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DevIntOps

**Telco Operator & Vendors Collaboration
Pattern for NFV Agile Delivery**

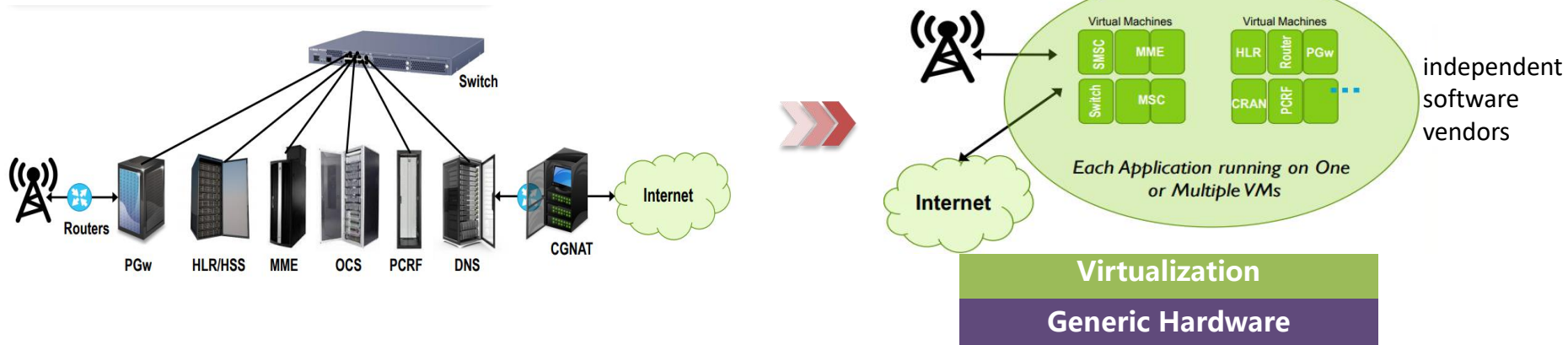
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Agenda

- Challenges in Telco cloud
- DevIntOps - Agile Pattern
- China Mobile DevIntOps experienc

Background

Network functions virtualization (NFV) revolutionized the way teleco networks are being built and operated. Softwarization, Virtualization & Orchestration, NFV replaces costly dedicated and purpose build hardware with generic servers that use software to provide a bunch of different virtualized network functions (VNFs)



NFV turns Traditional network hardware into virtualized network functions running on Generic Hardware

Challenges

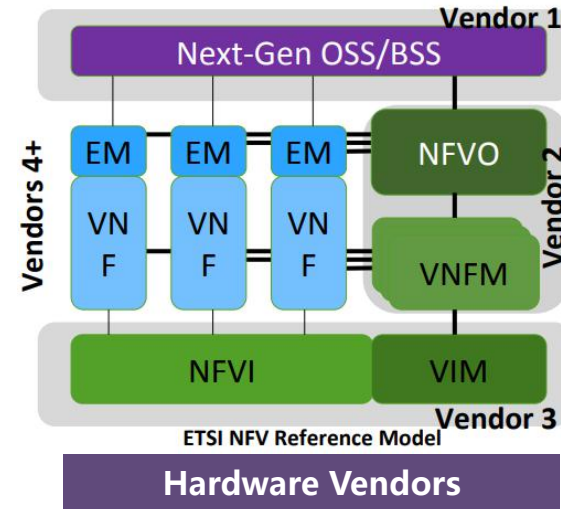
As NFV decouples hardware and software, it inevitably brings lot of complexity, interoperation and integration between multiple vendors is the key step for Telco cloud business deployment

Investigation Report and Statistics

Interoperability between modules is the **TOP 1** issue of NFV

Integration ability between multiple vendor is **TOP 1** reason for the complexity of cloud deployment

China Mobile Statistics: more than **60%** issues in NFV deployment was related to integration and interoperation between multi-vendors



Multi-vendor solutions require much more integration and quality assurance to become ready for production deployment

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Can We be more Agile?

What should we do to Agilely deliver telco cloud

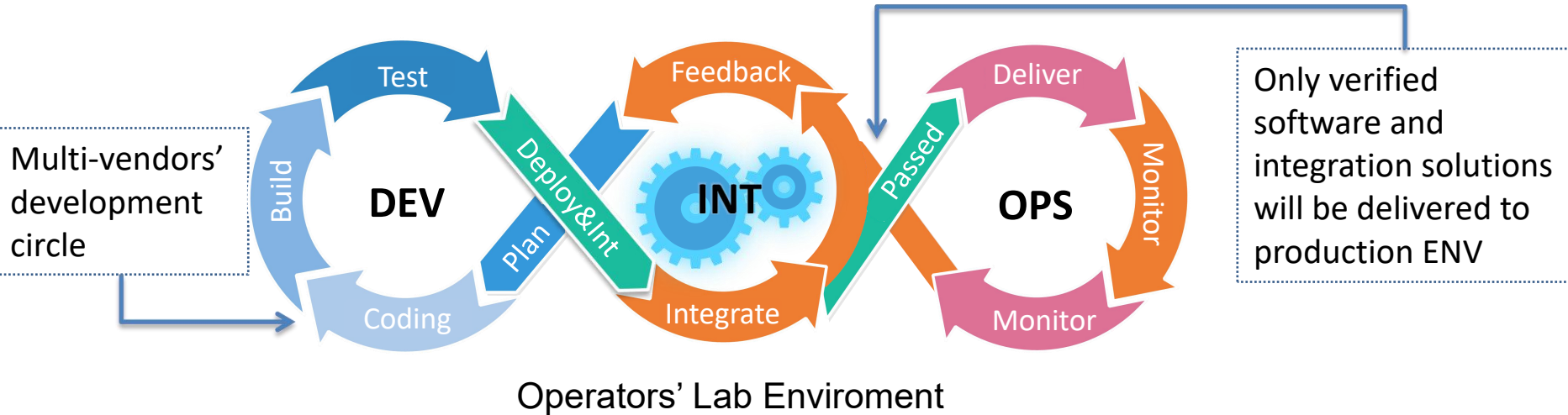
✘ Not just simply rely on Specification

- **Not agile:** The traditional specification - develop - test - purchase -design - construction process is time consuming, iteration cycle takes long time
- **Not detail and precise enough:** only specify functionality and common API, many integration work needs to deal with the actual configuration and private interface, different vendors may not understands the same when translating documents to code

✘ Not simply copy DevOps

DevOps is perfect in IT industry, it does not apply to telco operators. **Devops have its limitations for operators,** the hardware & software products are purchased from vendors, telco operators is not actually participate the development cycle.

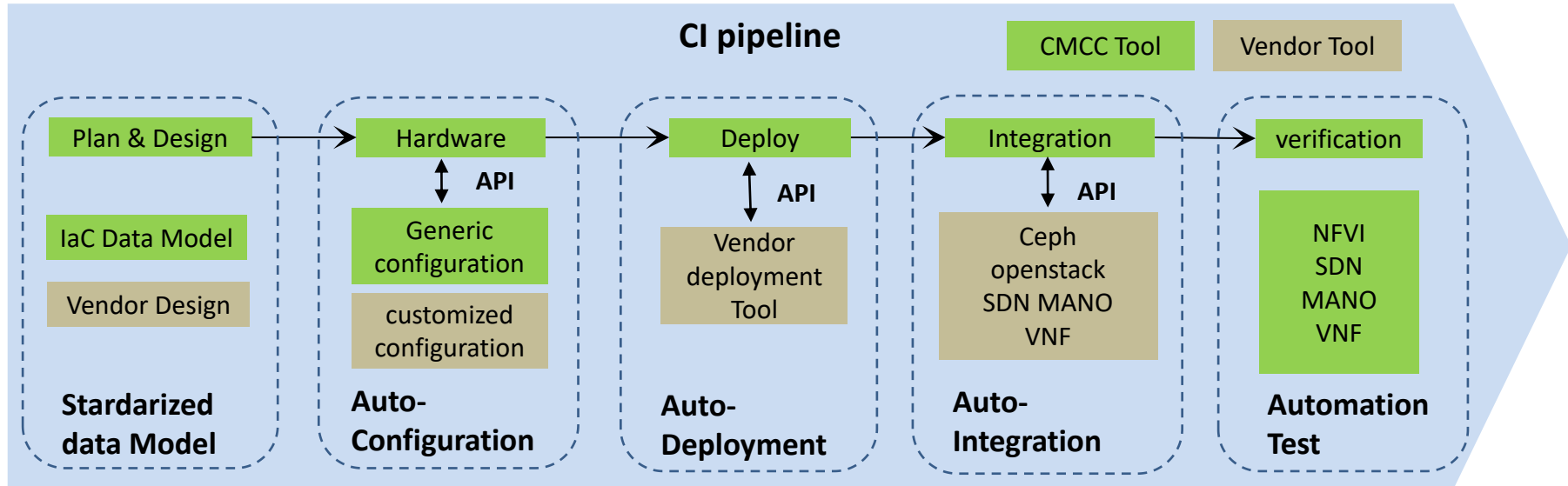
Close collaboration between vendor and operator, operator getting involved in vendors' development by continuous test, and the vendor extends its Ops processes into the operator's environment.



Continuously integrating vendor product, continuously run verification, and continuous feedback & improving, which will leads to agile delivery with better quality

Integration Solution

Adapt network/IT organizations' CI/CD methodologies, launch CI pipelines to connect multi-vendor tools and operator tools for E2E integration line



Telco operators need to adapt devops tools, improve automation test level, and build CI pipeline to manage automation tools.

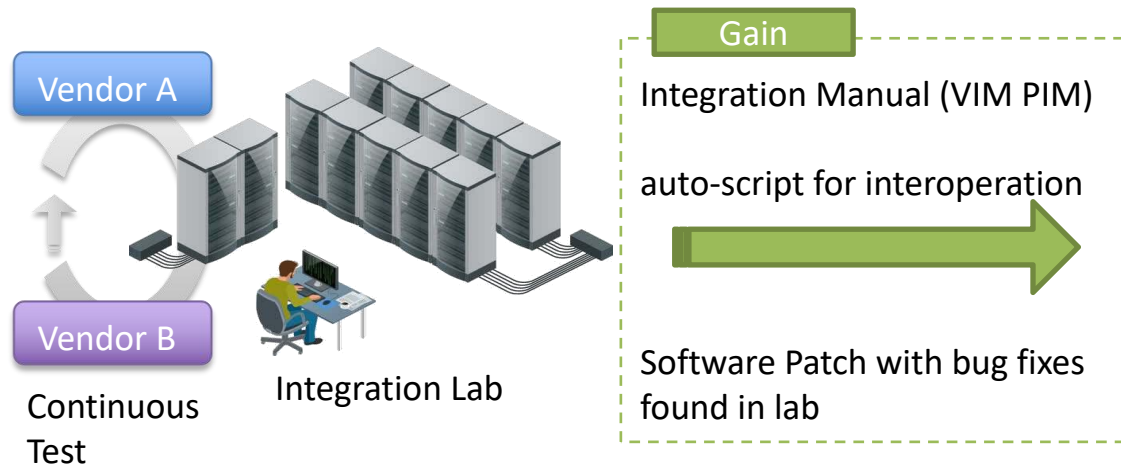
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- How to Agile – DevIntOps
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DevIntOps Practice - Lab pre-verification

Pre-integration and pre-verification in lab will lower the risk and reduce time cost of business deployment, also improve quality.

In Chinamobile Phase 3 network cloud deployment, 2 vendors(one from openstack and one from storage) , pre-deployed in integration lab, helpd optimized deployment in production environment.



Production Environment

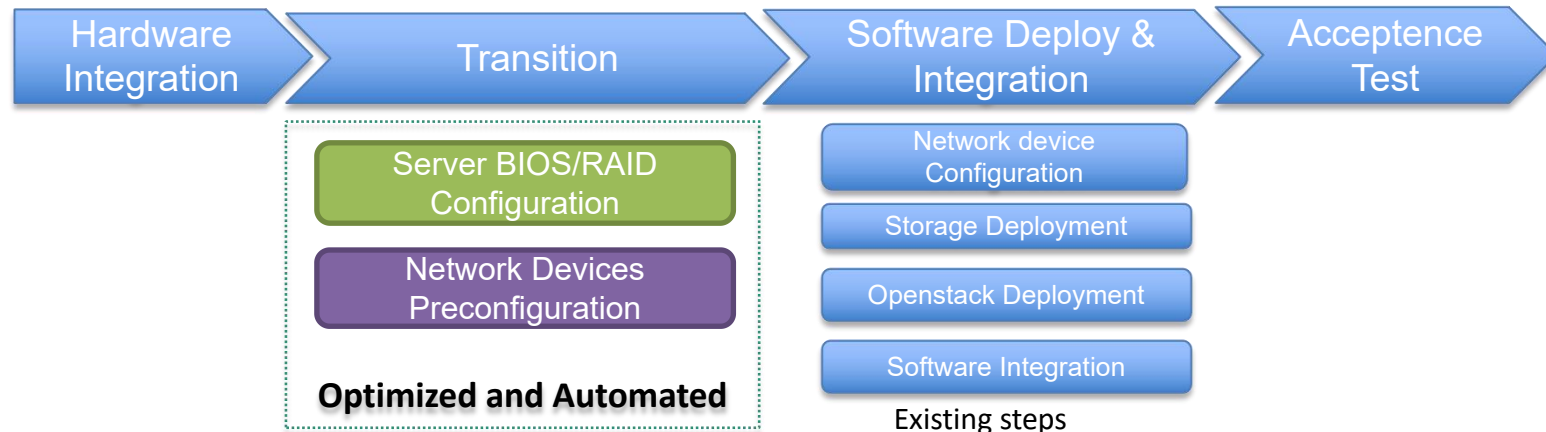
DevIntOps Practice – CI pipeline

Get involved in production cloud deployment, trigger NFVI deployment through CI pipeline.

Gain:

1, Sorting out deployment steps, find gap steps that could be automated and optimized it. Helped reduce time cost and save human effort.

2, CMCC has populated this integration pattern (pipeline participation of cloud deployment) to lots of production pools, in best case scenario, NFVI deployment cost only 1 week (counting from hardware integration finished date)



Collect configuration requirements from software&integration vendor in advance, do preconfiguration before software deployment, helped seamlessly transit resource pool construction from hardware to software

Continuous Integration for better quality and more agility

- Collaborate with more vendors to work in DevIntOps mode, and optimize deployment through CI pipeline
- Deeply get involved in production cloud deployment, fully automate the transition steps between hardware and software construction
- Standardize the steps and interface interoperation between openstack and iSCSI storage
- Populate the solution to more cloud deployment scenarios, like Edge or 5GC

Proposing closer collaboration between vendor and operator, jointly define and participate in DevIntOps.



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Thank You!

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