End User Advisory Group

Analysis of survey result

NFV Testing Automation Survey

Lei Huang

LF NETWORKING

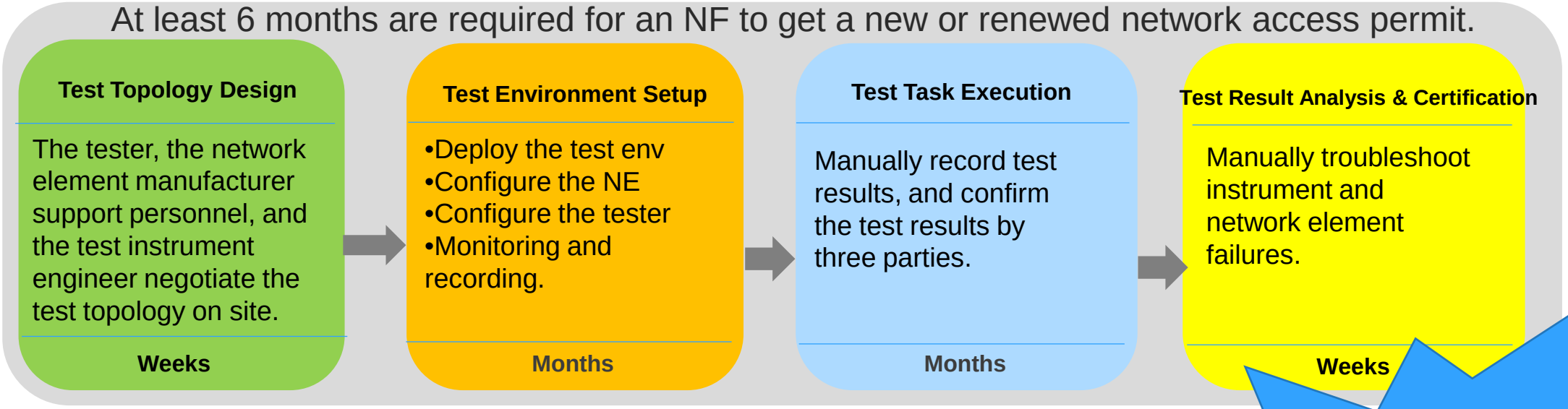
THE LINUX FOUNDATION

Outline

- Introduction
- Summary from NFV Testing Automation Survey
- Testing automation whitepaper proposal

NE Testing: Reality

• The NE testing process is usually divided into four steps: test topology design, test environment setup, task execution and result analysis and certification.



• Changes after the introduction of NFV

Introduction of open source components

Introduction of software component disaggregation

The frequency for software upgrades

Introduction of new function and service

Automated Testing

NFV Testing Automation Survey in EUAG- Introduction

•**Background：** Considering the scenario of NFV testing within operators, and in order to fully find out the potential extended application requirements of the general automated testing platform, we designed the automated testing survey in EUAG.

•**Participants：** EUAG Group

•**Response：** 6 participants, anonymous

•**Design of survey：** 34 Questions

1.Testing process and content

- Before the introduction of NFV, investigate the test types and test contents of new equipment, equipment patches, resource pools and other network access tests.

2.Testing Participants and Collaboration

- Investigate the personnel and division of labor involved in the network access test, including the development of test specifications, test environment provision, test execution, and test result summary.

3.Test Restrictions

- Investigate network access tests factors, including network access times, test costs, test stability, and others.

4. Changes of NFV Network Element Access Test

- Investigate test changes such as test organization, test cycle, and test frequency after the introduction of NFV.

5. Status and Requirements of Test Automation

- After the introduction of NFV, investigate the automation requirements and the application of automation tools for various test phrase.

6. Community Work Requirements

- Research on the requirements and value as well as co-construction ideas of community open source certification platform.

Summary from the survey-Part1

- **Changes of NFV network element access test**
  - Increased test types and frequency
    a) Resource pool tests and network element tests are usually conducted separately.
    b) Pairing tests are needed between resource pools and network elements.
  - Shorter upgrade cycle:
    Upgrade cycle is shortened from half-year to 2 ~ 3 weeks (1 ~ 2 months) compared to traditional physical network elements

- **Limiting factors for NFV access test**

- **Optimization of NFV access test**

The functional testing and performance testing of Testbed/lab test are usually necessary before the new device or patch obtains the network access license.

Specific optimization measures can include:

- Establish common test resource pool, reuse hardware and virtual resources between different rounds of test; introduce test management system to optimize the resource use approval process.
- Introduce automated tools and DevOps technology in different test stages.
- Provide integrated standards for third-party test tools and test scripts.

Summary from the survey- Part2

- **Status and requirements of test automation**
  - The life cycle test and the traditional business test are performed separately
  - Automation requirements priority
    - Test environment setup(highest)
    - Test execution(high)
    - Test design, test analysis, test scoring(medium)
  - Problems to be solved in life cycle test and business function test
    - Automatic configuration of network element (most urgent)
    - Automatic deployment, test scripts integration from different vendors, automatic control of the test process(urgent)
    - Test tools/test instruments integration from different vendors, traceability of test results(medium)
  - DevOps application status and cooperation mode
    - Some operators have introduced DevOps tools, and all operators hope to achieve full-automatic closed loop, including
      a) Network element codes are automatically built and automatically integrated
      b) Network element life cycle and service test is performed automatically
      c) Network elements are automatically deployed and brought online to a test or production environment
    - The DevOps cooperation model between operators and VNF suppliers is VNF vendors provide VNF software packages and operators implement CI/CD in their own DevOps environment.
      - There is a requirements about how to load the VNF software package into the operator's DevOps environment automatically

Summary from the survey- Part3

- **Significance of LFN OVP certification project for operators**

The value of the LFN OVP certification program to operators is mainly reflected in:

- Build the automated test framework together, operators can reference the open source implementation of OVP test framework to support their network access test.
- Build test case executors together, operators can integrate existing test scripts and test tools with reference to test framework requirements, and leverage the capabilities of third-party tools to improve test efficiency.

For the enhancement of OVP automated test functions, the top priorities are :

- Topology design
- Test environment setup
- Test execution
- Test analysis

Testing automation whitepaper proposal （Automated testing application guidance whitepaper）

- **Based on the operator's automated test requirements and bottlenecks responded from the preliminary NFV testing survey, we’d like to propose optimization suggestions for DevOps and automated testing from the operator's perspective in the form of a white paper.**
- **Draft of testing automation whitepaper：**

› 1. Introduction;

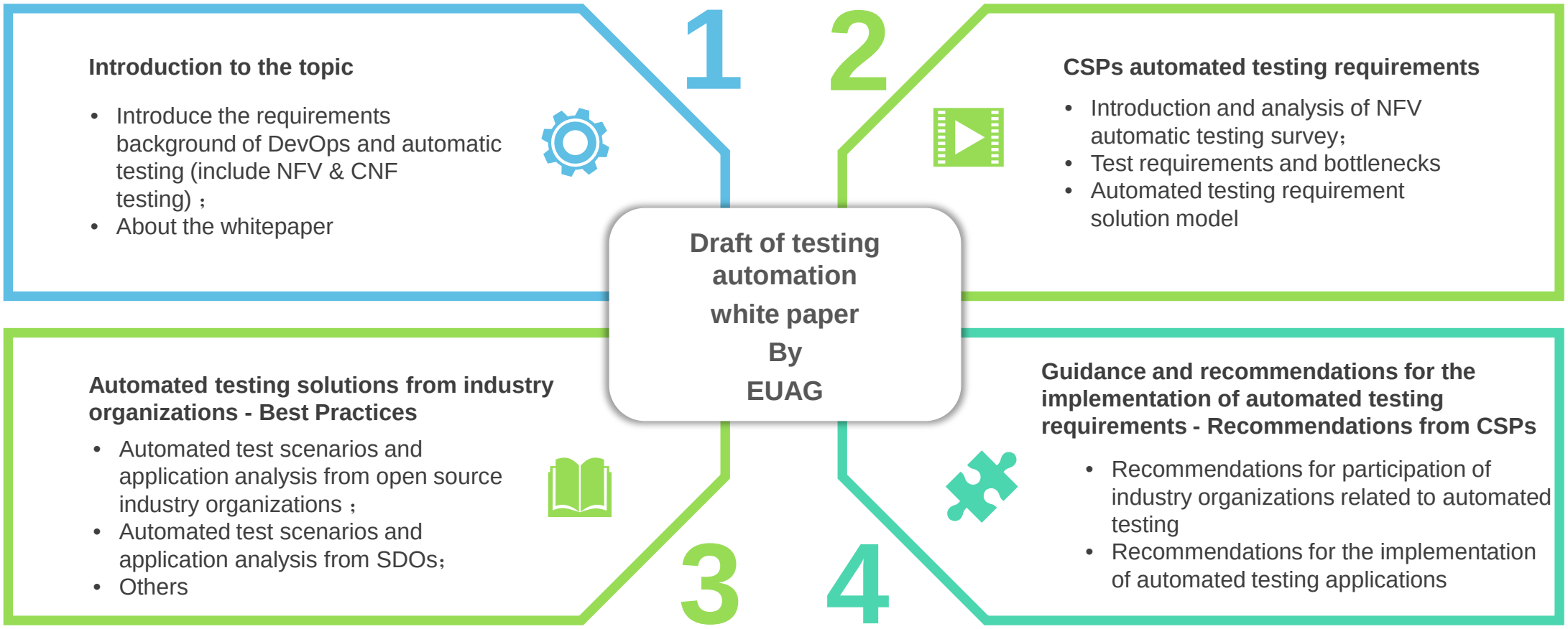
› 2. CSPs automated testing requirements;

› 3. Automated testing solutions from industry organizations - Best Practices;

› 4. Guidance and recommendations for the implementation of automated testing requirements - Recommendations from CSPs;

› 5. Others, still under discussion.

Testing automation whitepaper proposal （Automated testing application guidance whitepaper）



Thank you

If you have more expertise for automated testing , continuous testing , DevOps & CI/CD, or you are interested in any of the above aspects, welcome to discuss with us.

Contact Information: Lei Huang , email address : huangleiyjy@chinamobile.com

THE LINUX FOUNDATION
LF NETWORKING