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Europe 2020

Network Service Mesh to Address Cloud Native 5G Telco Networking Challenges

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Roshini Ratnam, Anders Franzen - Ericsson

Who are we?



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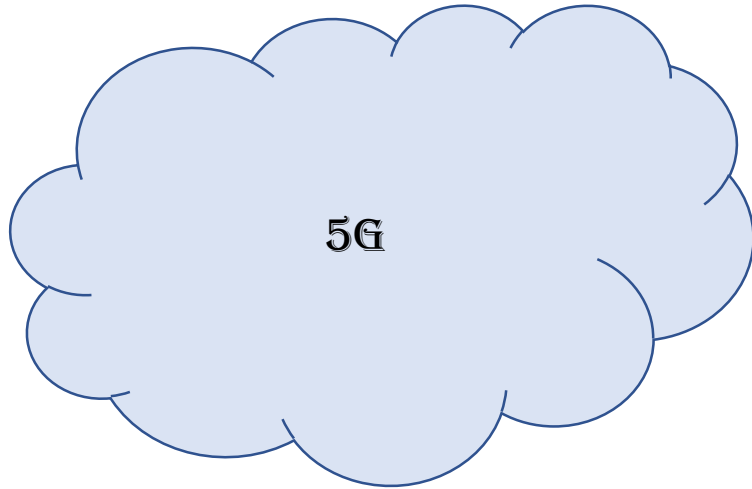
Anders Franzen
Technology Specialist, Ericsson

Agenda



- 5G and Cloud Native
- 5G System Architecture
- Challenging Telco requirements
- Different Telco traffic classes
- When to use Secondary network
- How NSM can help
- Demo

5G & Cloud Native



Why Cloud Native?

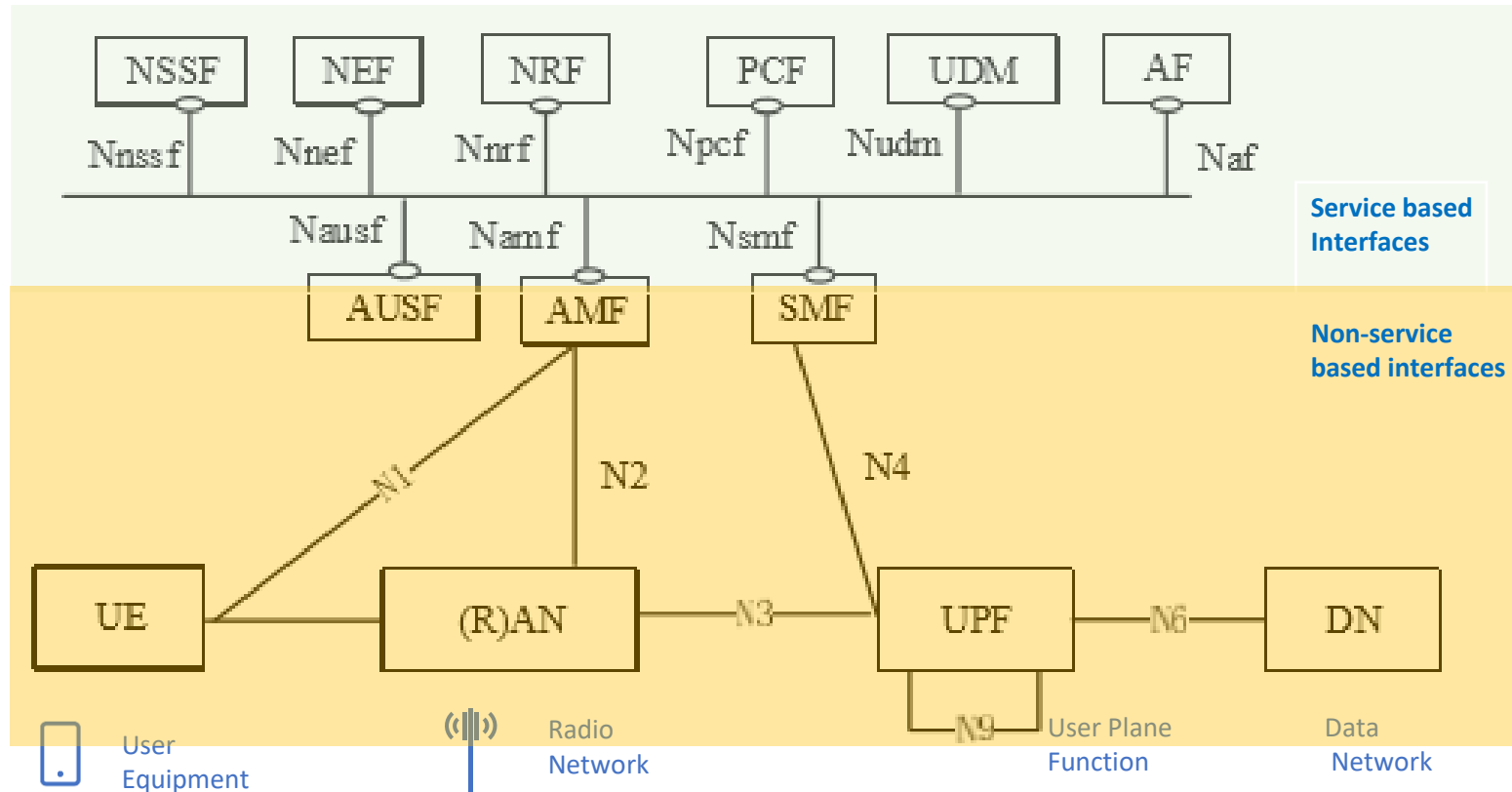
- Speed
- Scale
- Efficiency
- Capacity

Why K8s ?

- CNCF cloud platform
- Life Cycle Management
- Scaling and auto healing
- Service discovery
- External service exposure
- Load balancing

5G System Architecture

Network
Functions



SBI : HTTP2 / API based

Non SBI : Telecom protocols over L2/L3

[Reference: 3GPP TS 123 501 V15.2.0](#)

Challenging Telco requirements



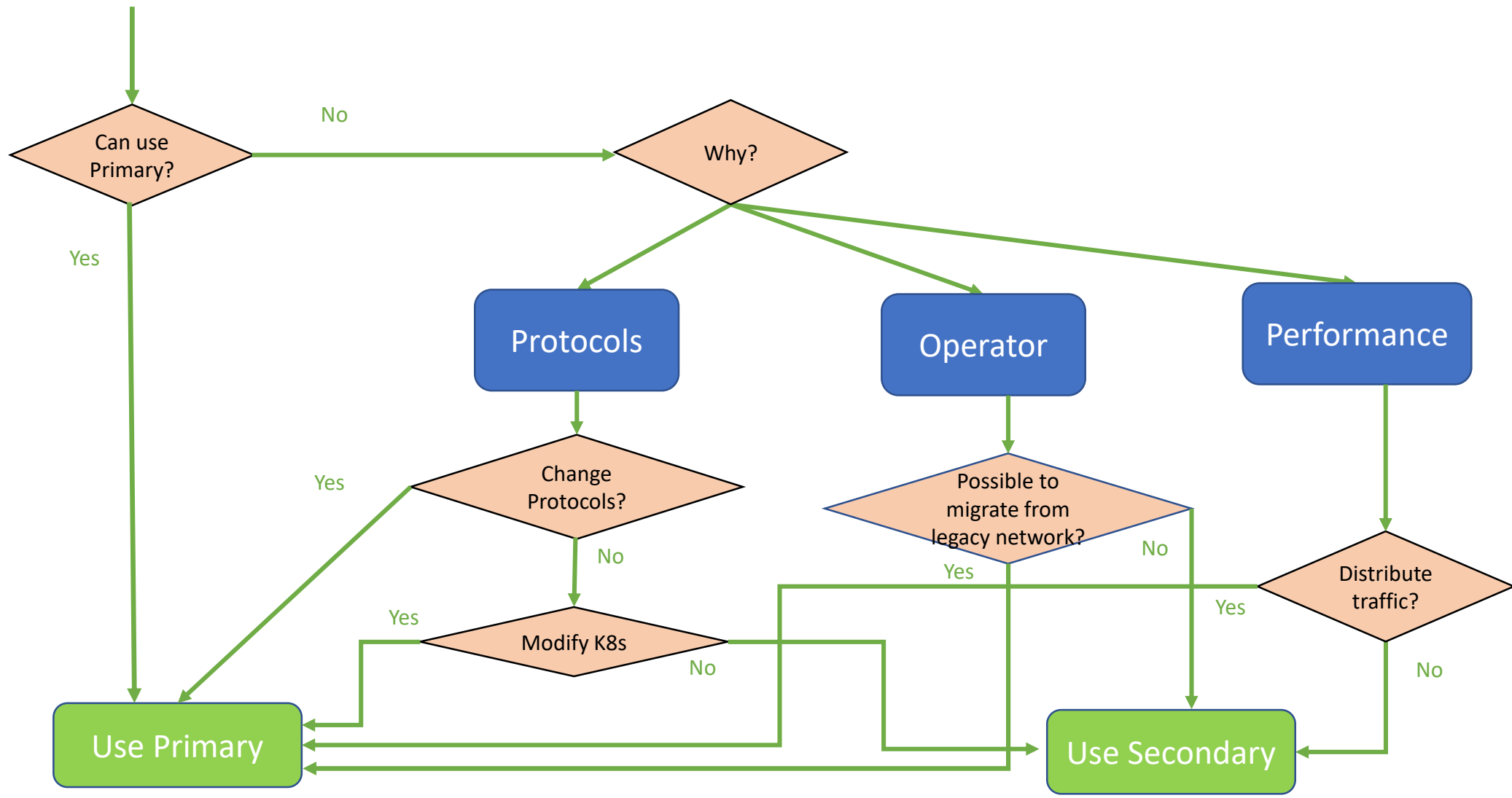
- Operator requirement on end to end VPN separation
- Support for no-NAT protocols like Session Initiation Protocol (SIP) , Media
- Egress VIP for outgoing traffic originating from application pods.
- Support for non IP protocols.
- Support for high performance traffic

Different Telco traffic classes



Traffic Type	Traffic Characteristics	Packets per second	Example
Low performance High function	<ul style="list-style-type: none">No latency sensitiveProtocol level encryptionRequires services like Load balancer, service discovery, VIP address management etc	0 to 1 million packets per second	OAM (SNMP, Netconf etc)
Medium performance	<ul style="list-style-type: none">High performance control planeLow performance data plane	1 to 5 million packets per second	Diameter, SIP
High Performance Low function, only data link level	<ul style="list-style-type: none">High performance User plane (data plane).Typical DPDK and SRIOV	5 million packets per second and more	UPF, RAN, BGF

When to use Secondary Networks



How NSM can help



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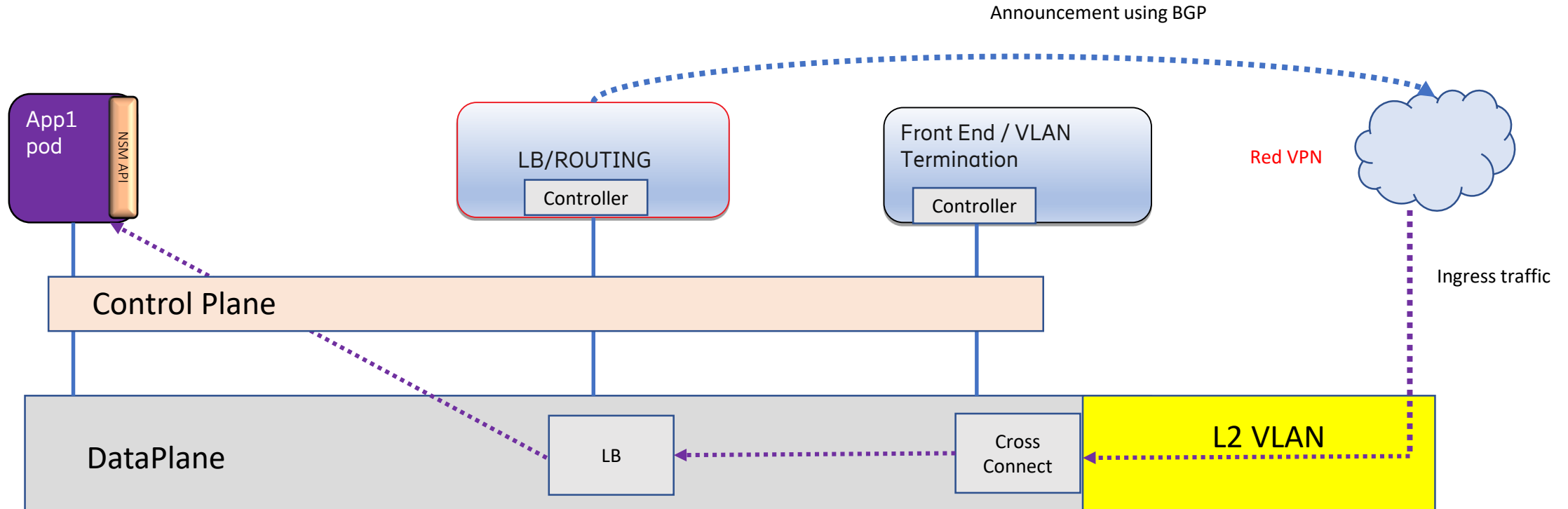
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- Network Service Mesh (NSM) is a novel approach solving complicated L2/L3 use-cases that in Kubernetes are tricky to address with the existing Kubernetes Network Model.
- Network Service Mesh maps the concept of a Service Mesh to L2/L3 payloads as part of an attempt to architecturally transpose NFV in a Cloud-native way utilizing microservice architecture.
- NSM is built around a distributed broker to keep track of all resources, and a set of integrated data planes to interconnect the resources in a coordinated way.
- A defined API to implement Service Endpoints (like firewalls, load balancers, different external access devices).
- A defined API for an application to “consume” the services.

NSM framework & Network Services



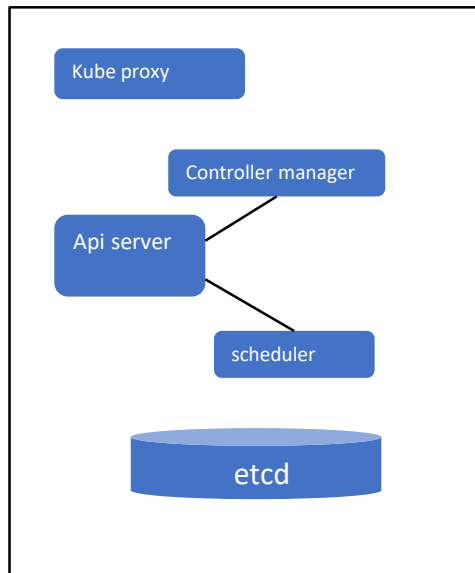
Demo



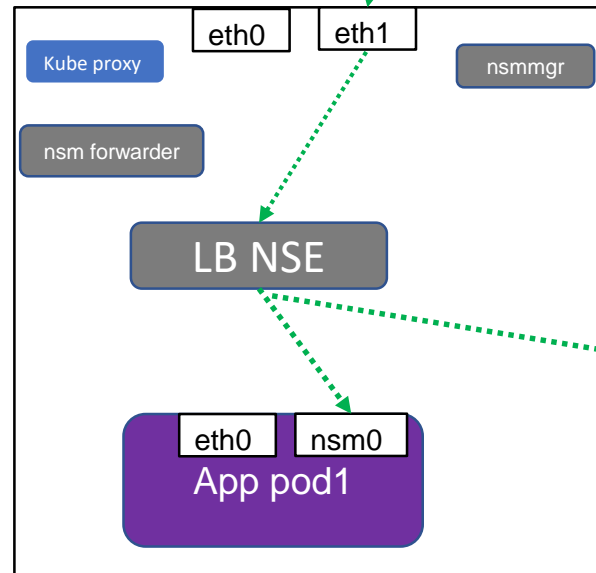
External Client



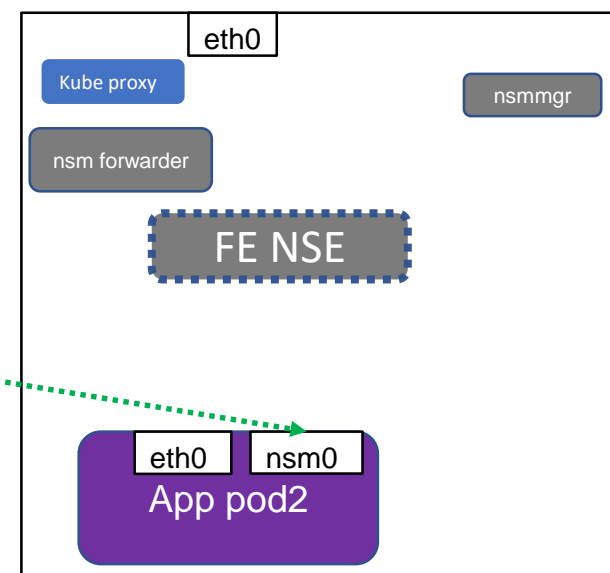
K8s cluster



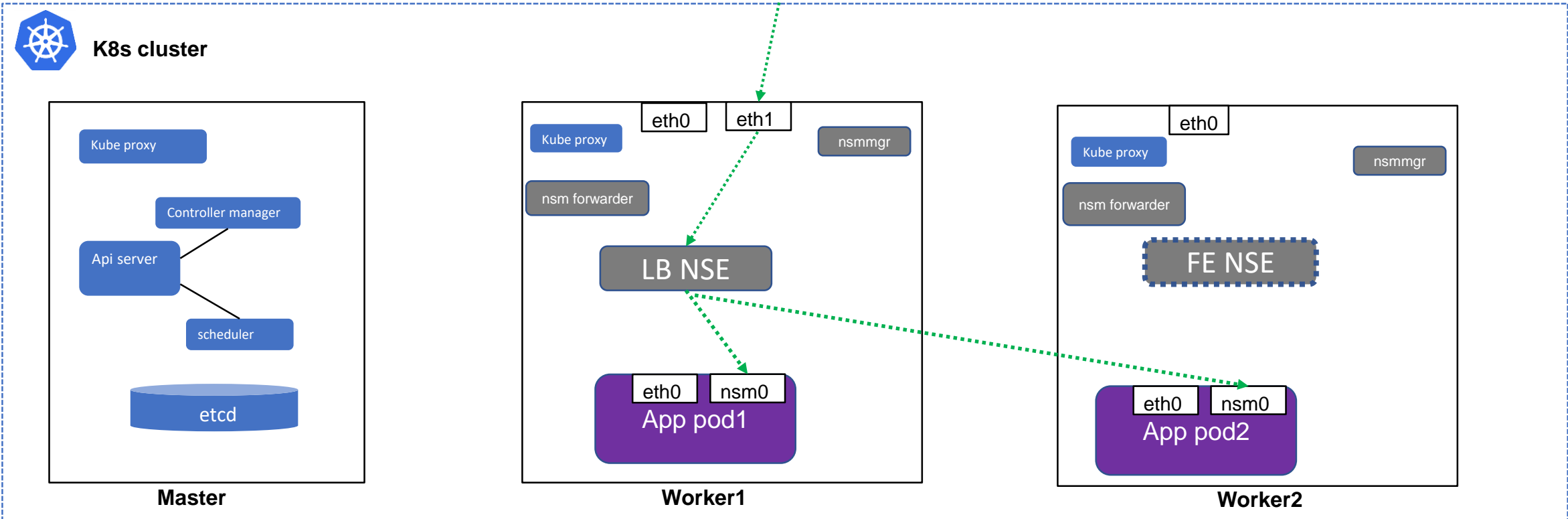
Master



Worker1



Worker2





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Q&A



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