

# Building a compliance program based on Open Source

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includes content prepared by Chris Donley

# Linux Foundation Networking Compliance Verification Program (CVP)

- Linux Foundation Networking is providing a testing program to demonstrate NFV capabilities and interoperability
- Program began with OPNFV Verified Program
  - Supports both self-testing and third-party lab testing
  - Initial version tests commercial cloud infrastructure platform
- Expanding the program in 2018 to include VNF compliance
  - Requirements and tests defined by ONAP
  - Test framework provided by OPNFV (Dovetail)
  - Back-end infrastructure provided by Linux Foundation

# Business Value

- Service Providers
  - Builds ecosystem for LFN-compliant (OPNFV, ONAP) components and VNFs
  - Helps ensure general interoperability and base level functionality
  - Reduces testing load
  - Shortcut for RFPs
- Vendors
  - Defines industry threshold for entry into operator trials
  - Simplifies interoperability
  - Helps identify priorities for future development

# Challenges and Lessons Learned

- Launching a new compliance program ALWAYS takes a long time
  - Need to build trust in the organization, program, and testing methodology
- What is the source of truth? We don't have standards/specifications
  - We use the open source release for component-level verification
  - ONAP VNF Requirements for VNF verification
- How do we deal with validity periods and re-testing requirements?
  - Date-stamp the test version
  - Let the marketplace decide how long those results apply
- Building trust in test results
  - No reasonable technical solution to defeat cheating
  - The market is small and a cheating vendor quickly loses trust
  - Let 3<sup>rd</sup> party labs conduct the tests
- How do you build market interest?
  - Start with a cohort willing to “beta-test” the program and provide feedback

# Linux Foundation Networking

- Umbrella project covering 7 networking projects
- Compliance programs

Linux Foundation Networking



2018.09

# OPNFV



OPNFV facilitates the development and evolution of NFV components **across various open source ecosystems**. Through **system level integration, deployment and testing**, OPNFV creates a reference NFV platform to accelerate the transformation of enterprise and service provider networks.

Participation is open to anyone, whether you are an employee of a member company or just passionate about network transformation.

**OPNFV defines use cases, integrates & tests what other projects (OpenStack, Kubernetes, ODL, OVS, fd.io) create!**

# OPNFV Compliance Program

- OPNFV Verified Program (OVP) verifies that a commercial cloud platform exposes the same
  - key APIs,
  - behaviors, and
  - characteristicsas a reference platform **defined through a specific selection of test cases**
- Main components of OVP
  1. OPNFV test frameworks providing the actual OPNFV and upstream test cases
  2. Dovetail: Wrapper for OPNFV test tools and reporting tool



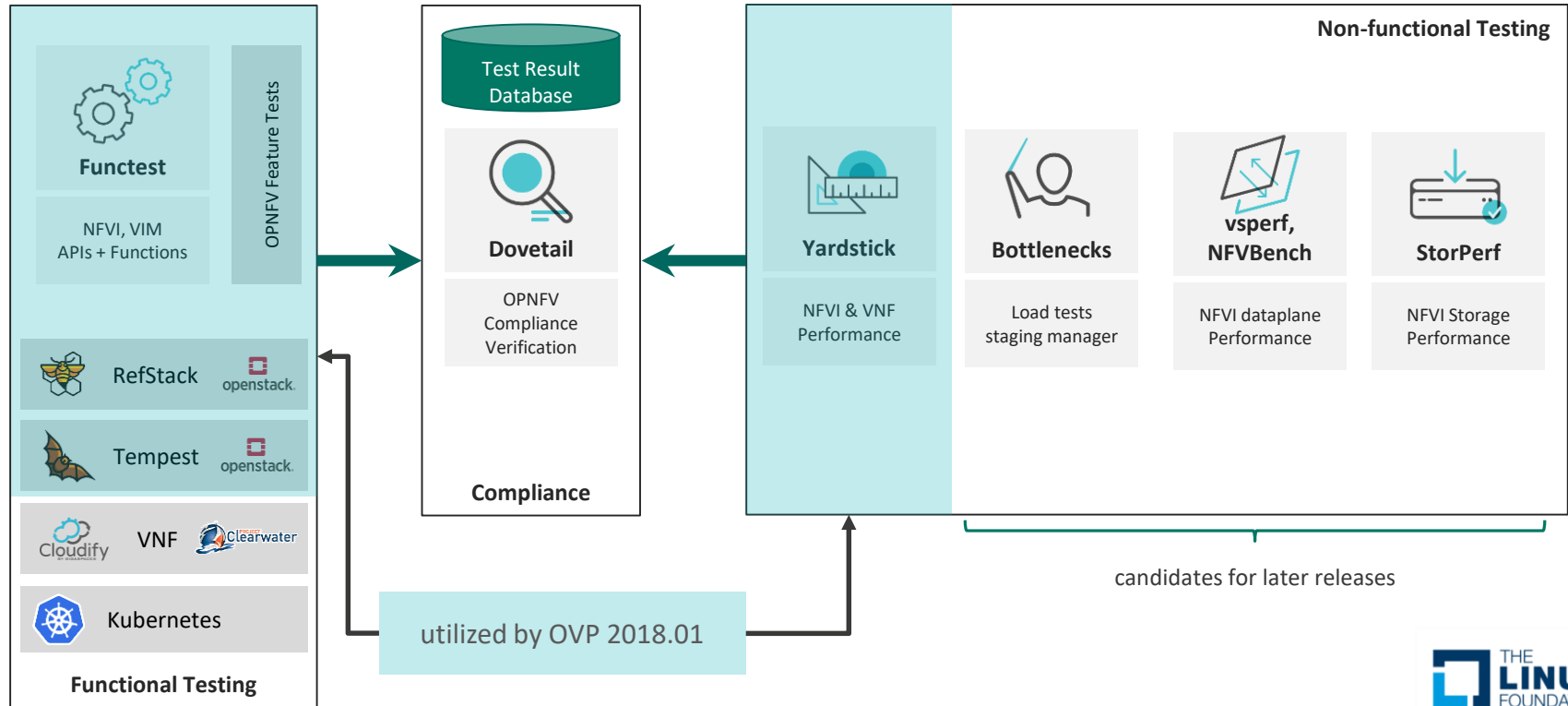
# OPNFV Compliance Program

- Test scope and coverage
  - Based on tests developed by OPNFV and upstream communities
- Releases of OVP
  - Labeled by release date (e.g. 2018.09)
  - Tied to specific releases of OPNFV reference platform
    - 2018.01 => Danube
    - 2018.09 => Fraser
  - ~ 6 months release cadence
  - 3 months shift wrt OPNFV platform releases
- Ways of Participation
  - Self testing: Deploy and run Dovetail in private lab
  - 3<sup>rd</sup> party labs: Utilize services offered by selected labs (under development)





# OPNFV Test Ecosystem



# Scope of OPNFV Verified 2018.01

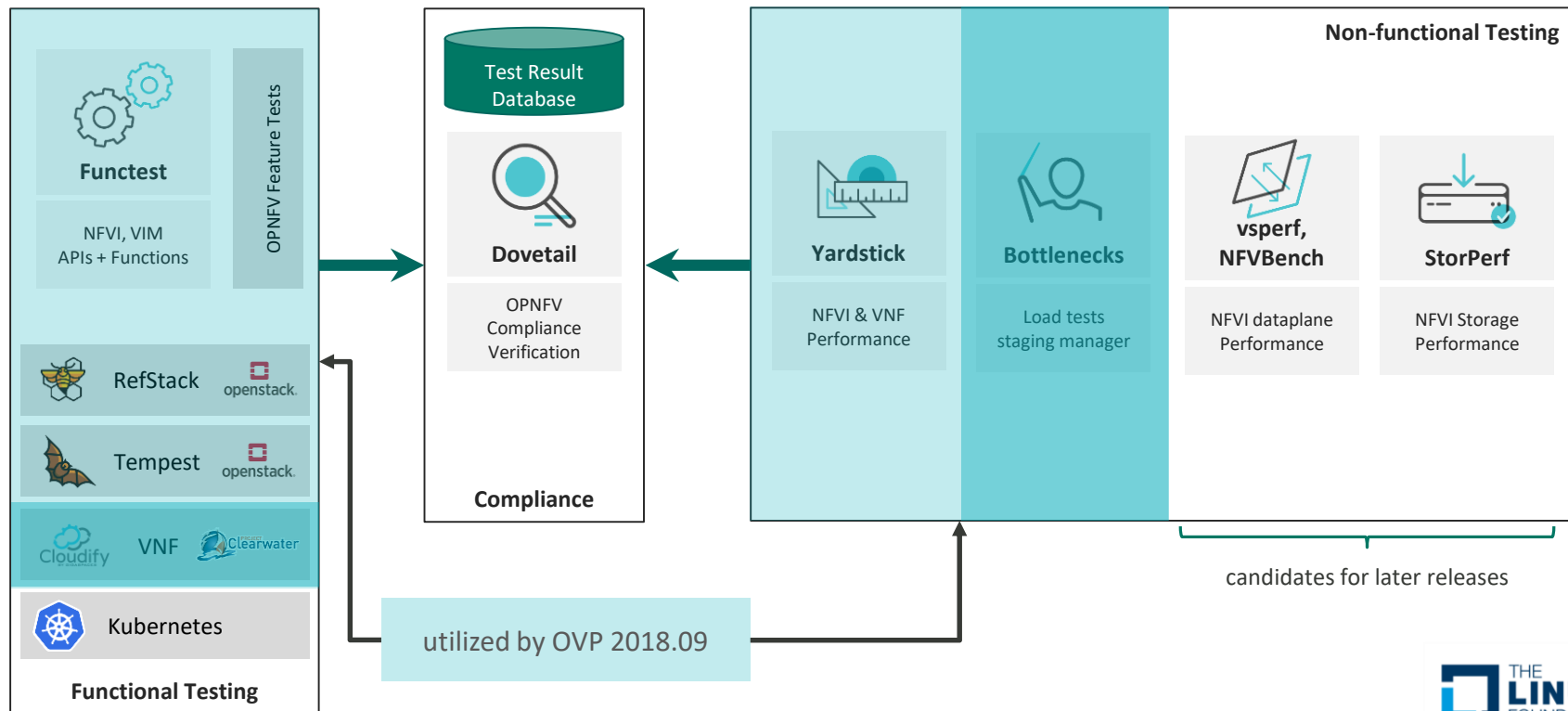
## Mandatory test cases

- OpenStack interop API tests (205 tests)
- Basic layer 2 packet forwarding (2 tests)
- OpenStack control service high availability (8 tests)

## Optional test cases

- IPv6 tenant networks (25 tests)
- BGPVPNs (4 tests)
- Fundamental VIM capabilities (30 tests)

# OPNFV Test Ecosystem



# Scope of OPNFV Verified 2018.09

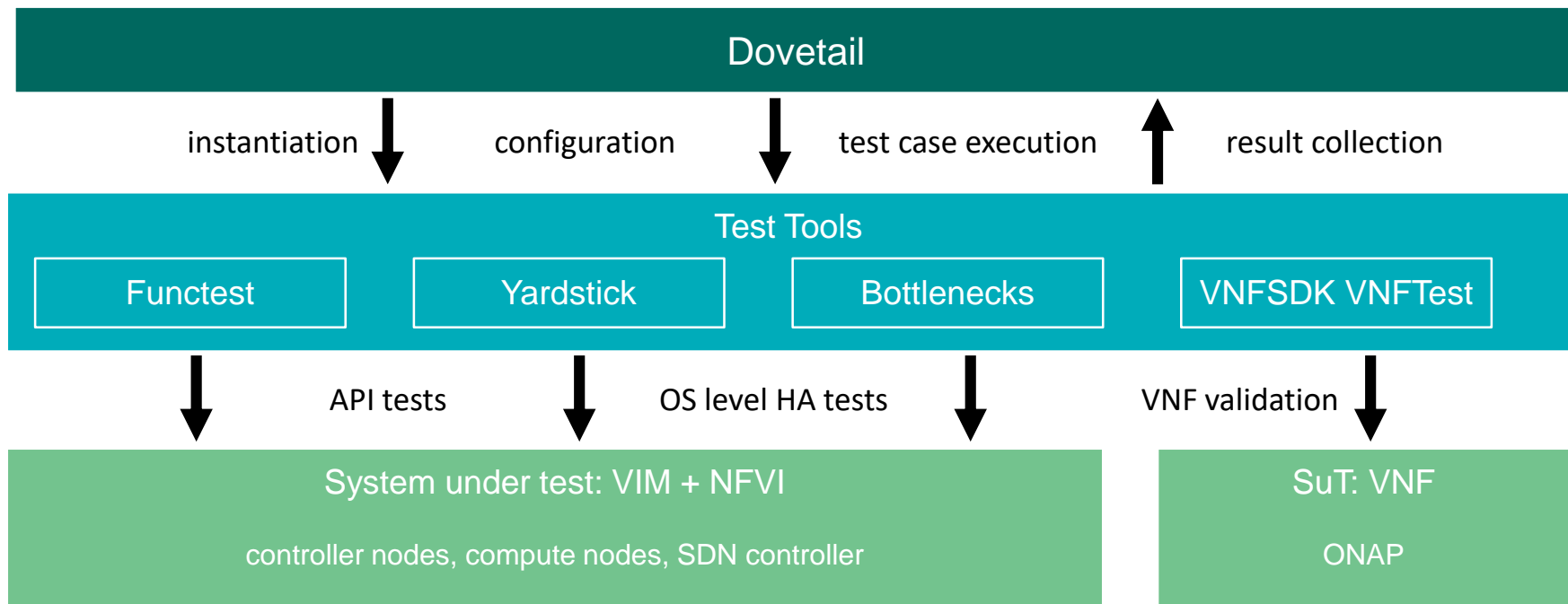
Functest	
<ul style="list-style-type: none"><li>• OpenStack Interop tests 2017.09</li><li>• vping (userdata and ssh)</li><li>• <i>Tempest compute</i></li><li>• <i>Tempest identity v3</i></li><li>• <i>Tempest image</i></li><li>• <i>Tempest network API</i></li><li>• <i>Tempest volume</i></li><li>• <i>Tempest Neutron Trunk ports</i></li><li>• <i>Tempest IPv6 API</i></li><li>• <i>Security: Patrole RBAC tests</i></li></ul>	mandatory
Total tests: 421	
<ul style="list-style-type: none"><li>• Tempest IPv6 scenario tests</li><li>• Tempest multi node scheduling</li><li>• Tempest network security</li><li>• Tempest VM lifecycle</li><li>• BGVPN tests</li><li>• <i>Tempest network scenario tests</i></li><li>• <i>Tempest BGPVPN Tempest API tests</i></li><li>• <i>SNAPS smoke tests</i></li><li>• <i>vIMS VNF</i></li><li>• <i>vEPC VNF</i></li></ul>	optional
Total tests: 59	

Yardstick	
<ul style="list-style-type: none"><li>• High-availability of nova-api</li><li>• High-availability of neutron-server</li><li>• High-availability of keystone</li><li>• High-availability of glance-api</li><li>• High-availability of cinder-api</li><li>• High-availability under high CPU load</li><li>• High-availability under high disk load</li><li>• High-availability of haproxy</li><li>• <i>High-availability of message queue</i></li><li>• <i>High-availability of OpenStack database</i></li></ul>	mandatory
Total tests: 10	
<ul style="list-style-type: none"><li>• <i>High-availability of Neutron L3 agent</i></li><li>• <i>High-availability of one controller (restart)</i></li></ul>	opt.

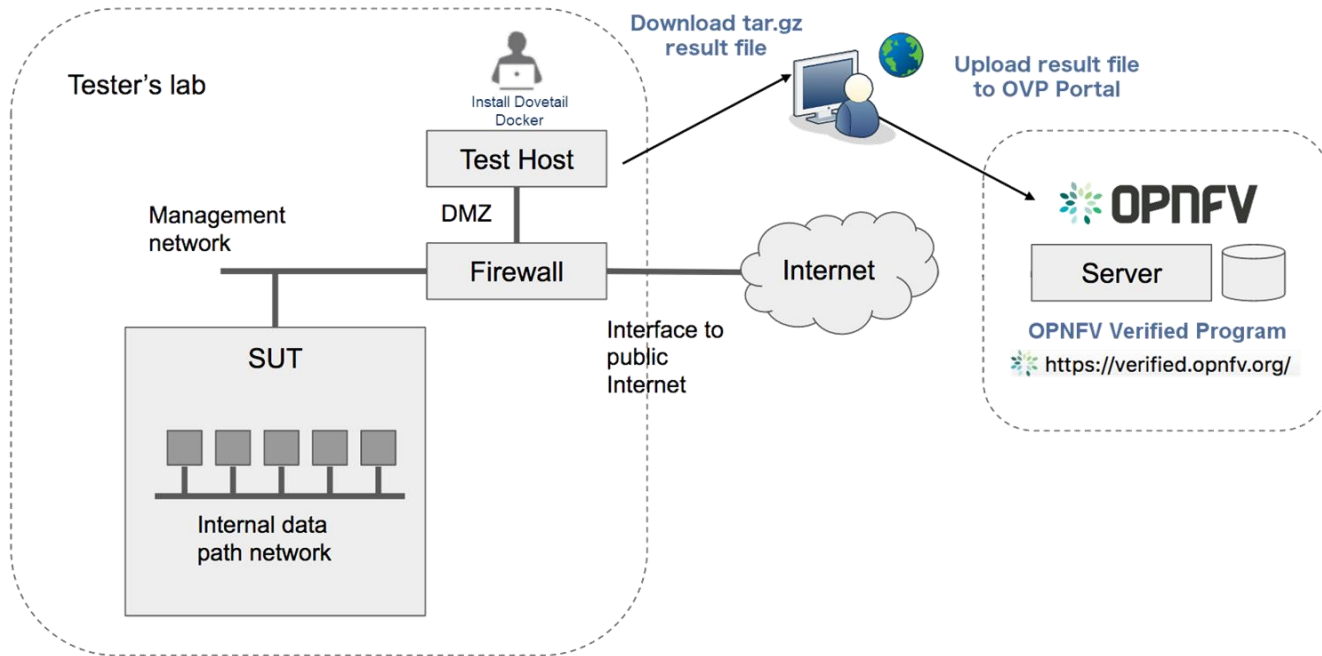
Bottlenecks	
<ul style="list-style-type: none"><li>• Stress testing</li></ul>	man.

normal font: carried over from OVP 2018.01  
*italic font: newly added test for OVP 2018.09*


# Dovetail Test Execution Flow



# Topology of Test Infrastructure



# OVP web portal

 **OPNFV**

OPNFV Verified Program


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[Governance & Workflow](#)

[Release 2018.09](#)

[Release 2018.01](#)

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

# Compliance Verification Workflow

1. Submission of participation form
2. Testing
3. Submission of results
4. Notification of reviewers
5. Community review of test results
6. Grant of use of program marks





# Linux Foundation Networking

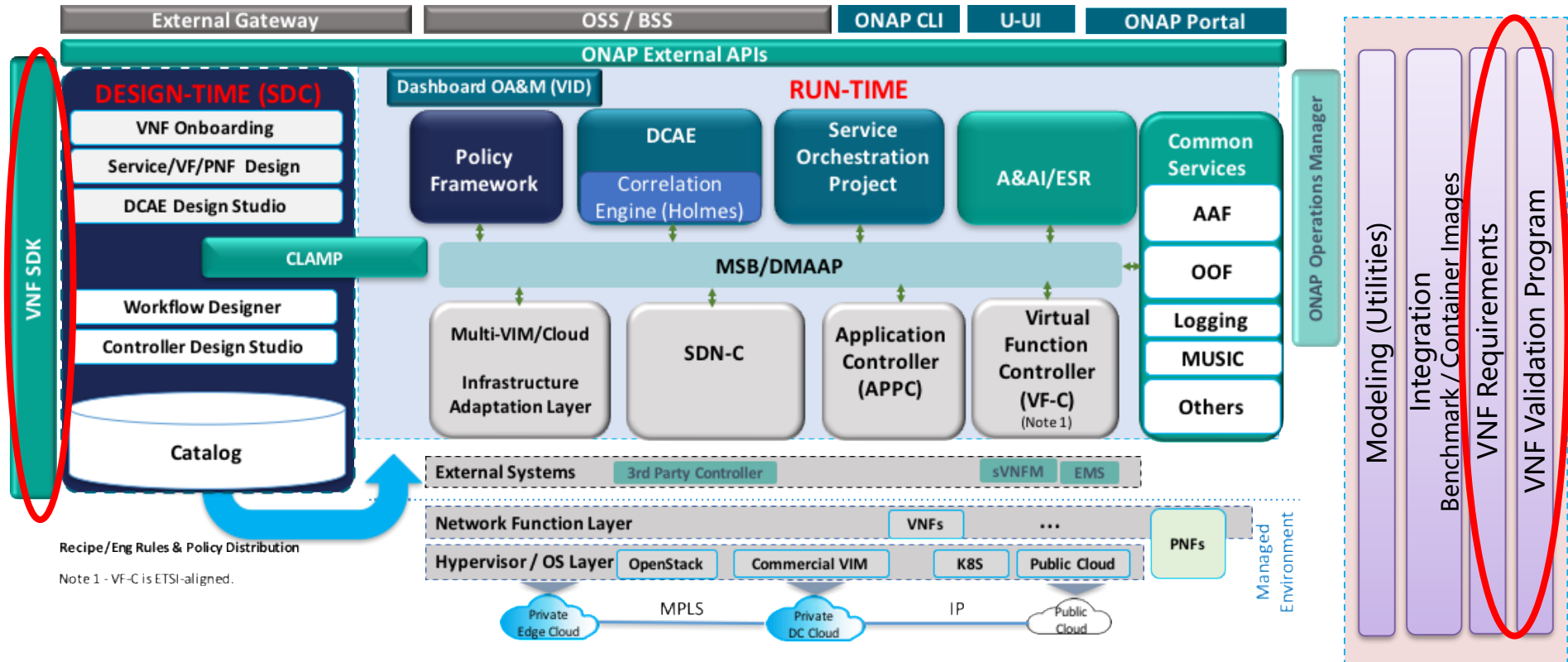
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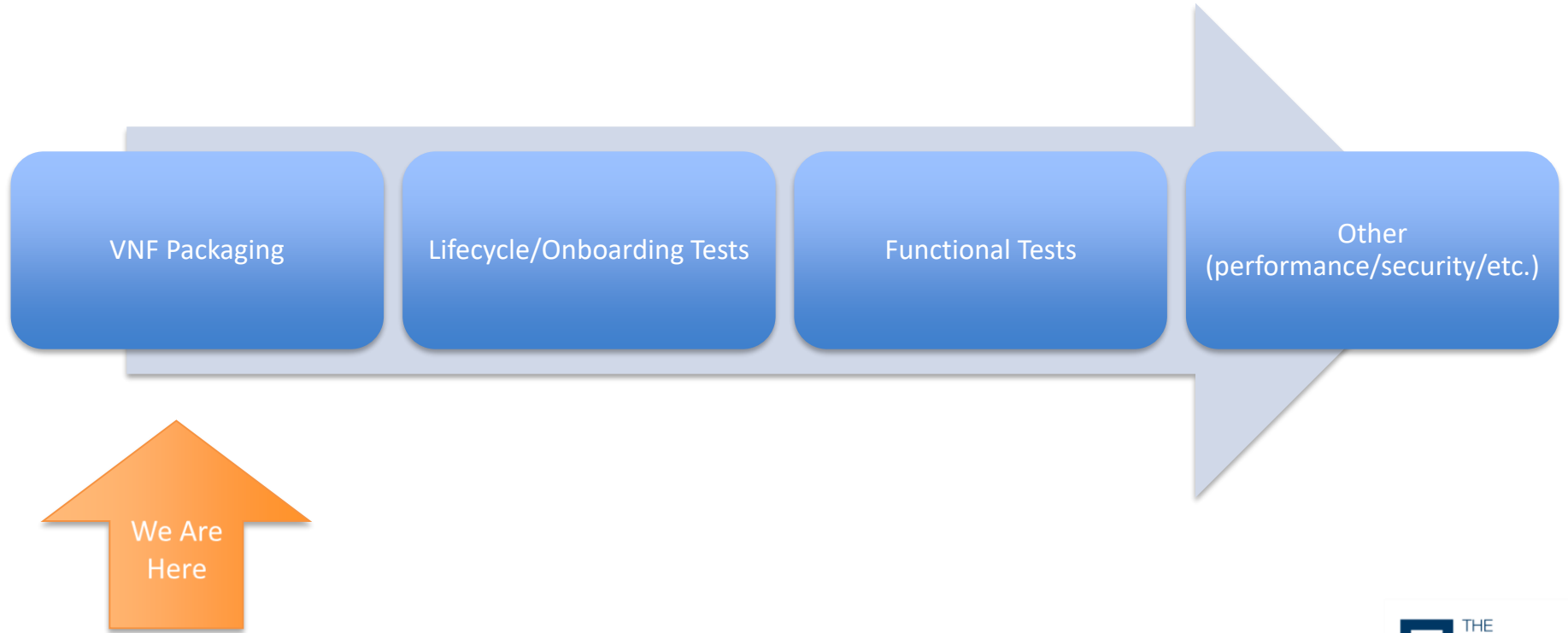
# VNF Compliance Verification Highlights

- Program is designed to start quickly raise the bar over time
  - Versions are date-stamped to make comparisons easy
  - We will make updates as new requirements and new tests are published
- Allows both self-testing and third-party lab testing
  - Larger vendors will likely self-test
  - Smaller vendors will turn to labs for help
- ONAP will define VNF Requirements and tests
  - VNF Requirements project
  - VNF SDK developing test tool and TOSCA-based scripts
  - VNF Validation Program (VVP) developing HEAT-based scripts

# Introducing ONAP



# Continuum of VNF testing



# Come Join us!

- LFN Compliance Verification Committee
  - Every other Monday, 1400 UTC
    - <https://wiki.lfnetworking.org/display/LN/Compliance+and+Verification+Committee>
- OPNFV Dovetail
  - Wednesdays, 1400 UTC
    - <https://wiki.opnfv.org/display/meetings/Dovetail>
- ONAP VNF Requirements
  - Tuesdays, 1200 UTC
    - <https://wiki.onap.org/display/DW/VNF+Requirements+Project>
- ONAP VNFSDK
  - Fridays, 1300 UTC
    - <https://wiki.onap.org/display/DW/VNF+SDK+Project>



# OPEN SOURCE SUMMIT

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