



LFN CVP
Unified Compliance, Validation, and Certification Programs.



LFN CVC | Contents

- **A step back – What is needed.**
- **What is the vision.**
- **What do we have today.**
- **How to get to vision.**
- **Proposals.**

LFN CVC | A step back – what do we need

Standards / Requirements

	VNF Compliance Checks	VNF Validation Tests	VNF Performance Tests
VNFs	<p>Check against existing VNF standards such as:</p> <ul style="list-style-type: none"> ➤ ONAP VNFRQTS ➤ ETSI NFV ➤ GSMA ➤ 3GPP ➤ Operator specific requirements. 	<p>Validation tests for VNF running against various profiles. (LCM, Health, etc)</p> <ul style="list-style-type: none"> ➤ OpenStack ➤ VMWare ➤ Kubernetes ➤ etc 	<p>Performance tests for VNF running against a given Infrastructure profile</p> <ul style="list-style-type: none"> ➤ Profile A ➤ Profile B ➤ Profile C
NFVI	<p>Check against existing NFVI standards such as:</p> <ul style="list-style-type: none"> ➤ ETSI NFV ➤ GSMA 	<p>Validation tests for VFVI</p> <ul style="list-style-type: none"> ➤ OpenStack ➤ VMWare ➤ Kubernetes ➤ etc 	<p>Performance tests for NFVI against given Infrastructure profile</p> <ul style="list-style-type: none"> ➤ Profile A ➤ Profile B ➤ Profile C

Testing/ Certification Tools

Tooling to allow test cases to run and results to be submitted to a repository.

Unified repository for both VNFs and NFVI.

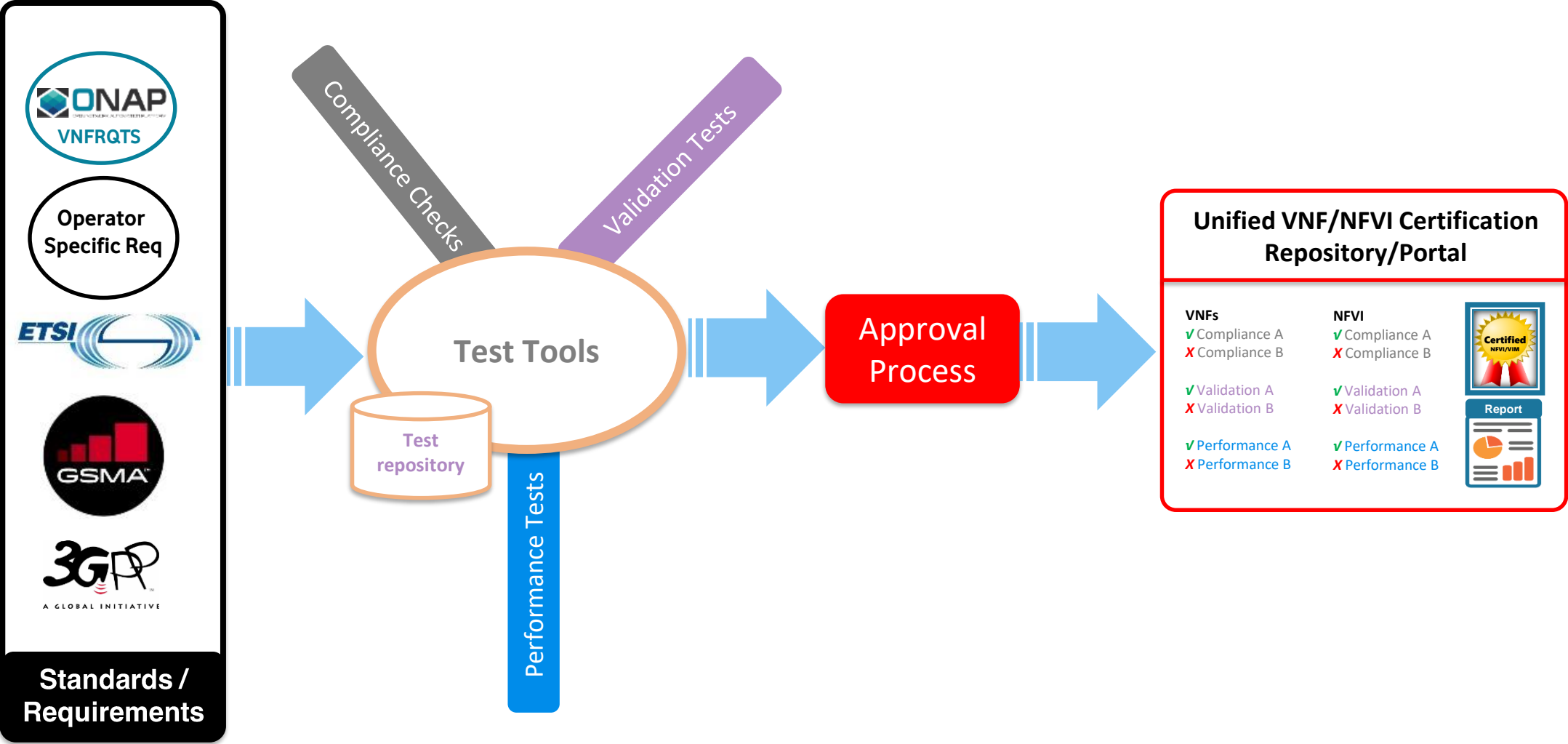
Certification Process

Unified VNF/NFVI Certification Repository/Portal

<p>VNFs</p> <ul style="list-style-type: none"> ✓ Compliance A ✗ Compliance B ✓ Validation A ✗ Validation B ✓ Performance A ✗ Performance B 	<p>NFVI</p> <ul style="list-style-type: none"> ✓ Compliance A ✗ Compliance B ✓ Validation A ✗ Validation B ✓ Performance A ✗ Performance B 	<p>Report</p>
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LFN CVC | Vision - overall

Keep it simple!



LFN CVC | Vision – More Details



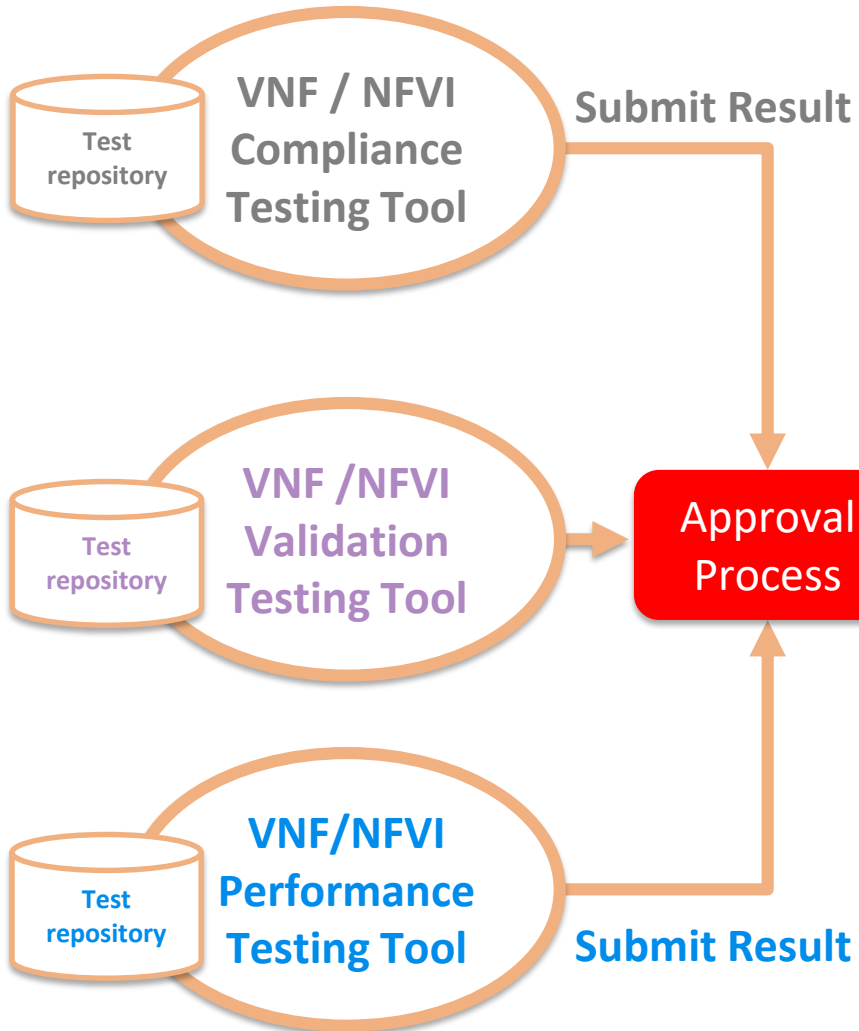
Operator Specific Req







Standards / Requirement

- VNFs**
- VNF Compliance Tests - VNFRQTS
 - VNF Compliance Tests – 3GPP
 - VNF Compliance Tests – Operator
- NFVI**
- NFVI Compliance Check – GSMA Profile A
 - NFVI Compliance Check – GSMA Profile B
- VNFs**
- VNF Validation Tests – Plat A
 - VNF Validation Tests – Plat B
- NFVI**
- NFVI Validation Tests – Plat A
 - NFVI Validation Tests – Plat B
- VNFs**
- VNF Performance Tests – GSMA Profile A
 - VNF Performance Tests – GSMA Profile B
- NFVI**
- NFVI Performance Check – GSMA Profile A
 - NFVI Performance Check – GSMA Profile B

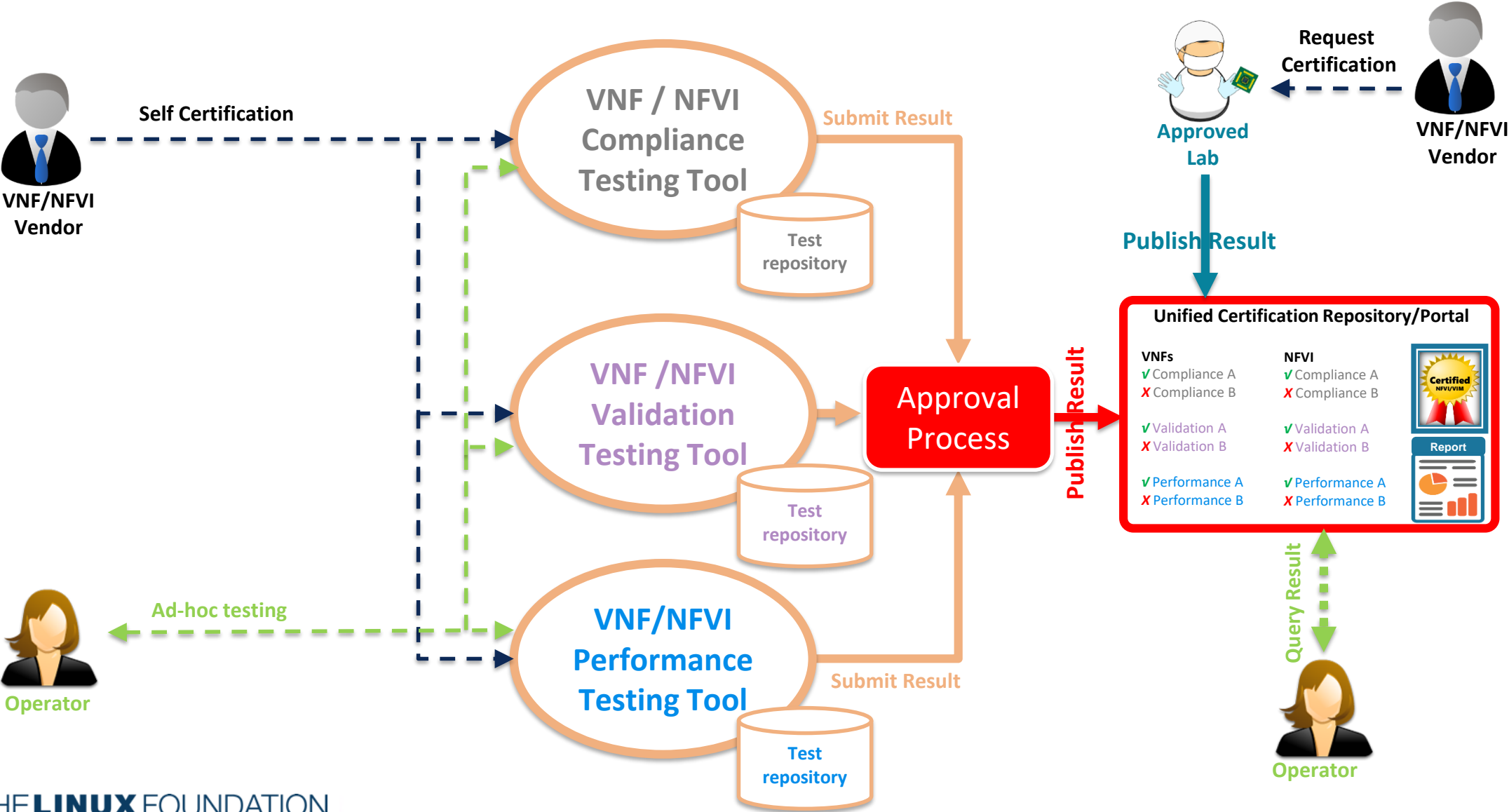


- Standards
- Compliance Checks
- Validation Tests
- Performance Tests
- Testing Tools
- Process/Portal

Unified Certification Repository/Portal

<p>VNFs</p> <ul style="list-style-type: none"> ✓ Compliance A ✗ Compliance B ✓ Validation A ✗ Validation B ✓ Performance A ✗ Performance B 	<p>NFVI</p> <ul style="list-style-type: none"> ✓ Compliance A ✗ Compliance B ✓ Validation A ✗ Validation B ✓ Performance A ✗ Performance B 	 <p style="font-size: small;">Report</p> 
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LFN CVC | Vision – Actors



OK ...

... But what do we have today?



ONAP Standard

VNF Guidelines.

VNF Test Case Description.

- VNF Package Inspection.

VNF Provider Use Case.

VNF Requirements.

- 789 numbered requirement in Casablanca
- Of which 634 are MUST/MUST NOT.



TOSCA Compliance Checks

TOSCA Tests.

- Cover 11 Requirements.
- 6 Tests in Casablanca



Heat Compliance Checks

Heat Tests.

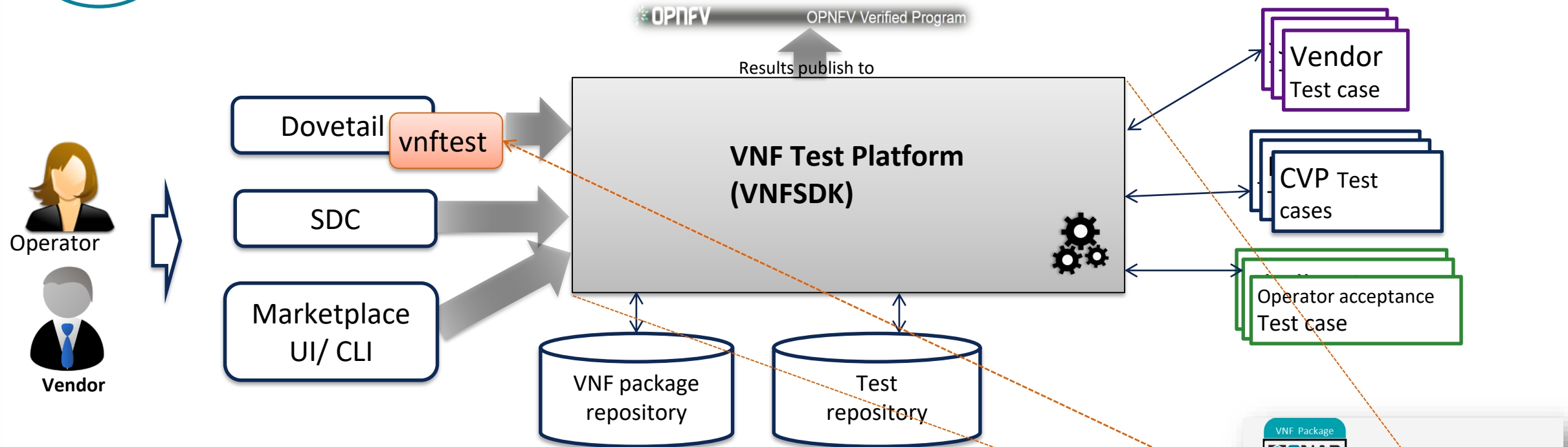
- Cover 298 Requirements.
- 180 Tests in Casablanca

LFN CVC | What exists today - VTP



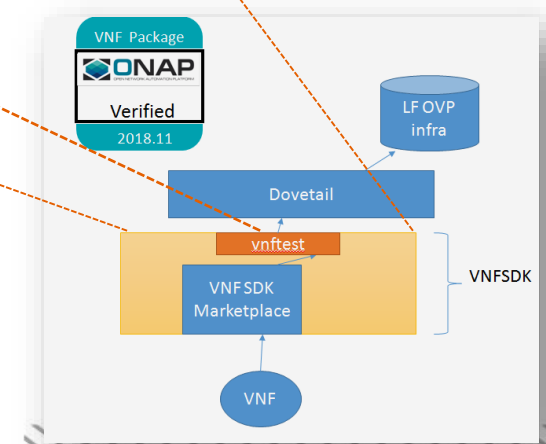
Certification & Testing Tool

Testing Tools



A platform to automate and manage different kind of VNF test cases for given VNF package(s) and provides unified accessibility over CLI, REST API and UI portal for operating the test cases.

Allows to write test cases in different languages like java, perl, shell scripts, python, etc.





Platform Specific Validation Tests



Functional Tests.

- Health checks.
- Smoke.
- Benchmarking
- VNFs

+ 1000 tests including upstream suites for OpenStack & Kubernetes.

LFN CVC | What exists today – Yardstick + NSB

Performance Tests



Performance Tests



Performance Tests.

- Compute.
- Storage.
- Networks.

+ Sample VNFs.

+ VSPERF, STORPERF

LFN CVC | What exists today - Dovetail

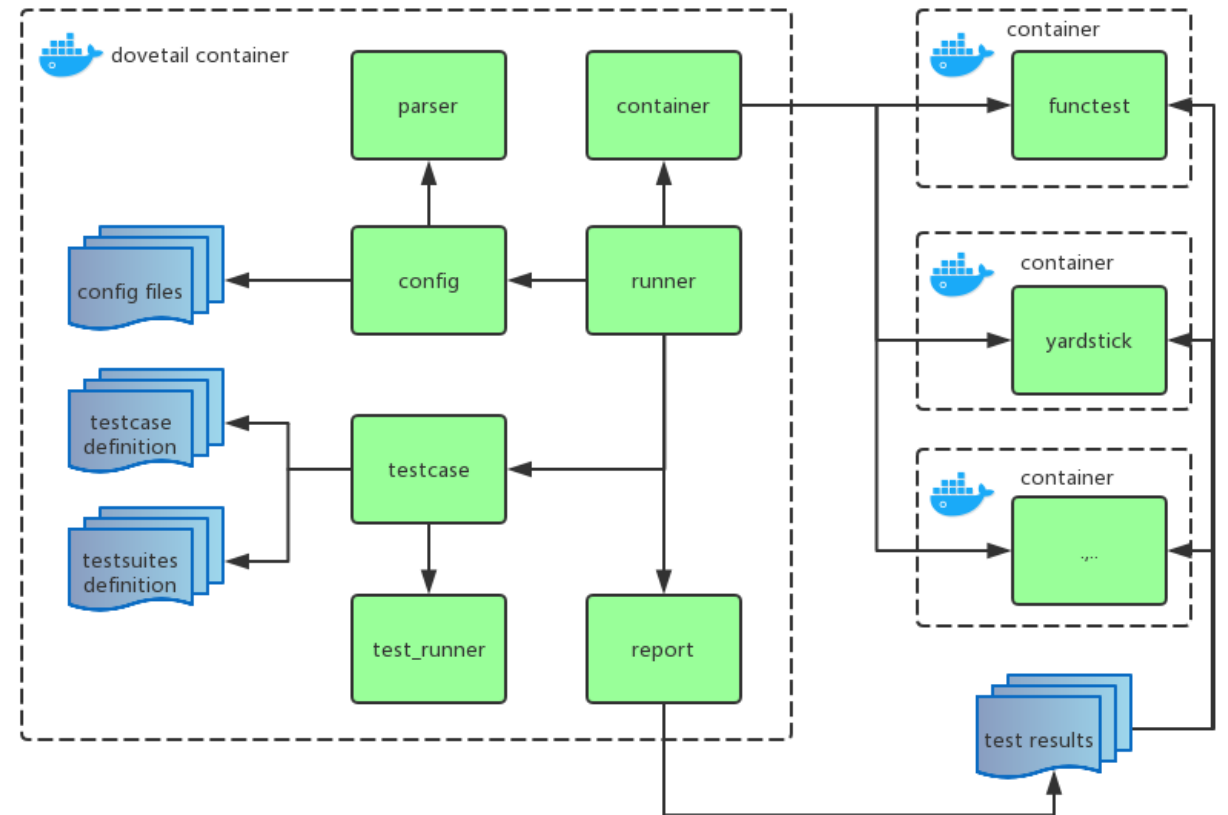


Certification & Testing Tool

Testing Tools

The Dovetail Test Tool is :

- Designed to leverage existing OPNFV test projects (such as [Functest](#) and [Yardstick](#)).
- Automate the execution of [Dovetail Test Areas and Test Cases](#) in a way that satisfies compliance testing requirements.
- Generate required reports for use by the OPNFV compliance verification program.



LFN CVC | What exists today - OVP



Process & Portal

Process/Portal

OPNFV Verified Program verifies products and services with the "OPNFV Verified" mark.



The OPNFV Verified Program (OVP) demonstrates the readiness and availability of commercial NFV products and services by implementing explicitly defined interfaces, behaviors and key features. This open source community-led initiative allows vendors and service providers to establish baseline conformance and interoperability while retaining distinct and value-added innovations across features and capabilities. Now in its second iteration, the program has doubled the number of mandatory tests from 215 to 432; and requires verified products to complete additional functional, high-availability, and NFV-focused tests. Future plans for OVP include adding third-party labs, as well as testing and verification of VNF deployments. View the directory of verified products and services below and navigate through the links in the left-hand menu to learn more and get started. You will find step-by-step instructions as well as a participation form. Use this portal to upload your test results when ready. Please send any questions to verified@opnfv.org.

OPNFV Verified Products Directory

Click on rows for more product verification details per company.

Company	Product	Category	Version
LG Uplus	U+Stack Cloud	Infrastructure	2018.01
ERICSSON Ericsson AB	Ericsson Cloud Execution Environment (CEE)	Infrastructure	2018.01
NOKIA Nokia	Nokia AirFrame Cloud Infrastructure for Real-time applications (NCIR)	Infrastructure	2018.01
WIND Wind River	Titanium Cloud	Infrastructure	2018.01
HUAWEI Huawei	FusionSphere Cloud Operating System	Infrastructure	2018.01
ZTE ZTE	TECS Cloud OS	Infrastructure	2018.01
NOKIA Nokia	Nokia AirFrame Data Center Solution	Infrastructure	2018.01

LFN CVC | What exists today – mapping to vision

- Standards
- Compliance Checks
- Validation Tests
- Performance Tests
- Testing Tools
- Process/Portal



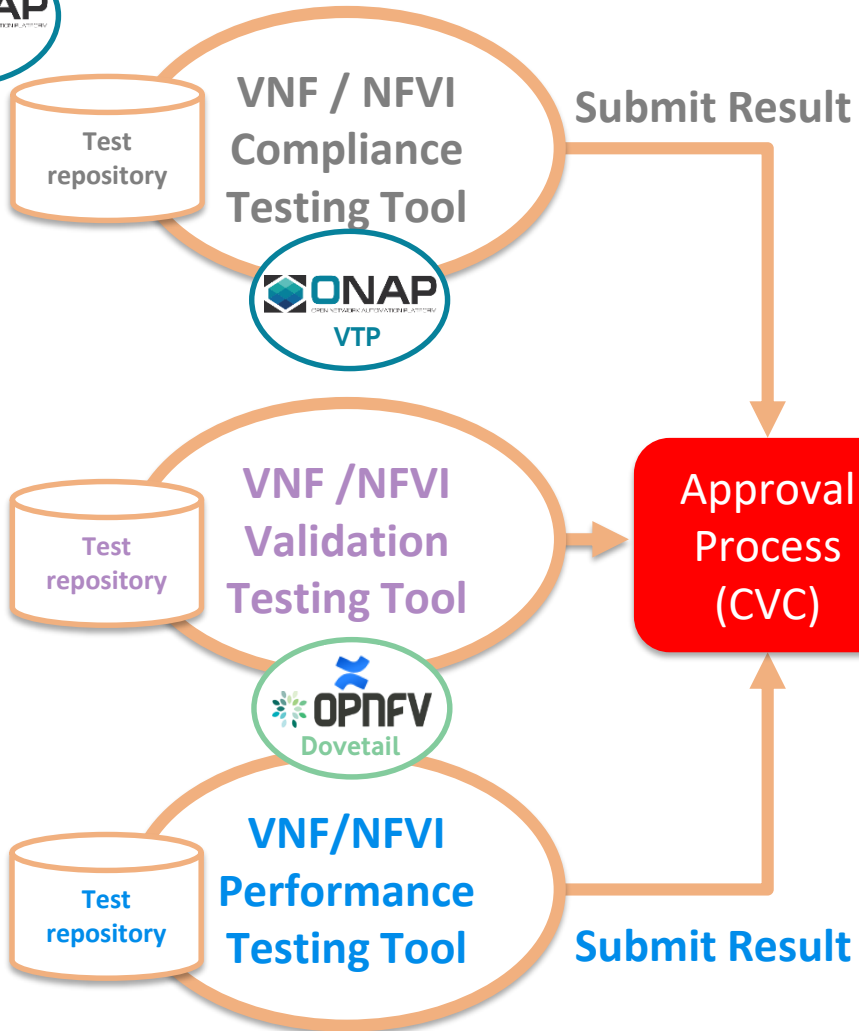
Operator Specific Req





Standards / Requirement



- VNFs**
- VNF Compliance – VNFSDK
 - VNF Compliance Tests – 3GPP
 - VNF Compliance Tests – Operator
- NFVI**
- NFVI Compliance Check – GSMA Profile A
 - NFVI Compliance Check – GSMA Profile B
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- NFVI**
- NFVI Performance Check – GSMA Profile A
 - NFVI Performance Check – GSMA Profile B



Unified Certification Repository/Portal

VNFs	NFVI
✓ Compliance A	✓ Compliance A
✗ Compliance B	✗ Compliance B
✓ Validation A	✓ Validation A
✗ Validation B	✗ Validation B
✓ Performance A	✓ Performance A
✗ Performance B	✗ Performance B

Report

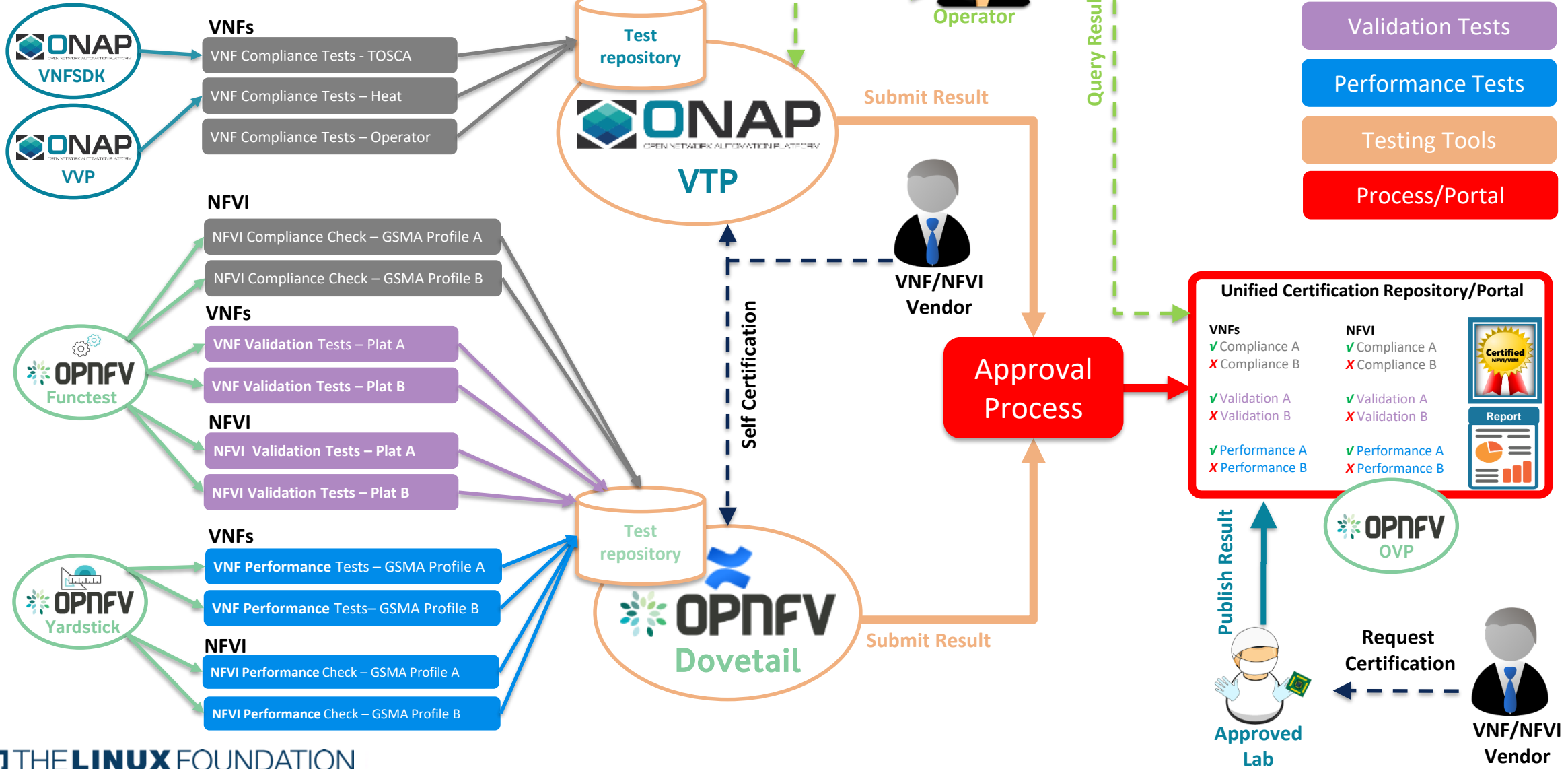





We are almost there ...

... but some **unification and role clarifications** needed

LFN CVC | Proposal



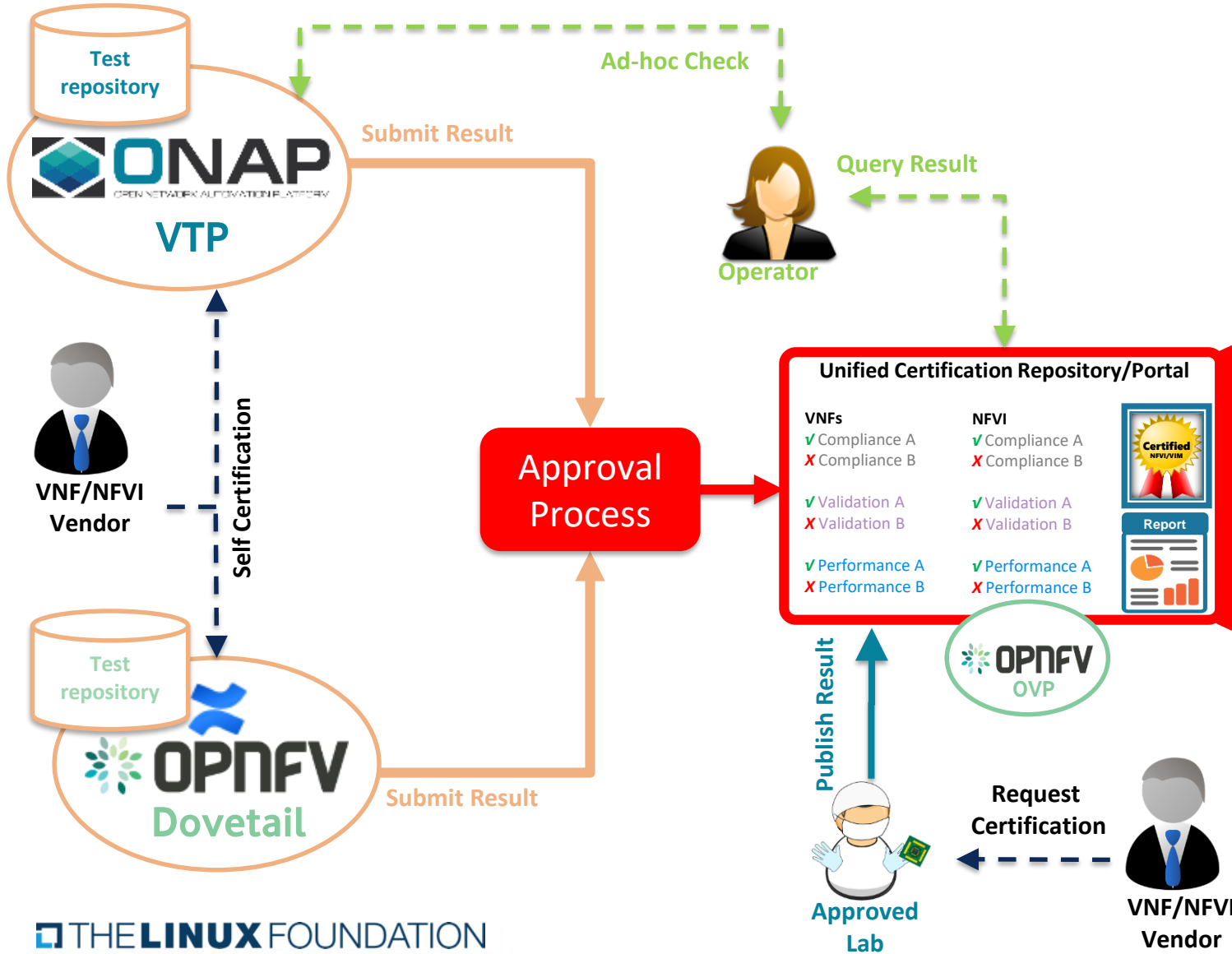
OK ...

... How to get there, what is next?

LFN CVC | Next – Expand OVP Program



Process/Portal



Unified Certification Repository/Portal

VNFs	NFVI	
✓ Compliance A	✓ Compliance A	
✗ Compliance B	✗ Compliance B	
✓ Validation A	✓ Validation A	
✗ Validation B	✗ Validation B	
✓ Performance A	✓ Performance A	
✗ Performance B	✗ Performance B	

NFVI	VNF
Vendor Name:	Vendor Name:
NFVI GSMA Profile:	Compliance
Compliance	<ul style="list-style-type: none"> ➤ TOSCA - Test 1 ✓ - Test N ✓ ➤ HEAT - Test 1 ✓ - Test N ✗ ➤ ETDI NFV ➤ GSMA ➤ ...
Validation	Validation
<ul style="list-style-type: none"> ➤ OpenStack - Test 1 ✓ - Test N ✓ ➤ Kubernetes - ... 	<ul style="list-style-type: none"> ➤ OpenStack - Test 1 ✓ - Test N ✓ ➤ Kubernetes - ...
Performance	Performance
<ul style="list-style-type: none"> ➤ GSMA Profile A - Test 1 ✓ - Test N ✗ ➤ ... 	<ul style="list-style-type: none"> ➤ GSMA Profile A - Test 1 ✓ - Test N ✗ ➤ ...

* Each Test Group will have its own passing criteria.
 ** Overall passing criteria can be determined.



Position OVP as a LFN certification repository

Define Report Structure and Elements (both VNF & NFVI)
Such as categories, passing criteria's, and thresholds.

Implement Backend API for Data addition and retrieval

Approved Lab Program and Self Certification Processes

LFN CVC | Next - Proposals



Clarify Scope and align with vision

SPOC: <name>



Clarify Scope and align with vision

SPOC: <name>



Clarify Scope and align with vision

SPOC: <name>



Clarify/Expand scope and align with vision

SPOC: <name>



Clarify/Expand scope and align with vision

SPOC: <name>



Clarify/Expand scope and align with vision

SPOC: <name>



Certification & Testing Tool

SPOC: <name>





Eco-system Integration

LFN CVC | Vision – Integration with SDC

