Improve Performance and Security for Containers using Kuryr and Cilium

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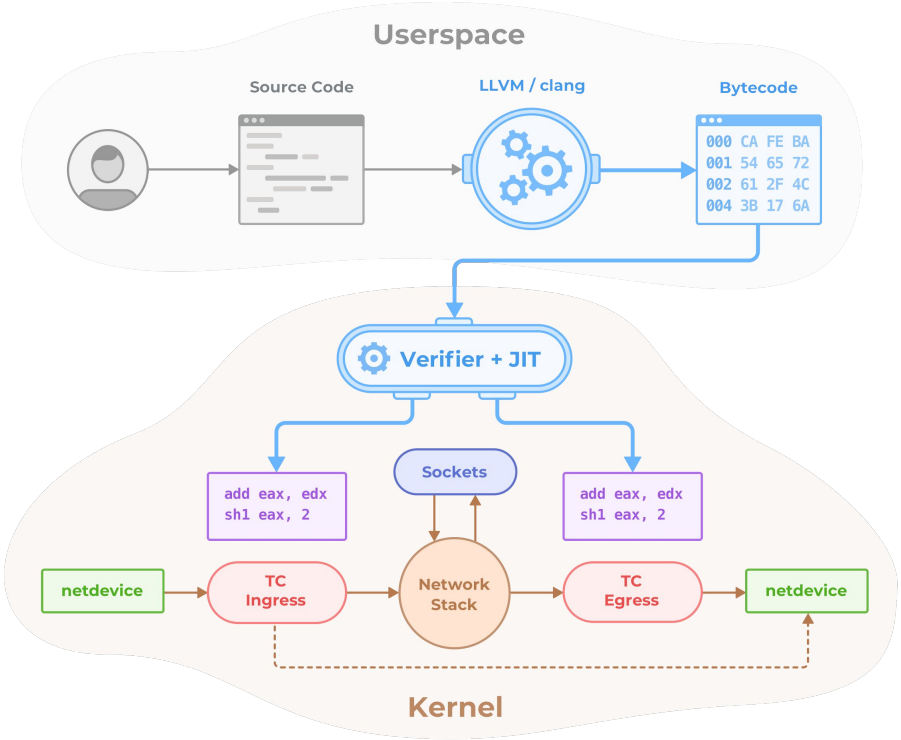
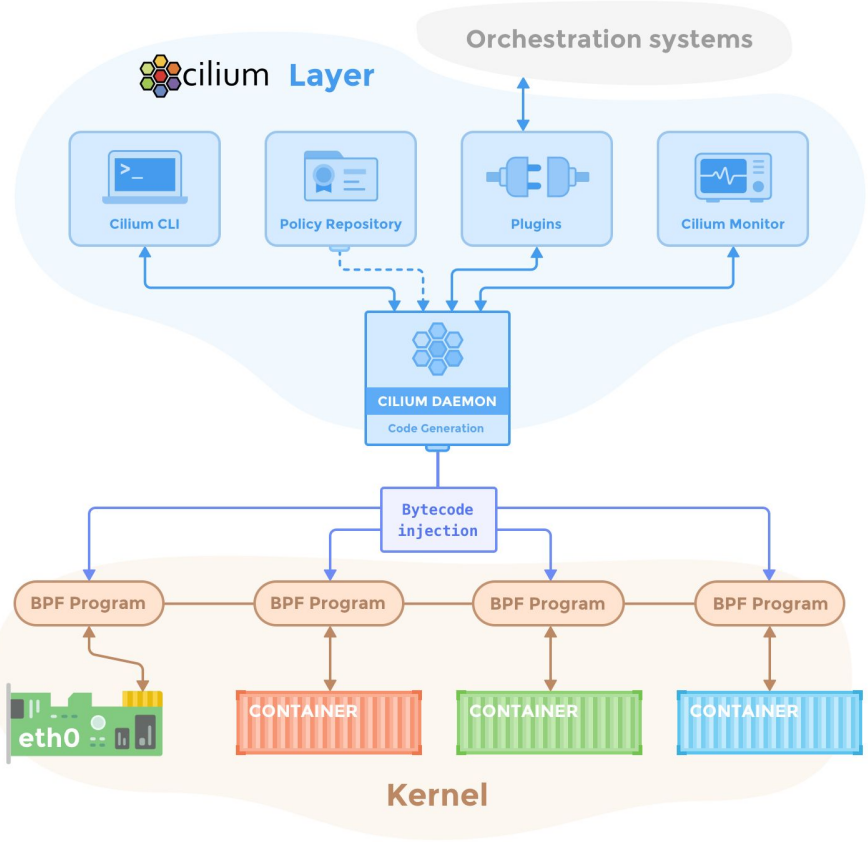
BPF



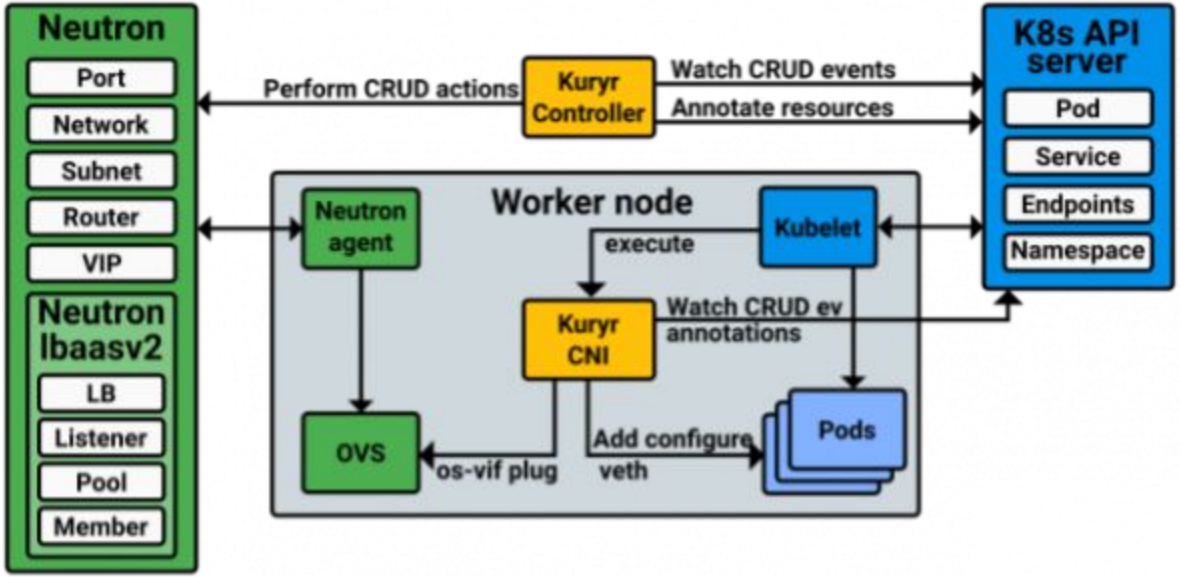
From https://github.com/cilium/cilium

Cilium architecture



From https://github.com/cilium/cilium

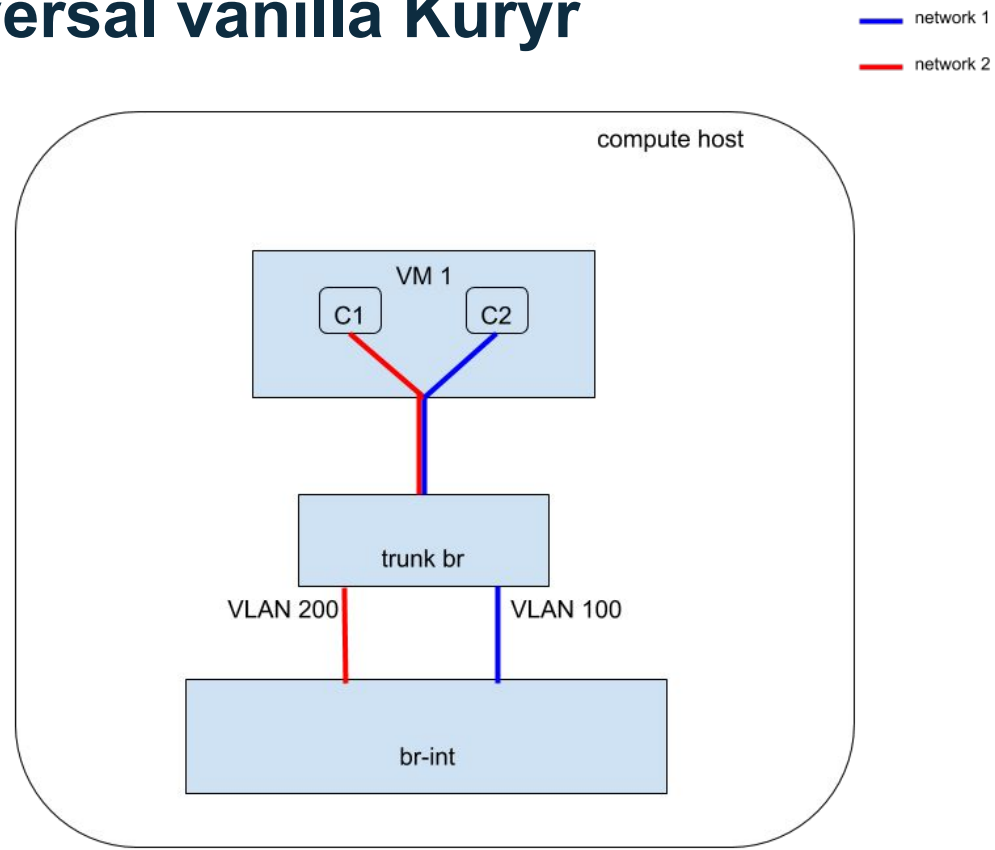
Introducing Kuryr



The two Kuryr-Kubernetes components depicted with all the main components they interact with.

From http://superuser.openstack.org/articles/networking-kubernetes-kuryr/

Packet traversal vanilla Kuryr



Why Cilium + Kuryr?

- Support for Network Policies in Kubernetes
- Using BPF as an underlying mechanism for Network Policies

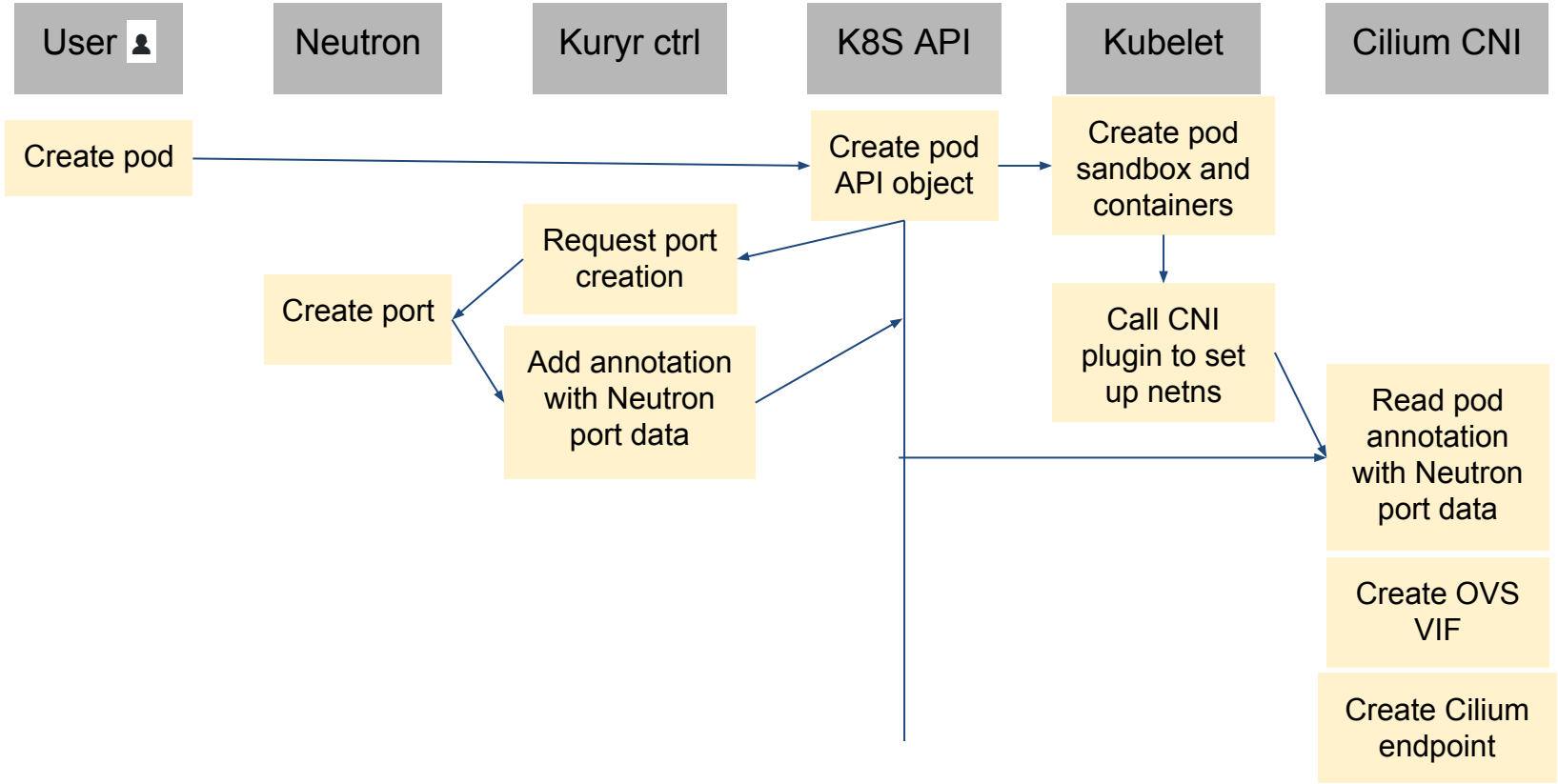
Integration: how it works

- Kuryr-kubernetes controller is running as a deployment
- Kuryr-kubernetes CNI plugin is **not** used
- Cilium CNI plugin is used instead

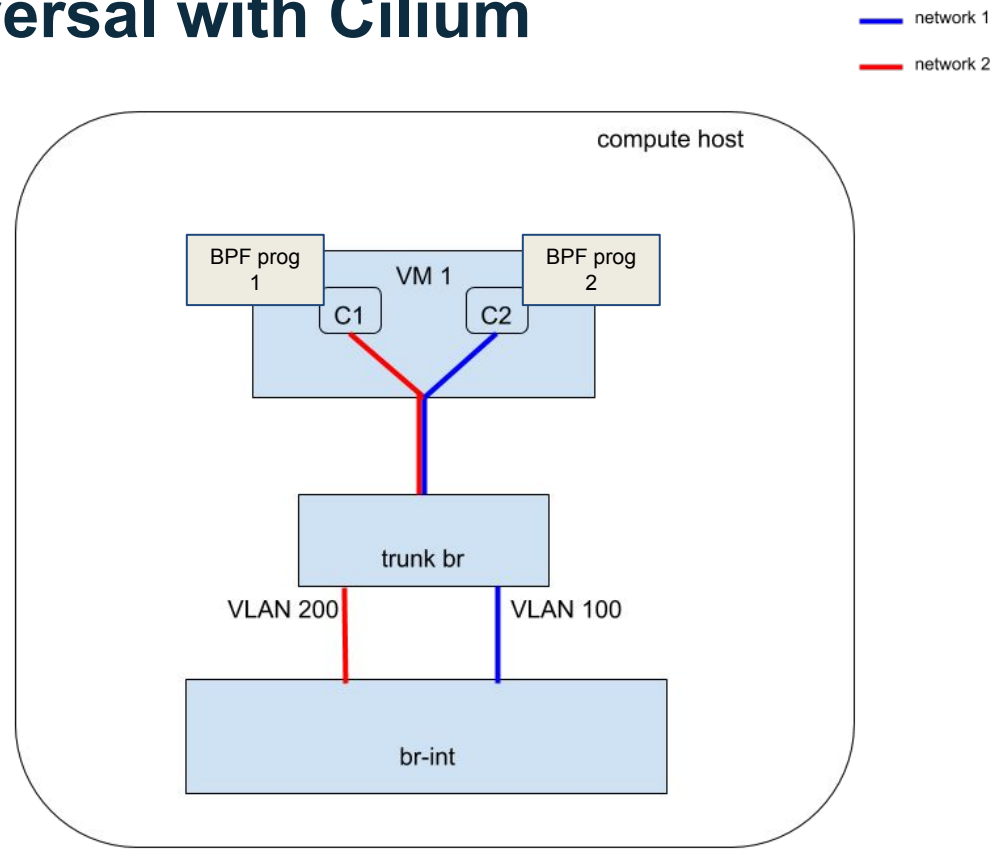
Integration: challenges

- Cilium CNI plugin had to be extended to:
  - read the OVS bridge name and information about allocated IP from pod annotations
  - create OVS VIFs

How the integration works



Packet traversal with Cilium



Demo time!

Future work

- Provide support for Kubernetes Services
- Provide support for load balancing (preferably by using Cilium BPF programs)
- Gating upstream

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