Setting up Day-2 Operations

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About me

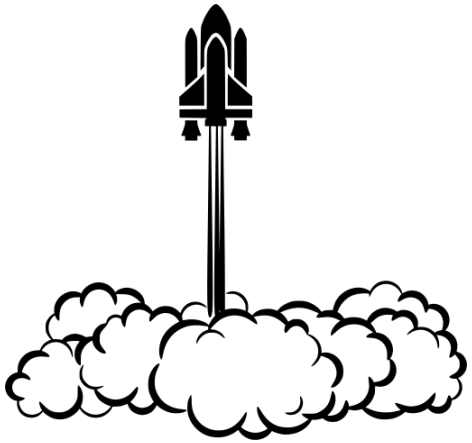
I’m a (Cloud) System Engineer passionate at architecting, building and operating on-premises and on-cloud infrastructures and services with a high focus on automation and production readiness.

Started at INFN in 2004, moved to private companies, then back at INFN in 2023.

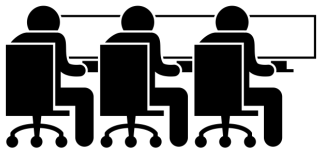
Joined INFN AI project since Jan 2024.

Day-2 Operations

Rocket launch suceeded but still mission not accomplished.



Operate the spacecraft during the mission using an operating model.



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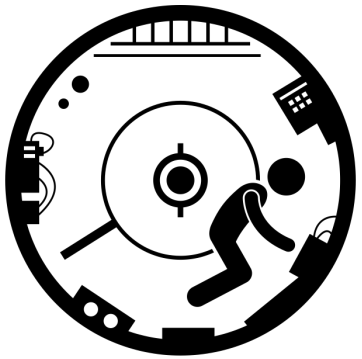

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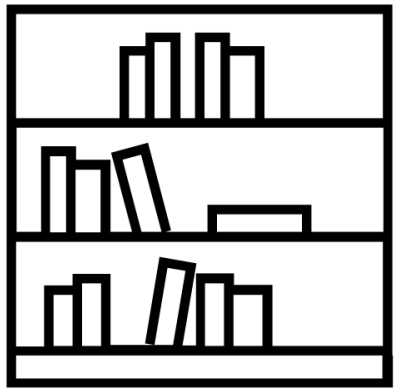
But we’re in the Cloud

So we need a Cloud Operating Model to build, mature, optmize our cloud environments.



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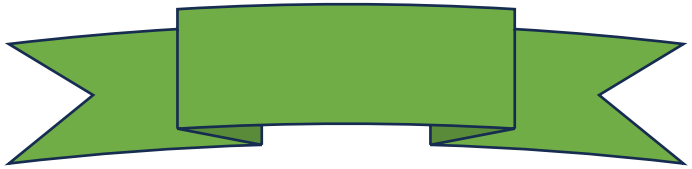
Inspiration from many good frameworks (AWS, GKE, Azure, Hashicorp) in the bookshelf.



Operational Excellence to tend towards

Operational Excellence for INFN AI

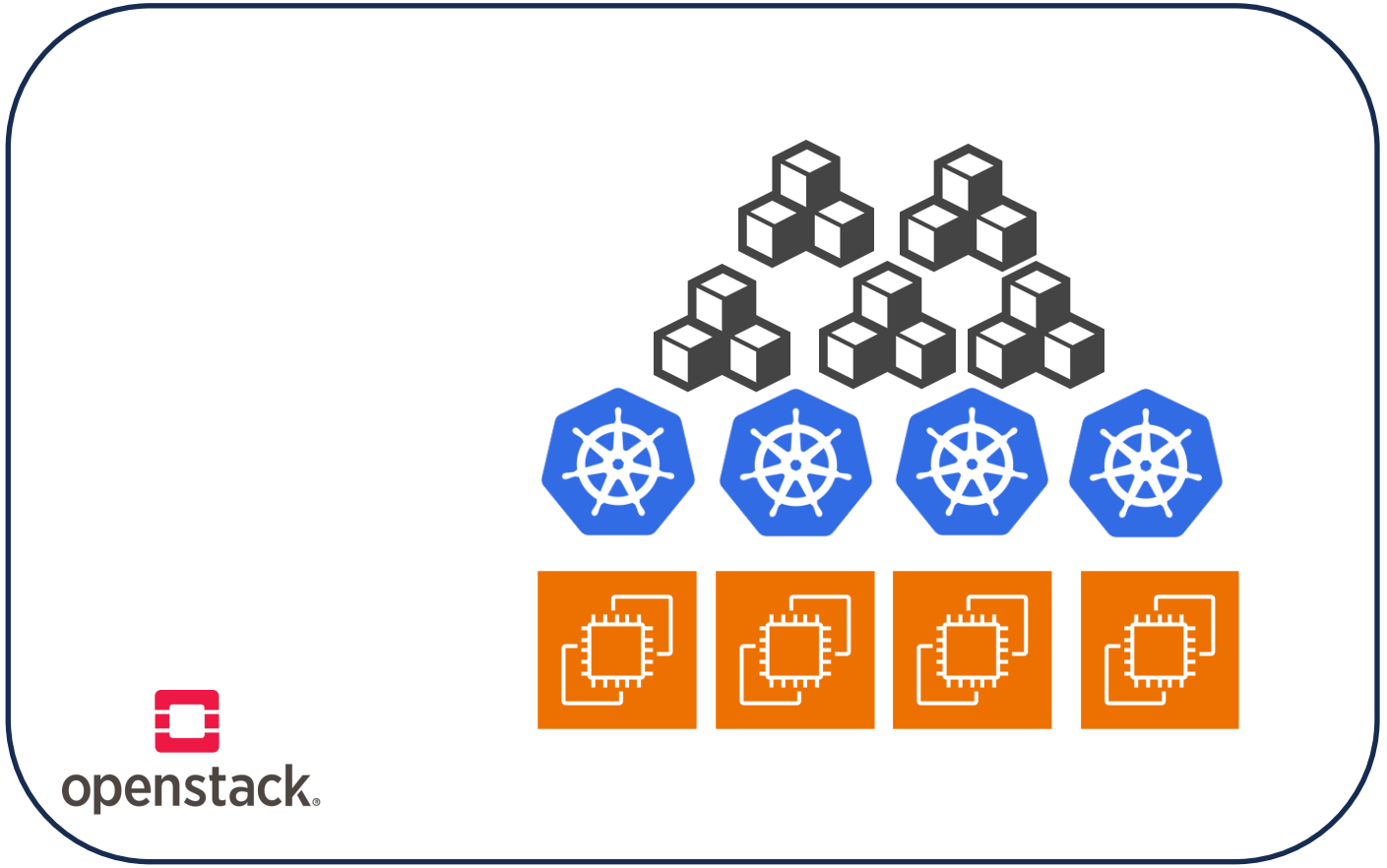
Or a series of best practices to adopt in order to:

- Use as much as possible automation to create and manage infrastructure and services.
  - Code repo (IaC) and scripts acting as automated and controlled procedures to avoid human errors.
- Be ready to react to events (planned and unplanned) through playbook and recepies.
- Review continuosly procedures and playbook to validate them against the evolution of infrastructure and services (es. changes, upgrades).

Ok the theory but…

What cloud be a possibile approach in the INFN AI context?

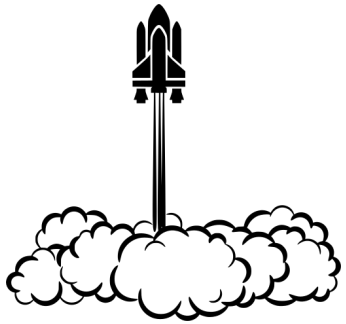
We mainly deal with cloud instances hosting Kubernetes clusters where we deploy INFN AI microservices

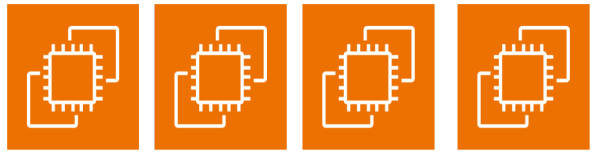


Operational Excellence for OpenStack

Infrastructure composed mainly of virtual machine instances.

Click and create approach not very automatic
(automation provided by DataCloud behind the scene).





Instances need to be consistent with a base line regarding the way they are set up, upgraded, monitored.
Consistency through procedures and playbook covering:

- set up
- upgrade
- response to incident

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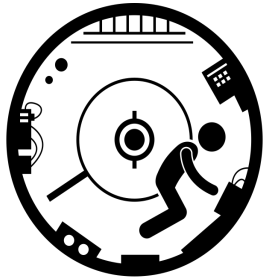

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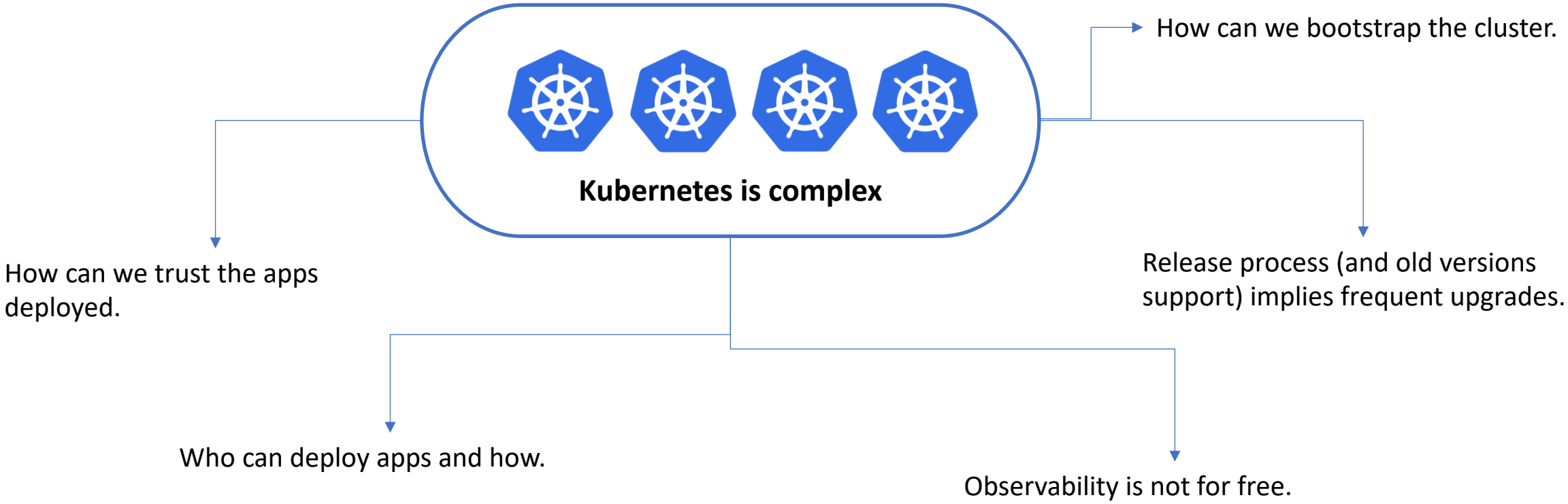
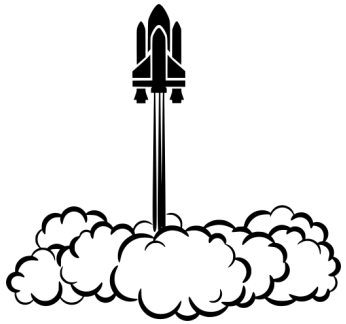
Operational Excellence for Kubernetes

The more we want to be production ready, the more we need to adhere as much as possible to the [Kubernetes the hard way] best practices. But…



Setting up Day-2 Operations for Kubernetes in INFN AI

Click and create approach not very automatic.
Automation provided by DataCloud behind the scene but a collaboration is started to share ownership and adapt the automation to the INFN AI requirements.



Ansible Playbook acting as the automatic and controlled procedure for cluster cosistency and upgrades.
Leverage the configuration management approach for

- set up
- upgrade
- response to incident

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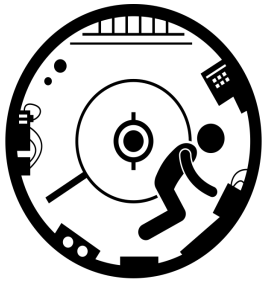

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Operational Excellence is a journey

We’re starting with the new Kuberntes cluster setup and (hopefully) cover other operational challenges in future iterations involving the INFN AI apps as well.