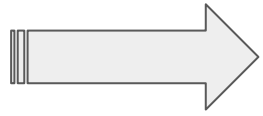




whitenfv *castelldefels-2*

# whitenfv, in our third formal major release.

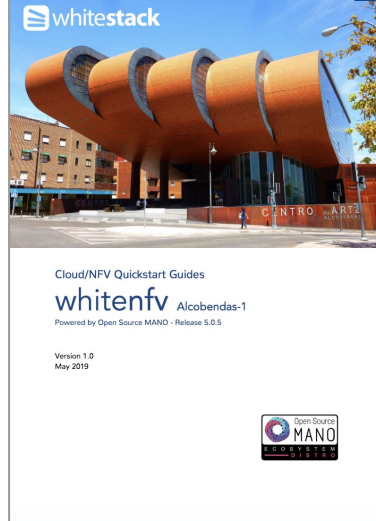
Whitenfv has a release calendar compatible with OSM



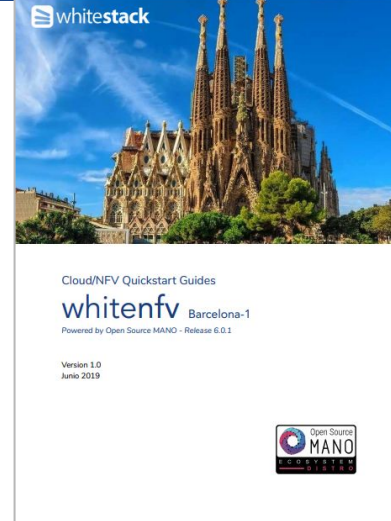
Jan/2018



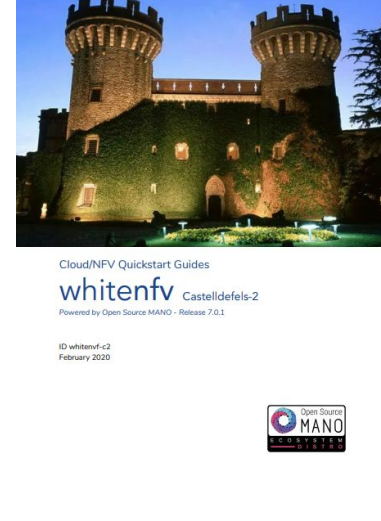
alcobendas



barcelona



castelldefels

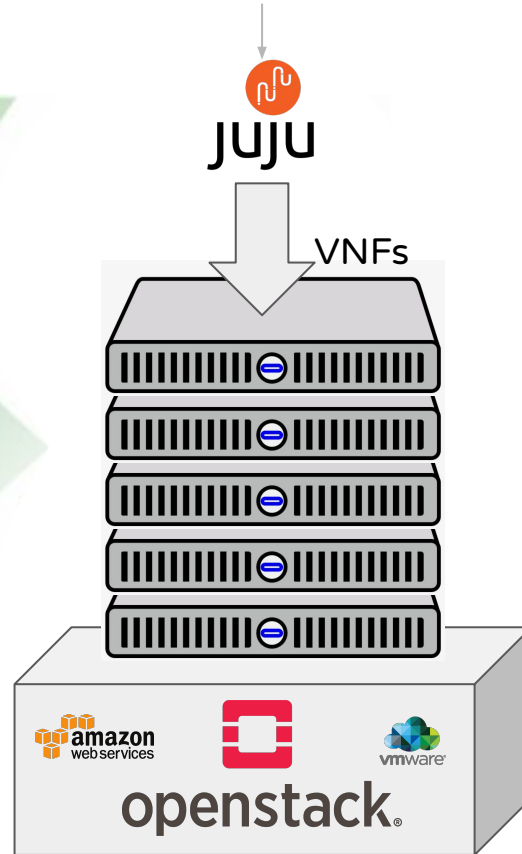


# Evolving towards containers

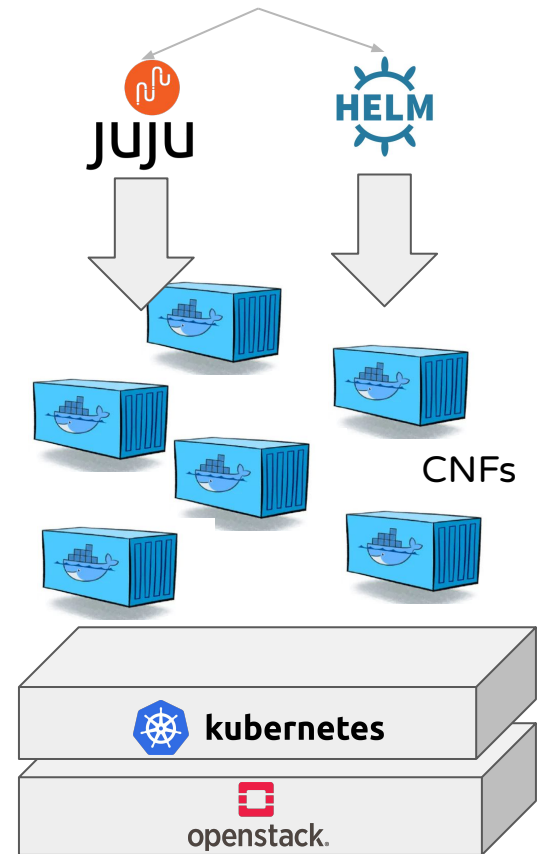
## Baremetal



## Virtual Machines

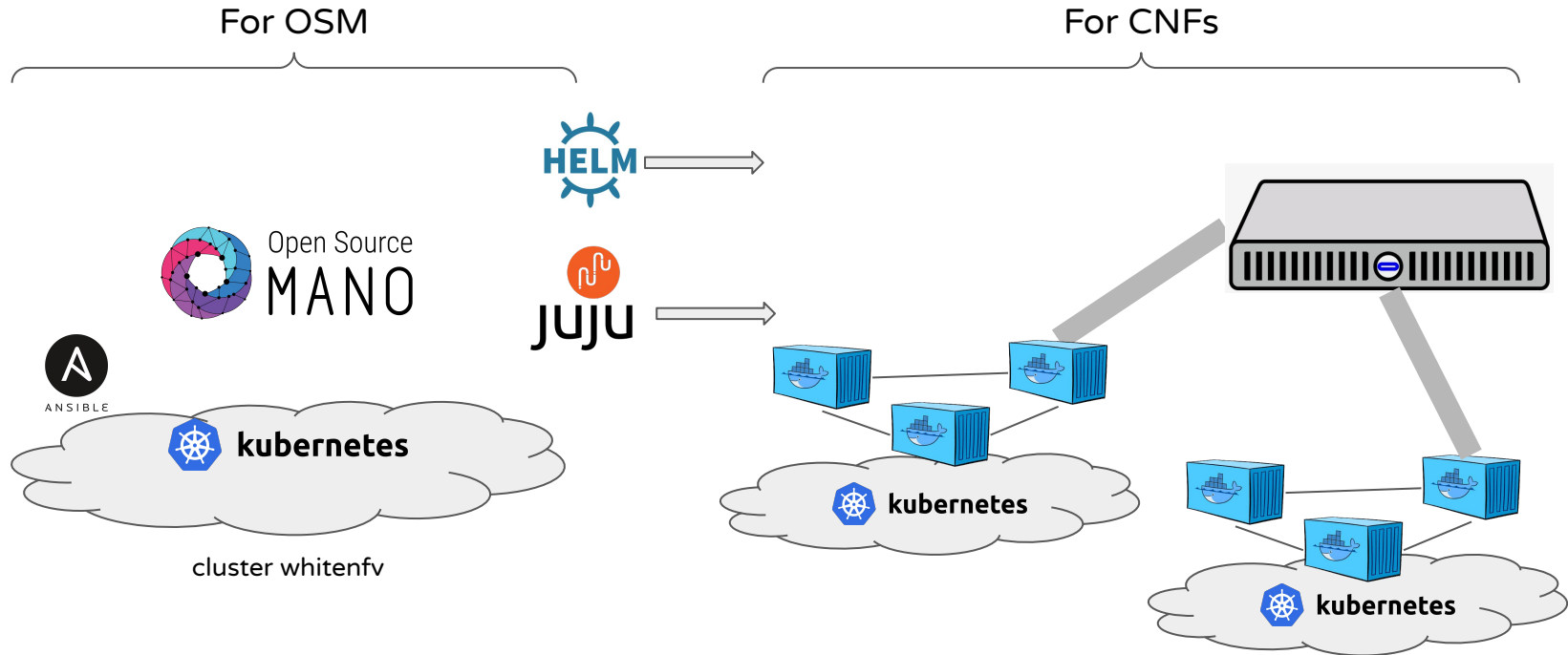


## Containers



# Containers for **OSM** and for **CNFs**

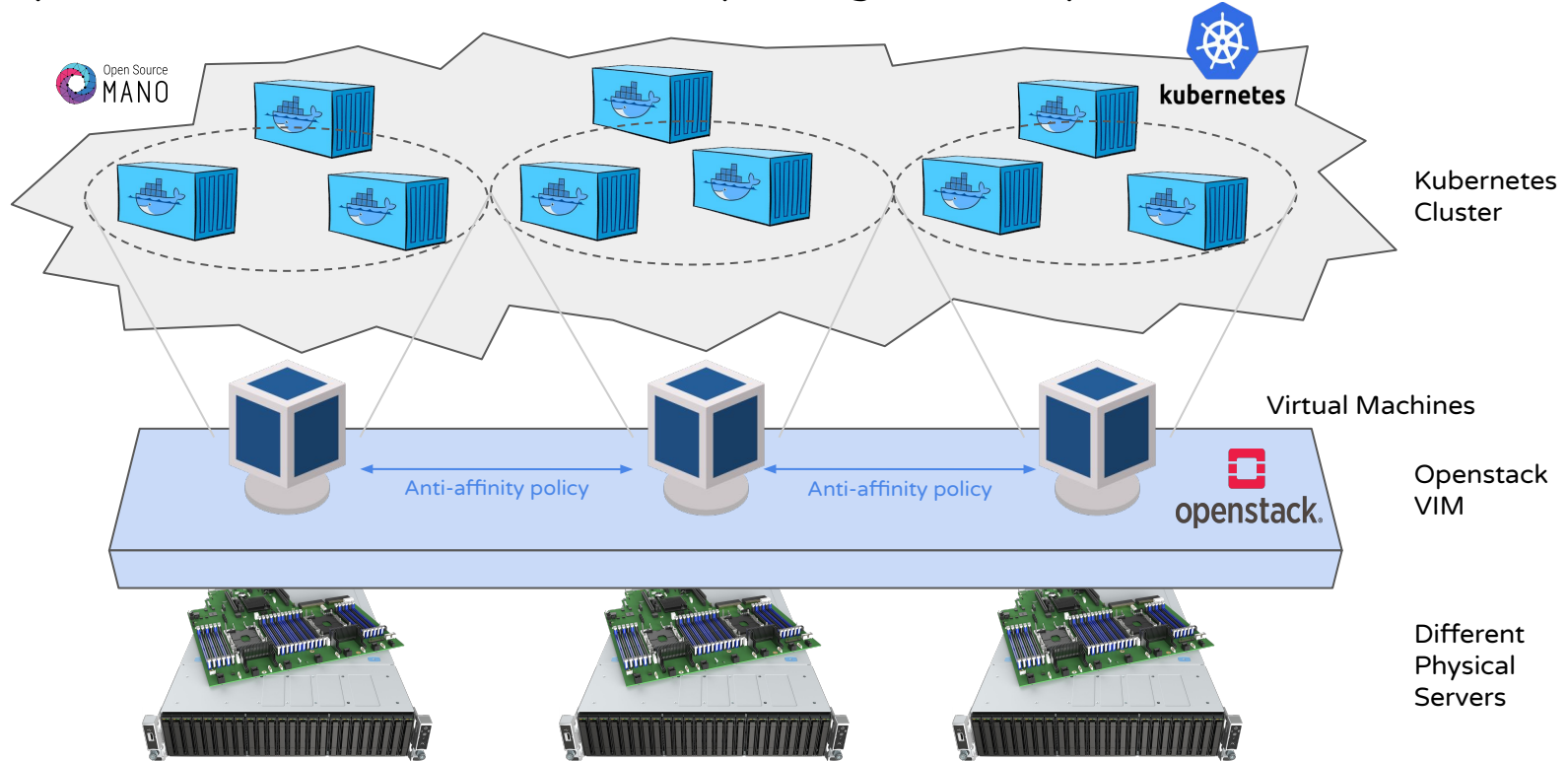
Kubernetes is used to support OSM, but also for supporting CNFs



# Deploying whitenfv

## by using Ansible on top of Kubernetes

WhiteNFV comes in Docker Containers, we deploy them in Kubernetes, on top of Openstack virtual machines or by using a cloud provider.



# Deploying white<sup>nf</sup>v by using Ansible on top of Kubernetes



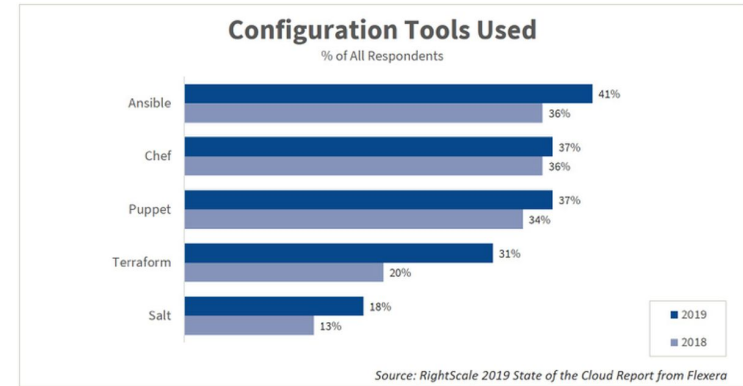
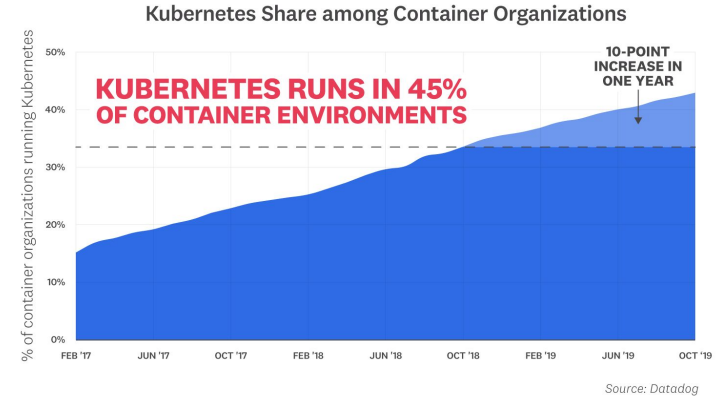
The fastest growing  
platform for Containers  
deployment.

## kubernetes



## ANSIBLE

The most popular  
configuration tool, in the  
market (OpenSource)



# How to deploy **whitenfv**?

## Deployment benefits:

- Sub-second High-Availability and Auto-healing  
(VCA in progress)
- Easily updatable (seconds) through deployer machine  
(Upgrading a container, is a matter of seconds)  
"Rolling upgrades"
- Layered Deployment  
Components spread across several layers, to minimize security risks  
(avoid an attacker to get access to all components)

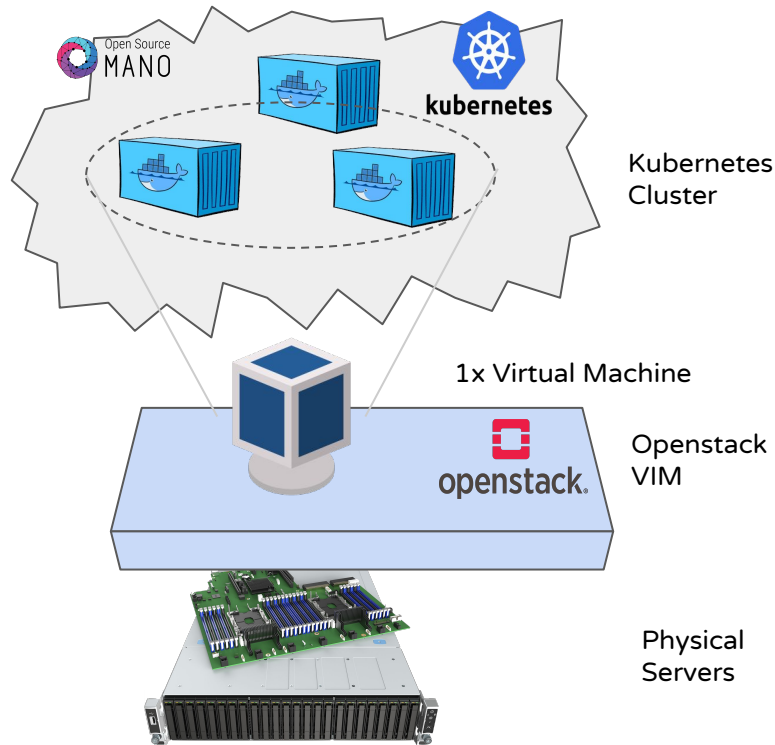




# Deploying white**nfv**

## For testing

Express-all-in-one model (for testing and experimenting)

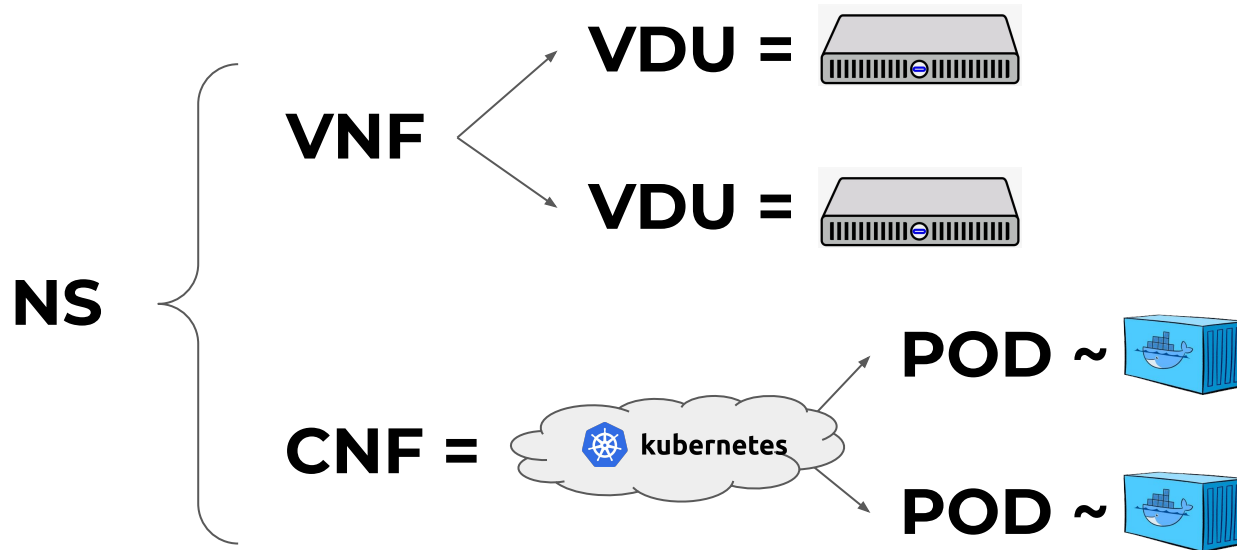


- “Express All-in-one” deployment, with co-located deployer docker container.
- Single VM, single interface
- Minimum: 2 vCPU, 8GB RAM
- Keeps WhiteMist Kubernetes for elasticity



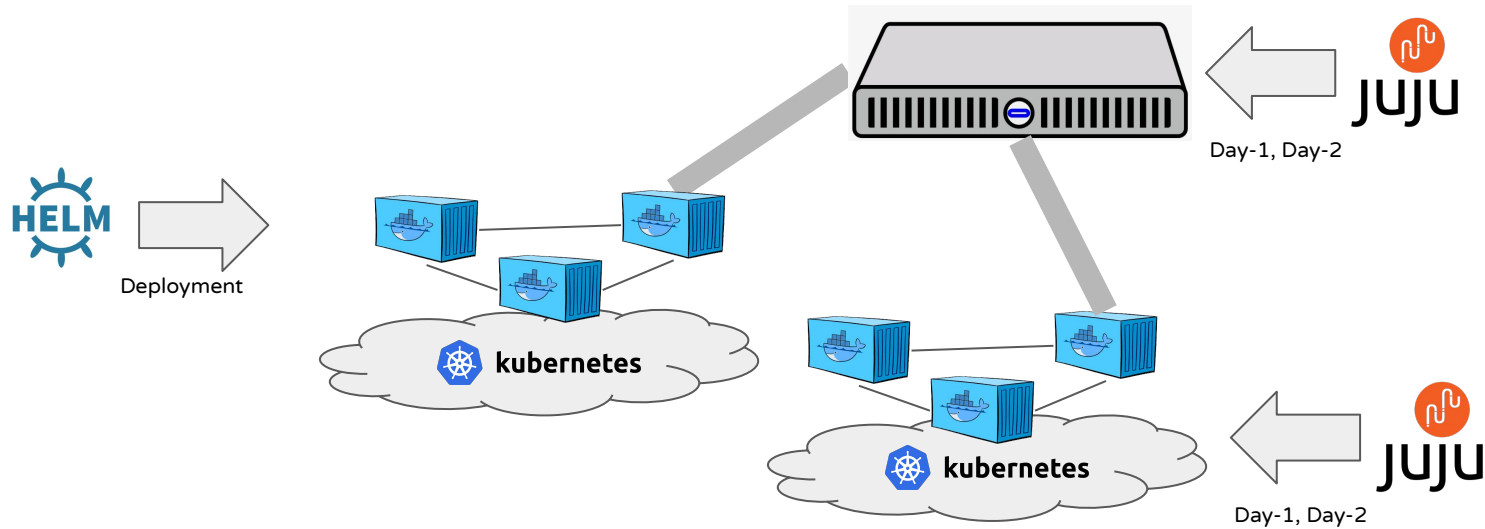
# VNFs vs CNFs

## Implementation differences



# Deploying **CNFs**

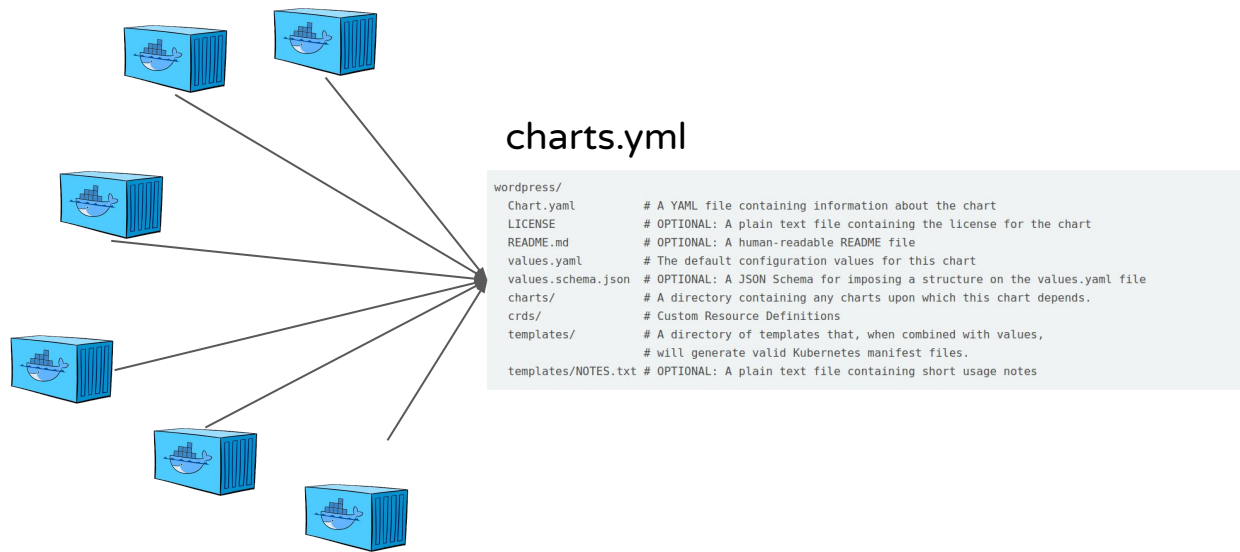
## With Juju or Helm on Kubernetes



# Helm uses Charts

A templating system to describe all the dependencies

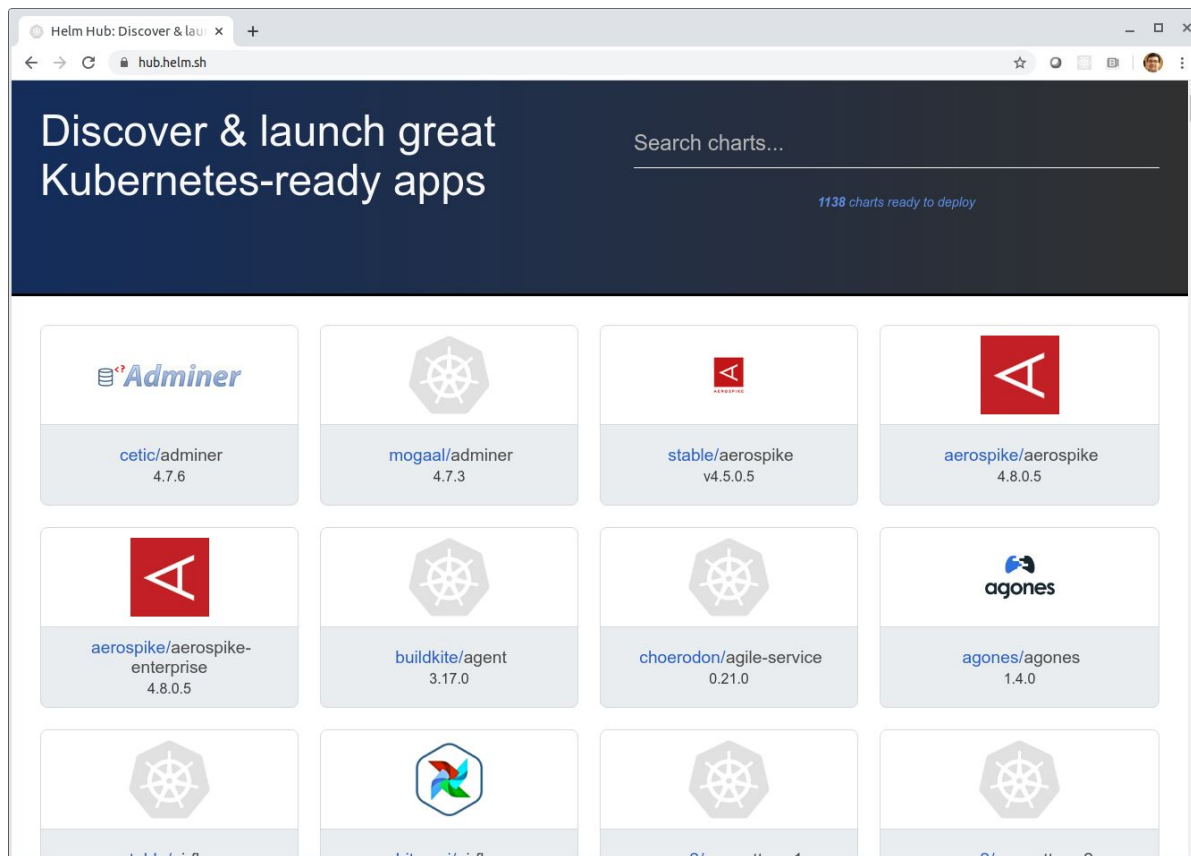
dependencies



```
$ helm install {application}
```

# Helm Hub

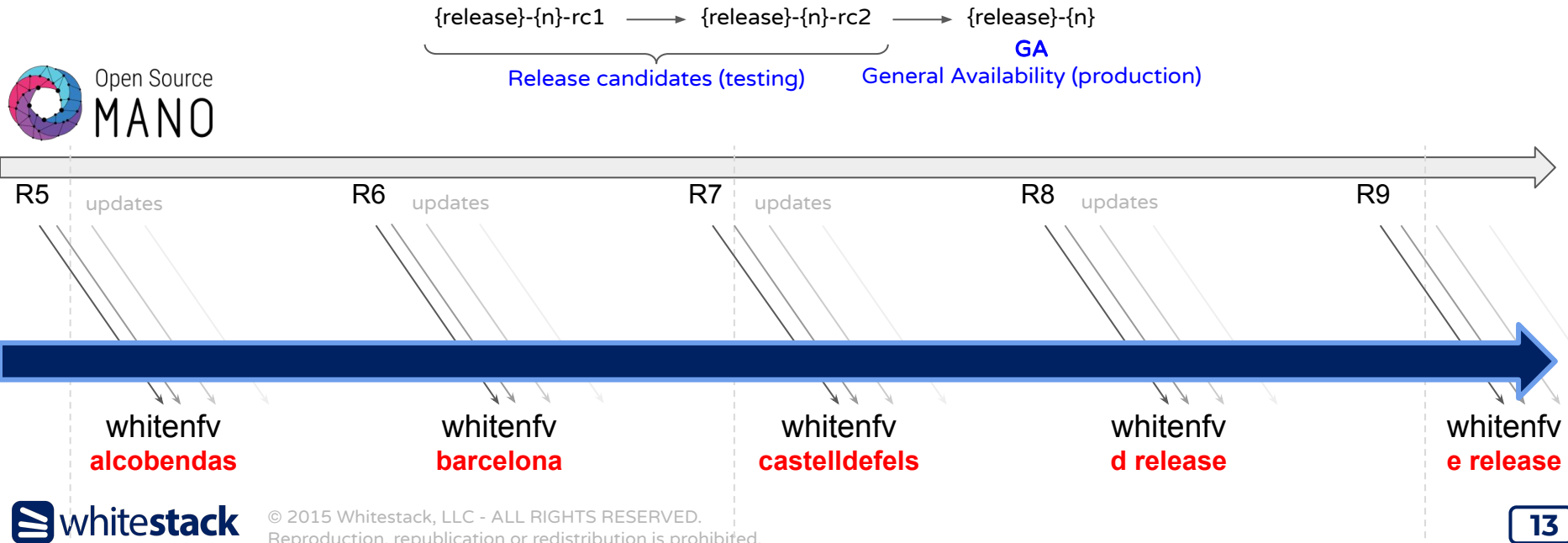
Thousands of Charts available  
(and many other Repositories)



# Release Calendar

Our Release calendar relies on the community releases

- We committed to release for testing (rc) on this calendar
  - **Alcobendas** (Q1/2018) - Based on Release FIVE
  - **Barcelona** (Q3/2019) - Based on Release SIX
  - **Castelldefels** (Q1/2020) - Based on Release SEVEN
  - **D Release** (Q3/2020)
  - **E Release** (Q1/2021)



# Roadmap

- More functionality around CNFs
- Deployment of OSM by using Helm Charts!

```
helm install whitenfv
```

- More integration with Openstack
  - Load Balancing with Octavia
  - Storage with Cinder, Swift or Manila
- More monitoring
  - Improved Network Services Dashboards
  - System monitoring
- More Security
  - Session Encryption
  - Auditing

# Successful Implementation of an **OpenRAN** deployment in Latam



TELECOM INFRA  
PROJECT

## POPULATION DENSITY DISTRIBUTION



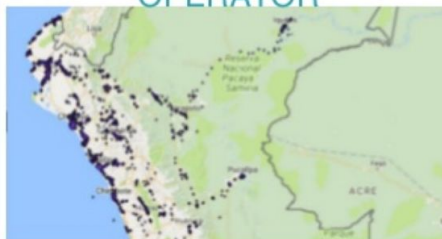
Data Mining: Satellite imagery

Estimation Model: Neural networks to identify and count households

Clustering (DBSCAN) to group households into settlements

Training Sample: Census data to train and iterate the model

## INTERNET COVERAGE BY TECHNOLOGY & OPERATOR



Data Mining: Geolocate mobile sessions

Estimation Logic: Generate internet coverage polygons by technology as perceived by mobile internet users

Training Sample: Telefonica coverage and infrastructure information + reported regulatory data

## INTERNET UNSERVED POPULATION DISTRIBUTION



Geolocate population distribution by internet coverage status, by technology (LTE, 3G, Wifi, 2G/Edge)

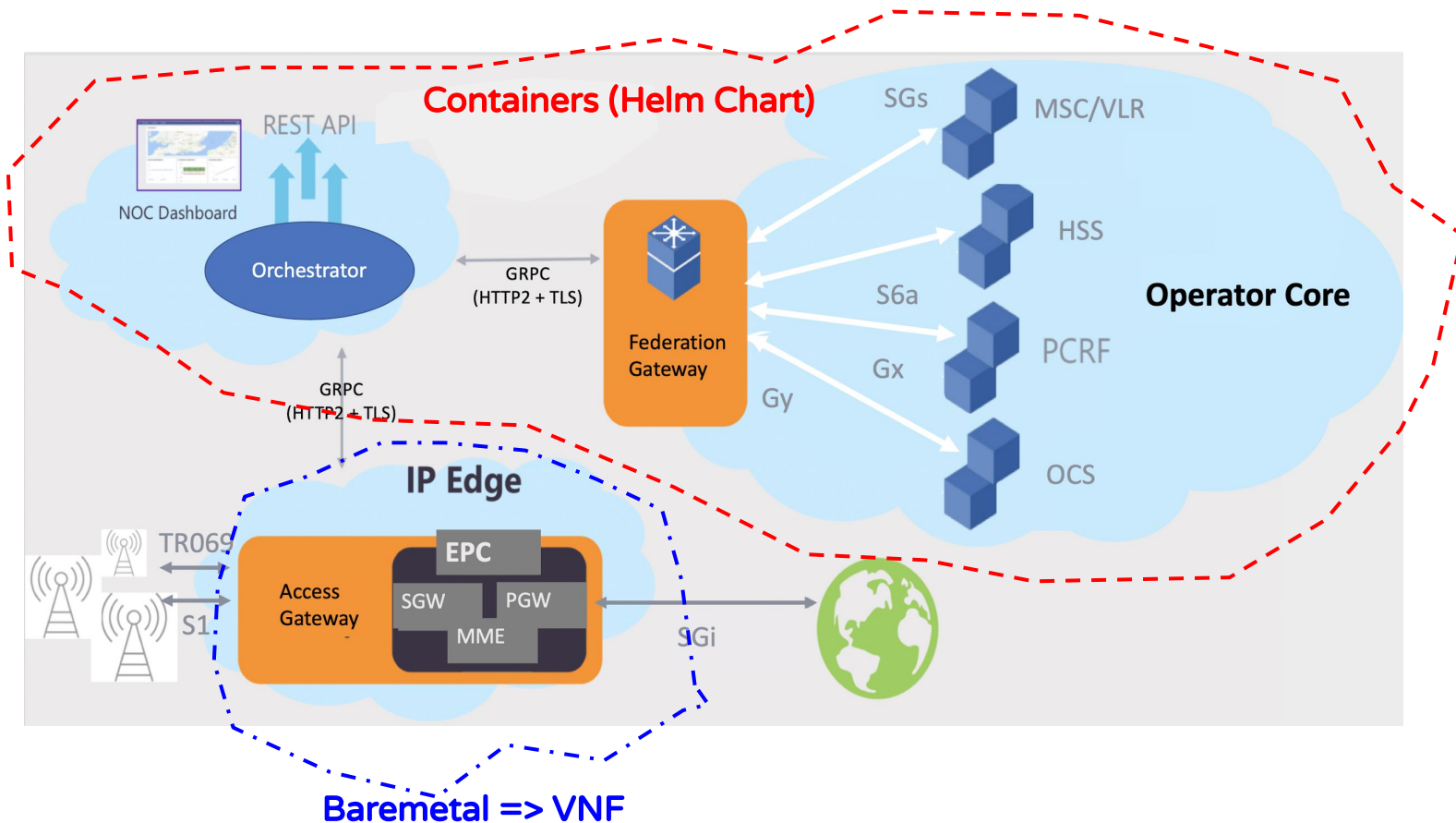


facebook





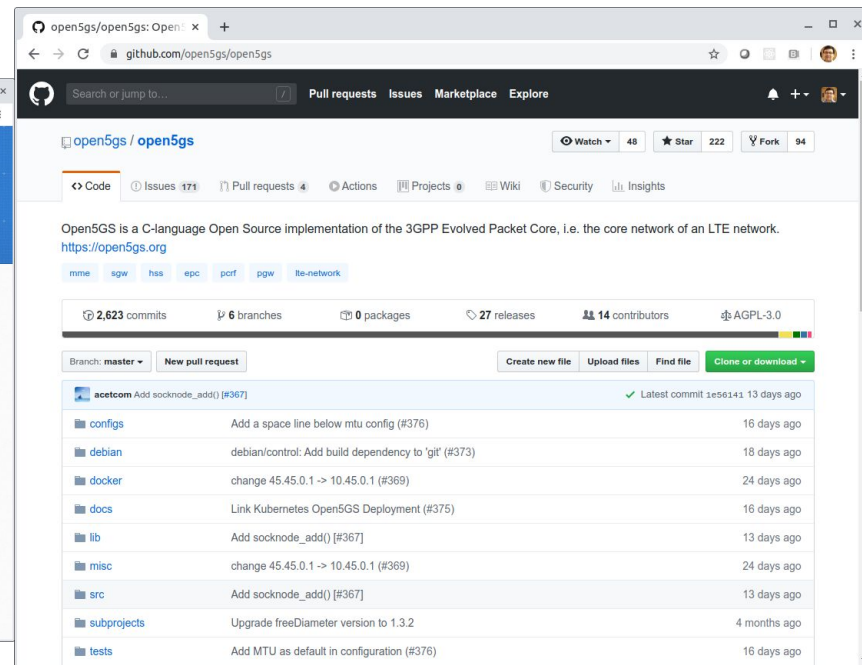
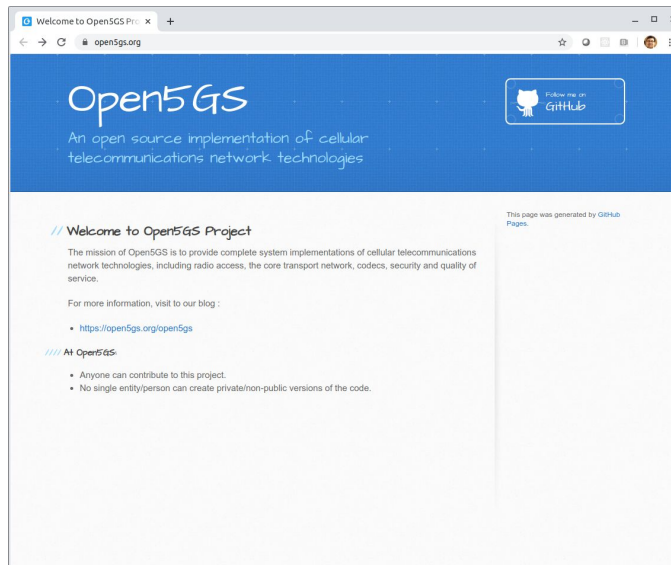
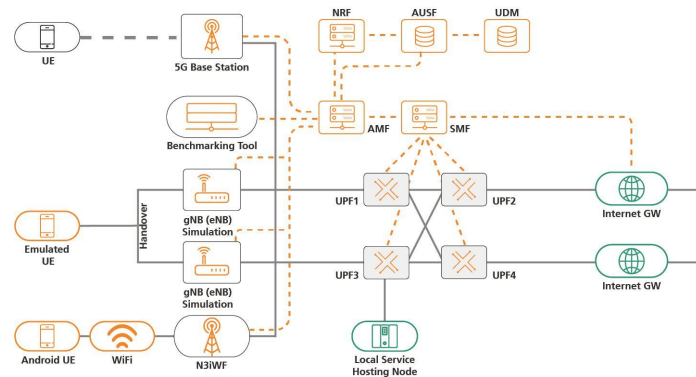
# Orchestrating a **Hybrid Network** Service Facebook **Magma**



# Getting Ready for 5G

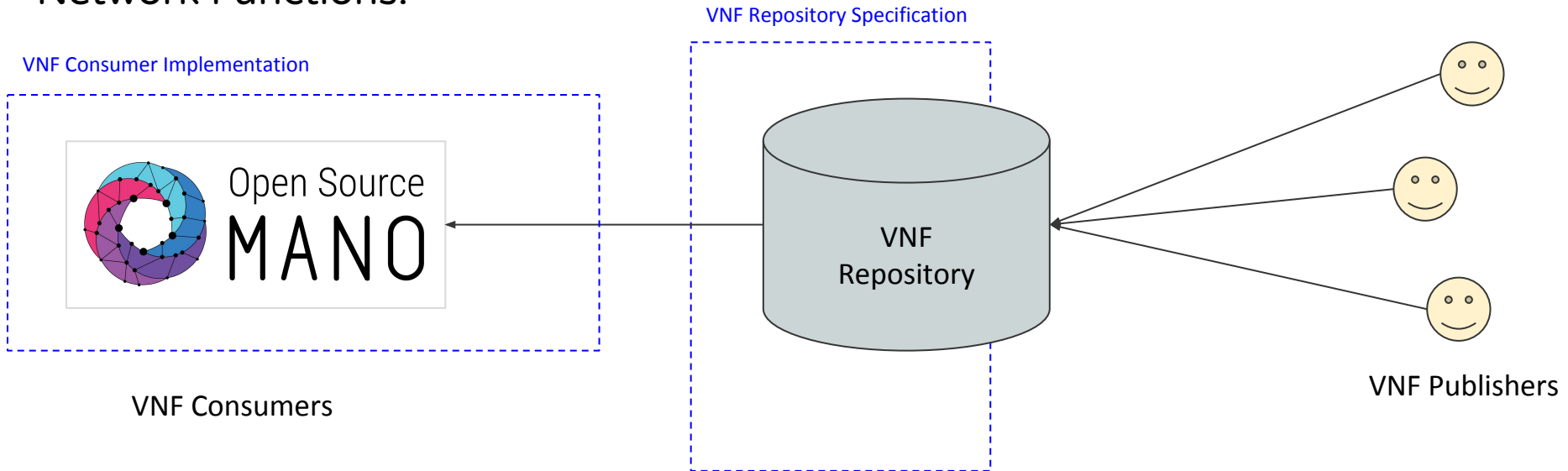
## Onboarding Open5GS

An containerized open-source implementation of a 5G Core



# VNF Catalogs

Whitestack, the VNFOB Task Force, and TSC members are promoting the concept of a repositories of VNFs, that will facilitate the distribution of Virtual Network Functions.





# Thanks!