

Open Source
MANO

OSM#10 Hackfest

OSM Primitives for PNFs
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PNF vs VNF

PNF

Higher unit cost
Bulky
Fragile
Needs care



VNF

Low unit cost
Compact
Recyclable
Needs no care



<https://www.linkedin.com/pulse/technology-analogy-physical-virtual-network-functions-milind-kulkarni/>

Physical Network Function

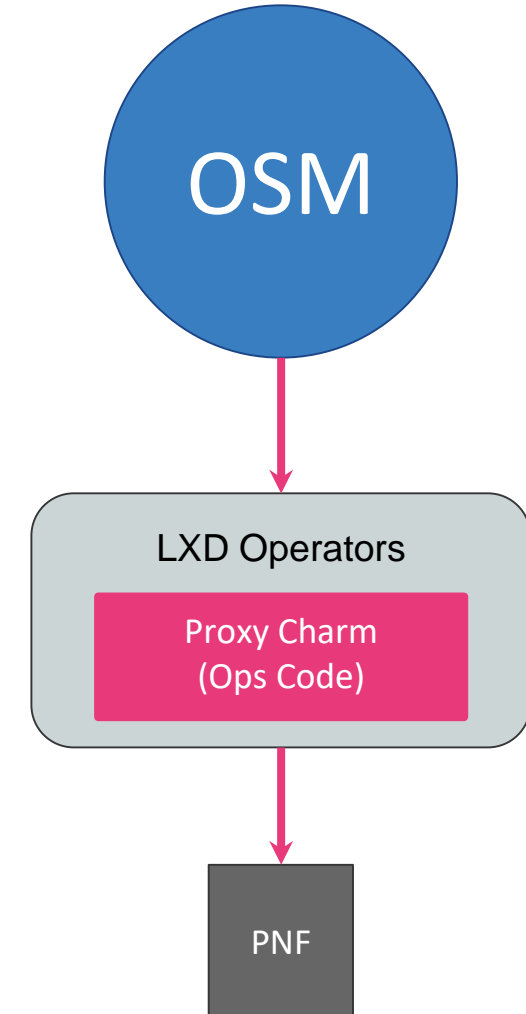
- Implementation of a NF via a tightly coupled software and hardware system
- PNF refers to a function that is fixed
 - Purpose built to provide a specific function - hardware appliance
- PNF does not always mean bare metal
 - Can be unmanaged software in VM
- VNF does not always mean running in VM or Container
 - OpenStack Ironic allows for management of bare metal like a VM

- PNF
 - Physical network function. It refers to the endpoint that provides a networking function
- PDU
 - Physical deployment unit. It refers to the “instance” of the appliance that will be incorporated to a Network Service instance
- HNF
 - Hybrid network function: Network function composed of both physical and virtual elements.

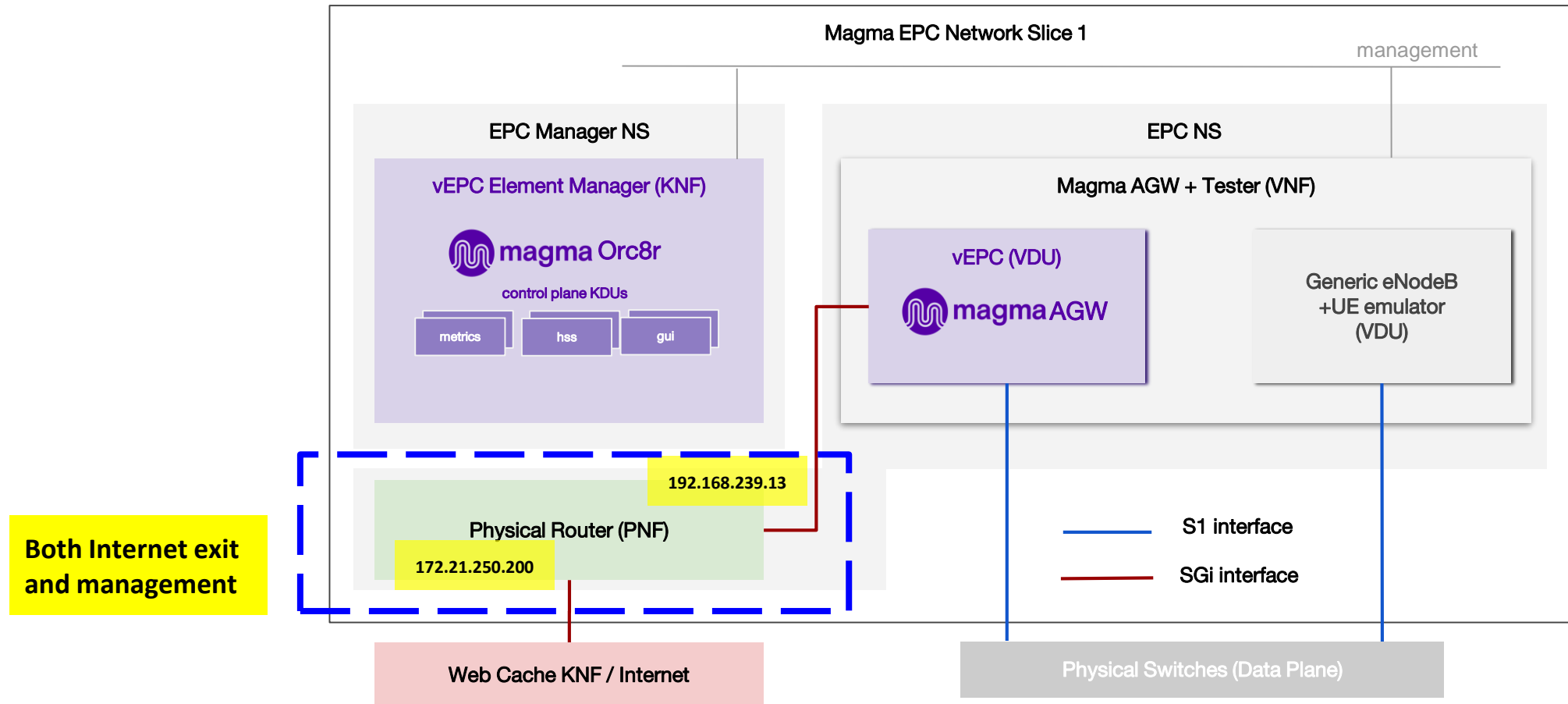
In OSM, there are no fundamental differences between a VNF, a PNF or a Hybrid Network Function (HNF)

How do we Manage a PNF

- OSM must be given information about the PNF
 - Register a PNF as a logical entity with IP and other info
- Use in standard network function package descriptors
 - Magma references the VyOS PNF
 - Must perform configuration on VyOS
- On Network Slice deployment, OSM creates an execution environment for the PNF
 - All actions execute in this environment



Physical Router: VyOS



VyOS Overview

<https://www.vyos.io/products/>



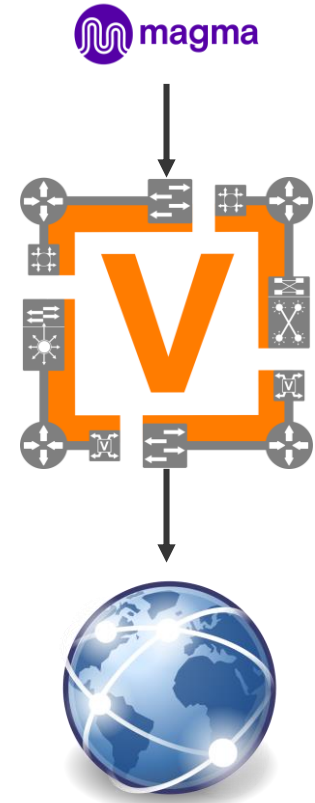
- Runs on physical and virtual platforms alike: small x86 boards, big servers, KVM, Xen, VMware, Hyper-V, and more
- Completely free and open source, with documented internal APIs and build procedures
- Scriptable CLI
- Ansible playbooks for configuration

Allow or Deny traffic?

- No rules to allow incoming traffic from your Magma AGW
- VyOS needs configuration change to allow your source

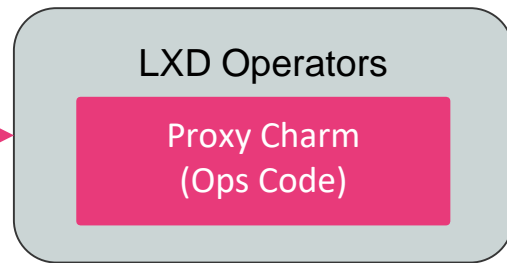
Day 2 operation:

- Execute primitive to allow incoming traffic



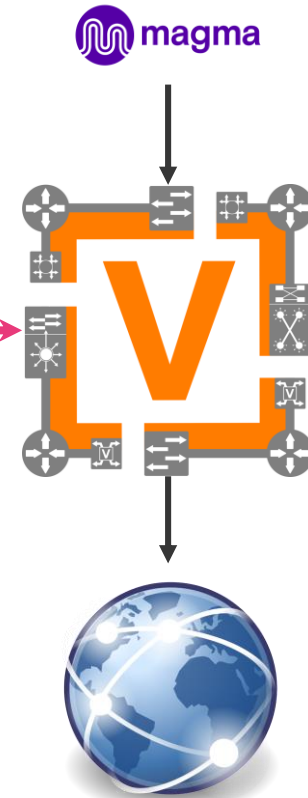
How a Primitive Runs

1. Execute "configure-remote" action



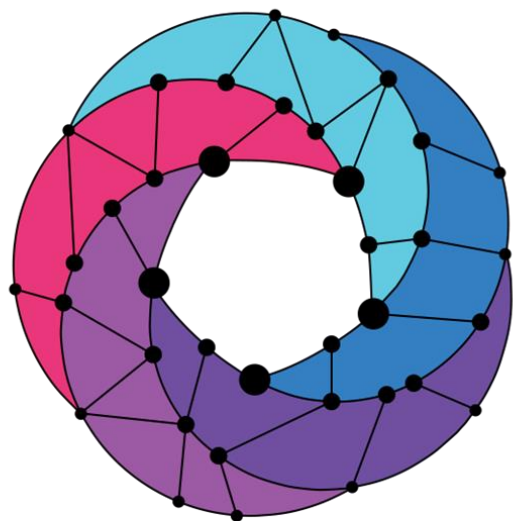
2. Run VyOS ansible playbook task "vyos_config"

3. ssh to Vyos, execute "set firewall group" command



Always in OSM Descriptor Context

- OSM performs actions on instances of NF as outlined in a descriptor
- VyOS PNF
 - Could have been standalone function
 - Strong functional relation between Magma and Firewall
 - In this case, was included in the network slice for Magma



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