OPNFV

2016 OPNFV
Year In Review

**Transforming Networks
Through Open Source NFV**

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CenturyLink	Korea Telecom	SK Telecom	

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ETRI	Laboratory
Fraunhofer Institute	Synchromedia
(FOKUS)	UNH IOL Lab
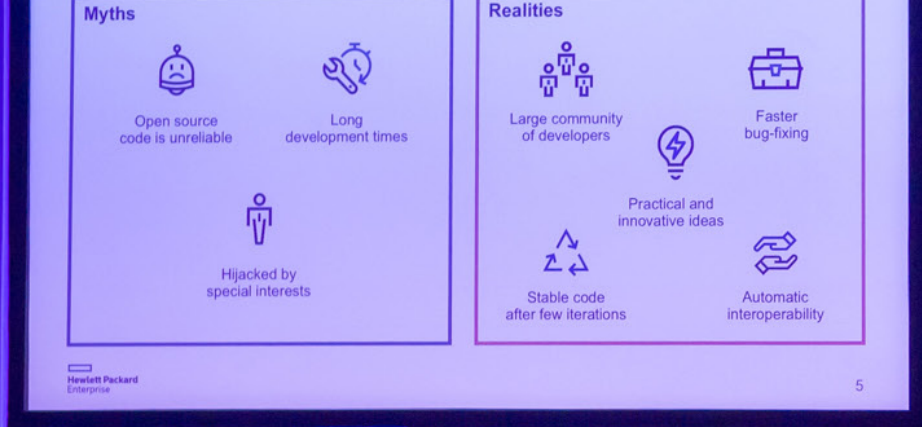
MESSAGE FROM THE
BOARD OF DIRECTORS CHAIR

As we end 2016, OPNFV has started its third year of existence. Where we are as a community is evident in the various metrics we use, to observe our health and progress.

There are 296 code developers working on 50 approved projects including six automated testing projects; member companies host 16 operational OPNFV test-bed infrastructure labs; and we have completed our third software release—Colorado. There are many other statistics we can look at, but I think these are enough to show that OPNFV is a healthy, productive and useful community that is here to stay.

2016 has been a year of transitions and beginnings.

From a strategic perspective, we have tried to ensure that the activities of OPNFV are aligned with the interests of the member companies, and more importantly the ultimate end users of what we produce—network operators, service providers and enterprise users. But we have done this in a way that preserves the true open source nature of our organization. The strategic planning activities in the OPNFV Board led to the creation of an open working group (Polestar), which concentrates on connecting end user requirements to the technical activities of OPNFV, on helping coordinate activities across

OPNFV projects to support end-to-end use cases, and on helping upstream communities like OpenStack understand NFV requirements and needs.

The Board has also created an End User Advisory Group, formed by users who operate and deploy large telecommunications and enterprise networks from both member and non-member companies, to help provide guidance and requirements. From a governance perspective, the Board and TSC have worked together to expand merit- and community-based participation in the TSC with five new Committer-at-Large TSC Members, furthering progress toward operating as a meritocracy-based organization.

That we have our fingers on the pulse of our industry is evident in how our community has responded naturally to industry calls for addressing service and operational issues. The Board expanded the scope of OPNFV, from its initial defined scope of the NFVI and the VIM—and the technical community responded by creating projects and working groups in the areas of MANO, testing, security and performance. Our

experience in integrating software from several open source projects, conducting extensive testing, and creating our OPNFV software releases has shown us that the NFV ecosystem needs more than just a reference platform; it also needs a set of tools and processes with which to use it. So we have clarified our goals to reflect that we develop both integrated software for NFV systems and a methodology for NFV.

When I look back at 2016, I can clearly see that this was the year that we began to mature as a community and an organization, and all aspects of our activities have contributed to this. I am looking

forward to 2017 as the year where we capitalize on this maturity and accelerate the deployment and implementation of NFV in service provider networks, and support network transformation into the cloud.

Prodip Sen
Chairman of the Board, OPNFV
CTO NFV
HPE Communications Solutions Business

OPNFV
BOARD OF DIRECTORS

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Tapio Tallgren,
Nokia

Committer Board Member

Christopher Price,
Ericsson

STATE
OF THE PROJECT

As we reach the end of 2016, I also reach my personal two year anniversary with the OPNFV project, and what an extraordinary journey it has been!

Watching our community embrace open source, move through multiple releases, and become ever more mature in how we approach our upstream communities and our own activities has given me high confidence in our industry, our capabilities, and our commitment to transforming networking.

Some of the highlights for me over the past year include a very snowy but productive second OPNFV plugfest at UNH-IOL, an amazing keynote demo at OpenStack Barcelona highlighting the great work of our Doctor project, watching our community sing karaoke (featuring Obana-san rocking it out on the drums) in our Rainy Street venue at OpenStack Austin, interacting with the vibrant Chinese NFV community at China SDN/NFV Congress in Beijing, presenting at our first meet up in Seoul co-located with the IETF, co-hosting a reception with OpenStack, OpenDaylight, and OPNFV community members at Levi Stadium during Open Networking Summit, celebrating the 25th anniversary of Linux in Toronto, and talking about open source at a China Mobile workshop back in January. And of course our truly amazing Summit in Berlin.

At each of these events, there were so many moments with community members from so many countries and different life experiences who came together to create innovation and accelerate our NFV journey. It reminds me of the inspiration for my keynote at Summit: "the name on the front of the jersey is more important than the name on the back." The combined team that we are all on as part of OPNFV is greater than the sum of all our parts. We come from many companies, countries, and time zones with a wide range of perspectives—yet we have worked together to create an on-time and well-received Colorado release, bring important NFV-related changes to our upstream partners, build 42 working OPNFV scenarios, deploy 16 Pharos test labs, and significantly move the needle for our industry.

I am also excited to see us recruit the next generation of sharp and curious minds into the networking industry. The first year of our intern program was a resounding success: we had 12 interns come aboard and are expected to scale up to 15 this year. Their work had significant impact on the project, and the work of these new participants will help create a future that surpasses all our expectations.

2017 has great things in store for us as a community: CI/CD integration with our upstream partners, continued collaboration with our fellow travellers in standards organizations, more plugfests and hackfests, our first Summit in Asia, and many opportunities to collaborate among members and the NFV ecosystem at large. The fourth OPNFV release—Danube—is poised to be another successful release, bringing in MANO integration for the first time and much more. And of course we'll continue to build on our relationships with other open source communities and industry groups in a common vision of advancing NFV.

The future is full of challenges and hard work, but it is also bright. We are in the fortunate position to be changing our industry for the better.

My name is Heather Kirksey, and I play for OPNFV.

Heather Kirksey
OPNFV Director

OPNFV
BY THE NUMBERS

52 MEMBER COMPANIES

8 NEW MEMBERS IN 2016

11 USER GROUPS

296 DEVELOPERS

14.9K COMMITS

16 PHAROS TEST LABS

12 INTERNS

2 OPNFV PLUGFESTS

3 MAJOR RELEASES

MESSAGE FROM THE
TSC CHAIR

In October of last year, I had the distinct pleasure of being elected the TSC chair after Chris Price from Ericsson stepped down. Having been on the job a few months now, I'm starting to better understand all that goes into chairing the TSC. I would like to take a moment thank Chris for all the work he did so capably, from his leadership to his seemingly tireless work in the technical trenches to get OPNFV up and running. Thank you, Chris!

The Technical Steering Committee, or TSC, plays the role of providing "technical guidance" overall; approves the releases, their schedule, and their high-level content; and reviews, debates, and approves all new OPNFV projects. Many matters are decided by voting and records are kept to help to move things forward so the same issues are not discussed over and over. There is also a good degree of debate, which is both healthy and necessary for a project like OPNFV with such broad affect across the industry. The weekly TSC meetings are open to all and we warmly welcome anyone to attend.

While the TSC oversees the projects, it is not possible to coordinate the work of the individual projects in the TSC. That is the role of the TSC's

working groups: Infra, MANO, and Testing. The Infra working group has a significant but perhaps not so visible role in managing the use of OPNFV physical resources. A major accomplishment from this group last year was the creation of a common POD description file, a format to configure and automate scenarios installation. The Testing working group has the role of coordinating the role and relation of different testing projects—which over time have blurred. Each testing project also has its own test infrastructure, and a highlight of the working group last year was the testing dashboard for the Colorado and Danube releases. The Management and Orchestration (MANO) working group has just started its work, but this is a strong focus area for 2017 with an early priority to test VNF onboarding from the operator point of view.

What has surprised me about OPNFV, or rather one thing that I did not appreciate enough, is how much effort goes into creating a stable release. This requires manually installing servers, running tests, fixing bugs, and trying to interpret the test results. The testing infrastructure and the system under test (also known as the OPNFV platform), has matured from one release to another. For 2017, the vision is LaaS, the Lab-as-a-Service, where a user or an automated Jenkins job can ask for hardware and have the right OPNFV stack installed on it automatically. We'll see the first steps towards that in Danube.

Of course, many in the industry do not care how the OPNFV release is made, only that it is stable and has the needed features. The way to verify this is

to run tests. The OPNFV test projects provide value also to those who do not use the OPNFV platform, and there is a lot of interesting work ongoing for improving and harmonizing the tests. The goal is that a user can download the test suites, launch them, and run a good variety of functional, performance, and system tests. The results should go to a common database with the right metadata, and with a nice user interface to view the results and to detect regressions.

We look forward to a productive and busy 2017.

Tapio Tallgren
TSC Chair, OPNFV
Lead SW Architect, MBB Architecture
Nokia

MESSAGE FROM THE
MARKETING CHAIR

The OPNFV marketing committee is comprised of members from leading companies in our industry. Our primary purpose is to strategize, develop, and execute key programs and events to help accelerate the availability and deployment of commercial NFV solutions.

We do this by driving results around deepening community engagement, increasing developer and end user participation, and driving increased visibility of OPNFV releases and features.

Our strategic marketing goals this year were to increase end user participation, deepen collaboration with upstream communities, grow our developer participation, and leverage the efforts of our member companies to increase visibility for OPNFV. I am proud that we met or exceeded our targets for nearly all the goals we set out for ourselves, including increased end user participation with service provider PoCs and feature stories, as well as service provider speaking slots. We deepened collaboration with upstream communities with joint messaging and co-hosted events. We launched our intern program, acquiring 12 new interns, which is a significant accomplishment for a young project.

But the goal I am most proud of is that we tripled our number of developers to almost 300, with participation in 10 developer-centric events and 13 new and largely member-driven OPNFV training videos. Our representation at industry events grew, and we saw the creation of 11 new user groups across the globe. In addition, we created many new content pieces, including whitepapers, solution briefs, and content co-developed with upstream communities like OpenStack and OpenDaylight.

Our 2016 OPNFV Summit in Berlin, Germany was a tremendous success with more than 600 attendees

and compelling keynotes from industry leaders. We had content-packed sessions, a number of co-located events, and a Technology Showcase with PoCs and products that demonstrated a broad range of tools and use cases. We also had significant press and analyst activities with OPNFV and community announcements, press and analyst briefings, and 22 articles in key publications. The second OPNFV Plugfest and Hackfest also saw strong attendance with 70 attendees—a significant increase over our first Plugfest.

In 2017, we plan on developing more content in concert with members, including case studies and success stories that demonstrate TCO (Total Cost of Ownership) savings and commercial NFV deployments. We'll host and promote this great content across the OPNFV channels, including the new OPNFV website which is now live.

Thank you to all marketing committee members for helping us deliver such a high-impact year. OPNFV's continued success is driven by active engagement and you are a key part of our vibrant, growing community. We look forward to your contributions in 2017 as we challenge ourselves to achieve even more ambitious goals in our effort to accelerate the adoption and broad-scale deployment of NFV in the market.

Sandra Rivera
Marketing Chair, OPNFV
Vice President and General Manager,
Network Platforms Group
Intel Corporation

VOICE OF THE
END USER

There are dramatic changes taking place across service provider networks worldwide—and having been involved in the industry as an end user, and with standard's bodies like ETSI NFV ISG—I believe that collaboration amongst end users is vital to guide the NFV inputs that will lead to innovative and transformational NFV outputs.

One of the primary goals for OPNFV from its inception has been to include participation of leading end users to validate that OPNFV meets the needs of user community. We took a significant step forward in this regard last June at the the OPNFV Summit in Berlin, where we convened the initial meeting of the OPNFV End User Advisory Group (EUAG).

This group, made up of both members and non-members alike, was chartered by the OPNFV Board to assist and support OPNFV by providing technical and strategic guidance based on the challenges of running real-world networks. The group is a discussion forum for end users of open source software, relevant to NFV, to share perspectives on progress and priorities, and to offer strategic priority planning for the OPNFV technical communities.

I'm pleased to say that in just six months time, we have grown to 36 members from 20 service provider companies across the globe including telco, cable, and financial services industries. Together, this group has contributed 26 industry pain points that we selectively discuss on our monthly calls along with other business. We've also begun to engage with the OPNFV Technical Steering Committee and select working groups around project mapping and prioritization.

We're excited for a transformational 2017 for OPNFV and the industry at large.

Steven Wright

EUAG Chair, OPNFV
Lead Member of Technical Staff
AT&T

> "OPNFV has only been in existence for two years now and they are impacting the market... The changes that OPNFV brings will ripple out to your business soon."
>
> –John Fruehe, senior analyst, Moor Insights & contributor to Forbes

INDUSTRY
IMPACT

By the Numbers

- 9,317 total media clips (+32% YOY)
- 526 related to 2016 OPNFV Summit (+15% over 2015 Summit coverage)
- 60 total press/analyst briefings
- 8,786 social followers (+53% YOY)
- 24 official speaking engagements

OPNFV has become an integral player in the NFV industry in 2016, demonstrated by a significant uptick in media coverage and analyst interest from the previous year. 2016 saw two platform releases, a handful of new members, formation of the End User Advisory Group, two interoperability Plugfests, speaking engagements across the events landscape, and a second, more impactful OPNFV Summit. Combined with strong alignment with upstream communities, OPNFV has solidified its place in the market and earned project recognition. We expect this upward trend to continue in OPNFV's third year as the project further evolves and scales to meet the real-world needs of users who operate and deploy large telecommunications and enterprise networks.

Media Highlights

LightReading | May 1, 2016
OPNFV Promises More Powerful Platform

The Register | June 23, 2016
Linux's NFV crew: Operators keen to ditch clunky networks, be 'cool' like, er, Facebook

Linux Magazin | June 23, 2016
OPNFV to shake up the Telecoms industry

RCR Wireless News | June 27, 2016
OPNFV survey shows nearly all telecom operators on board with NFV

Forbes | July 5, 2016
The Latest IT Transformation Is Being Led By The Phone Company

PacketPushers | September 26, 2016
OPNFV Colorado increases functionality, improves collaboration

Linux.com | December 6, 2016
How Virtualized Networks Will Save Us From Dropped Calls

What Operators Think About OPNFV: A Heavy Reading Survey

In June of 2016, Roz Roseboro, Senior Analyst at Heavy Reading, performed a survey of service providers in the Light Reading database about their thoughts on OPNFV. The data indicated that almost all service providers have initiated an NFV strategy and see an important role for OPNFV. Specifically:

- Only 6% have no NFV strategy at all
- 91% say OPNFV is important to the telecom industry
- 98% agree OPNFV will deliver on its promise to accelerate NFV

HOW IMPORTANT IS OPNFV TO THE TELECOM INDUSTRY?

- 9.4% It's Marginally Important
- 34% It's Essential
- 56.6% It's Important but not Essential
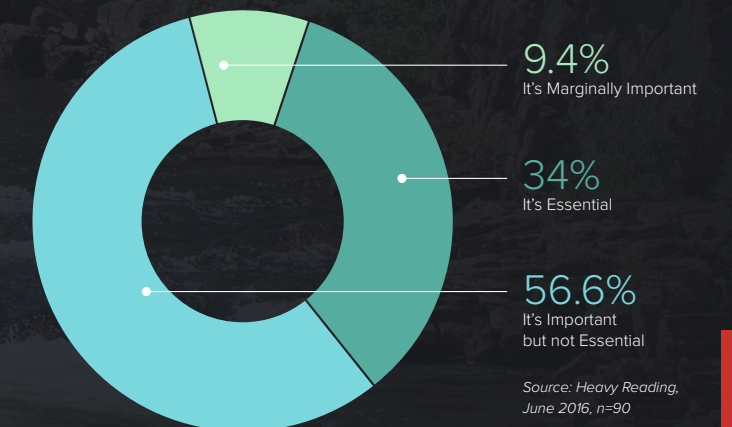
Source: Heavy Reading, June 2016, n=90

OPNFV Onstage at Industry Events

China Mobile Open Networking Workshop
FOSDEM
Telecom Council Silicon Valley
MPLS + SDN + NFV World
Open Networking Summit
Linux Foundation Collaboration Summit
China SDN/NFV Conference
OpenStack Summit – Austin

Big Communications Event
Global SDN Technology Conference
OPNFV Summit
OpenStack India Day
LinuxCon North America
Open Daylight Summit
OpenStack Days Seattle
LinuxCon Europe

SDN & OpenFlow World Congress
Next Generation Mobile Networks
OpenStack Summit – Barcelona
MEF 16 (Unite Partner Summit, Nov 10)
Global Network Technology Conference
Okinawa Open Days
Carrier Network Virtualization
OpenStack Days Mountain West

THANK YOU
TO THE OPNFV COMMUNITY
FOR A SUCCESSFUL 2016!

Learn more and get involved: opnfv.org