katacontainers

Team Members: Alec Pemberton, Chris Robinson, Gabe Venberg, Jenny Okugas, Maxwell Wendlandt
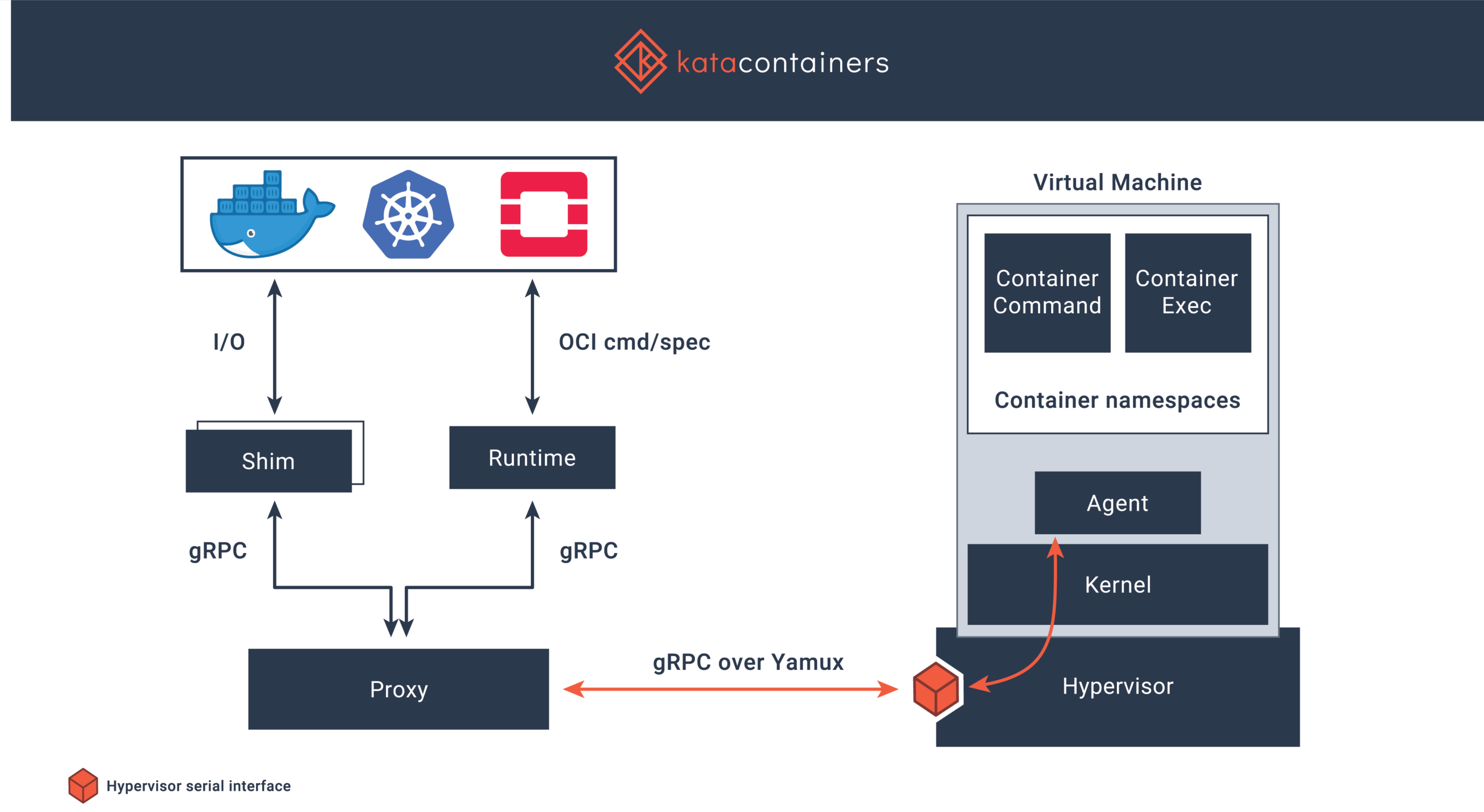Sponsor: Kata Containers

Introduction to Kata

Our capstone project focuses on addressing key issues within Kata Containers, an open-source project that provides lightweight virtual machines for better container isolation. Our collaboration with Kata Containers aimed to enhance the functionality and performance of the platform.

Why use Kata

Kata Containers offers lightweight and fast execution, enhanced security through workload isolation, seamless integration with the container ecosystem, customizable hypervisor options, and a robust open-source community.

Who uses Kata?

Google Cloud   Azure
IBM   Alibaba Cloud
Red Hat   intel   ubuntu
Delivered by Canonical

Collaborative Development

Kata Containers utilizes GitHub and slack for effective project management.
- Global contributors collaborate on Kata Containers.
- Asynchronous communication is the primary mode of interaction.
- Decisions and discussions are transparent and tracked in GitHub.

Extensive Code Review

✓ Reviews from two maintainers.
✓ Unit tests passing.
✓ Integration tests passing.
✓ Code style tests passing.

Transitioning from Golang to Rust

- Golang: A statically typed, compiled language known for its simplicity and efficiency in building concurrent applications.
- Rust: A relatively new programming language with a focus on memory safety, high performance, and code correctness.
- Kata is transitioning to Rust for performance and correctness benefits without compromising on the ease of use and maintainability offered by Golang.

Objectives

- Familiarize ourselves with the GitHub workflow and the Rust codebase by authoring small patches
- Contribute to tooling needed to bring the Rust codebase up to feature parity with the legacy Go codebase.

Results

- Rewrote log parsing tool for use with new runtime
- Implemented markdown checker to aid documentation correctness in CI pipeline
- Fixed several bugs in installation process related to certain combinations of options
- Implemented firewall management in the kata-ctl control program

git
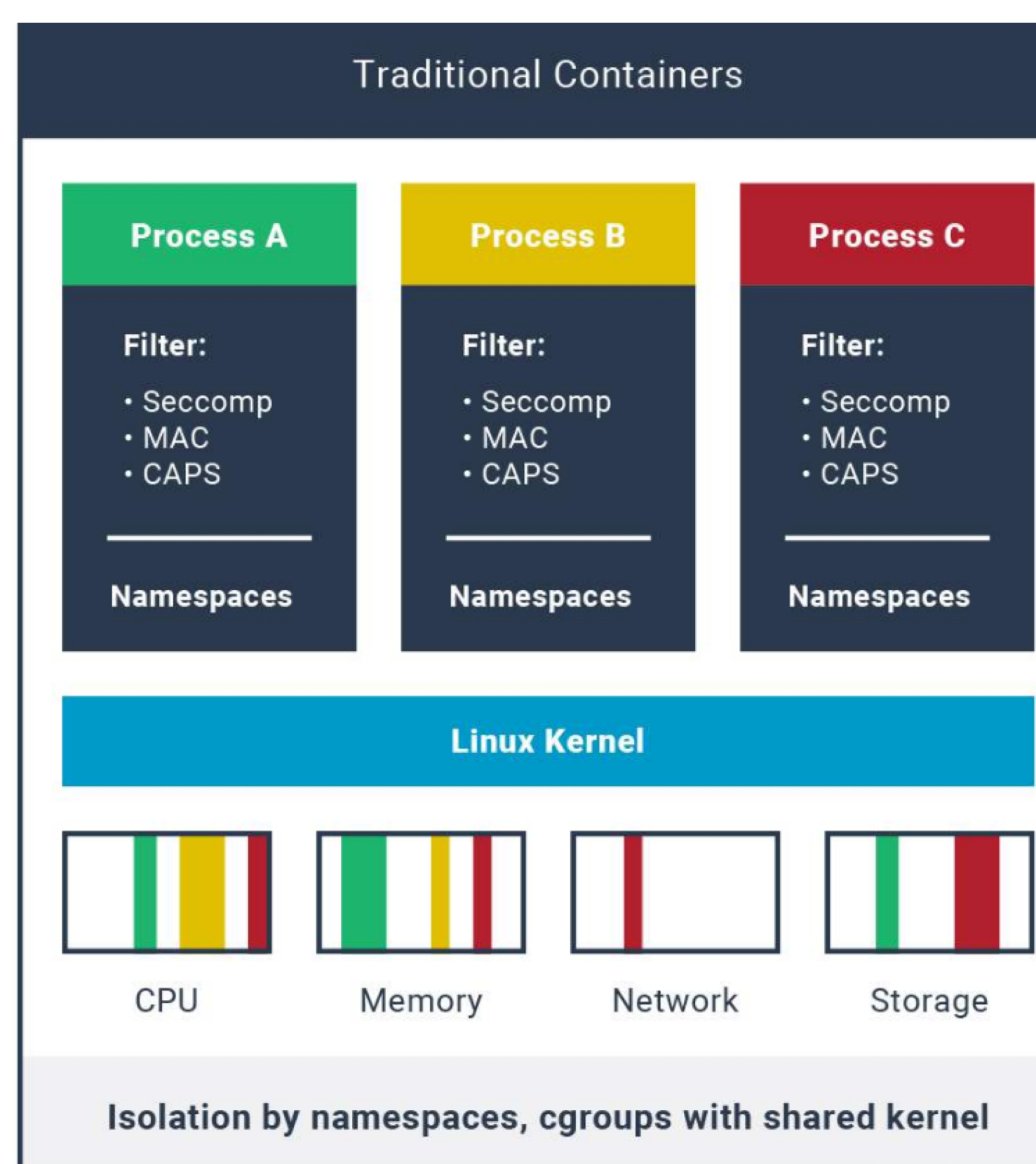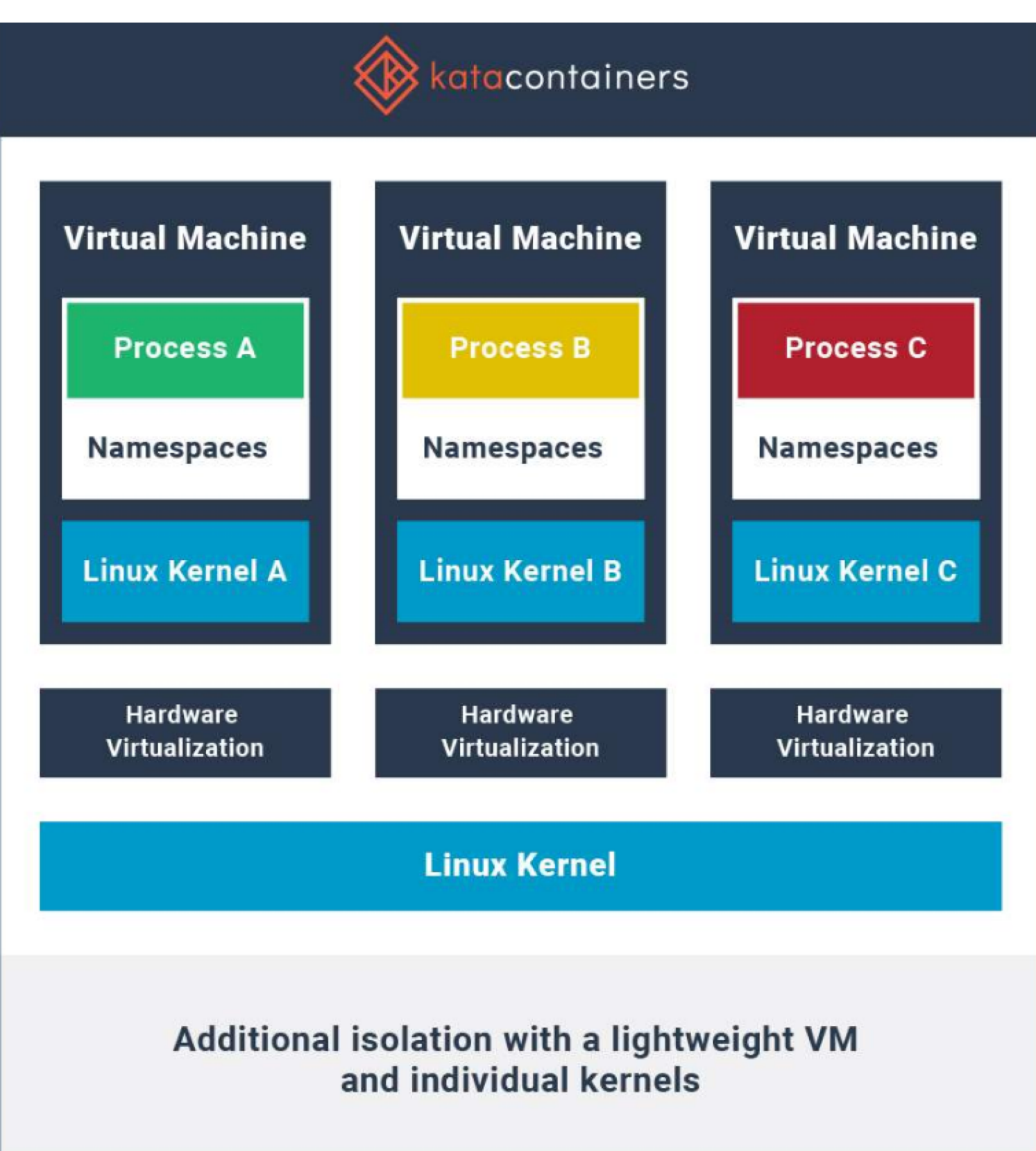
Failure is not an Option<T>
it's a Result<T,E>