# NEXT GENERATION PLATFORM AS A SERVICE: LEVERAGING ONF OPEN SOURCE OFFERS

ONF-Connect 2018

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# Agenda

- The NGPaaS project
- Telco PaaS Use case
- Policy Framework for ONOS
- VIM Adaptation Layer for CORD

# The NGPaaS Project: Motivation

- 5G should become the ubiquitous fabric blending universal connectivity

- Adopt the PaaS model, as it hides out infrastructure complexity

- One size PaaS does not fits all 5G business cases and verticals markets.

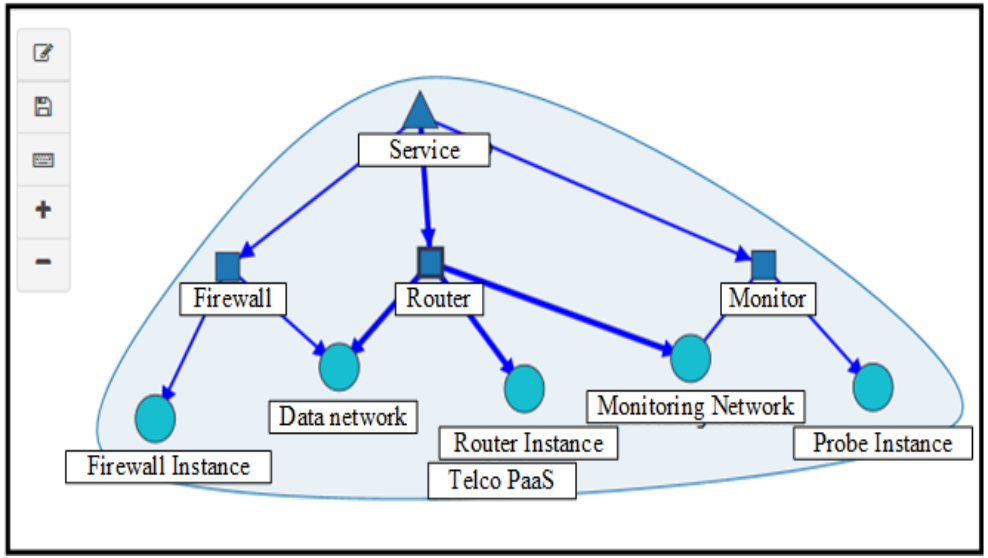
- **NGPaaS** to allow the composition and deployment of tailored/customized PaaSes.
  - **Based** on: Reusability and modularity of components

# The NGPaaS Project: Architecture Overview I

- NGPaaS is able to build customized PaaSs:
  - By abstracting components of the PaaS (e.g. the SDNC) into Reusable Functional Blocks (RFBs).
  - RFBs are then used by an editor to compose platform and service graphs.

**Decomposable** service definition

**Modular/adaptable** architecture



# The NGPaaS Project: Architecture Overview II

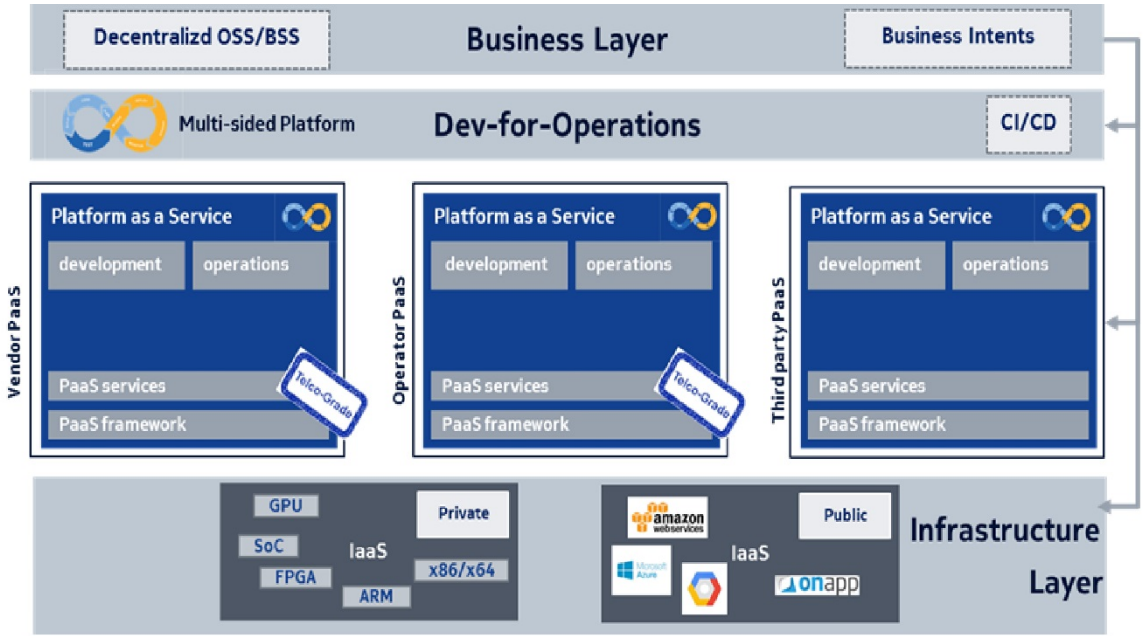
- Create a **telco-grade, cloud-native eco-system** where interactions can create added value (cooperation between Vendors, service/infrastructure/platform Providers, Operators)

Validated services can be requested from a catalog
OSS reserves IaaS and orchestrates:
- PaaS to IaaS
- Service to PaaS

Vendors interaction
- Onboard and validate new components via CI/CD
- Receive detailed monitored data from operations

Specialized PaaS can be plugged in

Specialized IaaS can be plugged in



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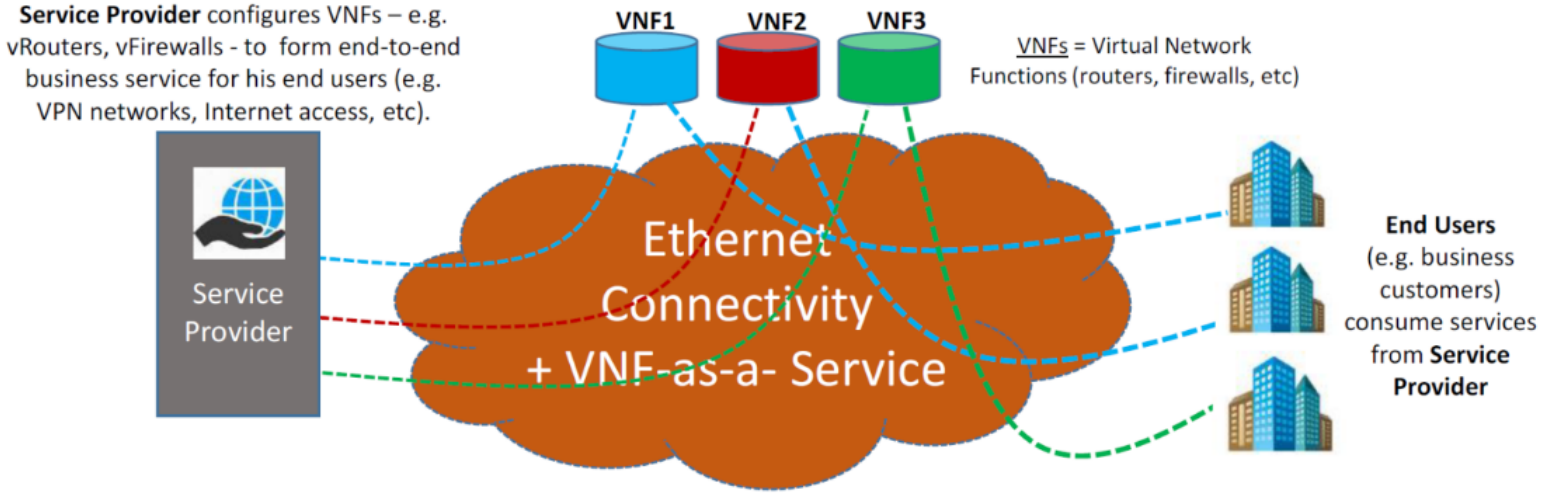
# The NGPaaS Project: VNFaaS and Telco PaaS

- Telco-Oriented use case **("VNF-as-a-Service"),** built using a Telco-Oriented PaaS **(Open-CORD)**
  - **VNFaaS**:

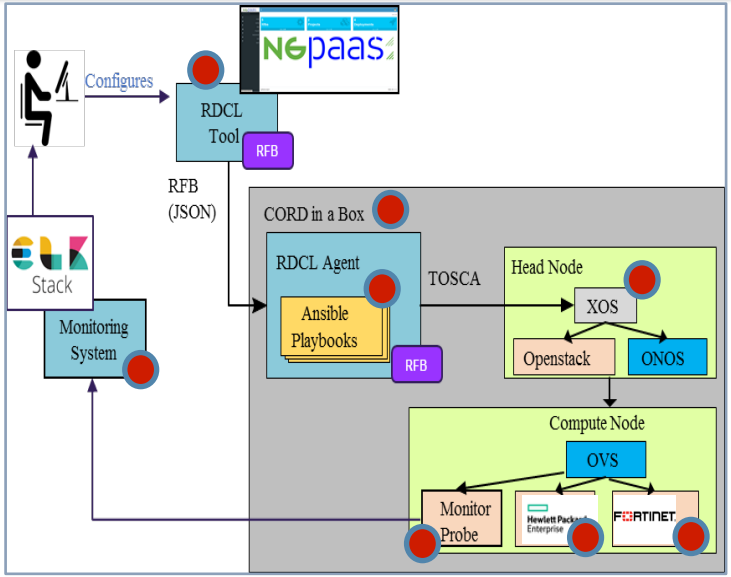


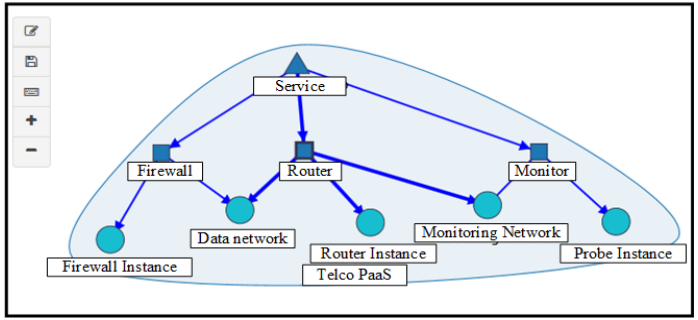

  - **Telco PaaS:**
    - Based on open-CORD to facilitate the service features of the VNF-aa-S use case.

# The NGPaaS Project: Telco PaaS Work Flow

Focus on Service deployment:

1. The **platform** (CORD) is already deployed.
2. The **RDCL-3D** tool will be used to define RFBs and combine them into service graphs.
3. One **Monitoring Probe** attached to the *Monitoring* network
4. One **Firewall**, attached to the *Data* network
5. One **Router** attached to both the *Data* and *Monitoring* networks
6. **RDCL Agent** executes local workflows on CORD via RDCL-3D
7. VNF deployment verified through XOS
8. Monitoring of the Router verified through Kibana



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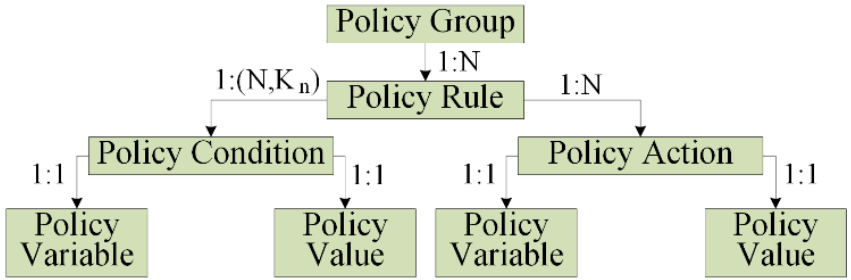
# Policy Framework for ONOS – Background Info

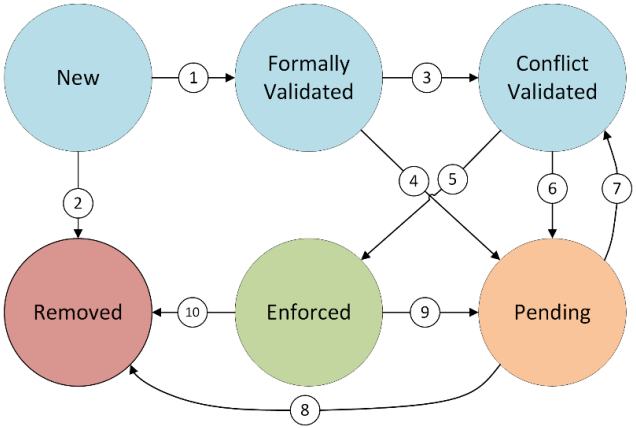
- Allows Service Providers to define topology-wide and SDN-based network policies for the ONOS SDNC.
- The policy manager and the policy types are disaggregated, as separate ONOS apps that communicate through REST
- Currently, 3 policy types are supported: Firewall, NAT and Connectivity

## Policy Model




https://tools.ietf.org/html/rfc3060

## Policy Lifecycle

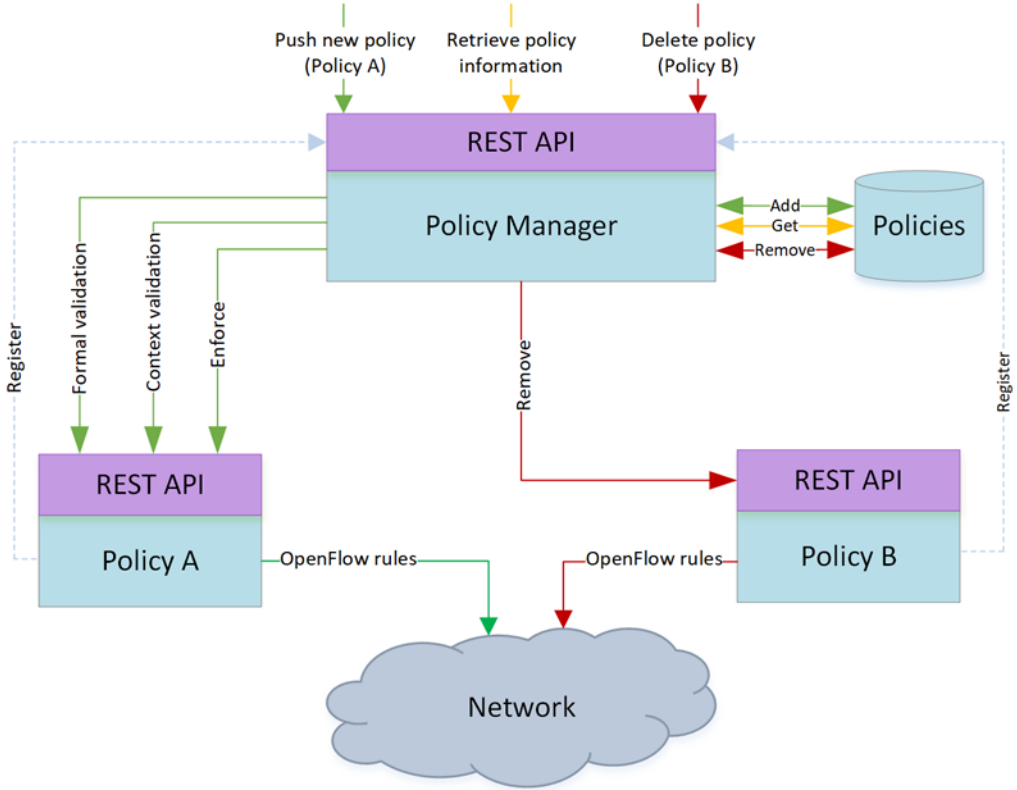


# Policy Framework for ONOS - Implementation

- **Policy Manager**:
  - Manages the lifecycle of policies
  - Keeps a database of all policies
  - Communicates through REST with the Policy apps to run specific functions.
  - Performs conflict validation

- **Policy apps:**
  - Implement the **formal validation**, **context validation**, **enforce** and **remove functions**.

- **Modular – Scalable Architecture:**
  - The **policy manager** and the **policy apps** are separate ONOS apps.



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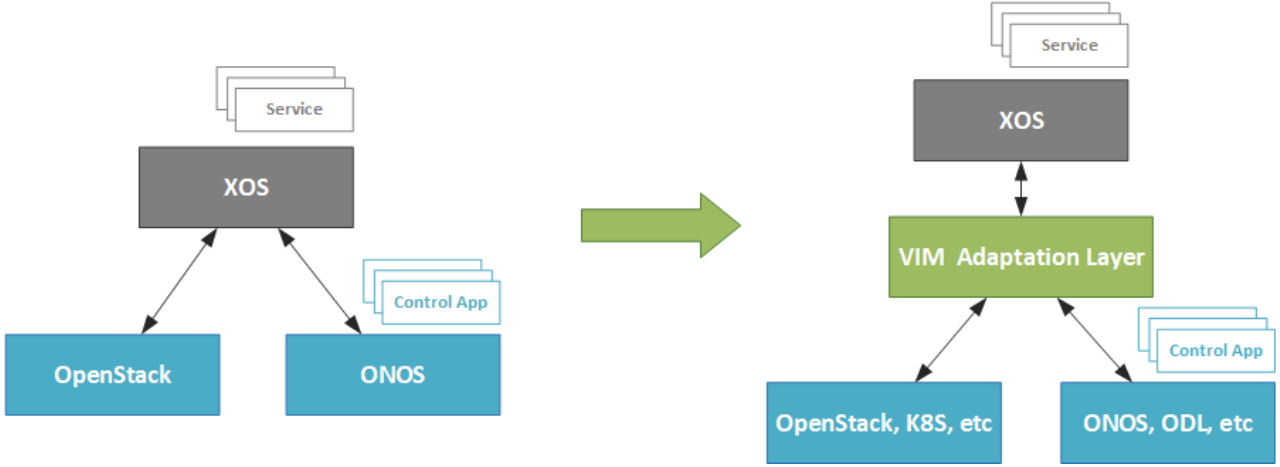
# VIM Adaptation Layer for CORD: Problem Statement

- CORD 4.X building blocks (XOS, OpenStack and ONOS) are tightly integrated and cannot be easily replaced or extended with similar technologies
  - E.g. Kubernetes instead of OpenStack
  - E.g. OpenDaylight instead of ONOS
- This tight integration can act as a barrier to the use of CORD.

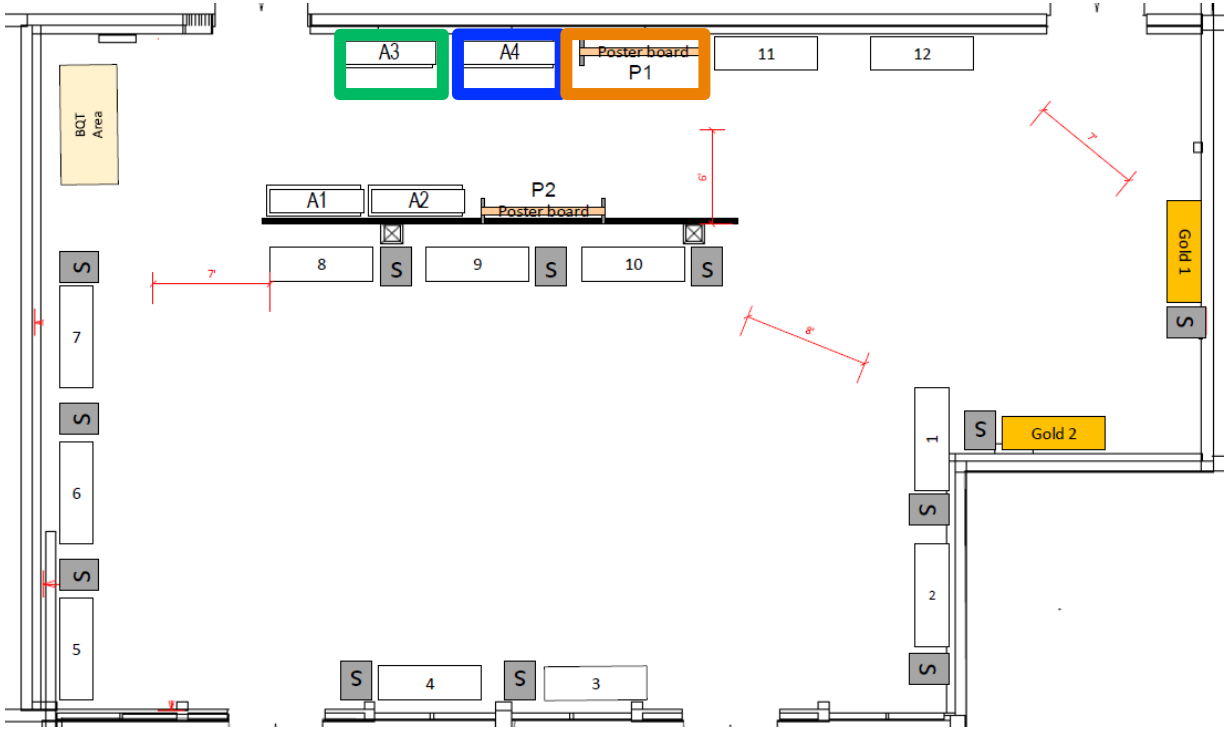
# VIM Adaptation Layer for CORD: Proposal

- Identify the interactions between XOS and OpenStack/ONOS
- Based on the identified interactions, define a generic interface that allows CORD to support multiple VIMs.
  - Users/Administrators of a CORD POD become agnostic to the underlying VIMs.



# Posters and Demos @ ONF Connect 2018

- More details on all these work tracks in the following demo/poster sessions:
  - Telco PaaS : **A4**
  - Policy Framework : **A3**
  - VIM-AL : **P1**



# Questions ?