

Open Source  
**MANO**

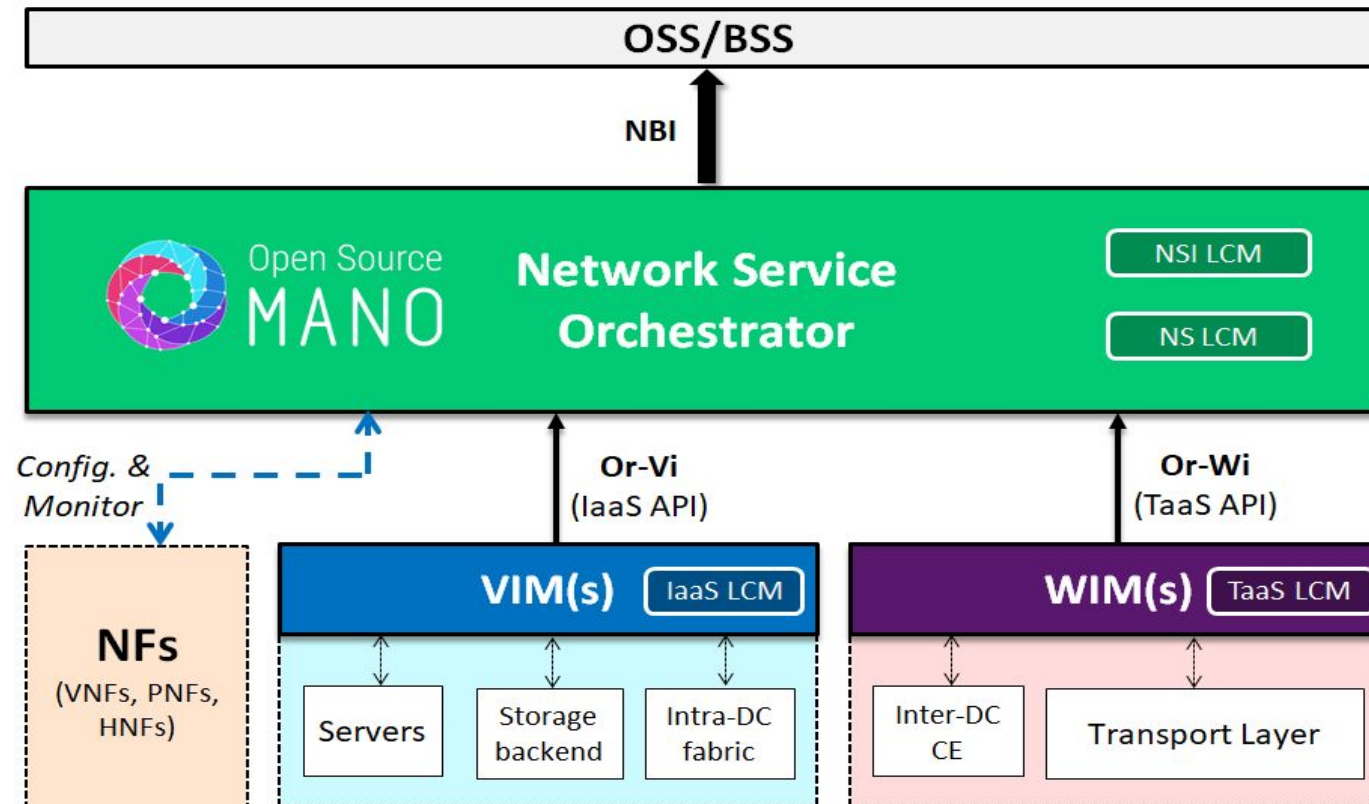
# OSM-MR#10 Hackfest Hackfest Content Overview

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# What is OSM?

A community-driven production quality E2E Network Service Orchestrator for telco services. It focuses on delivering operational-ready virtualized Network Services.



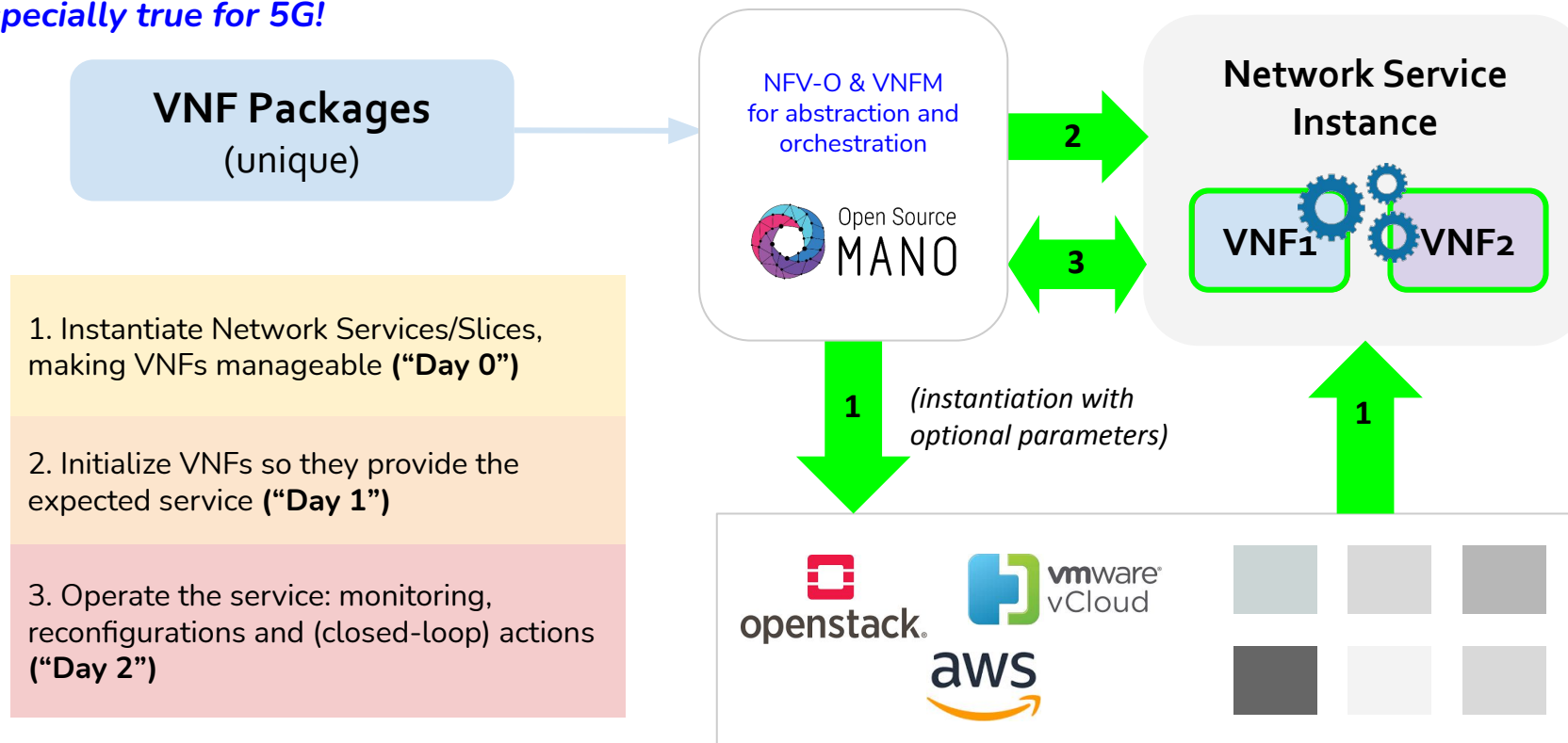
# Benefits of OSM

- A well-known Information Model (IM), aligned with ETSI NFV SOL006, allows operators to model Network Services without worrying of the virtualization of resources and the underlying infrastructure.
- Capable of modelling and automating the full lifecycle of:
  - Network Functions (virtual, physical or hybrid),
  - Network Services (NS)
  - Network Slices (NSI)
- Includes all the way from their initial deployment (Instantiation / Day-0, and Day-1), to their daily operation and monitoring (Day-2).

# VNF Onboarding Workflow

- Network Functions Virtualisation will only scale if all of the functions can be automated.

...specially true for 5G!

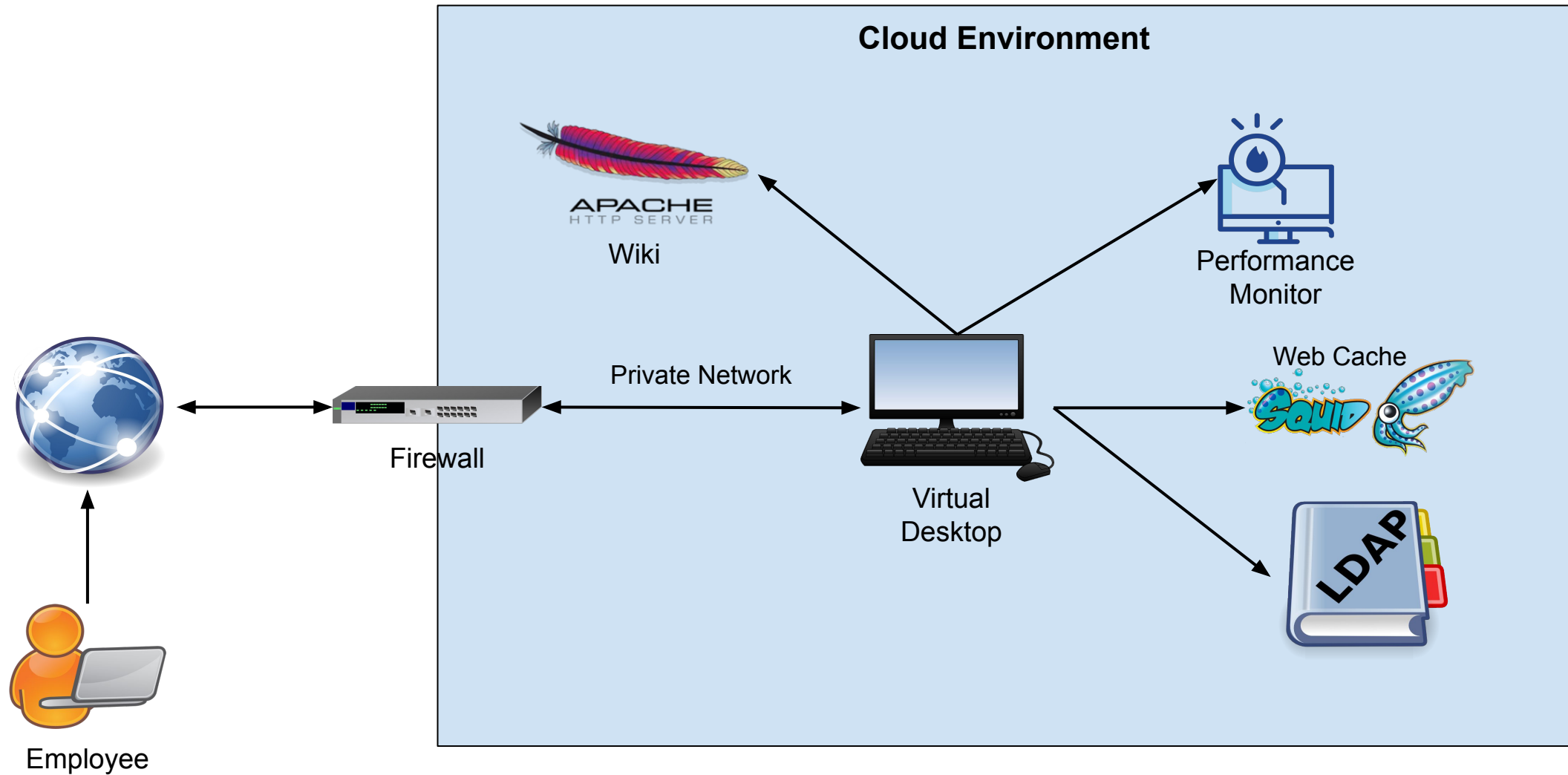


- Last mile workload-specific workflows and codepaths
  - Scripts, file changes, integration, config, backup etc
- OSM leverages Juju Charms to perform operations
  - Proxy
    - PNF or existing fixed functions with limited integration options
    - Charm acts on NF using a network protocol
    - Code must have its own execution environment
  - Native
    - Charm has direct access to function
    - App that can be installed on Win/Ubuntu/RHEL/CentOS, or
    - Docker image that can be driven by a charm directly
    - No need for external management port - actions run locally

# The Scenario for the Hackfest

- You are a telco operator that
  - seeks to offer a network as a service for small businesses
  - has a cloud computing environment complete with a Kubernetes cluster and an OpenStack NVFI
  - needs to deploy several services to have complete your offering for small businesses
    - Firewall, to keep your data safe
    - LDAP Server, to centralize user management
    - Wiki Server, for internal documentation
    - Virtual PC, for each employee as you won't buy laptops for everyone
    - Centralized service monitoring, to make sure things are performing well

# Your Service Architecture



# What is the Firewall?

- Network device to forward data packets between networks
- Pre-installed by IT department
  - Has no lifecycle
  - Cannot manage the firmware

*This is a PNF*





# What is the Virtual Desktop?

- Starts from vanilla cloud image
  - <https://cloud-images.ubuntu.com/focal/>
- Adds complete Ubuntu Focal Fossa desktop
  - Reachable via Remote Desktop Protocol (RDP)
  - Web browser, code editor, and other tools installed
- Day 2 software management
  - Add / Upgrade / Remove software

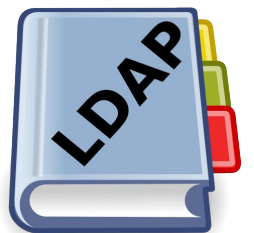
*This is a VNF*



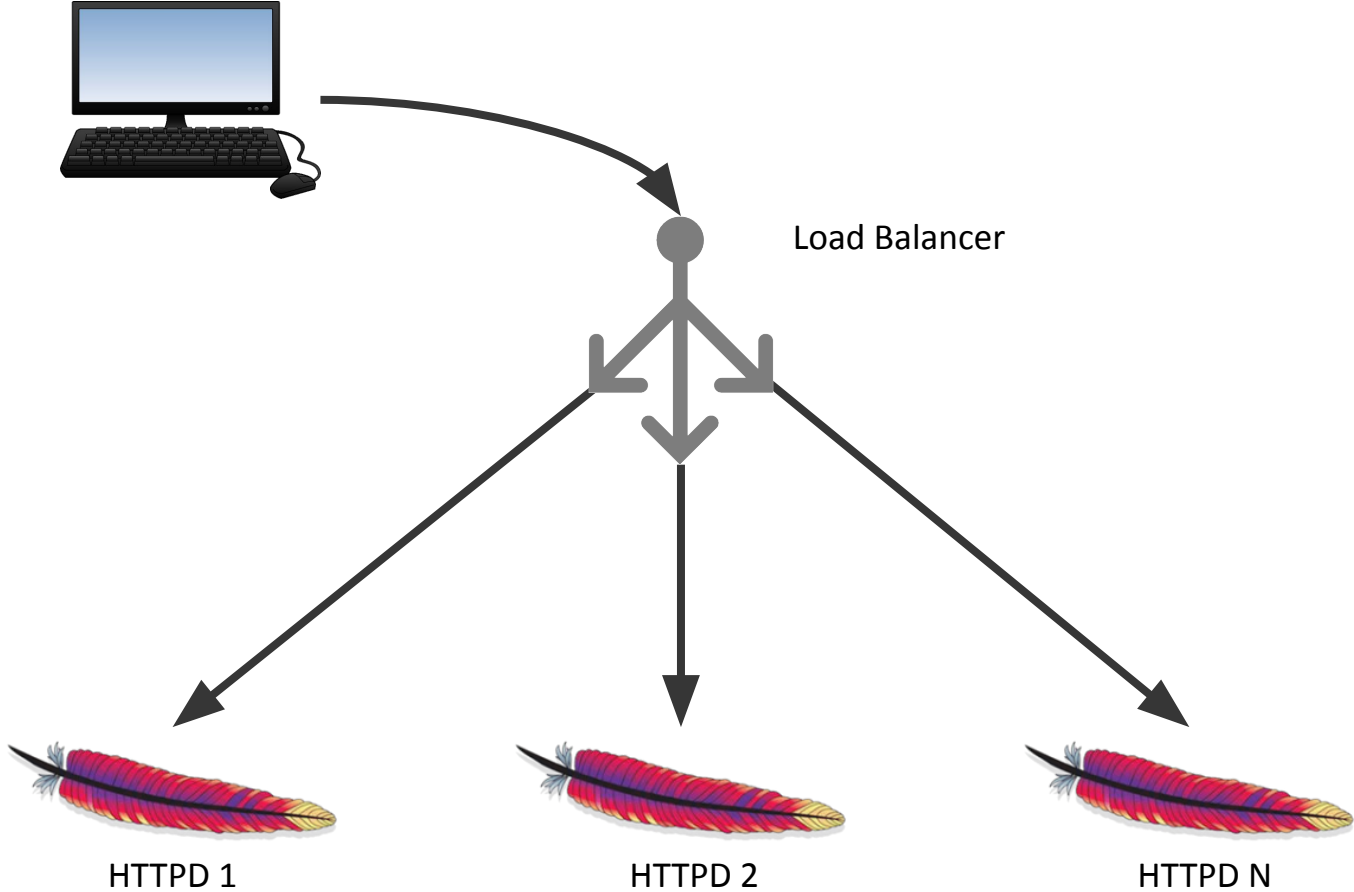
# What is LDAP?

- Lightweight Directory Access Protocol
- Container images based on OpenLDAP
- Deployed using Helm Chart from public sources

*This is a Helm managed KNF*



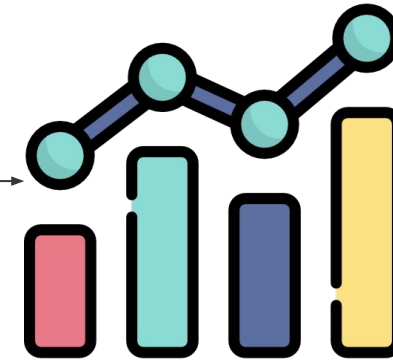
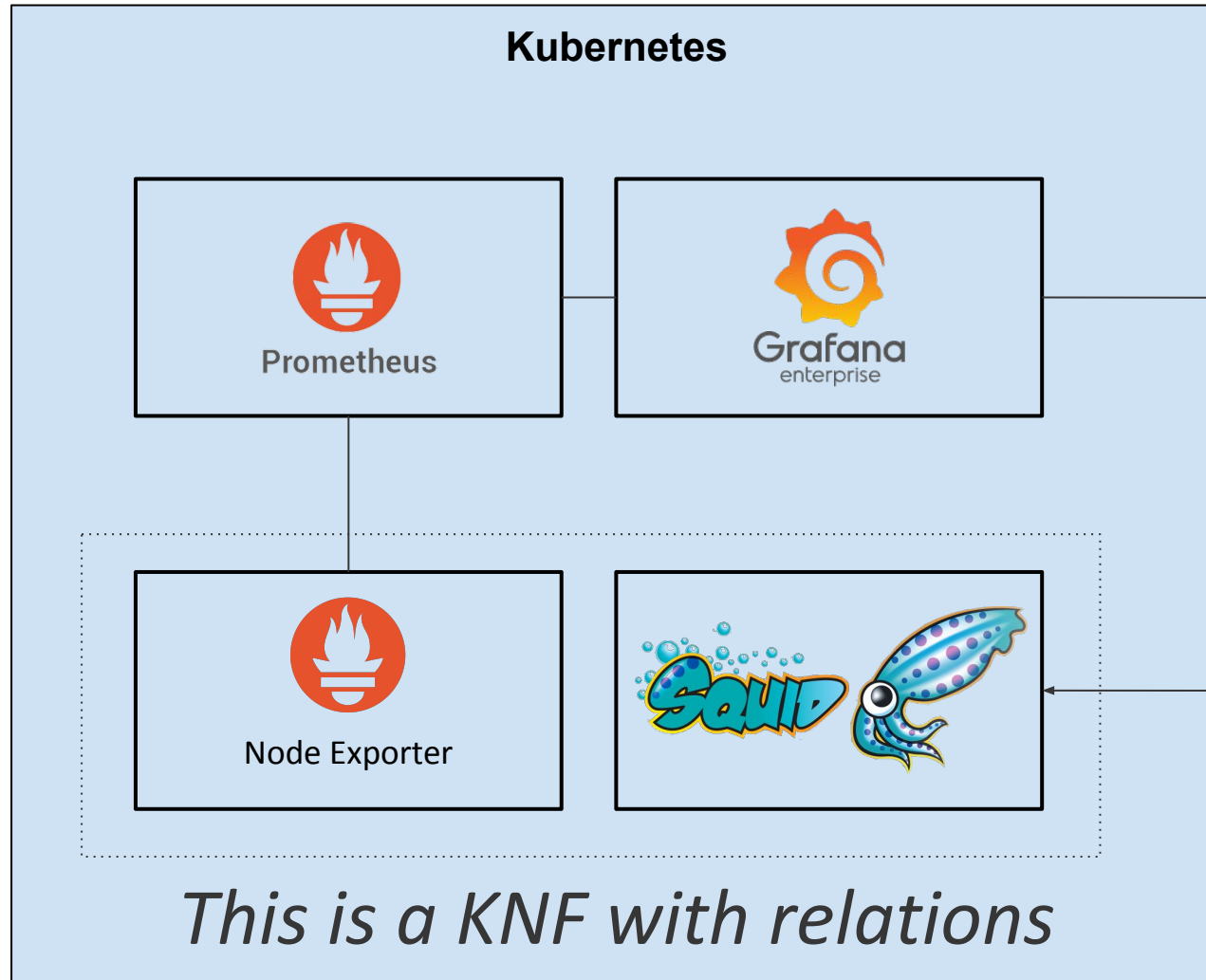
# What is the Wiki?



*This is a VNF with Scaling*



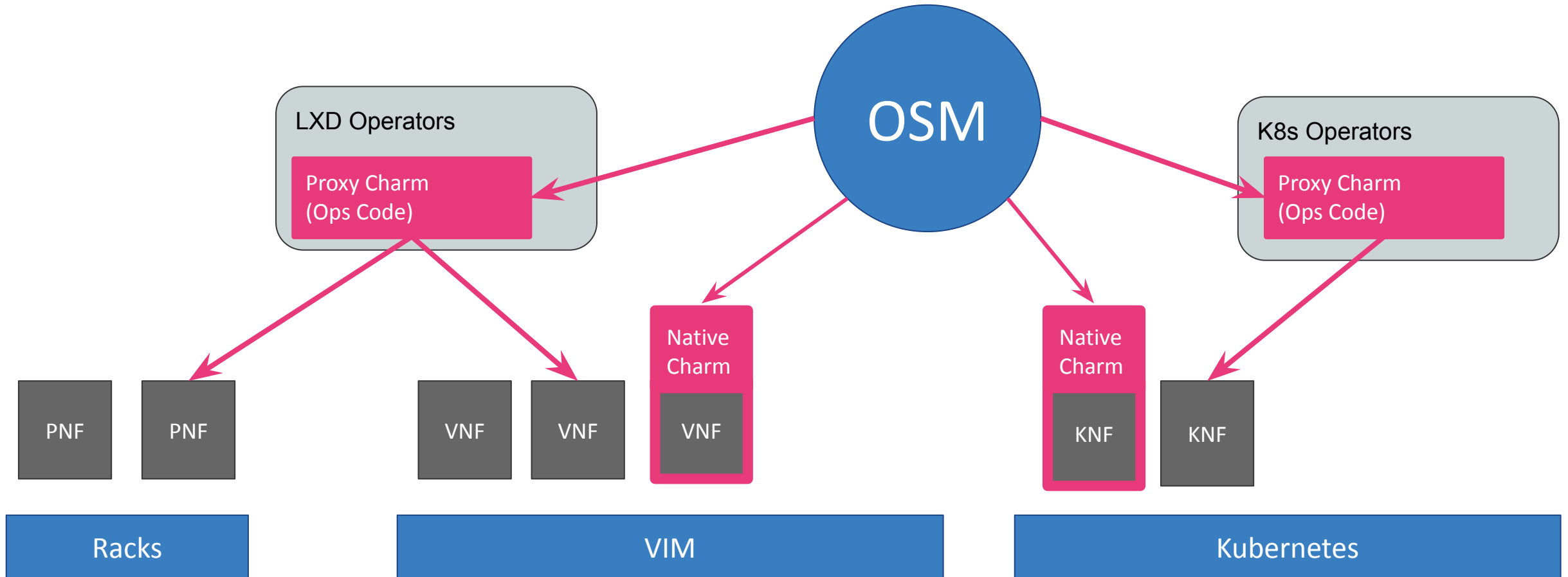
# What is the Performance Monitor?



Virtual  
Desktop



# Reality is messy and mixed



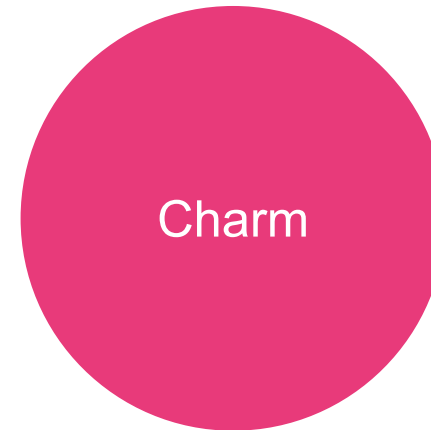
# Charms are packages of scripts to drive apps

## Lifecycle scripts

- install
- config
- update
- remove
- scale

## “Action” scripts are OSM Primitives

- “action: backup”
- “action: restore”
- “action: add-repository”
- “action: add-package”
- “action: full-upgrade”
- “action: ...”
- “action: ...”
- “action: ...”



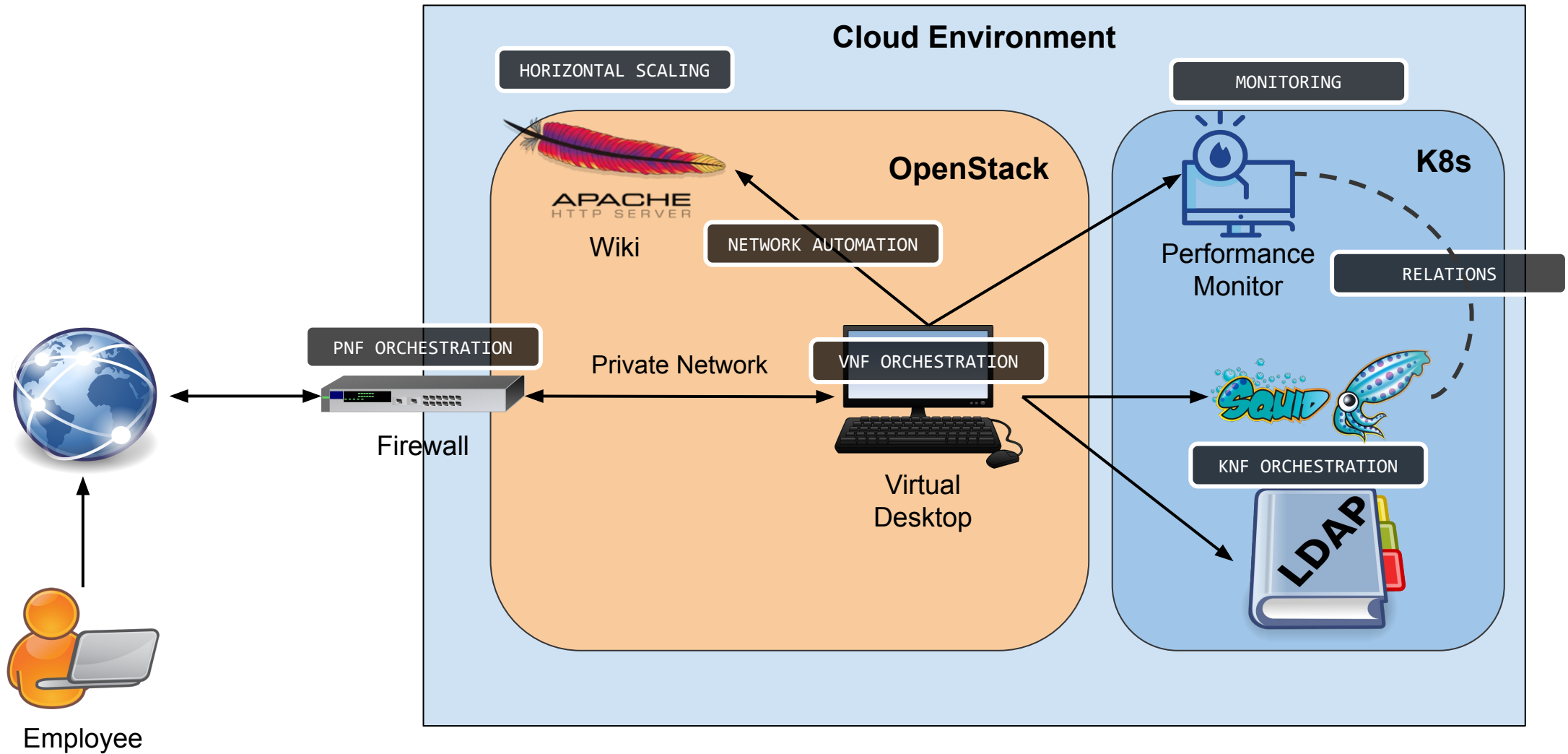
## Integration scripts

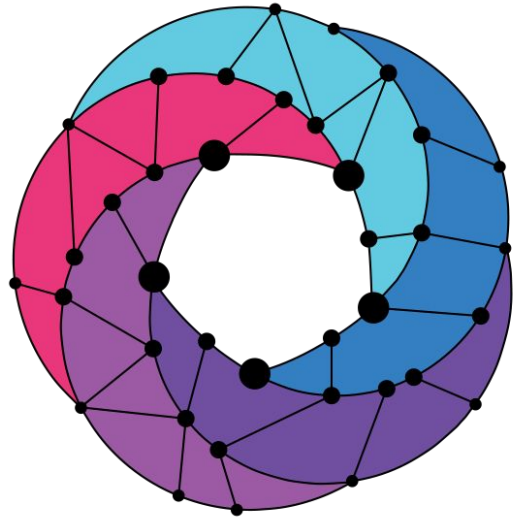
- relate-mysql
- relate-ldap
- relate-proxy
- relate-...

These are your operations primitives.



# The Big Picture





# Open Source MANO

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[osm.etsi.org/wikipub](https://osm.etsi.org/wikipub)