ALL-IN-ONE PLATFORM for:

1. **Badging** - Vendor/Certification – LFN {OVP / OVP2.0}
2. **On-boarding** – Operator/Design-Time - ONAP {SDC}
3. **Service Testing** – Operator/Run-Time – ONAP {SO/VFC}

VNF TEST PLATFORM(VTP)

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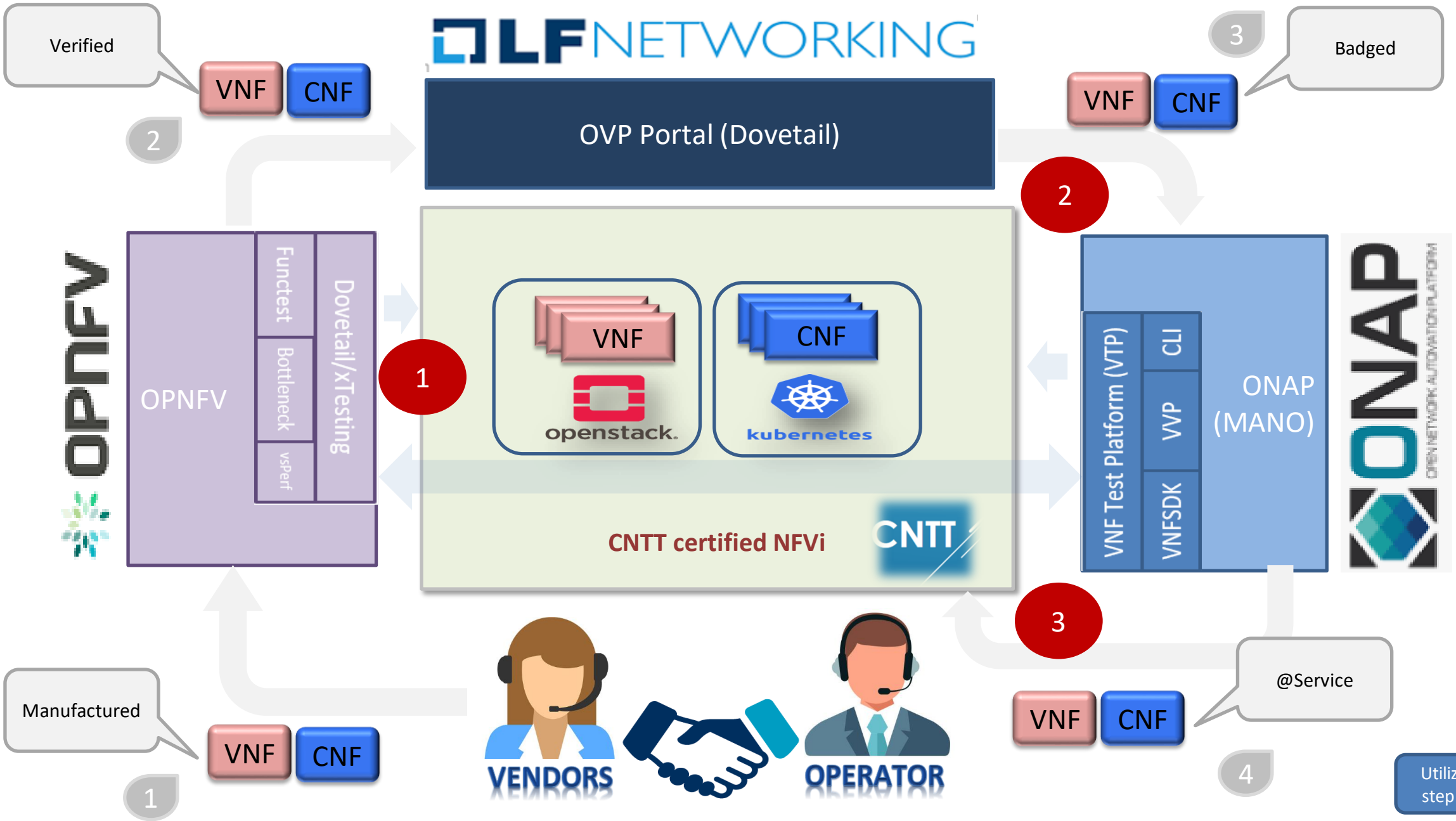
CNTT/OVP Contributor
ONAP VNFSDK/VTP PTL
ONAP CLI PTL
OPNFV Dovetail PTL

LFN 2020 April Virtual Conference

23rd April 2020

VNF/CNF from factory to production – Enabled by OVP

https://wiki.onap.org/display/DW/OVP+Introduction



Vendor's & Operator's Needs of the moment

Certification (Badging) Time

- **Vendor** wants to get certification for VNFs (TOSCA & HEAT) , CNF (helm) by compliance, verification, validation and performance
- OVP needs a platform to **orchestrate test cases across different tools** and submit result to OVP portal for badging

Design Time

- **Operator** wants to check the Operator's specific VSP compliance check when VNF is on-boarded in **SDC**
- **Operator** wants to **design the service testing**, similar to service design to enable service verification at run-time

Run Time

- On every service instantiation, **operators** want to verify the network service before activating for the consumer. (passive testing) thru **SO/VFC**
- **Operators** want to check the SLA of service on need basis (active testing)

OVP

ONAP

VNF Test Platform (VTP)

*** VTP REST API is standardized with **TMF TestAPI** (in progress) ***

PERSONAS

Operator

Vendor

PARTNERS / LABs

- OPNFV Dovetail
- ONAP SDC
- OVP Lab
- Jenkins CI/CD/ CLI

<TMF TEST REST API>
Test Controller

OVP Portal
Publish Results

3rd-party test registry / provider

VNF Test Agile Orchestrator

Artifacts ,Test case, profiles, results

TEST SCENARIOS

- SDO spec. Test ca (ETSI, VNFREQS) — HELM
- Operator Test case ✓
- Vendor Test case ✓
- Functional Test case
- Lifecycle Test case ✓ — CNF
- Compliance Test case — CNF
- Performance Test case — CNF
- Java/Python/Script /Docker Container/ Robot based Test case ✓

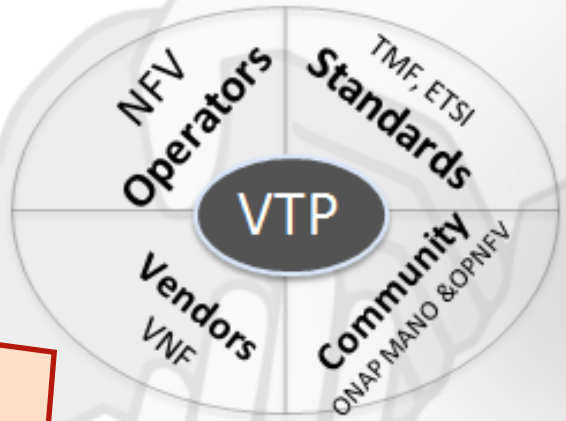
ENVIRONMENT
Standards, MANO, VIM, VNF

- ETSI TOSCA
- openstack. HEAT
- GSMA CNTT
- STANDARDS
- ONAP MANO
- VNF or PNF or CNF VNF manager.
- NFVi

A **Test orchestration agile platform** to manage and orchestrate different VNF testing scenario across different SUT environment like ONAP MANO, OpenStack Cloud, Vendor VNFM, SDN Controller, Kubernetes docker, etc under one umbrella across different Test providers and partner labs.

Programming Interface
- ✓Provides REST API over HTTP(s)
- ✓Role-based Access control

User Interface
- ✓Web Portal
- ✓Command Line Interface (CLI)



AGILE
Test case Modeling & Standardization
Test case management
Test orchestration
System Under Test (SUT) management

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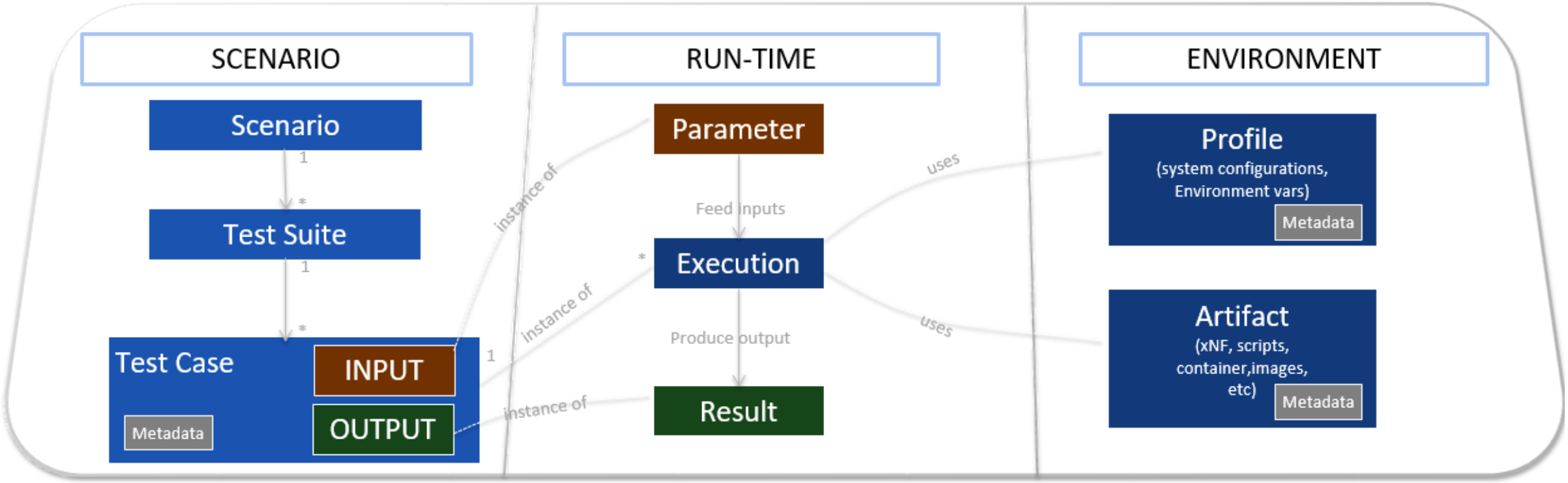
C N F — TEST
- Compliance
- Verification
- Validation
- Performance
- Benchmark

-Easy Extensible for testing CNF and PNF-

*-- Powered by **Open Command Platform (OCOMP)** – [illegible] agile orchestrator, part of ONAP CLI project*

VTP: Domain model



✓**Scenario** is an logical entity to model any given situations for which test cases are made, ex: LFN OVP, vendor specific, functionality specific.
✓**Test suites** is an logical entity helps to group the tests into hierarchy with the notation *x.y.z*
✓**Test case** models the given real test case with required Inputs and Outputs.

✓**Execution** models every execution of given test case with unique identifier
✓**Parameter** is instance of Test case inputs, given by user while executing the test case
✓**Result** is instance of Test case output, produced by VTP as part of Execution
✓While execution, user could use Profile and Artifacts

✓**Profile** models the System configurations and Pre-defined test case parameters. Ex: GSMA profile, OpenStack environment details, etc
✓**Artifact** models the given binaries of any nature like VNF, Scripts, configuration files, certificates, etc
✓**Metadata** models tagging to support searching of test execution

✓Test case *results* are **searchable** based on artifact, profile, scenario, test-case, metadata as VTP captures every test case execution with parameters and results.

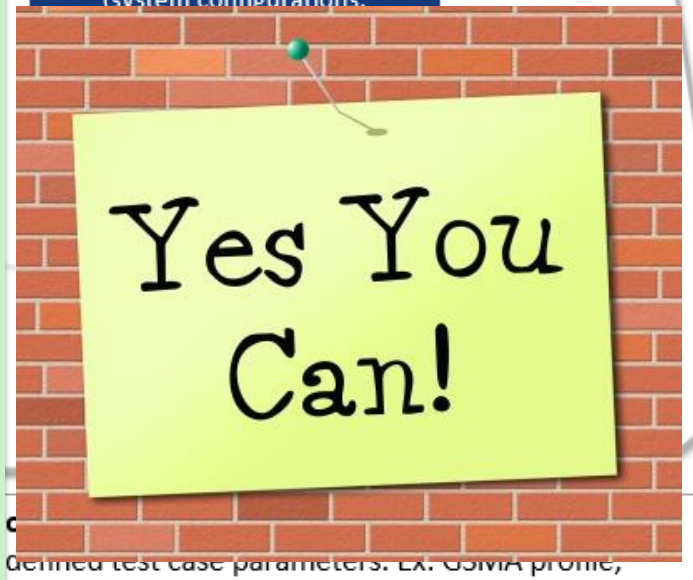
VTP: Domain model

SCENARIO | RUN-TIME | ENVIRONMENT

OVP:
Can I design, [id]entify & manage test case(s) ?
Can I tag and filter test cases for given CNTT RC[1,2] requirements ?
Can I store results and search ?
Can I mark test case as MUST, SHOULD, OPTIONAL, etc?
I don't want to worry about my test native result format, but Can I submit my results in OVP format ?
Can I integrate and collaborate with different test tools from OPNFV, CNCF, ONAP, OpenStack ?

ONAP:
Can I verify my VNF while on-boarding to check for my Operator specific reqs?
Can I make it to verify VNF fn. before activating for user?
Can I make it to check my network service current status ?

Profile
(system configurations,



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hie
Inputs and Outputs.

nStack environment details, etc
tifact models the given binaries of any nature like
, Scripts, configuration files, certificates, etc
etadata models tagging to support searching of test
execution

✓While execution, user could use Profile and Artifacts

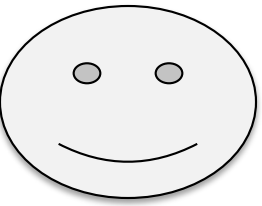
✓Test case *results* are **searchable** based on artifact, profile, scenario, test-case, metadata as VTP captures every test case execution with parameters and results.

```yaml
name: csar-validate-r01123

description: |
  The VNF package Manifest file MUST contain: VNF package meta-data, a list of all artifacts
  (both internal and external) entry's including their respected URI's, an algorithm to calculate
  a digest and a digest result calculated on the content of each artifacts, as specified in
  ETSI GS NFV-SOL004. The VNF Package MUST include VNF Identification Data to uniquely
  identify the resource for a given VNF provider. The identification data must include:
  an identifier for the VNF, the name of the VNF as was given by the VNF provider, VNF
  description, VNF provider, and version.

info:
  product: onap-dublin
  version: 1.0
  service: vnf-compliance
  author: ONAP VTP Team onap-discuss@lists.onap.org

parameters:
    - name: csar
      description: CSAR file path
      long_option: csar
      short_option: b
      type: binary
      is_optional: false

results:
    direction: landscape
    attributes:
     - name: code
       description: Error code
       scope: short
       type: string
     - name: message
       description: Error message
       scope: short
       type: string
     - name: file
       description: File in which error occured
       scope: short
       type: string
     - name: line-no
```

- sol001
  - vtp-validate-csar-r02454.yaml
  - vtp-validate-csar-r09467.yaml
  - vtp-validate-csar-r15837.yaml
  - vtp-validate-csar-r17852.yaml
  - vtp-validate-csar-r32155.yaml
  - vtp-validate-csar-r35851.yaml
  - vtp-validate-csar-r35854.yaml
  - vtp-validate-csar-r46527.yaml
  - vtp-validate-csar-r54356.yaml
  - vtp-validate-csar-r65486.yaml
  - vtp-validate-csar-r67895.yaml
  - vtp-validate-csar-r95321.yaml
- sol004
  - vtp-validate-csar-r01123.yaml
  - vtp-validate-csar-r04298.yaml
  - vtp-validate-csar-r07879.yaml
  - vtp-validate-csar-r10087.yaml
  - vtp-validate-csar-r13390.yaml
  - vtp-validate-csar-r21322.yaml
  - vtp-validate-csar-r23823.yaml
  - vtp-validate-csar-r26881.yaml
  - vtp-validate-csar-r26885.yaml
  - vtp-validate-csar-r27310.yaml
  - vtp-validate-csar-r40293.yaml
  - vtp-validate-csar-r40820.yaml
  - vtp-validate-csar-r43958.yaml
  - vtp-validate-csar-r51347.yaml
  - vtp-validate-csar-r57019.yaml
  - vtp-validate-csar-r66070.yaml
  - vtp-validate-csar-r77707.yaml
  - vtp-validate-csar-r77786.yaml
  - vtp-validate-csar-r87234.yaml
  - vtp-validate-csar-r130206.yaml
  - vtp-validate-csar-r146092.yaml
  - vtp-validate-csar-r293901.yaml
  - vtp-validate-csar-r787965.yaml
  - vtp-validate-csar-r972082.yaml
- vtp-validate-csar.yaml

All-in-1 Platform (VNF) -

Badging : OVP VNF Compliance & Validation (ONS EU 2019)
Design-time: Operator specific VSP compliance check (ONS NA 2019)
Runtime : Network Service Test (ONAP G release)



VNF:
Compute Flavor 4GB 2vCPU
Nw Flavor NIC speed

Certify VNF C&V

VTP Portal
((ONAP G release)

VTP Backend

Upload
VNF Test results

OVP portal

Check if VNF is badged ?

Upload
VNF

Market place

VNF	Badge
vFW	2019.12
vLBS	NA

Test Operator VSP
Compliance check

Pull list of **OVP certified** VNFs

Operator #1:
Flavor-match-test-1
security -check-test-1

Operator #2:
Flavor-match-test-1
security -check-test-1

Validation :
Vnf-validation

Compliance:
Csar-validate

VTP Test cases

Service Test cases

VSP
On-board

SDC

ONAP design-time

OpenStack

Flavor List :
✓ NIC speed
✓ m1.medium

VNF

ONAP
Runtime

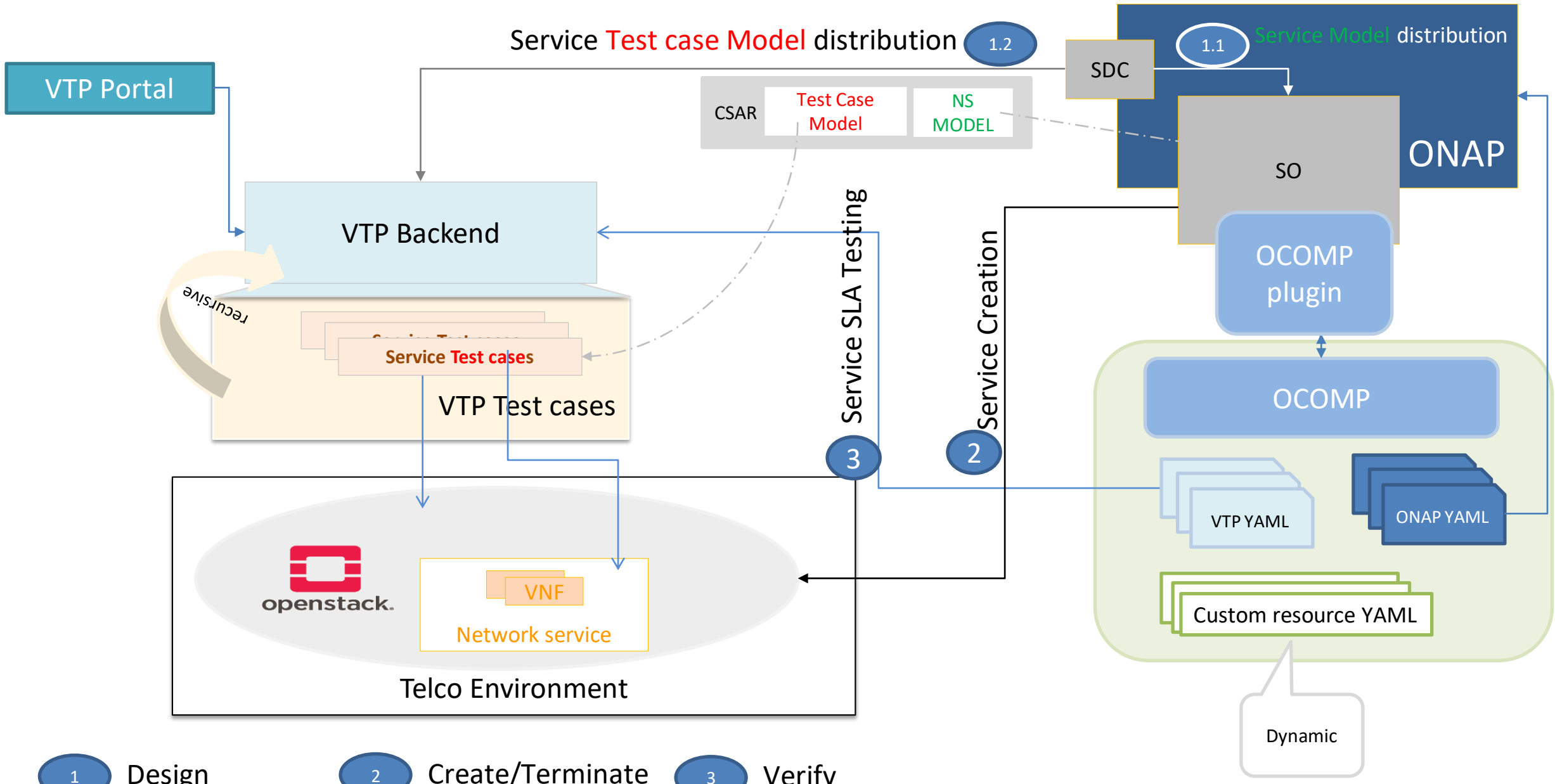
SO

Service Test

Telco Environment

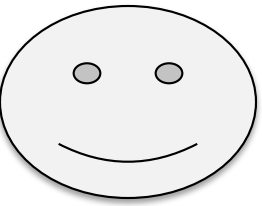
ONAP
Component

ONAP : Network Service Test (VNF)



All-in-1 Platform (CNF) –

Badging : OVP CNF Compliance & Validation
Design-time: Operator specific VSP compliance check
Runtime : Network Service Test



CNF:
SRIOV-enabled
Nw Flavor NIC speed

Certify CNF C&V

VTP Portal
(ONAP G release)

VTP Backend

Upload
CNF Test results

OVP portal

Check if CNF is badged ?

Upload
CVF

Market place

CNF	Badge
vFW	2019.12
vLBS	NA

Test Operator VSP
Compliance check

Pull list of **OVP certified** CNFs

Operator #1:
Flavor-match-test-1
security -check-test-1

Operator #2:
Flavor-match-test-1
security -check-test-1

Validation :
Cnf-validation

Compliance:
Csar-validate

VTP Test cases

Service Test cases

VSP
On-board

SDC

ONAP design-time

Kubernetes

Flavor :
✓ NIC speed
✓ SRIOV

CNF

ONAP
Runtime

SO

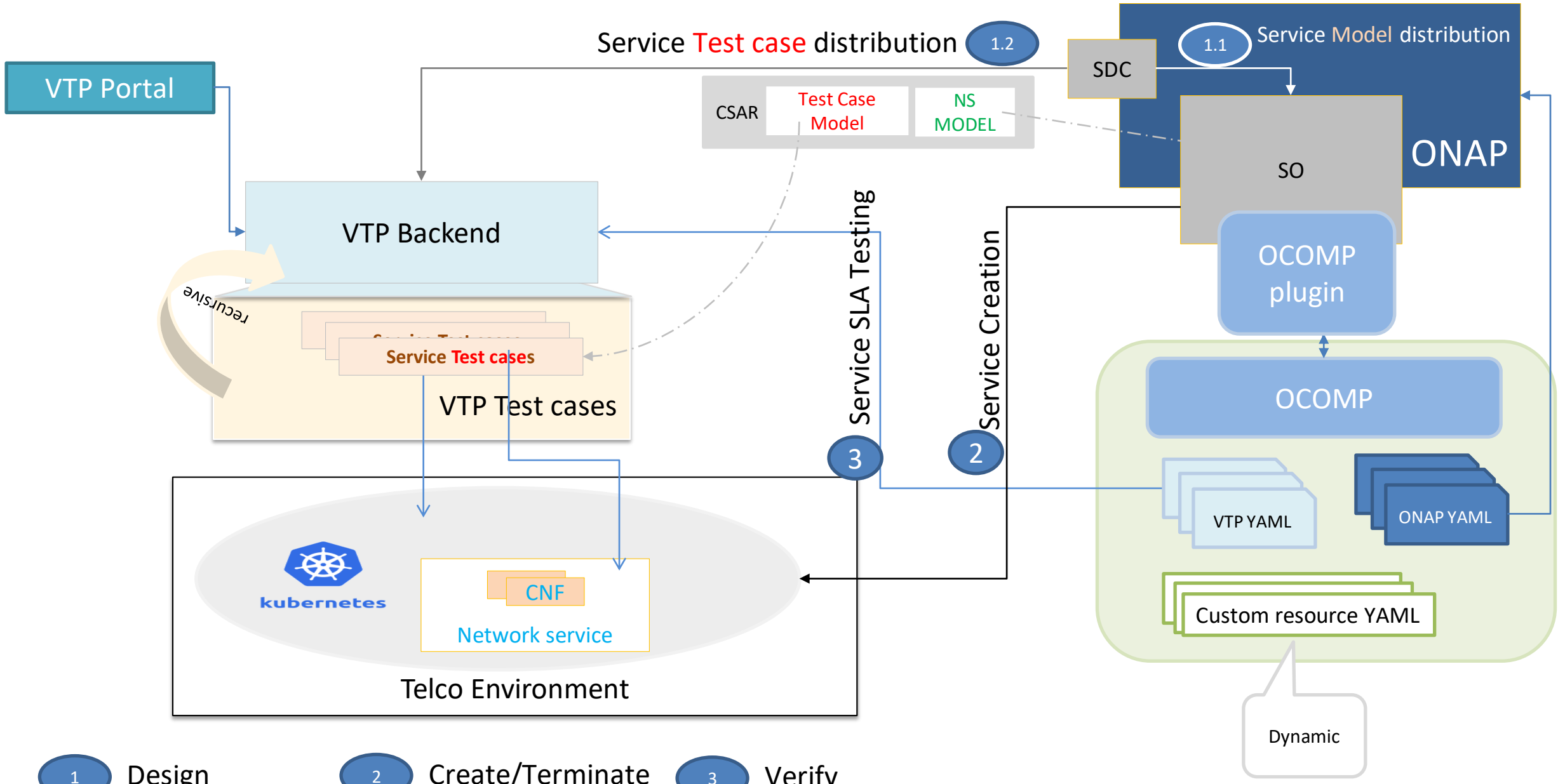
Service Test

Telco Environment

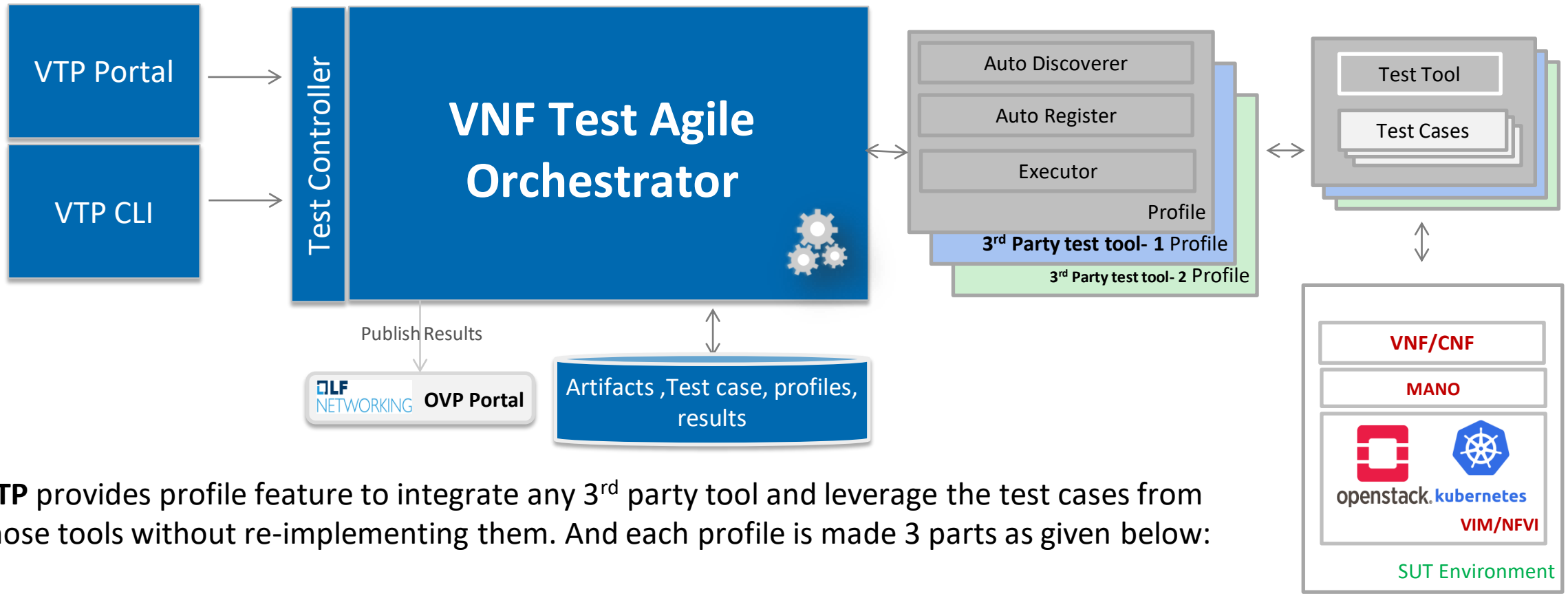
[ONAP CNF TASK FORCE PRESENTATION]

ONAP Component

ONAP : Network Service Test (CNF)



VNF Test Platform (VTP) – 3rd Party Test tool integration – ONAP G release



VTP provides profile feature to integrate any 3rd party tool and leverage the test cases from those tools without re-implementing them. And each profile is made 3 parts as given below:

1. **Auto Discover** – Discovers the available test cases in test tool and produces Test case YAML
2. **Auto Register** – Register those discovered YAML into VTP as test cases
3. **Executor** – Execute the given test cases by using the corresponding test tool

Note: Currently VTP has implemented these features for OVP, ONAP

Thank you

Adoption of TMF API in VTP

VTP Portal

VTP REST API

VTP TMF adoption 4.0.0

[Base URL: serverRoot/tmf2vtp/v4/]

VTP TMF adoption

Schemes: HTTPS

testScenario

- GET /testScenario List or find TestScenario objects
- GET /testScenario/{id} Retrieves a TestScenario by ID

testSuite

- GET /testSuite List or find TestSuite objects
- GET /testSuite/{id} Retrieves a TestSuite by ID

testCase

- GET /testCase List or find TestCase objects
- GET /testCase/{id} Retrieves a TestCase by ID

testCaseExecution

- GET /testCaseExecution List or find TestCaseExecution objects
- POST /testCaseExecution Creates a TestCaseExecution
- GET /testCaseExecution/{id} Retrieves a TestCaseExecution by ID

testCaseResult

- GET /testCaseResult List or find TestCaseResult objects
- GET /testCaseResult/{id} Retrieves a TestCaseResult by ID

Test case management (TMF704)
Environment management (TMF705)
Test data management (TMF706)
Result management (TMF707)
Test execution (TMF708)
Scenario management (TMF709)
Artifact management (TMF710)

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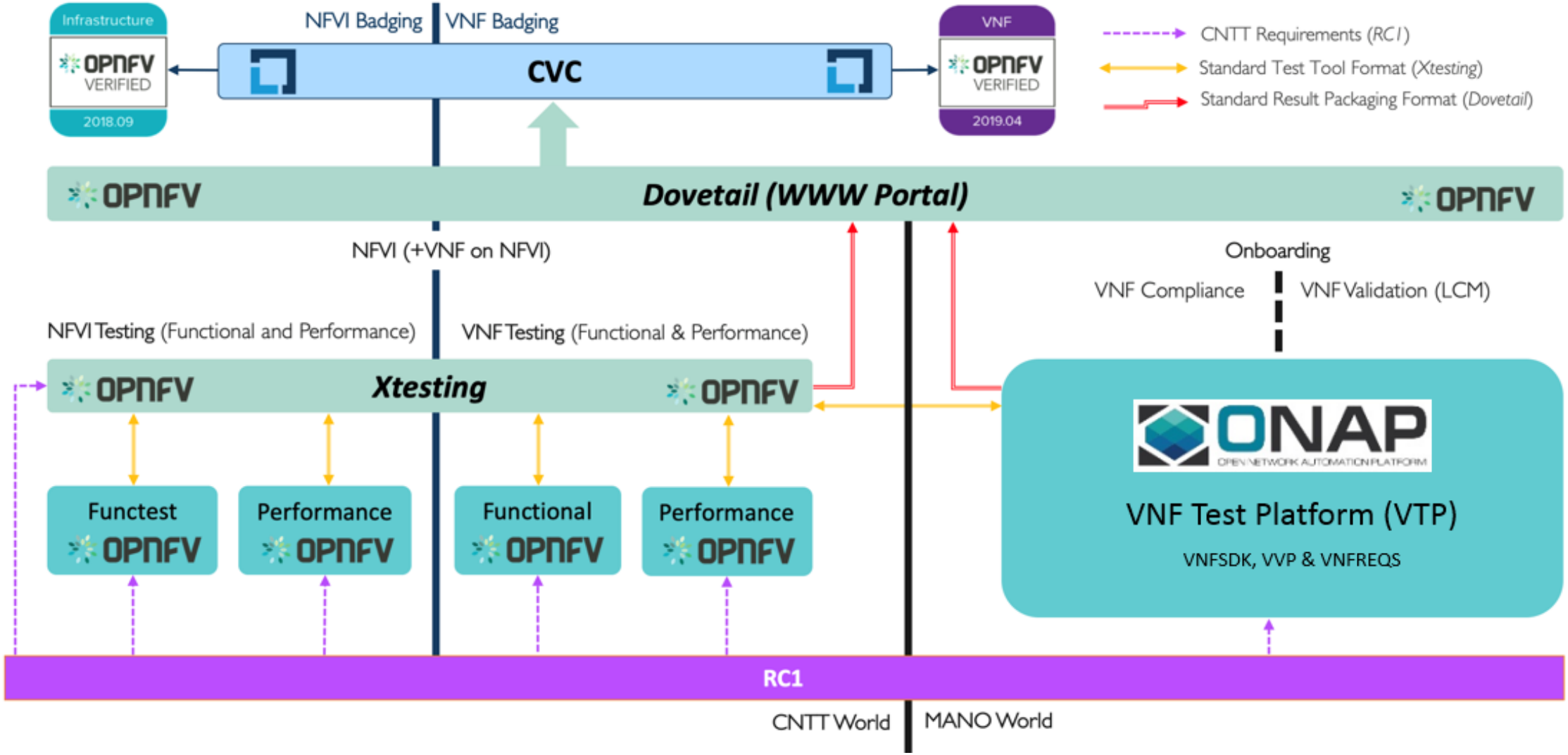
OVP – CNTT Overview