Kata Containers

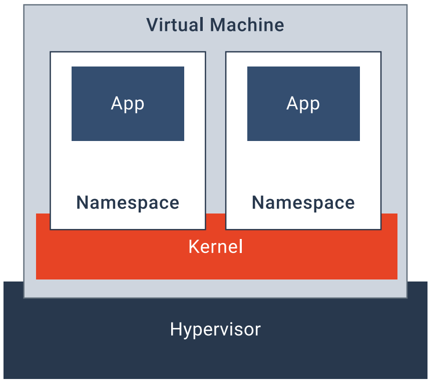
The speed of containers, the security of VMs

katacontainers

Kata Containers is a novel implementation of a lightweight virtual machine that seamlessly integrates within the container ecosystem. Kata Containers are as light and fast as containers and integrate with the container management layers, while also delivering the security advantages of VMs.

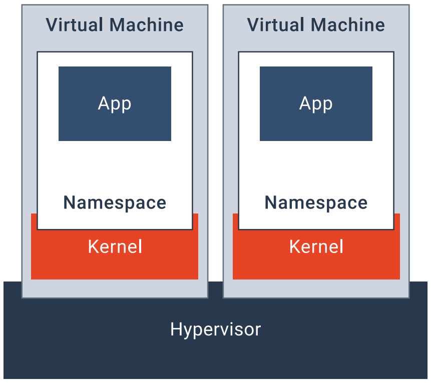
Kata Containers is a merger of two existing open source projects: Intel Clear Containers and Hyper runV. The new project brings together the best of both technologies with a common vision of retooling virtualization to fit container-native applications, in order to deliver the speed of containers, and the security of VMs.

Kata Containers benefits from each project's strengths. Intel Clear Containers are focused on performance (<100ms boot time) and enhanced security, while Hyper runV prioritized being technology-agnostic by supporting many different CPU architectures and hypervisors. By merging the projects, Kata Containers delivers a superior end user experience in both performance and compatibility, unifies the developer communities, and accelerates feature development to tackle future use cases.



Containers in cloud today

(Shared kernel, isolation within namespace)



Kata Containers

(Each container/pod is hypervisor isolated, As secure as a VM, As fast as a container, Seamless integration with the container ecosystem and management layers)

The industry shift to containers presents unique challenges in securing user workloads within multi-tenant untrusted environments. Kata Containers utilizes open source hypervisors as an isolation boundary for each container (or collection of containers in a pod); this approach solves the shared kernel dilemma with existing bare metal container solutions.

Kata Containers is an excellent fit for both on-demand, event-based deployments such as serverless functions, continuous integration/continuous delivery, as well as longer running web server applications. The developer is no longer required to know anything about the underlying infra or to perform any kind of capacity planning before launching their container workloads. Kata Containers delivers enhanced security, scalability and higher resource utilization, while at the same time leading to an overall simplified stack.

Join The Community

Kata Containers is an independent open source community producing code under the Apache 2 license. Anyone is welcome to join and contribute code, documentation, and use cases.

katacontainers.io

Github: /kata-containers
Slack: KataContainers
Website: katacontainers.io
Twitter: @KataContainers
Facebook: KataContainers
Mailing Lists: lists.katacontainers.io
Email: info@katacontainers.io

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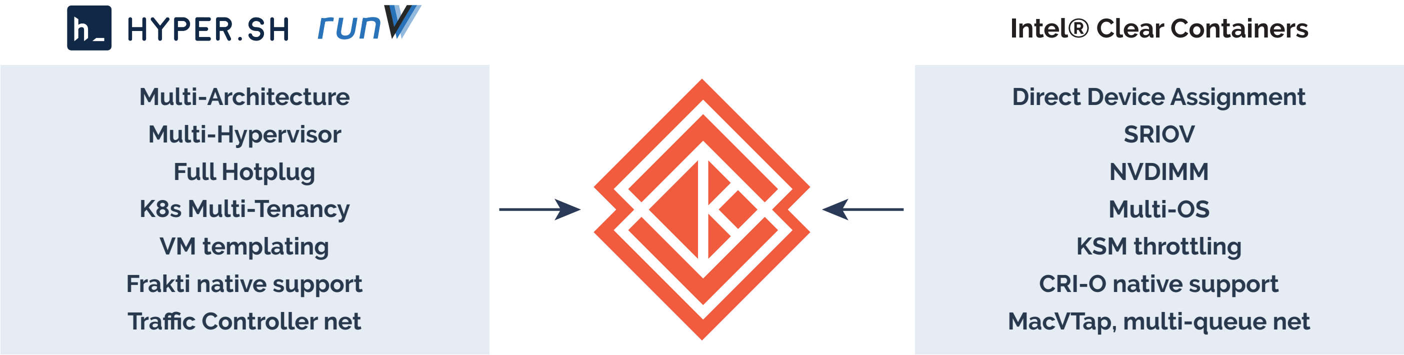
Kata Containers Features:

Security Runs in a dedicated kernel, providing isolation of network, I/O and memory and can utilize hardware-enforced isolation with virtualization VT extensions

Compatibility Supports industry standards including OCI container format, Kubernetes CRI interface, as well as legacy virtualization technologies

Simplicity Eliminates the requirement for nesting containers inside full blown VMs

Performance Delivers consistent performance as standard Linux containers



Kata Containers Enables:

Multi-tenancy	Event-Driven Container-Native	Increased Resource efficiency	Bridge Ecosystems
Enables multiple tenants to share single container orchestration engine	Can be launched at anytime without any planning or pre-existing VM cluster requirement.	Small footprint allows for 10x increase in density compared to traditional VMs.	Utilizes both battle tested hypervisor and bleeding edge container technologies, providing an elegant and cohesive integration.

Kata Containers Use Cases:

CaaS

Provides straightforward Container-as-a-Service capabilities, where the end user is not required to learn or manage a COE (Kubernetes, Swarm, OpenShift).

Network Functions Virtualization

Provides the multi-tenancy and security required for container based VNF deployments

Dev/Test

Allows developers to focus on coding and abstracts away underlying infra

Continuous Integration/Continuous Delivery

Ideal for CI/CD, which tends to be more random in workload deployment, by eliminating idle resources.

Serverless

Can be used as basis for a container-native Serverless platform

Edge

Fits well with the unique security requirements and small footprint of edge deployments

Cloud Multi-tenanted environments

Provides security required to run containers in the cloud

katacontainers.io