

Open Platform for Network Function Virtualization

Project Case Study – A path to open source success with The Linux Foundation



ABOUT OPNFV

OPNFV is a carrier-grade, integrated, open source platform to accelerate the introduction and market penetration of Network Function Virtualization (NFV) products and services. As an open source project, OPNFV is uniquely positioned to bring together the work of standards bodies, open source communities and commercial suppliers to deliver a de facto standard open source NFV platform for the industry. Anyone can contribute to OPNFV whether they are an employee of a member company or not.

www.opnfv.org

HIGHLIGHTS

- Leveraged open source guidance to create project with key industry support
- Successfully pivoted from traditional standards approach to open development
- Collaborative development has helped speed innovation and troubleshooting

NFV Background

Network function virtualization (NFV) is a systems architecture that implements diverse network functions with technologies and techniques of IT virtualization. By contrast, legacy telecom products built on proprietary systems, hampered by long product cycles and contentious standards development. Ultimately, competition from internet-based service providers (Google, Skype, Netflix) disrupted the legacy ecosystem, with equipment and services providers seeking a new (virtualized) paradigm.

In 2012 the Network Functions Virtualisation specification group published a paper on Software-Defined Networking (SDN). Part of the European Telecommunications Standards Institute (ETSI), the group comprised representatives from Europe, North America and beyond. This paper and others that followed formed the foundation for SDN and ultimately NFV.

SDN and NFV

SDN uncouples control and data planes on networking and telecoms systems, with control residing centrally and forwarding components distributed logically and physically. The control plane abstracts the network, presenting APIs to applications, and dictates forwarding behavior of the data plane at the device level.

While NFV shares many technical and economic aims with SDN, NFV does not depend upon the same mechanisms. NFV instead leverages modern, high-performance commodity computer hardware to virtualize many/most node types, gaining flexibility, implementation cost advantage, and smoother upgrade paths.

The Challenge

Like most standardization efforts, NFV began as an abstract effort, where early investments in design and documentation only later yield usable, interoperable physical kit. But unlike traditional standards, NFV made an early, conscious decision for rapid, incremental implementation, ultimately as open source software.

Actually, the nascent OPNFV group faced a number of related challenges in going from white board to white box:

- Member companies, while expert in telecoms, lacked experience in working with, building and nurturing open source communities
- Traditional standards bodies emphasize collaboration in developing original requirements specifications and elaborating standards documentation, but in implementation – once the standard is “baked”, the members all go their own way (until the standard itself needs to be revised)
- Legacy standards are “leading” – they are aspirational and define how systems “should work”, setting a specific (not too high) bar for compliance, eschewing much deep specificity. Implementations, after reaching compliance, almost always fragment, as vendors work to add “secret sauce” to their versions and derived products

Member companies also wanted to invigorate telecoms with young engineers and spur innovation. And open source looked like the answer.

“Working with The Linux Foundation on the OPNFV project has given Ericsson the opportunity to collaborate openly with our competitors, together using open source to address a common industry concern.”

*-Christopher Price, Architect at Ericsson and
Chair of OPNFV Technical Steering Committee*

The Approach

Along the way, OPNFV project founders explored a range of options to host the project and to foster its growth and success as open source:

- Host an OSS project with standards member companies – attempted unsuccessfully: hosting members seen as too dominant
- Start a new OSS foundation – too daunting: not enough applicable experience among founders
- Join an existing OSS foundation – couldn’t find the right mix of organizational competence and direct involvement

Then they discovered The Linux Foundation.

OPNFV member companies saw in The Linux Foundation a chance to jump-start collaborative development of a unified OPNFV implementation. What they found most attractive was

- The Linux Foundation “full service package” of organizational tools, training and dedicated staff
- Available expertise to recommend tool chains, governance models, marketing and best practices
- Track record in helping to found and sustain other groups in parallel technology areas

The Results

Choosing an open source path and coming to The Linux Foundation has yielded a number of benefits for OPNFV:

Two Major Releases to Date – the latest, Brahmaputra, shows how the initiative can bring carrier grade features upstream, to the benefit of members and the larger telecoms ecosystem

New Features for Carriers – open collaboration has delivered fault management, upgraded IPv6 support, service function training and other requested features

Federated Test Lab – ten member companies today contribute hardware resources for “real world” development and release validation. Diversity of lab configurations yields higher quality and better interoperability, less vendor-based fragmentation

Meet ongoing integration challenges – as OPNFV grows, integration becomes more complex. Collaboration under The Linux Foundation umbrella helps accelerate troubleshooting to solve problems “in the open” and reduce churn from regressions

New features, greater interoperability and facilitated integration - OPNFV is a shining example of how a legacy industry and ecosystem can benefit from open-source based collaboration and from the stewardship of The Linux Foundation.

“AT&T has been doing open systems for decades, all the way back to the original UNIX, so working with OPNFV is like returning to our roots. With OPNFV, we’re collaborating with the industry and The Linux Foundation to create the next generation networking platform as open source.”

*-Margaret Chiosi, Distinguished Network Architect,
AT&T and OPNFV President*

For more information on OPNFV, visit www.opnfv.org.

To learn more about hosting your open source project at The Linux Foundation, please contact us at membership@linuxfoundation.org.