



NETWORKING

LFN Developer & Testing Forum

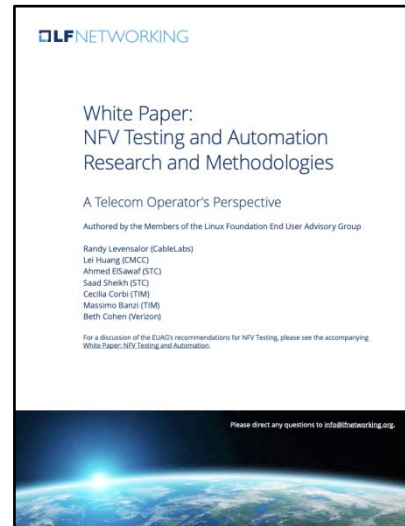
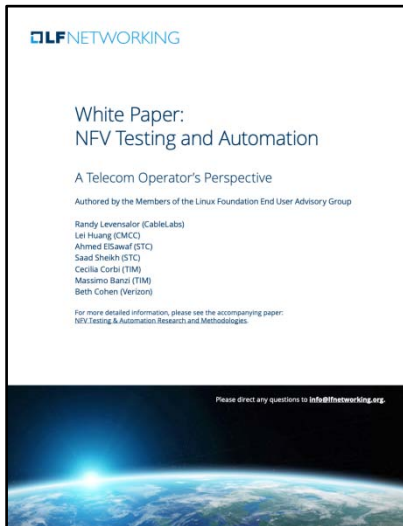
EUAG Newly Updates - Summary and Next Step

Lei Huang, China Mobile
Beth Cohen, Verizon
Jim Baker, LFN

EUAG Newly Updates

- EUAG Recent Work
 - **NFV Testing and Automation White Papers**
 - Network Intelligence White Paper
 - AI/ML Data and Model Sharing Project (joint work with TAC)
- Joint meeting with Anuket
 - CVC Anuket Assured Badging review and feedback
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NFV Testing and Automation White Papers



White Paper: NFV Testing and Automation

Whitepaper: NFV Testing and Automation Research and Methodologies

- Get the Whitepapers -

<https://www.lfnetworking.org/category/publications/>

Highlight 1- NFV automated testing requirements

Test environment

- Automated deployment processes including network configuration and network element instantiation, etc.

Test configuration

- Including the test framework/tool and service configuration of the tested object

Test execution

- Automated execution of test tasks, providing a flexible automated test framework.

Test process observation

- Real-time monitoring of the test processes to facilitate understanding of the execution of test cases.

Test result analysis and report

- Test data collection and provide customized test reports; automated analysis and certification of test results and automated release of certified objects

Testing tool- appeal to Restful API

- Specified test suite can be loaded; test suites/test cases can be executed regularly or in real time; observation points can be set to observe the test process in real time; obtain the original test log

DevOps integration

- There is a requirements about how to load the VNF software package into the operator's DevOps environment automatically.

Highlight 2- NFV automated testing recommendations

➤ General idea of NFV automated testing -

1. Introduce vendors/integrators tools for automated testing
2. Adjust current test specifications and adapt to automated processes
3. From easy to difficult, implement whole process of automated testing in stages

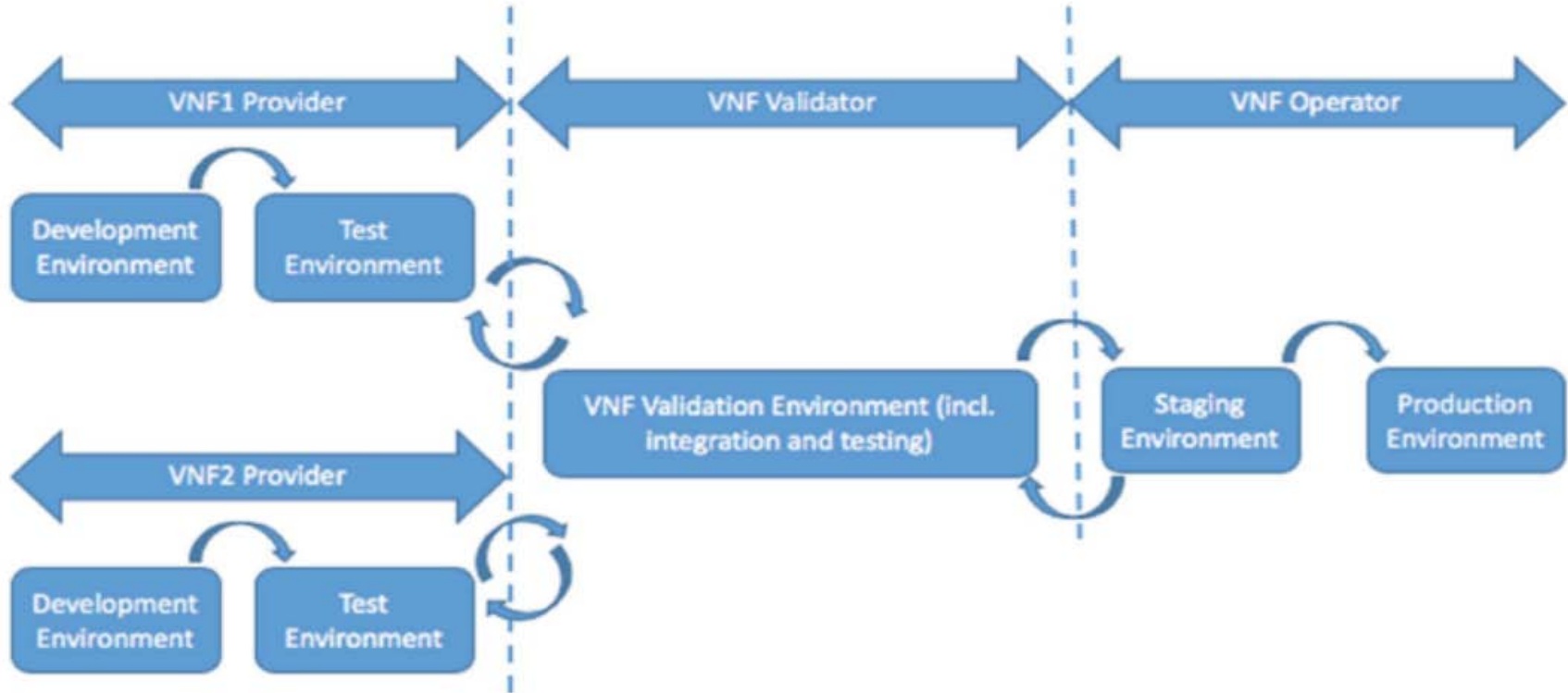
➤ Recommendations for NFV automated testing labor division -

1. Operators' perspective : provide DevOps joint pipelines that connect vendors, establish a common automated testing framework;
2. Vendors' perspective: provide interfaces, their own testing tools, test case implementation, and provide test feedback channels;
3. Instrument manufacturers' perspective: provide standard test case implementation based on operator test specifications, provide integration capabilities with operators' common framework, and provide customized test results.

➤ NFV automated testing open source and standard promotion recommendations -

1. SDOs: Align the DevOps joint delivery pipeline and relevant process that have introduced role named Validator defined by TST006, and align the TST013 standard test framework and test case template
2. Open Source: Input common requirements of the operator's automated testing into OVP as a third-party testing and certification platform to implement the Validator defined in the standard TST006

Highlight 2- NFV automated testing recommendations



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Intelligent Networking, AI and Machine Learning White Paper

- **White Paper Assumptions and Overall Objective:**
 - Audience: Technical and strategic leaders in the Telecom Industry interested in understanding the role of intelligent tools, AI and machine learning can have in support of their network infrastructure, customer
 - 7-10 Pages in length total
 - Do not declare or propose a definite solution just share EUAG Operator community point of view
 - Purpose of White Paper is to share information about EUAG member companies' approaches to network intelligence
- **Workspace:** <https://wiki.lfnetworking.org/pages/viewpage.action?pageId=56067017>
- **Timeline:**



Intelligent Networking, AI and Machine Learning White Paper

- **What will be in the AI white paper**

1. Background and introduction

- Key takeaways
- Challenge and problem statement of intelligent networking

2. AI Survey & Key Findings

- Current progress
- Platform strategy
- Application scenarios
- Future development
- Industrial ecology

3. Requirement & Strategy

- Requirements of application scenarios
- Requirements of data and model sharing
- Strategy for improving network intelligence
- Ecology strategy
- R&D strategy

4. Next Steps and Recommended Actions

- Recommendations for network intelligence improving strategy
- Recommendations for network intelligence testing and certification
- Recommendations for network intelligence ecology

For More Details

- At present, the industry's integration of AI capabilities is still in the preliminary stage of exploration. We have tried to conduct industry ecological analysis on related issues, hoping to provide some thoughts and suggestions from the perspectives of standards, open source, testing and certification requirements.
- **For more details and discussion-**
 - We will have more in-depth investigation in AI/ML survey on high priority use-cases and use it to further investigate collaboration with open source communities or SDOs
 - Please continue to focus on EUAG DTF topic: Intelligent Networking - Next Steps (Yuhan Zhang, Beth Cohen)

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AI/ML Data and Model Sharing Project

- We've established a collective workspace for exploring how to apply open source processes to the development of AI/ML models for use in the operations of intelligent networks.
- The project is mainly for -
 - ✓ Operator or vendor that have ideas on data sharing
 - ✓ Operator or vendor that have ideas on specific use cases to lead the exploration
- How to participate?
 - ✓ If you are an operator or vendor that would like to propose a use case - please add it to project table
 - ✓ If you are an operator or vendor that is interested in one of the listed use cases - please add your name to project table together with proposed contributions, if any
 - ✓ <https://wiki.lfnetworking.org/pages/viewpage.action?pageId=52003108>

AI/ML Data and Model Sharing Project

Use Case	Description	Interested Developer	Interested Operator
Congestion Prediction & Mitigation	This use case will demonstrate how AI/ML may be used to predict congestion and perform closed loop automation for executing configuration changes to mitigate.	Company 1: Samsung Contact person 1: Ranny Haiby Proposed contribution 1: O-RAN-SC xApp, non-RT RIC, rAPP & AI server Company 2: Contact person2 : Proposed contribution2:	
Sleeper Cell Detection	Predict a cell going to "sleep" and handover a critical UE (e.g. ambulance) to another cell.	Company 1: Samsung Contact person 1: Ranny Haiby Proposed contribution 1: O-RAN-SC Non-RT-RIC rApp 2020 October Virtual Technical Event Topic Proposals#2020OctoberVirtualTechnicalEventTopicProposals-ONAP:A1PolicyenforcementwithNon-RTRIC Company 2: Contact person2 : Proposed contribution2:	
Traffic Steering	Improve Quality of Experience (QoE) by steering UE traffic among multiple cells.	Company 1: Samsung Contact person 1: Ranny Haiby Proposed contribution 1: O-RAN-SC xApp Company 2: Contact person2 : Proposed contribution2:	
Soft fault detection and resolution	Detect "soft" faults that are not often caught because they are hidden by the redundant systems. Example, would be faults that bounce for a short time, so are ignored by service assurance. We want to use AI/ML to detect patterns of faults to uncover the ones that might not have an immediate impact on network performance, but will over time as the network degrades.		Company 1: Verizon Contact person 1: Beth Cohen
Deterministic Predictive capacity planning	Ability to detect usage patterns so that the network can be used more efficiently, don't need to built to peak.		Company 1: Verizon Contact person 1: Beth Cohen

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Joint meeting with Anuket

- Background
 - EUAG participants cover a very broad range of networking topics
 - EUAG would provide another set of eyes to Anuket project (e.g. review conformance testing objectives, etc.)
- How to better work with Anuket?
 - Anuket priorities get input from EUAG. Input to Anuket is currently loosely connected via common participants
 - Hold several joint meetings with Anuket TSC in getting stronger collaboration between Anuket/EUAG
- CVC Anuket Assured Badging review and feedback (@Beth Cohen)

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EUAG Next Step Plan (Overall)

- Continue to focus on operators requirements, collaborate with open source communities/projects:
 - Continue to output operators requirements to various open source communities through the collection of work priority(e.g. CSPs priorities for ONAP releases, etc.)
 - Continue to pay attention to the latest open source trends, and extend collaborative work to more open source communities, including ONAP, LF AI, Anuket, etc. based on existing working method(surveys, priorities, etc.) through our liaisons.
 - Continue to explore industry common requirements and concerns, investigate industry requirements through surveys and other methods, and conduct in-depth analysis of survey from the perspective of operators, and give operators recommendations .

Call for participation

- **Next Meeting Time:** Tuesday, June 22th, 2021, 1400 UTC
- **Join Zoom Meeting**
- <https://zoom.us/j/100882564?pwd=TkcrWUNHYWswTG16dkpYSR1d3BCZz09>
- **Contact:** huangleiyjy@chinamobile.com

Thank You



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