Telco Perceptions of OPNFV

Roz Roseboro, Senior Analyst, Heavy Reading
CSP Info (1)

Source: Heavy Reading Service Provider Survey, June 2017 n=98
CSP info (2)

Source: Heavy Reading Service Provider Survey, June 2017 n=98
Status of NFV Strategy

- **2017**
  - We have no NFV strategy at this point
  - We are now developing our NFV strategy
  - We have an NFV strategy but have not started executing it yet
  - We are in the testing/proof of concept stage regarding NFV
  - We are in production deployment with NFV

- **2016**
  - We have no NFV strategy at this point
  - We are now developing our NFV strategy
  - We have an NFV strategy but have not started executing it yet
  - We are in the testing/proof of concept stage regarding NFV
  - We are in production deployment with NFV

*Source: Heavy Reading Service Provider Survey, June 2017 n=97*
Barriers to NFV Adoption

- Interoperability between core infrastructure platform and VNFs
- Maturity of MANO software & OSS/BSS integration
- Cultural issues / mindset
- Lack of skills (e.g., IT programming languages, Chef/Puppet/Ansible, Agile/DevOps methodology, etc.)
- Executive buy-in
- Availability of system integration capabilities
- Interoperability among core platform elements (VIM/NFV-I)
- Other

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Familiarity with OPNFV

Source: Heavy Reading Service Provider Survey, June 2017 n=98
Change in OPNFV’s Importance to Company

- OPNFV has become more important to us, 54%
- OPNFV has become less important to us, 12%
- OPNFV’s importance to us has not changed, 35%

Source: Heavy Reading Service Provider Survey, June 2017 n=95
Opinion of OPNFV

- **OPNFV is most helpful for network operators to achieve their NFV goals**
- **OPNFV is useful mainly for other open source projects to develop solutions appropriate for network operators**
- **OPNFV is most helpful for vendors developing NFV solutions**
- **OPNFV is not addressing the issues that matter most to the telecom/networking industry**
- **OPNFV provides little or no value to the telecom/networking industry**

*Source: Heavy Reading Service Provider Survey, June 2017 n=96*
Engagement with OPNFV

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Factors to increase OPNFV engagement

- OPNFV-provided developer training
- Better articulated value & strategy
- Documentation
- Better training for operations personnel
- More quantitative impact on upstream projects
- Better packaging of software artifacts
- Other

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Most important thing OPNFV is doing

- Providing VNF interoperability testing on different NFV-I platforms
- Promoting network operator interest in upstream projects
- Helping converge architectural concepts
- Providing end-to-end functional and system testing
- Providing testing facilities
- Developing reference stacks
- Getting involved with management & orchestration (MANO)
- Providing performance test suites
- Prototyping and incubating new NFV features
- Other

Source: Heavy Reading Service Provider Survey, June 2017 n=96
### Most important thing OPNFV is doing

<table>
<thead>
<tr>
<th></th>
<th>NA</th>
<th>Non-NA</th>
<th>Contributing</th>
<th>Not contributing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting network operator interest in upstream projects</td>
<td>27%</td>
<td>8%</td>
<td>40%</td>
<td>13%</td>
</tr>
<tr>
<td>Providing VNF interoperability testing on different NFV-I platforms</td>
<td>17%</td>
<td>42%</td>
<td>12%</td>
<td>31%</td>
</tr>
<tr>
<td>Helping converge architectural concepts</td>
<td>13%</td>
<td>6%</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>Providing testing facilities</td>
<td>12%</td>
<td>8%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Providing end-to-end functional and system testing</td>
<td>10%</td>
<td>11%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Developing reference stacks</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Source: Heavy Reading Service Provider Survey, June 2017 n=96
We have no plans to leverage output from OPNFV

We will use OPNFV functional, system, or performance test tooling to evaluate vendors’ NFV-I solutions

We will adopt an OPNFV stack as part of our NFV architecture

We will consider OPNFV as we develop our NFV architecture

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Rating importance of OPNFV activities

- Consistent environment and configuration across multiple stacks and hardware options
- Documentation
- DevOps infrastructure, including automated testing and validation, and CI/CD pipeline integrated with multiple upstreams
- Set of federated test labs for release and development activities
- Release artifacts (i.e., a set of pre-integrated stacks integrated with multiple installers)

Source: Heavy Reading Service Provider Survey, June 2017 n=95,96
## Top expected benefits from OPNFV

<table>
<thead>
<tr>
<th>Overall Rank</th>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Easier integration</td>
<td>143</td>
</tr>
<tr>
<td>2</td>
<td>More rapid deployment of NFV</td>
<td>105</td>
</tr>
<tr>
<td>3</td>
<td>Accelerated adoption</td>
<td>89</td>
</tr>
<tr>
<td>4</td>
<td>Consistent environment across multiple architectures/stacks</td>
<td>79</td>
</tr>
<tr>
<td>5</td>
<td>Higher-quality products</td>
<td>73</td>
</tr>
<tr>
<td>6</td>
<td>Reduced risk</td>
<td>55</td>
</tr>
<tr>
<td>7</td>
<td>Increased understanding of underlying technologies</td>
<td>35</td>
</tr>
</tbody>
</table>

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Satisfaction that OPNFV is delivering on its promises

- Very satisfied, 17%
- Somewhat satisfied, 81%
- Not satisfied at all, 2%

Source: Heavy Reading Service Provider Survey, June 2017 n=96
OPNFV role in MANO

- Demonstrating how MANO projects (e.g., ONAP, OSM) can be integrated into various NFVI/VIM infrastructure stacks
- Promoting a common information model for VNF provisioning and management
- VNF onboarding (e.g., developing templates that all VNF suppliers can use to standardize, defining metadata, etc.)
- Proposing industrywide APIs in support of orchestration
- Offering upstream feedback to project components across the stack, including VIMs, VNFMs, SDN controllers, and analytics projects
- Validating/refining ETSI NFV interface specifications defined in the IFA 00x specifications
- Enabling benchmarking and performance analysis

Source: Heavy Reading Service Provider Survey, June 2017 n=96
Top MANO Pain Point

- Multi-domain orchestration
- VNF onboarding
- Confusion about different approaches to orchestration
- Service assurance
- System and service monitoring
- Telemetry
- Inventory
- Subscriber management
- Other

Source: Heavy Reading Service Provider Survey, June 2017 n=96
Top Security Priority

- Security-oriented applications, such as deep packet inspection, next-generation firewall, etc.
- Security management and monitoring
- Intrusion prevention
- Data integrity and encryption
- Denial of Service prevention
- Identity and access management

Source: Heavy Reading Service Provider Survey, June 2017 n=98
Importance of DevOps to NFV Success

- It's essential, 43%
- It's important, but not essential, 37%
- It could be useful, but it would be very difficult to implement, 13%
- Don't know / Not sure, 2%
- It's not important at all, 5%

Source: Heavy Reading Service Provider Survey, June 2017 n=98
Company engagement with DevOps

We have no plans to adopt DevOps approaches internally

We push multiple small patches to production every day using automated tools and validation

We are building CI/CD pipelines internally to continuously integrate and build code from multiple sources

We are working on automating our testing infrastructure

We are evaluating various DevOps tool chains, but are unsure when and how to roll out

We have not yet started adopting DevOps approaches internally

Source: Heavy Reading Service Provider Survey, June 2017 n=95
“In addition to OpenStack and SDN controllers (e.g., OpenDaylight, ONOS, OpenContrail), which upstream projects are most important to the success of OPNFV?”

Source: Heavy Reading Service Provider Survey, June 2017 n=97
“In addition to OpenStack and SDN controllers (e.g., OpenDaylight, ONOS, OpenContrail), which upstream projects are most important to the success of OPNFV?”

<table>
<thead>
<tr>
<th>Project</th>
<th>Very familiar</th>
<th>Somewhat familiar</th>
<th>Contributing</th>
<th>Not contributing</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPDK</td>
<td>68%</td>
<td>34%</td>
<td>50%</td>
<td>38%</td>
</tr>
<tr>
<td>Open Compute Project</td>
<td>63%</td>
<td>47%</td>
<td>67%</td>
<td>45%</td>
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<tr>
<td>Docker</td>
<td>42%</td>
<td>35%</td>
<td>33%</td>
<td>38%</td>
</tr>
<tr>
<td>OVS</td>
<td>37%</td>
<td>22%</td>
<td>29%</td>
<td>23%</td>
</tr>
<tr>
<td>OpenDataPlane (ODP)</td>
<td>26%</td>
<td>24%</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>ONAP</td>
<td>26%</td>
<td>34%</td>
<td>54%</td>
<td>25%</td>
</tr>
<tr>
<td>Ceph</td>
<td>21%</td>
<td>20%</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>Kubernetes</td>
<td>21%</td>
<td>20%</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>FD.io</td>
<td>16%</td>
<td>8%</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>Mesos</td>
<td>11%</td>
<td>10%</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td>PNDA.io</td>
<td>5%</td>
<td>4%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>TIP</td>
<td>5%</td>
<td>5%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Docker Swarm</td>
<td>0%</td>
<td>20%</td>
<td>8%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Source: Heavy Reading Service Provider Survey, June 2017 n=97
Thank you!

roseboro@heavyreading.com