Easing the transition to cloud-native NFV for CSPs
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Introduction

Operators have been struggling to grow revenues for years while the traffic that runs over their networks has continued to surge from year to year. While the connectivity communication service providers (CSPs) deliver has made the business of internet content providers (ICPs) possible, it is the ICPs whose business doubled between 2014–19, while network operator revenues slightly declined. Connectivity has been commoditized.

Exhibit 1: CSP revenues decline as internet content provider revenues rocket

This leaves two avenues for operators to remain profitable:

- Lower their overall cost structure
- Find new revenue streams through offering additional services to basic connectivity

Network functions virtualization (NFV) is how operators plan to change their cost structures. 5G is how operators plan to drive new revenue streams, not just by offering faster speeds, but by creating new experiences and services for their consumer and enterprise customers. For CSPs to deliver these new 5G services they also require their networks to become more flexible, agile, and intelligent. Cloud-native NFV or Telco cloud is a more flexible and agile way to manage the network than previous iterations of NFV. Thus, for operators to deliver new 5G services and experiences, operators must also embrace the technology, people, and processes of cloud-native NFV into their networks.
Operators have been developing network function virtualization (NFV) for nearly a decade now. In that time, we have seen the evolution of network components that started as tightly coupled proprietary hardware and software (PNFs) evolve into virtualized network functions (VNFs) which disaggregated the hardware from the software. The latest evolutions have seen the principles of cloud networking software applied to these VNFs. This has involved decomposing individual monolithic VNFs into smaller elements called containers, which are architected according to micro-services principles. The advantage of these containerized or cloud-native network functions (CNFs) is that they can be scaled up and down more dynamically, can be monitored at a more granular level, and bring network operators closer to the iterative development and automation models which have made the public cloud providers so successful.

Operators increasingly want to consume network functions in many parts of their network as CNFs, in line with their deployment of full 5G standalone networks. This is no easy task, as CNFs not only have to integrate with telcos’ legacy network components but also implement organizational changes to support cloud-native networking deployments.
Cloud-native NFV still wants to achieve the same goals

Increased operational efficiency, faster network optimization, commoditization of network hardware, increasing network agility, and accelerating time to revenue for new services remain top outputs for operators adopting cloud-native NFV solutions. In these cases, the increased programmability of CNFs is what operators hope to leverage to achieve many of these goals. This programmability will facilitate operator efforts to automate their networks. When matched with the right APIs and monitoring solutions the greater amount of network data operators can expose from CNFs will enable them to introduce more intelligent forms of automation. These new automation solutions should in turn generate greater network efficiencies, scalability, and real-time network optimization.

These capabilities will only come if operators can support their deployments with the right ecosystem of partners and are able to manage the complexity these deployments entail. Operators must adopt continuous integration/continuous delivery (CI/CD) pipelines and other cloud-native skillsets and work practices if they are to make cloud-native NFV a significant improvement over the first wave of network virtualization.

Exhibit 3: Significant outputs operators want from NFV migration

<table>
<thead>
<tr>
<th>Output @n</th>
<th>Very significant</th>
<th>Significant</th>
<th>Somewhat significant</th>
<th>Not significant at all</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase operational efficiency</td>
<td>33%</td>
<td>50%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain revenue more quickly by using software to introduce new services</td>
<td>29%</td>
<td>54%</td>
<td>18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quickly scale services up or down</td>
<td>29%</td>
<td>49%</td>
<td>18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use standard hardware COTS servers instead of specialized network equipment</td>
<td>37%</td>
<td>40%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimize network performance in near real time based on actual traffic/mobility patterns and service demands</td>
<td>33%</td>
<td>42%</td>
<td>22%</td>
<td></td>
<td></td>
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Source: Omdia, NFV & Edge Adoption Survey 2020
Operators need to step-up CI/CD

While network virtualization has been embraced by the telecoms industry, the migration from earlier NFV implementation to cloud-native networking is hard. In 2020, only 22% of operator respondents to Omdia’s annual NFV & Edge Adoption survey had begun implementing CI/CD, up just 1% from 2019. In comparison, 96% of operator respondents had started or planned to start NFV deployments in 2020. With many operators eyeing 2021 and 2022 for 5G standalone deployments there is little time for operators to make the necessary operational changes in line with aggressive network rollout targets. With this in mind, Omdia expects operators will need additional support from their network partners to implement the organizational change to consume cloud-native solutions, particularly for operators who do not have the resources of major tier 1 operators like AT&T, NTT Docomo, Telefonica, and Vodafone, or the green field networks of Dish, Rakuten Mobile, and Reliance Jio.

Exhibit 3: Rates of NFV and CI/CD adoption in network operators

Source: Omdia, NFV & Edge Adoption Survey 2020
Bottom line

The practical side of managing network software is getting more complex. Operators that will go on to thrive with cloud-native networking are those that will be able to iterate and automate their network configurations the fastest. This means automating the simple, simplifying the complex, and investing not just in new technologies, but new skillsets and organizational structures to unlock the benefits cloud-native networking promises.

Stepping back, operators also need to be aware of the large eco-systems that are required to support a healthy and innovative cloud-native roadmap. While operators do not want to have to manage 40 different vendor contracts for one deployment, they need to work with their partners to facilitate software plug-in capabilities to their network that take minimal integration. While network virtualization discussions tend to focus more on software development there is increasing need to focus on how to optimize the underlying hardware infrastructure which support cloud-native networking deployments. Again, fostering a hardware eco-system where operators can plug-in specialized accelerators like graphical processing units (GPUs) or more specialized network processing units (NPUs) into commoditized hardware will ensure operators can still appreciate some of the cost and scalability benefits of commoditized hardware while maintaining the performance benefits of more specialized equipment.
To learn more

Watch this free webinar

“Easing the transition to cloud-native NFV for CSPs”

presented by Omdia and our partners

Atos  DRiVeNETS  NOKIA

The webinar can be accessed at: https://bit.ly/3uPuU1p

For additional Omdia events, visit:
https://gateway.on24.com/wcc/eh/753397/Omdia+Webinars

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