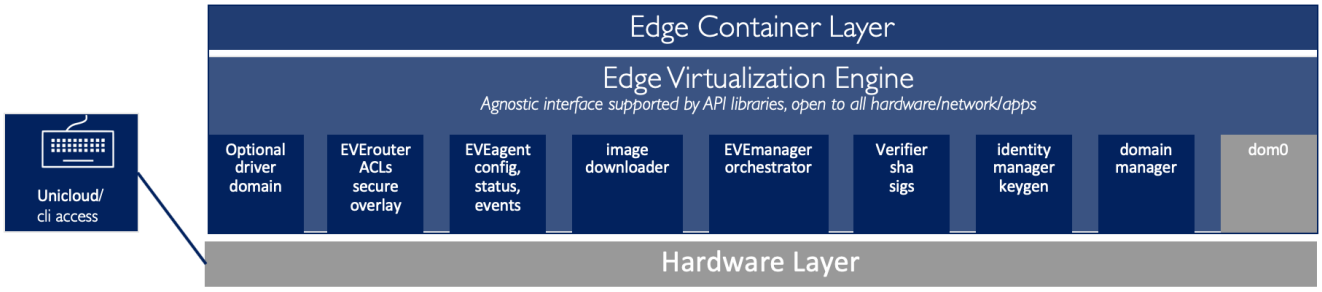
The Edge Virtualization Engine (EVE) combines a type-1 hypervisor (currently Xen) with a hardened root-of-trust operating system that provides a runtime for edge containers. It is specifically designed to run in IoT and edge devices. EVE provides system architects with new levels of control through virtualization of these edge devices. Since this edge equipment is deployed *outside* datacenters, EVE securely isolates functions in the virtualization layer to prevent a single functional block from compromising the entire system (similar to the concepts first developed in Qubes OS). EVE virtualizes all resources on a device and allows for granular remote management. It can host multiple applications running in edge containers. It provides high security default settings, and enables remote patching, updates, and application deployment, and much more. EVE's APIs control assignment of device resources to different workloads allowing more efficient use of resources. System architects can increase device utilization through workload consolidation and application multi-tenancy.

Using EVE as the basis of a fleet of IoT devices, it's possible for operators to efficiently manage far larger numbers of deployments, spread across wider geographies, while running many applications. Developers can deploy modern cloud-native apps co-located with existing legacy applications running on any operating system.

Main Concepts

EVE consists of four major components:

- Type-1 hypervisor
- Operating system services
- Device connectivity and management interfaces
- Edge container runtime



Hypervisor

EVE includes a type-1 hypervisor based on Xen, allowing it to run on any supported hardware platform.

System services

These services provide the ability for EVE and its hosted apps to self update, identity management, security, and networking services for all the device resources and instances.

Device connectivity and management interfaces

This includes the device network interface, drivers for ethernet and wireless networking, and an API for connecting EVE to centralized management services.

Edge container runtime

This includes domain management, instance orchestration, virtualized IO, inter instance networking, and remote instance consoles.

How to Get Eve

You can get the source code for EVE from the LF Edge Github Repository. Build instructions are here.

Getting Started Tutorial

Instructions how to use are available here.

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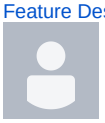

Rene de Souza Pinto
CAN Bus support updated Mar 01, 2024 view change

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EVE VLAN support - switch network instances updated Feb 23, 2024 view change

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