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Network | IaaS | PaaS | ServiceMesh
交流 学习 沉淀 成长 分享
olaf.luo@foxmail.com
https://www.yuque.com/wei.luo
https://youdianzhishi.com/web

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Kubernetes Network

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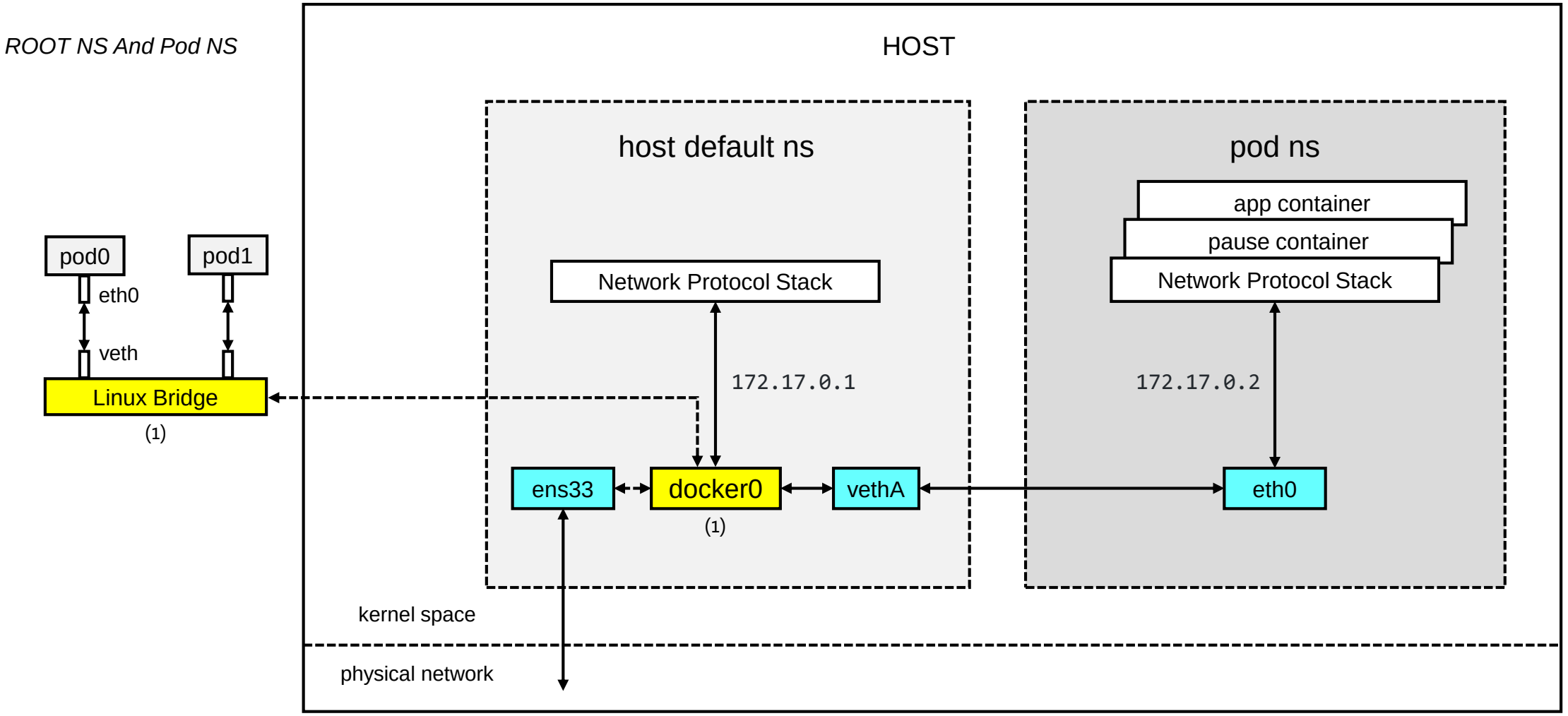
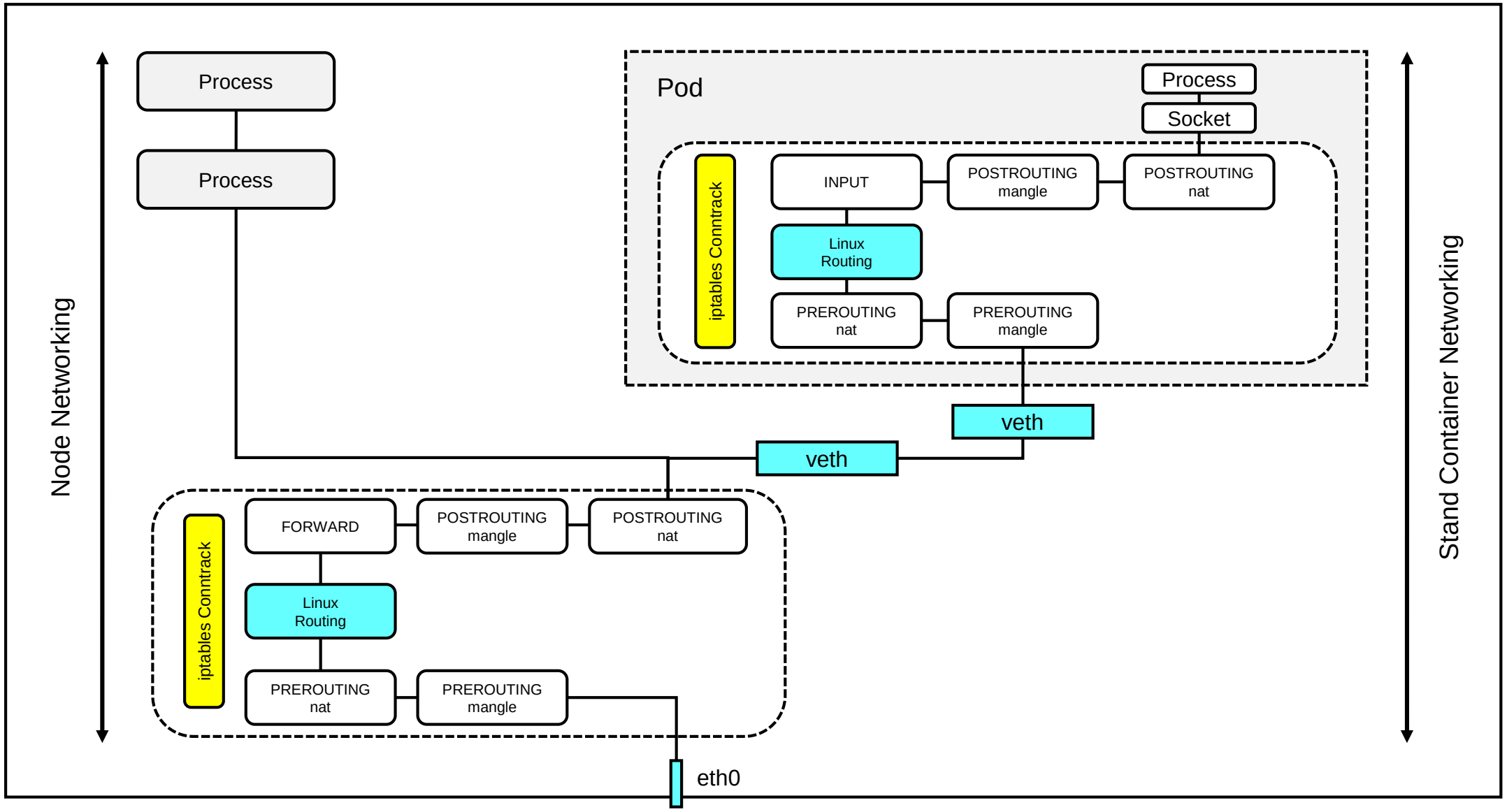
Version：v1.2
DocID：CN00002022XLW

Kubernetes CNI - Pod Network

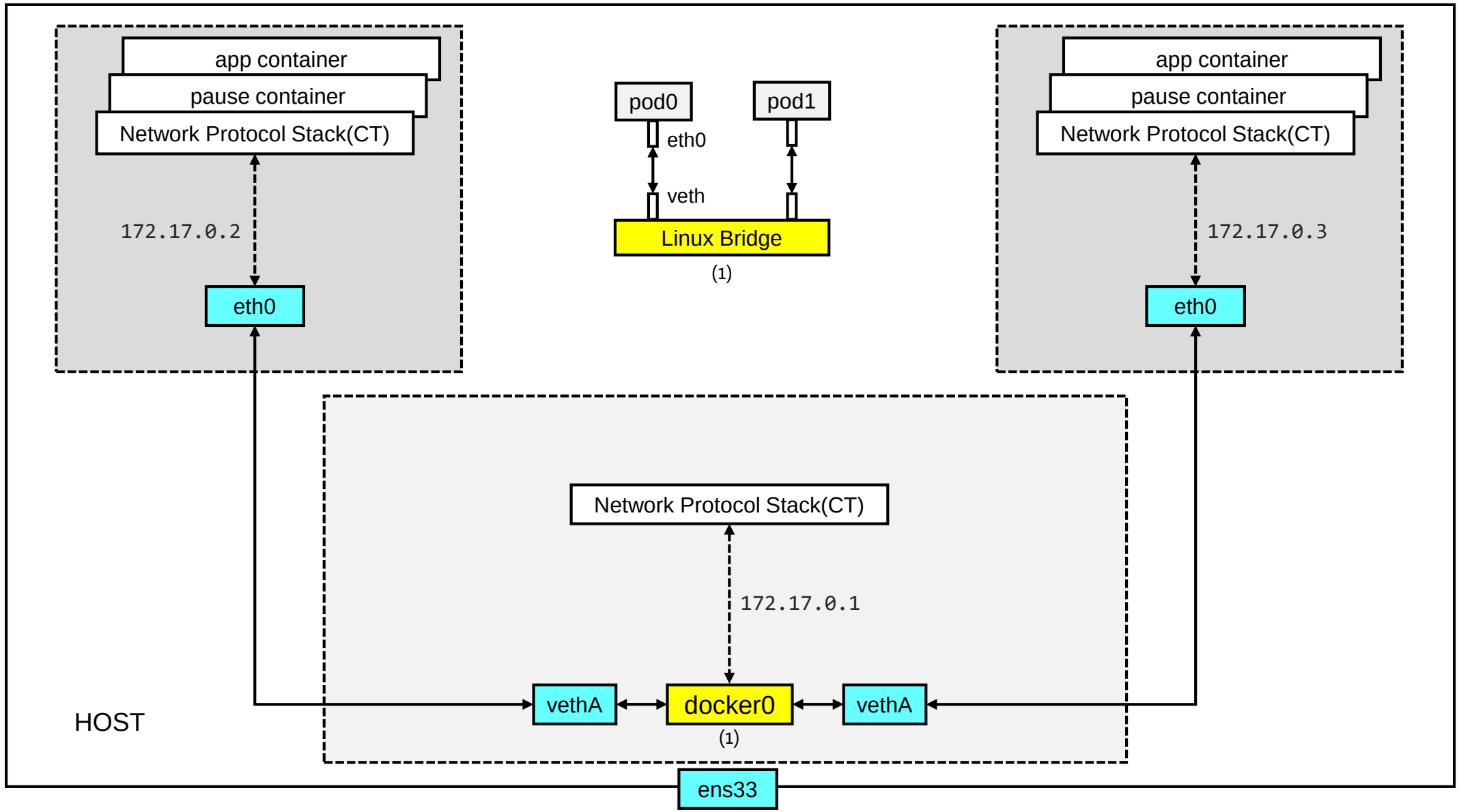


Docker spawns a container in the containers own network namespace (use the CLONE_NEWNET flag defined in sched.h when calling the clone system call to create a new network namespace) and later on runs a veth pair (a cable with two ends) between the container namespace and the host network stack.

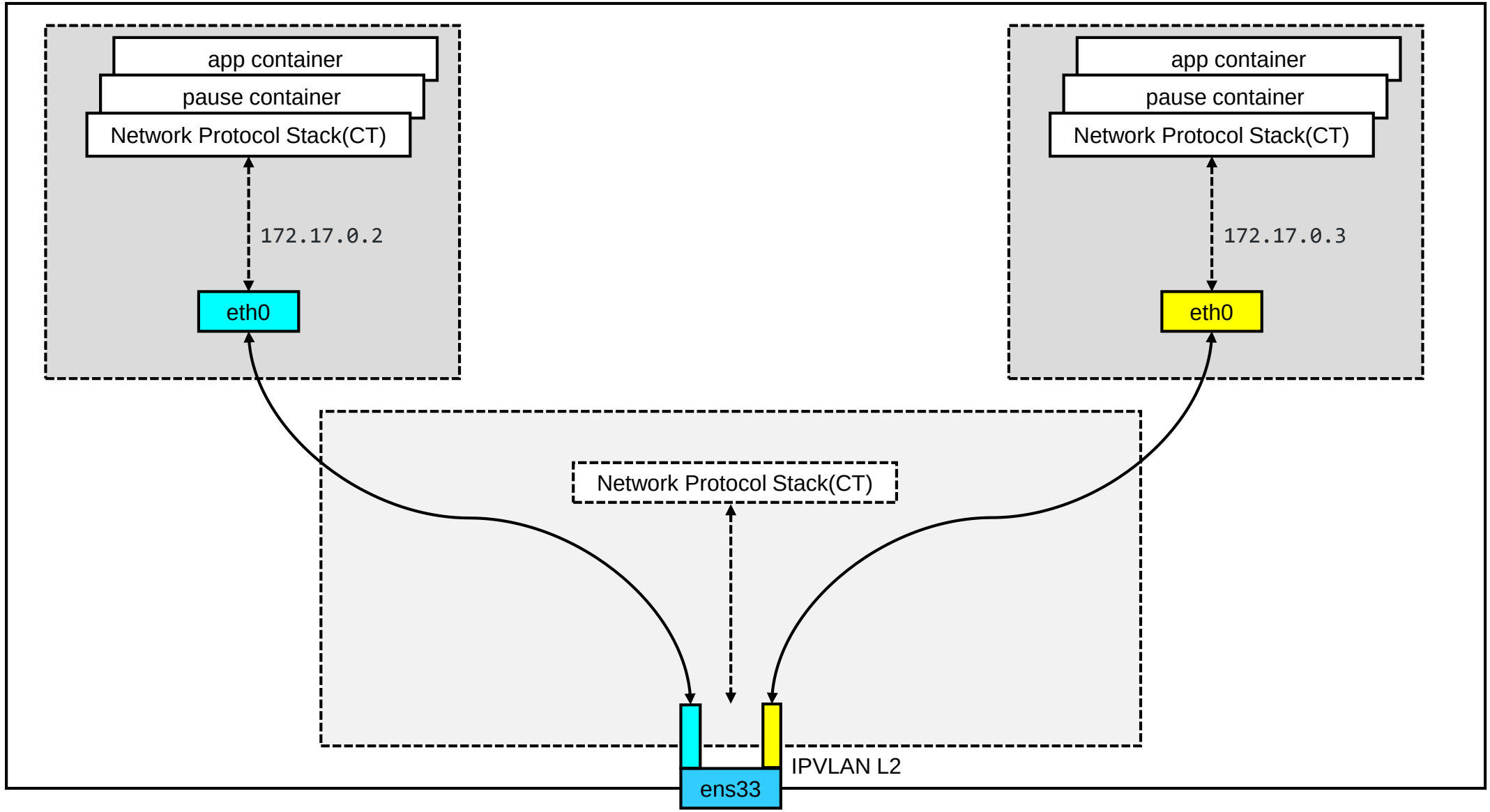
Kubernetes CNI - Pod Network vs Node Network



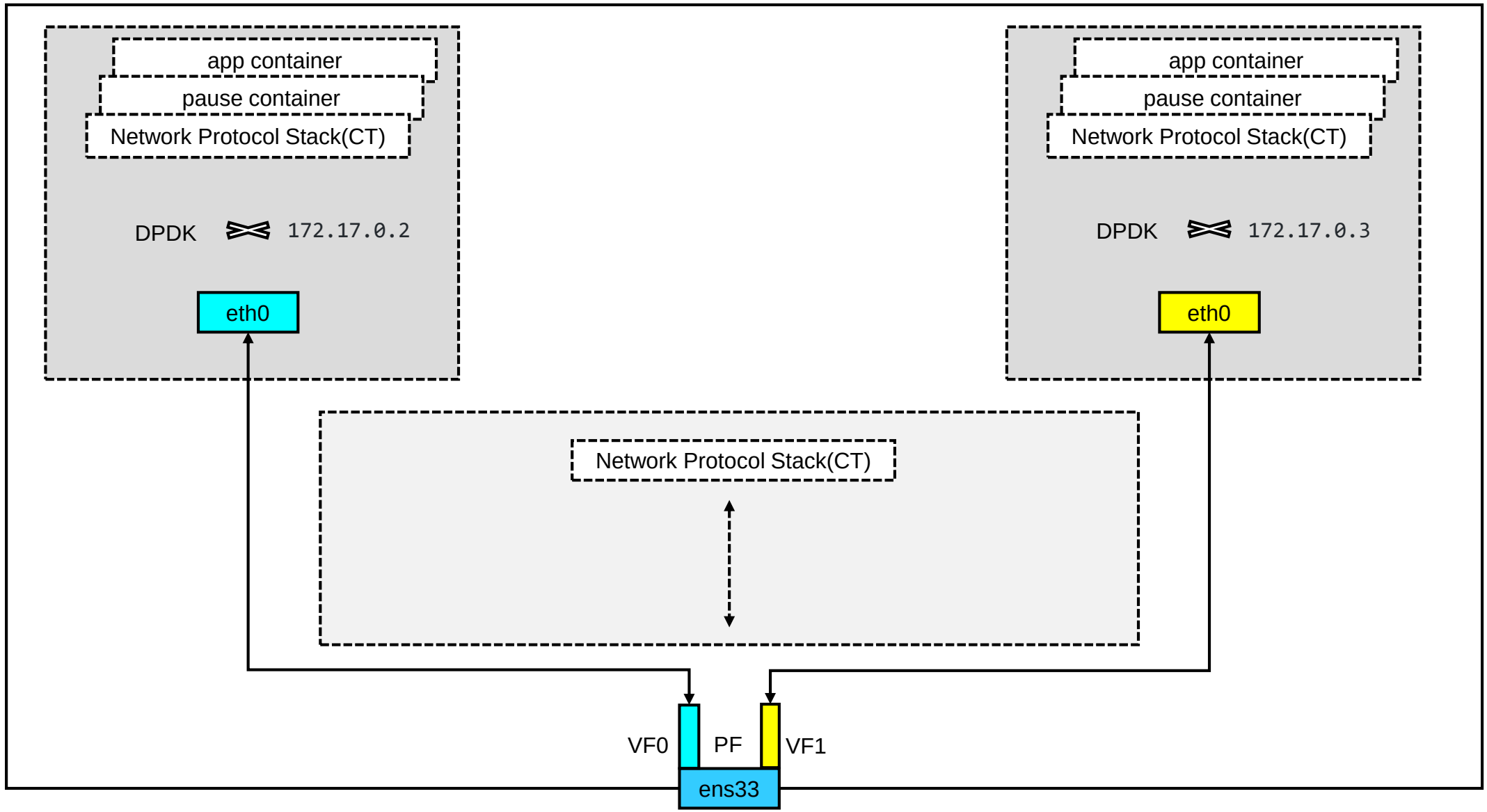
Kubernetes CNI - Bridge Mode



Kubernetes CNI - NIC Multiplex

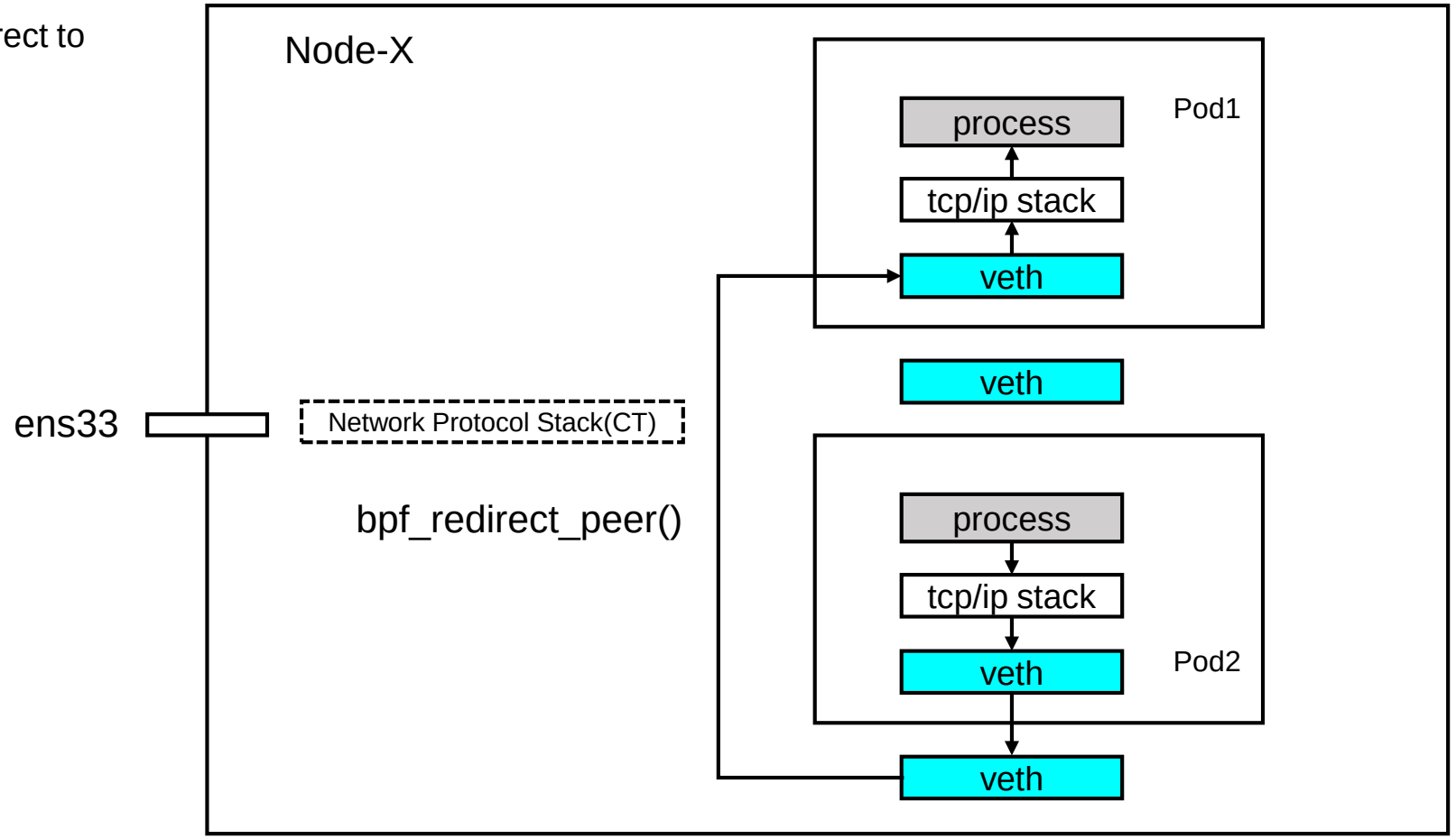


Kubernetes CNI - SRIOV/DPDK Mode



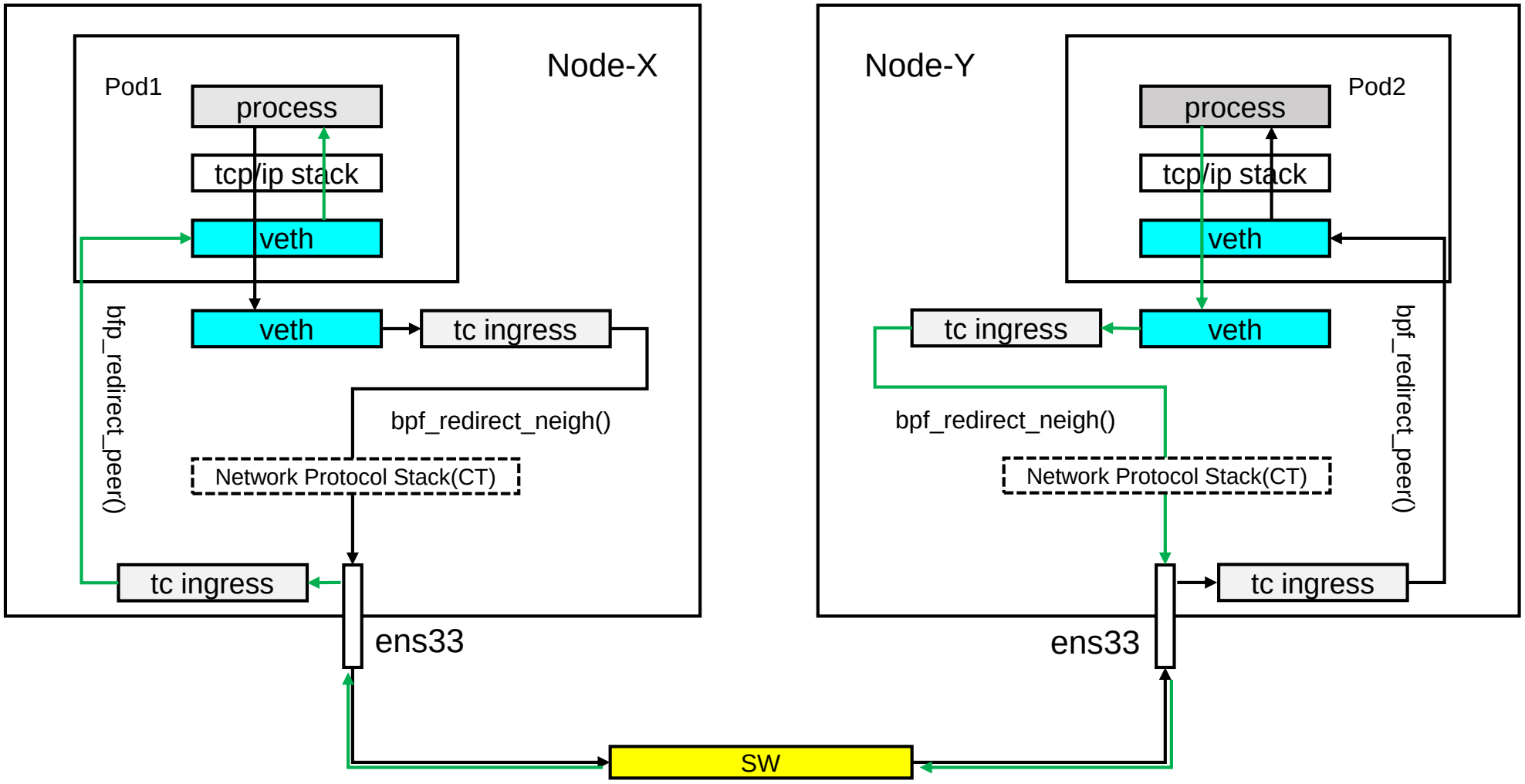
Kubernetes CNI - Cilium eBPF

②: pod namespace 1 redirect to pod namespace 2



The bpf_redirect_peer() enables switching network namespaces from the ingress of the NIC to the ingress of the Pod without a software interrupt rescheduling point when traversing the network namespace. The physical NIC can thus push packets up the stack into the application's socket residing in a different Pod namespace in one go. This also leads to quicker application wake-up for picking up the received data. Similarly, rescheduling points are reduced from 2 to 1 for local Pod-to-Pod communication resulting in better latency there as well.

Kubernetes CNI - Cilium eBPF



Kubernetes Network

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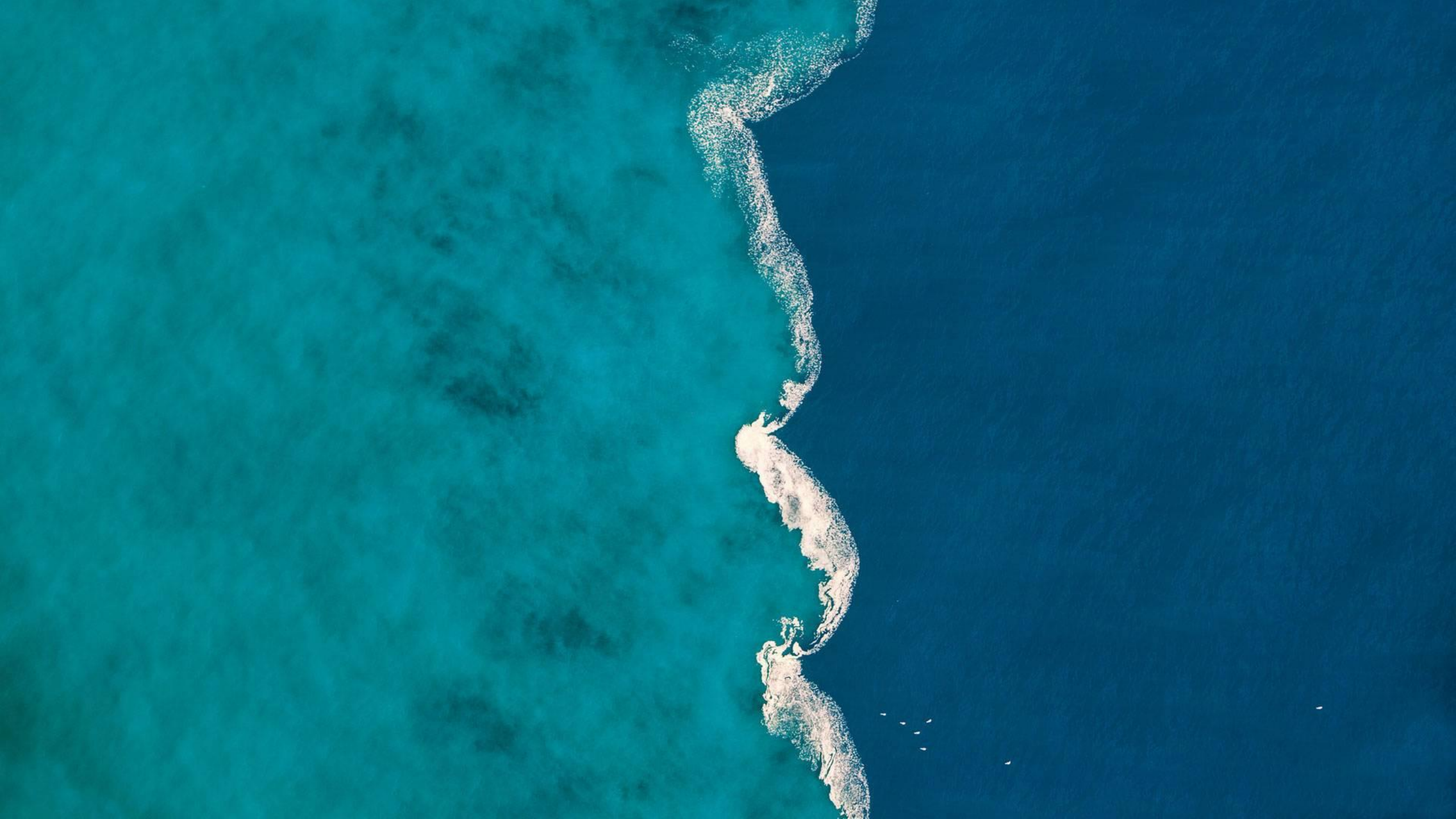
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