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!

1. Instantiate Network Services/Slices, making VNFs manageable (“Day 0”)
2. Initialize VNFs so they provide the expected service (“Day 1”)
3. Operate the service: monitoring, reconfigurations and (closed-loop) actions (“Day 2”)

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Orchestration

• 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

Cloud Environment

Wiki

Performance Monitor

Web Cache

Private Network

Virtual Desktop

Employee

Firewall

LDAP
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/](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?

Kubernetes

Prometheus

Grafana

Node Exporter

Squid

Virtual Desktop

This is a KNF with relations

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Reality is messy and mixed

OSM

LXD Operators
- Proxy Charm (Ops Code)

VNF
- Native Charm

PNF
- Native Charm

K8s Operators
- Proxy Charm (Ops Code)

VNF
- KNF

Racks

VIM

Kubernetes
Charms are packages of scripts to drive apps

**Lifecycle scripts**
- install
- config
- update
- remove
- scale

**Integration scripts**
- relate-mysql
- relate-ldap
- relate-proxy
- relate-

**“Action” scripts are OSM Primitives**
- “action: backup”
- “action: restore”
- “action: add-repository”
- “action: add-package”
- “action: full-upgrade”
- “action: ...”
- “action: ...”
- “action: ...”

These are your operations primitives.