



Advanced Automation in ONAP via Closed Loop

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March 25 , 2018

The Network Revolution

NETWORK TRANSFORMATION

CLOUD
TECHNOLOGIES

SOFTWARE DEFINED
NETWORKING

5G NETWORKS

END-TO-END
SECURITY



OPPORTUNITIES AND CHALLENGES

RAPID
INNOVATION

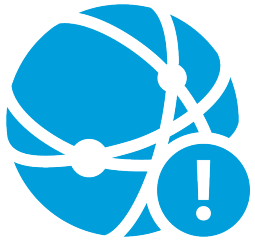
PLATFORM
DRIVEN

HIGHLY DYNAMIC
NETWORKS

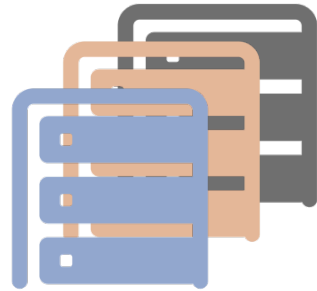
HIGH TRAFFIC
VOLUME

Advanced Automation

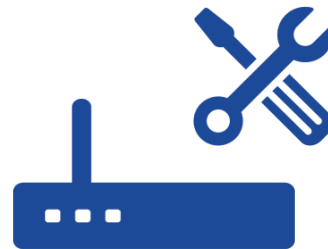
- Automation is key to operating modern networks



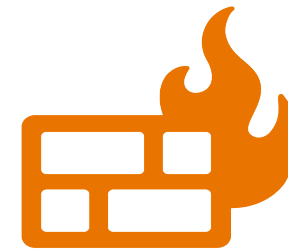
Reacting to events



Scaling capacity



Fault management



E2E security



Cost savings

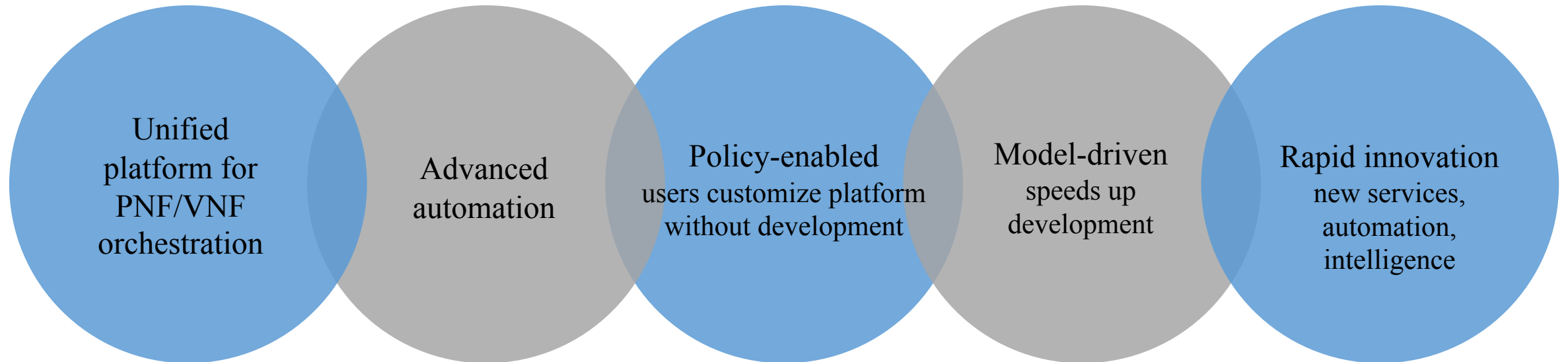
Agenda

- Introduction
- What is ONAP?
- ONAP closed loop operations
- Closed loop components
- Demo

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- Introduction
- **What is ONAP?**
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What is ONAP?

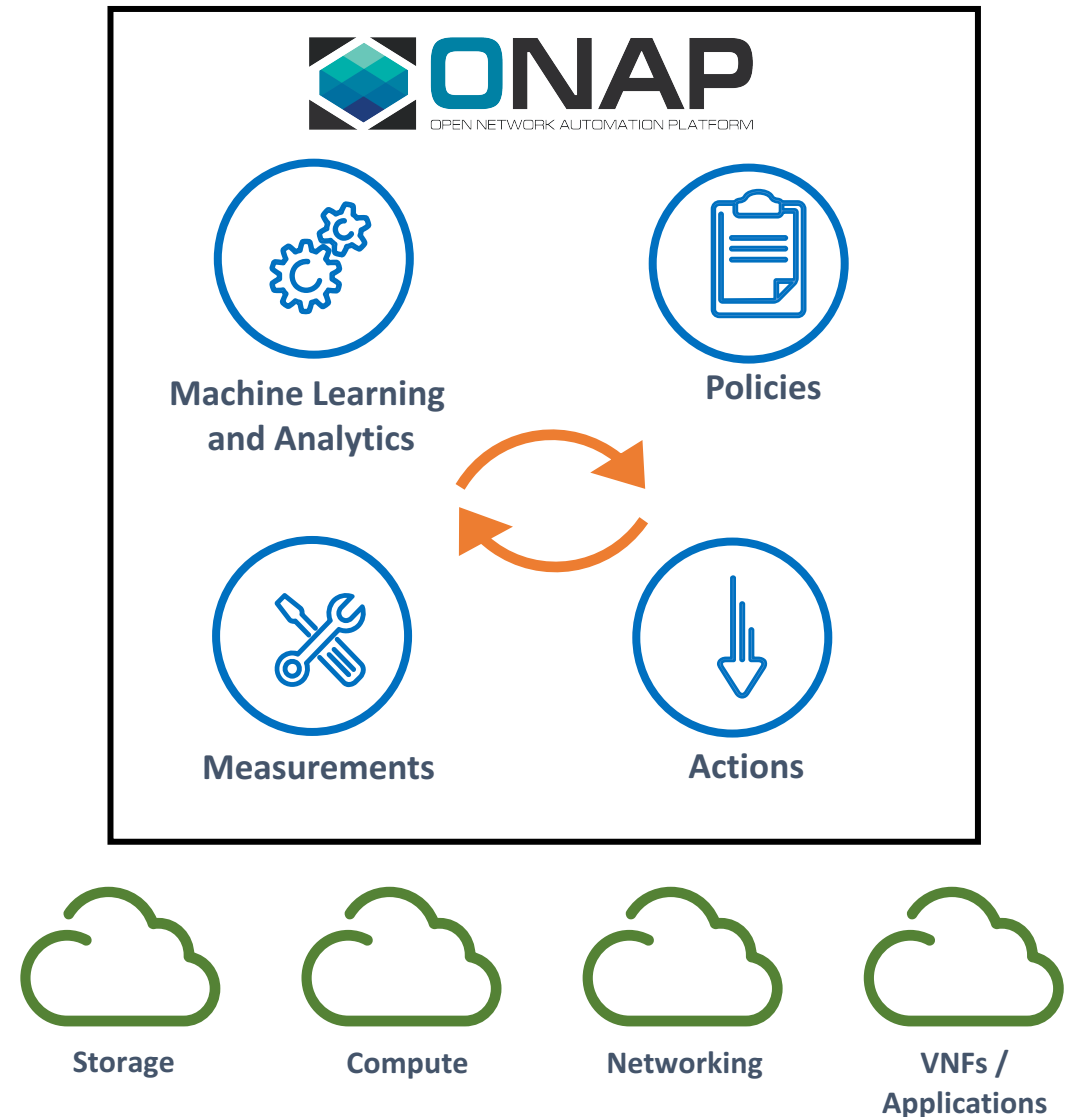


Agenda

- Introduction
- What is ONAP?
- **ONAP closed loop operations**
- Closed loop components
- Demo

ONAP Closed Loop

- Repeatable pattern of operations
- Platform for machine learning and data analytics microservices
- Using data insights and policies to determine corrective actions



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- **Closed loop components**
- Demo

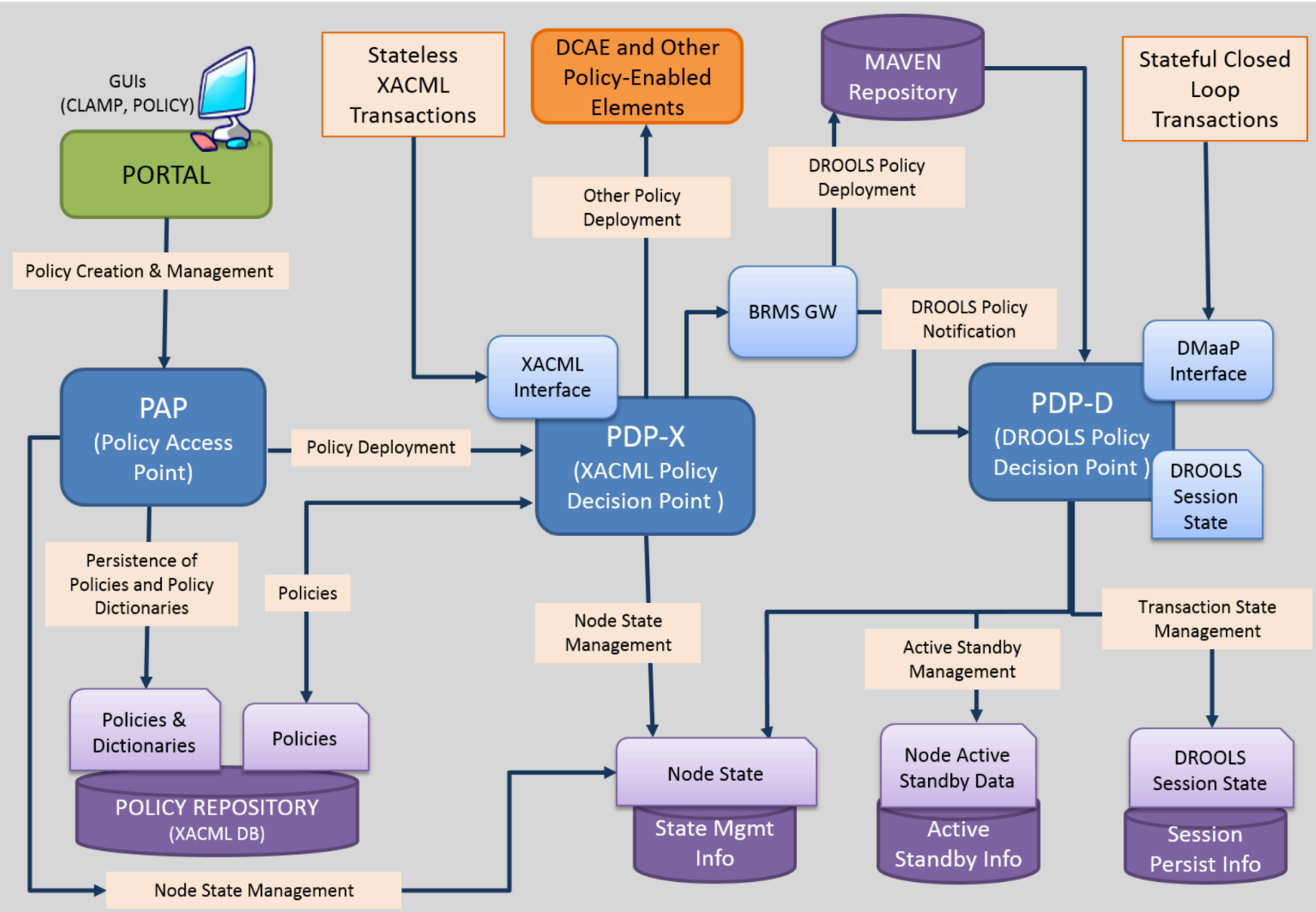


ONAP

OPEN NETWORK AUTOMATION PLATFORM

Policy Engine

Policy Engine



Creating New Policies

The screenshot displays the ONAP Policy Editor interface. At the top, there is a navigation bar with 'ONAP Portal', 'Manage', and 'Support' links, along with a user profile 'Demo'. Below this is a breadcrumb trail 'Home > Policy' and a search bar. The main area is titled 'Policy Editor' and contains a table of policies. A context menu is open over the first row, offering options like '+Add Sub Scope', '+Create Policy', 'Move Scope', 'Rename Scope', and 'Delete Scope'. To the right, a separate table lists various configuration and decision policies.

Name	Version	Date	Created By	Modified By	Watch Policy
com		2017-06-01 11:45:36.0	Demo	Demo	

Name	Version	Date
Config_BRMS_Param_BRMSParamvCPE	1	2018-02-17 08:35:02.0
Config_BRMS_Param_BRMSParamvDNS	1	2018-02-17 08:34:57.0
Config_BRMS_Param_BRMSParamvFirewall	1	2018-02-17 08:34:54.0
Config_BRMS_Param_BRMSParamVOLTE	1	2018-02-17 08:34:59.0
Config_MS_MicroServicevCPE	1	2018-02-17 08:35:09.0
Config_MS_MicroServicevDNS	1	2018-02-17 08:35:07.0
Config_MS_MicroServicevFirewall	1	2018-02-17 08:35:04.0
Decision_AllPermitGuard	1	2018-02-17 08:35:12.0

Configuration Policy

- DCAE periodically pulls configuration policies from Policy Engine
- Configuration policies are executed by DCAE microservices
- Microservices fire events when configuration policies are violated
- Events reach Policy Engine via Message Router

+ - thresholds

severity	MAJOR	severity	CRITICAL
fieldPath	\$.event.measurementsForVfScalingFiel	fieldPath	\$.event.measurementsForVfScalingFiel
thresholdValue	300	thresholdValue	700
closedLoopEventStatus	ONSET	closedLoopEventStatus	ONSET
closedLoopControlName	ControlLoop-vFirewall-d0a1dfc6-94f5-41	closedLoopControlName	ControlLoop-vFirewall-d0a1dfc6-94f5-41
version	1.0.2	version	1.0.2
direction	LESS_OR_EQUAL	direction	GREATER_OR_EQUAL

Operational Policy

- Enforced by SO or Controllers as part of closed loop

Config Policy Type:
BRMS_Param

Policy Name:
BRMSParamvFirewall

Description:
BRMS Param vFirewall policy

BRMS Template:
ClosedLoopControlName

controlLoopYaml:
controlLoop%3A%0D%0A++version%3A+2.0.0%0D%0A++controlLoopName%3A+Contr

closedLoopControlName:
ControlLoop-vFirewall-d0a1dfc6-94f5-4fd4-a5b5-4630b438850a

```
controlLoop:  
  version: 2.0.0  
  controlLoopName: ControlLoop-vFirewall-d0a1dfc6-94f5-4fd4-a5b5-4630b438850a  
  trigger_policy: unique-policy-id-1-modifyConfig  
  timeout: 1200  
  abatement: false
```

```
policies:  
- id: unique-policy-id-1-modifyConfig  
  name: modify packet gen config  
  description:  
  actor: APPC  
  recipe: ModifyConfig  
  target:  
    # TBD - Cannot be known until instantiation is done  
    resourceID: Eace933104d443b496b8.nodes.heat.vpg  
    type: VNF  
  retry: 0  
  timeout: 300  
  success: final_success  
  failure: final_failure  
  failure_timeout: final_failure_timeout  
  failure_retries: final_failure_retries  
  failure_exception: final_failure_exception  
  failure_guard: final_failure_guard
```

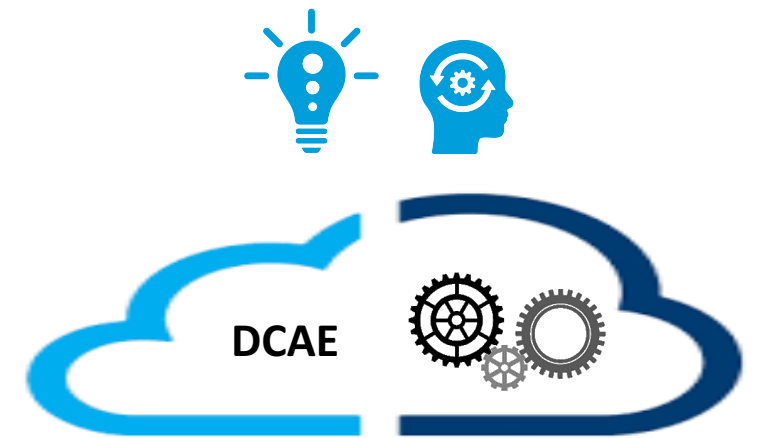
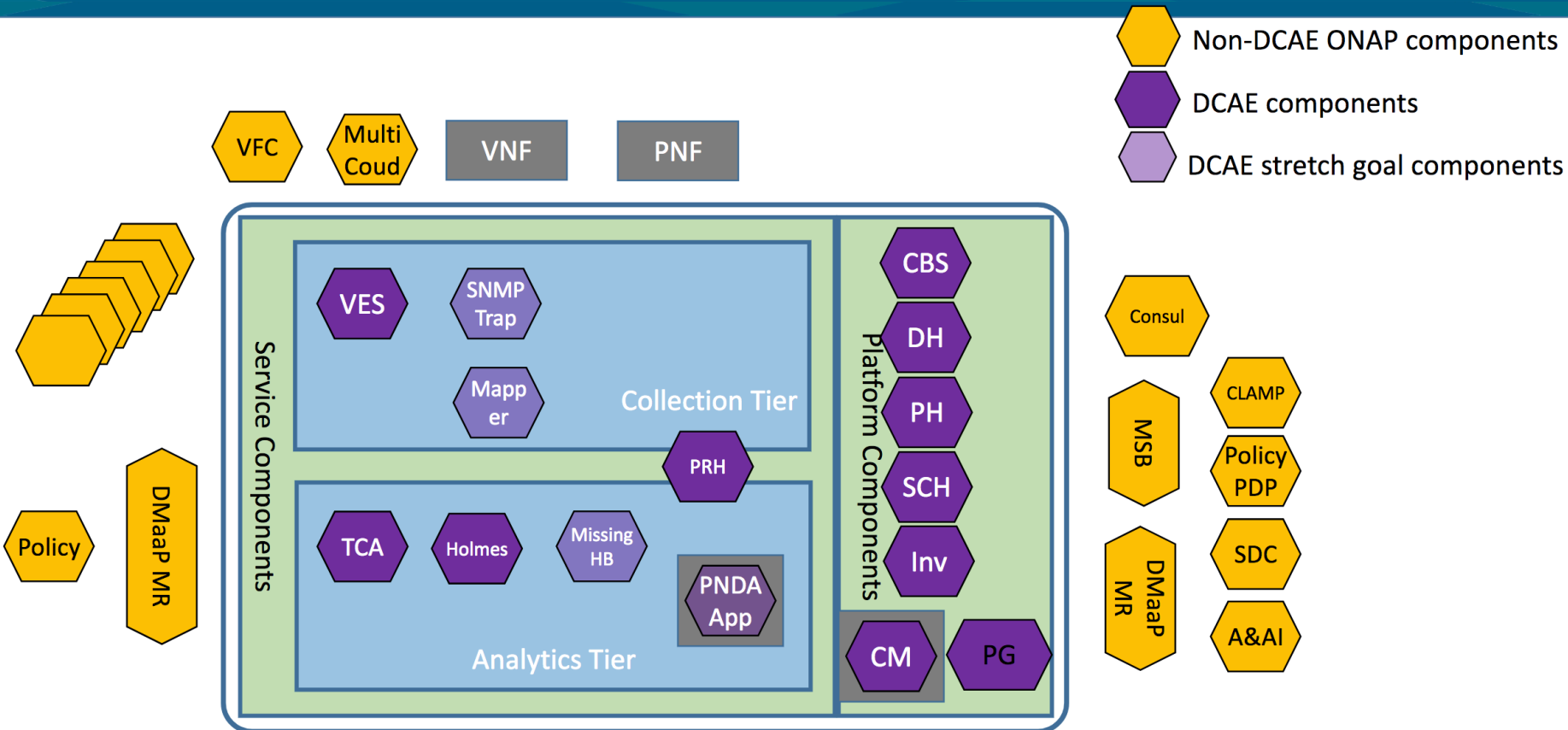


ONAP

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DCAE Platform

DCAE Platform





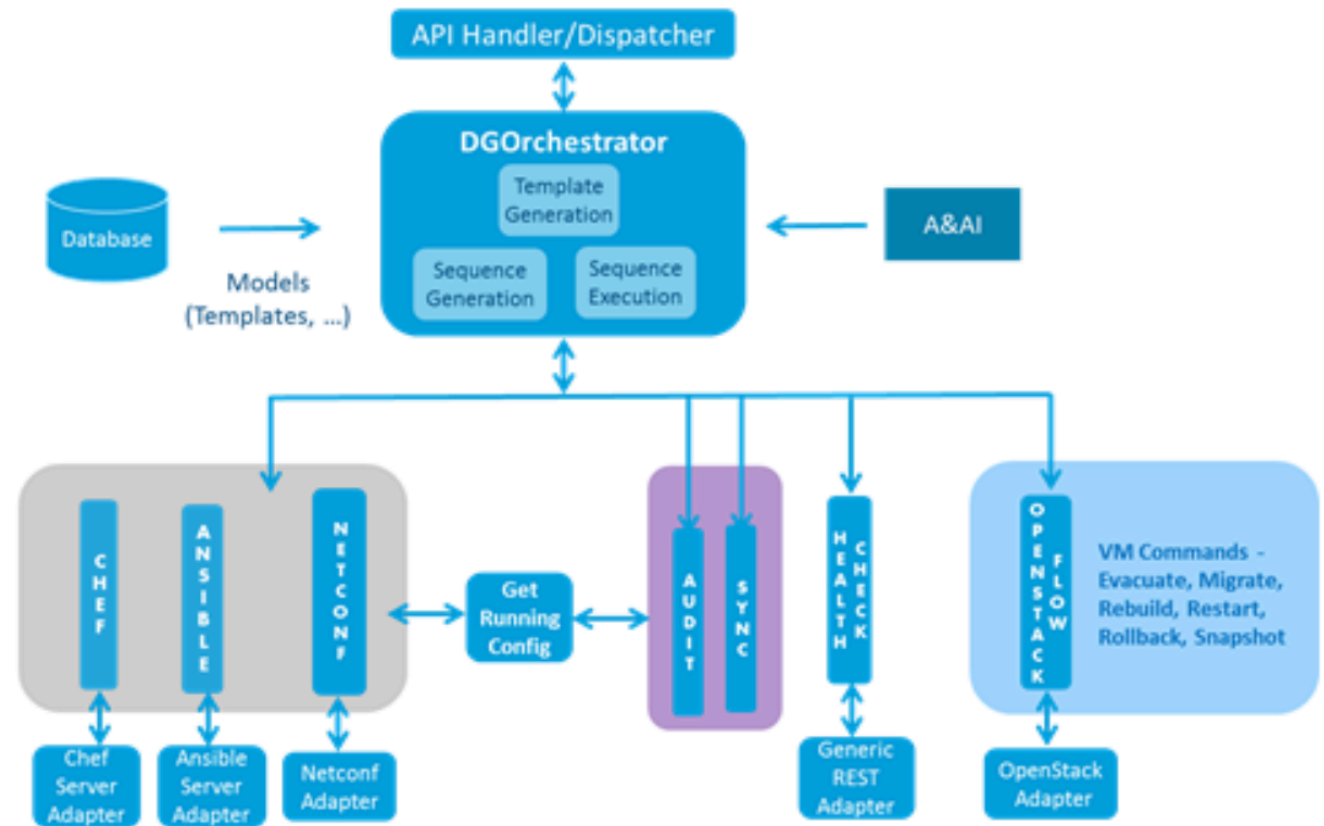
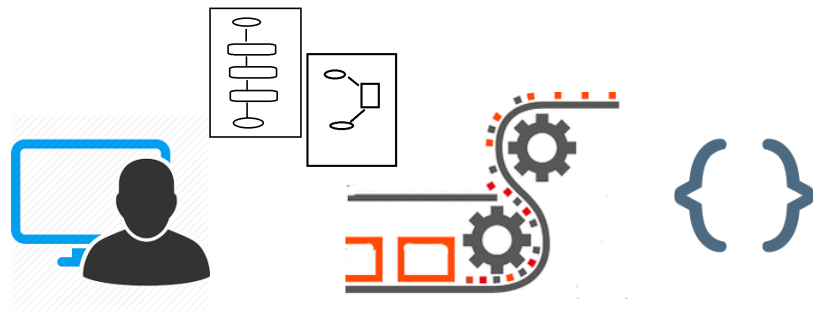
ONAP

OPEN NETWORK AUTOMATION PLATFORM

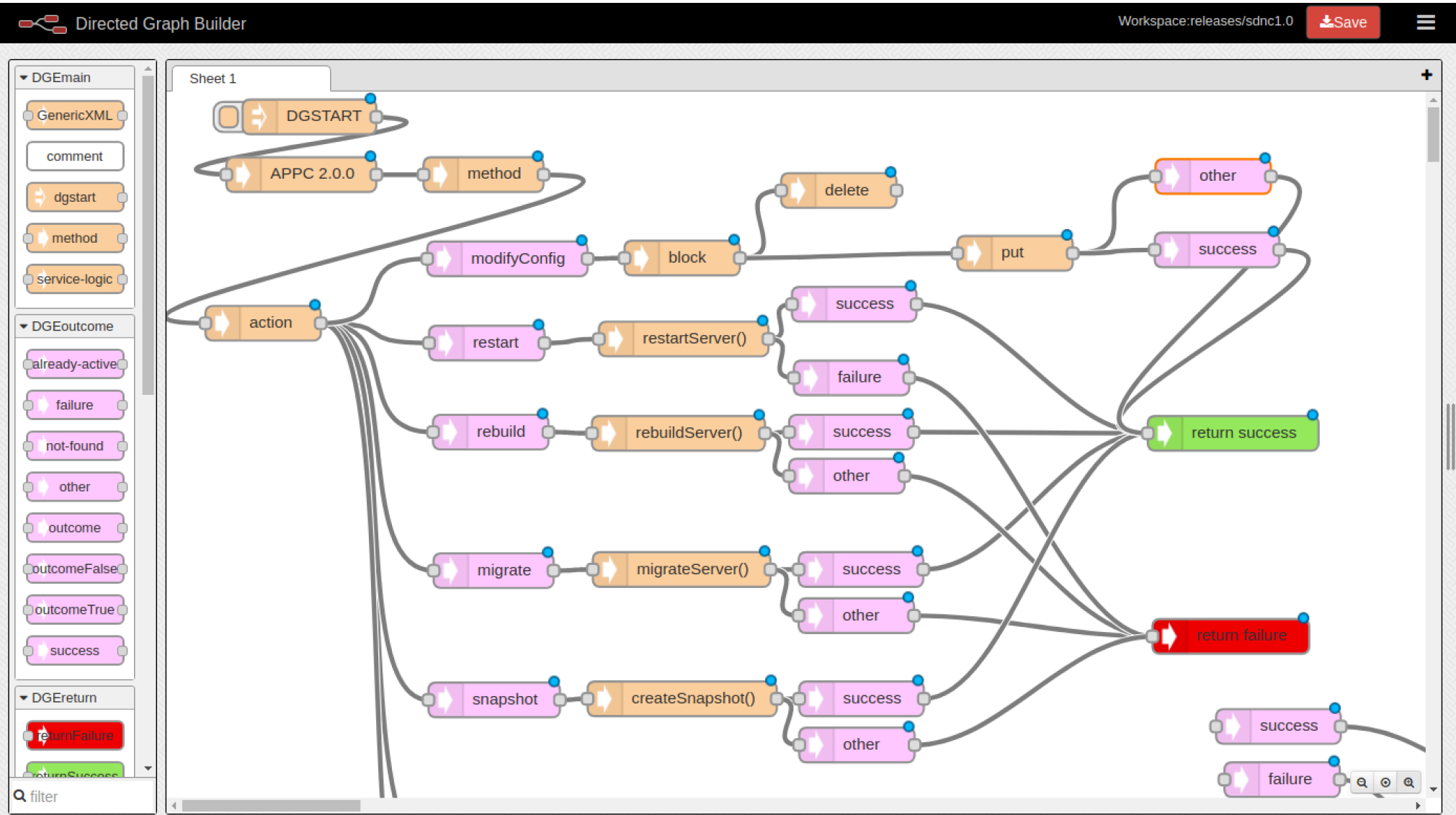
Application Controller

Application Controller

- Built on top of OpenDaylight
- Model-based lifecycle management of VNFs



Directed Graph Builder



Directed Graph Builder (continued)

Edit execute node

Name: put

Node XML

```
1 <execute plugin='org.onap.appc.adapter.rest.RestAdapter' method='commonPut' >
2 <parameter name='org.onap.appc.instance.URI' value='`$org.onap.appc.configURL`' />
3 <parameter name='org.onap.appc.instance.requestBody' value='`$org.onap.appc.configJson`' />
4 <parameter name='org.onap.appc.instance.headers' value='{"Content-type":"application/json"}' />
5 <parameter name='org.onap.appc.instance.haveHeader' value='true' />
```

Validate XML Show Values Add Comments

See the Info tab for help using this node.

Ok Cancel



ONAP

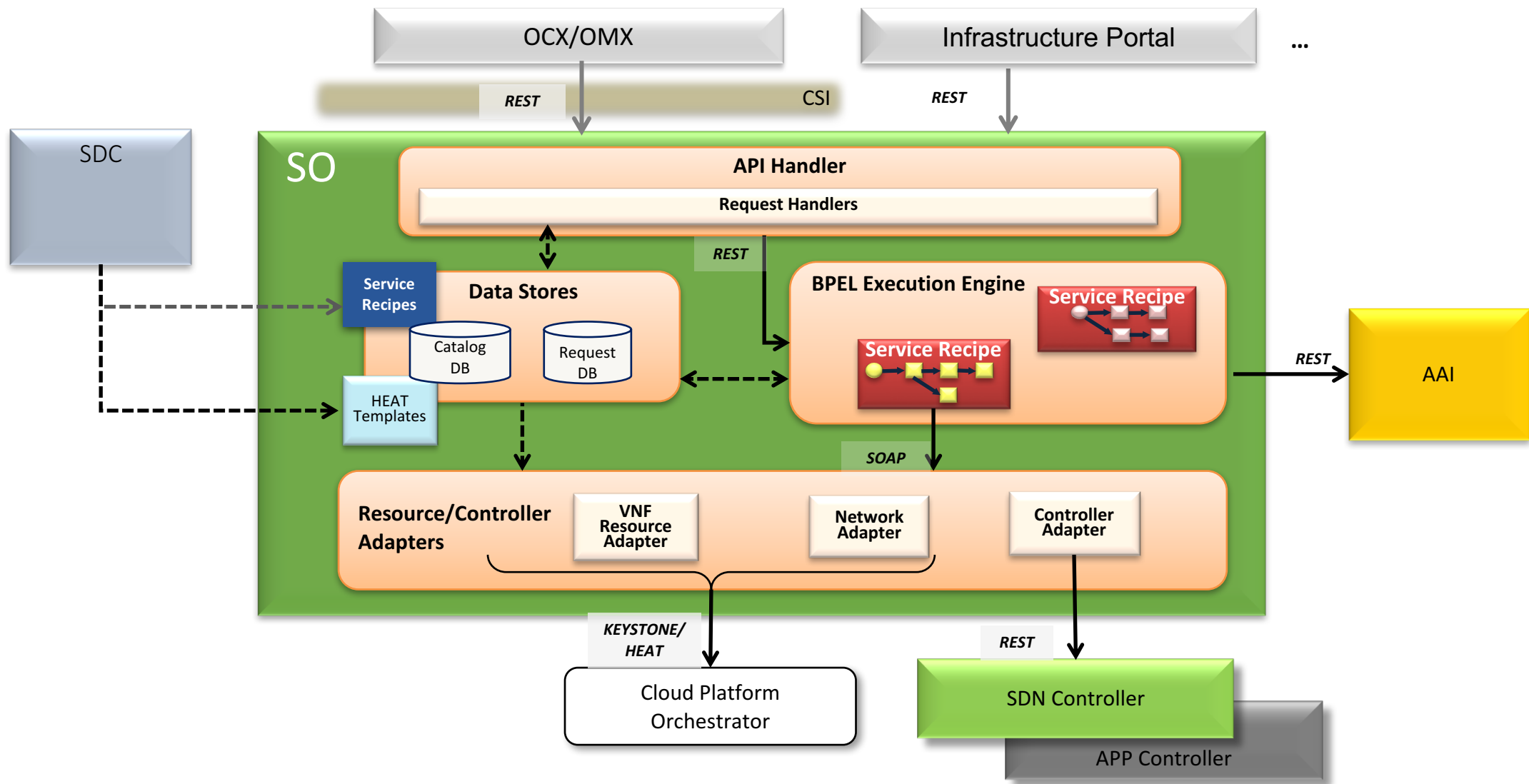
OPEN NETWORK AUTOMATION PLATFORM

Service Orchestrator

Service Orchestrator

- Reusable service that executes process workflows
- Primary task: end-to-end service instance provisioning activities
 - Instantiation
 - Release
 - Migration
- Executes BPEL service recipes
- During orchestration can invoke *adapters* based on the resources in the recipe
 - Platform
 - Network
 - Application

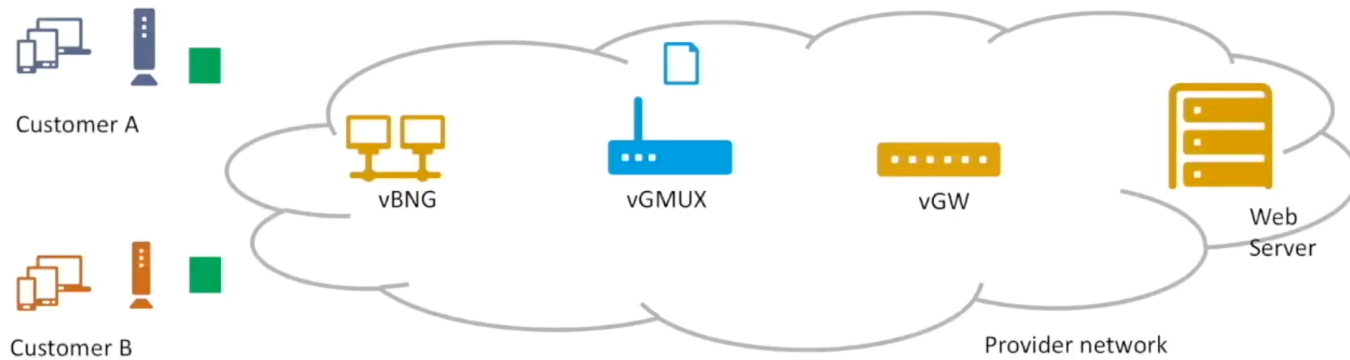
SO Architecture



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vCPE Use Case



```
root@dcae-cdap-tca:~# ./tca_vcpe.sh
```

Analytics microservice

```
root@drools-2762157365-k0cfk:/tmp/policy-install# tail -f logs
```

Policy Engine

```
root@appc-949626408-8q6p5:/# tail -f logs
```

APPC



ONAP

OPEN NETWORK AUTOMATION PLATFORM

Thank you!