

Pelion Edge Applications Management with Container Orchestration and Gateway System Management

Edge computing has emerged as a dominant industry trend, and the balance between edge and cloud computing is shifting. Meanwhile, IoT applications are becoming

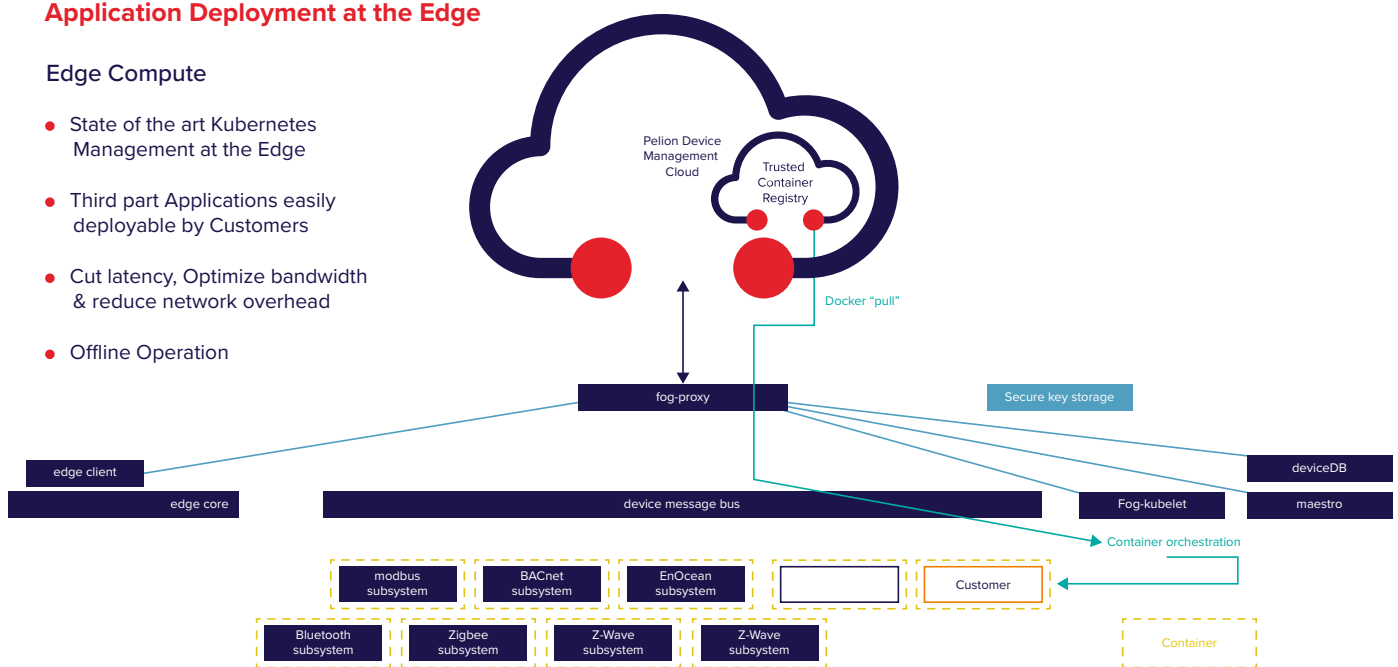
more expansive and sophisticated by the day. These new deployments allow for primary application compute to be run on the edge rather than in the cloud: improving latency, reducing bandwidth requirements, and opening the door for robust privacy guarantees where confidential data never leaves the premise.

The IoT deployments of the past are increasingly being overshadowed by generic compute on more capable Cortex-A and Linux-based systems. The devices can be dynamically programmed from the cloud with new applications to adjust for the existence of modular peripherals, new machine learning models, new application software, and security upgrades over time. At the same time,

Application Deployment at the Edge

Edge Compute

- State of the art Kubernetes Management at the Edge
- Third part Applications easily deployable by Customers
- Cut latency, Optimize bandwidth & reduce network overhead
- Offline Operation



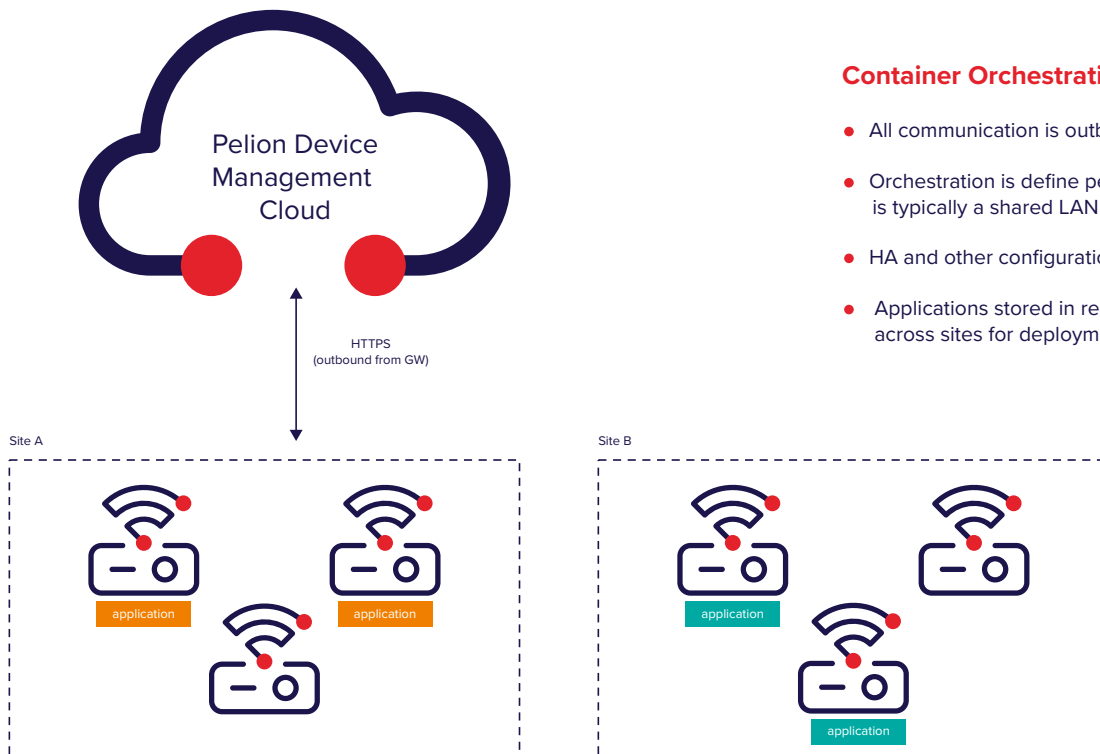
as applications get spread over many highly distributed, heterogeneous, resource-constrained, relatively insecure, and unreliable compute fabric, the management and the orchestration of the applications become a daunting challenge.

Pelion Edge Applications Management addresses these challenges by offering an open standards-based, and interoperable mechanism to package, deploy and manage IoT applications from the cloud to distributed edge devices securely and efficiently. It extends into Pelion's other core functionalities, such as supporting non-IP endpoints with protocol adapters and device management, binding them to a bedrock of security.

Systems based on Linux containers (for example, Docker) have become a standard way to package and ship applications for reproducibility and portability. They are a natural fit for gateway-based devices. When it comes to server-side cluster management and application deployment frameworks, Kubernetes is the most popular

system. At Pelion, we believe that an IoT-optimized Kubernetes, and/or container runtime, delivers the optimum go-forward strategy for edge computing.

The extensibility and modularity characteristics of Kubernetes ensures most edge-related customizations can be achieved without changing the core orchestration engine, while at the same time, maintaining API compatibility. Addition features such as fault tolerance, extensibility, and open ecosystem in K8s internal architecture that make it highly suitable for Pelion Edge Applications Management.



Pelion Edge Applications Management offers a unique edge computing platform with the following features:

- **Open** - Based on open source components and open APIs. Pelion Edge Applications Management integrates well with existing application management ecosystem and cloud-based DevOps toolchains.
- **Secure** - End-to-end security is enabled from secure gateway provisioning, to secret management, to application level security. Security for IoT devices is critical, from hardware through to connectivity and into the cloud. Pelion Edge Applications Management provides a wide range of features that ensure chip-to-cloud security, regardless of the industry and market, allowing OEMs to design and deploy more robust IoT solutions easily.
- **Powerful** - Capable of remotely deploying and managing micro-services. Pelion Edge Applications Management leverages years of advancements in cloud application management technologies such as rolling updates, containerization, micro-services, rollbacks, health monitoring, checkpointing, etc.
- **Flexible** - Based on Docker containers, but extensible to support multiple backends such as VMs, Unikernels, functions, etc. and to also deploy higher-level artefacts.
- **Unified** - Single control plane for orchestrating hybrid cloud-edge applications.

Summary

As edge computing enters the mainstream, the emergence of multiple edge computing platforms will become a common practice. Unfortunately, many of these systems are built around proprietary APIs and runtimes. Pelion, on the other hand, has taken an approach of building on an existing open source-based cloud and edge ecosystem to bring years of server-side learning to the IoT edge computing.

