15 NFV SOLUTION PROVIDERS TO WATCH

Here at STL Partners, we have been following developments and deployments in the Telco Cloud space for several years. Below, we highlight fifteen different companies that offer NFV solutions, broken down into three buckets:

- Traditional Network Equipment Providers (NEPs)
- Other NFV giants
- Start-ups you may not have heard of

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Traditional NEPs

Ericsson

• HQ: Stockholm, Sweden
• Website: https://www.ericsson.com
• Date founded: 1876
• Number of employees (2019): 99,417
• Revenue (2019): SEK 227.2bn
Offering:

Ericsson's NFV offerings address the whole stack, including NFV MANO, core VNF's (such as vEPC), as well as a complete NFVi solution. Their offerings seek to provide customers with several different deployment options, whether it be a full decoupling of NFV solutions or full stack solution deployment. They emphasise that their objective is to bring new levels of performance, flexibility and optimisation.

Ericsson is collaborating with others in the space. Their collaboration with VMware, for example, aims to simplify network virtualisation for CSPs, accelerating time to market for new services and enabling customers to fully embrace the opportunities of services like VoLTE and 4G/5G.

Huawei

• HQ: Shenzhen, Guandong
• Website: https://www.huawei.com/uk/
• Date founded: 1987
• Number of employees (2019): 194,000
• Revenue (2019): 121.72 billion USD

Offering:

Huawei provides a full NFV solution, based on open cooperation with NFV Open Lab, as well as integration of individual NFV components and existing network integration in multi-vendor scenarios. They provide carrier-class high

availability services, and claim a faster TTM relative to competitors and an open ecosystem.

The products and solutions developed by Huawei's cloud core network team are interoperable with and authorised by the major cloud OS vendors, such as RedHat, Ubuntu and Windriver. This means operators can select the portfolio of VNF software, cloud OS and COTS hardware that suits them best, reducing concern over compatibility risk during integration and deployment.

Juniper Networks

- HQ: Sunnyvale, California
- Website: juniper.net
- Date founded: 1996
- Number of employees (2019): 9,400+
- Revenue (2019): 4.4 billion USD

Offering:

Juniper offers a carrier-grade NFV solution that combines a dynamic cloud orchestration system with a supporting reference architecture based on virtualisation and programmability. They have a production-ready suite of NFV capabilities that orchestrates and automates the provisioning and operation of network functions, both virtualised and physical.

They are committed to an open-platform approach, helping firms stay flexible and minimize risks by avoiding vendor lock-in. These elements enable a platform to rapidly deliver new services to market. The NFV solution further has a built-in automation capability powered by machine learning to optimise the distributed cloud infrastructure and VNFs, to help guarantee SLA delivery.

Cisco

- HQ: San Jose, California
- Website: www.cisco.com
- Date founded: 1984
- Number of employees (2019): 75,900
- Revenue (2019): 51.9bn

Offering:

“Cisco Evolved Services Platform provides a comprehensive multivendor NFV solution that is based upon open standards and APIs. It is extensible by offering comprehensive modular capabilities that span the entire network operator architecture: cloud, video, mobile and fixed. It is elastic; it seamlessly and dynamically scales services and resources whenever and wherever they are needed. Cisco’s NFV portfolio has the most extensive set of virtual network functions available on the market”

Cisco’s NFV Infrastructure solution provides the compute, storage, networking infrastructure and management and assurance to run NFV services. It is a fully integrated, carrier-grade and robust solution, that delivers “high performance, availability, security and scalability”

Cisco’s open-ecosystem approach to network function virtualisation allows thier partners, which include Fortinet, f5 and Palo Alto, to submit their VNFs for certification, as well as Cisco offering VNFs that are developed in-house

Nokia

- HQ: Espoo, Finland
- Website: https://www.nokia.com
- Date founded: 1865
- Number of employees (2018): 103, 083
- Revenue (2018): 22.56bn Euro

Offering:

Nokia offer a “comprehensive portfolio” of NFV-ready products, solutions and services, boasting “hundreds” of commercial SDN & NFV deployments. Their “horizontal operations” delivery model enables the delivery of managed cloud services for virtualised network products from Nokia (including vIMS, vCPE, vEPC and OSS applications), as well as managing network virtualisation transformation for customers.

As with the above players, Nokia are also partnering with other players, particularly around easing the deployment of VNFs. Partners here include VMware, to certify Nokia's VNFs on VMware's vCloud NFV platform, to help speed up the onboarding of VNFs by service providers, as well as f5, "to enable service providers to deploy a wide range of VNFs, coupled with complete MANO".

Nokia acquired Nuage Networks in 2015 (founded 2013, https://www.nuagenetworks.net/, based in the San Francisco Bay Area), who seek to "empower [their] customers to finally deliver on the true promise of the cloud", and to work towards a "world where innovation isn't hampered by infrastructure … where network resources are as effortless consumable as compute and storage". To this end, they deliver scalable and programmable SDN solutions within and across the DC and out to the SD-WAN, with the security and availability required by business-critical environments.

Other NFV giants

Red Hat

- HQ: Raleigh, North Carolina
- Website: https://www.redhat.com/en
- Date founded: 1993
- Number of employees (2019): 13,400
- Revenue (fiscal year 2018): 3.4 billion USD

Offering:

Red Hat's NFV solution delivers the entire core software stack for NFV, as well as integrating key technologies from open source communities, including OpenStack and Linux, into its enterprise-grade projects. Red Hat is "the only open technology vendor that delivers the entire core software stack needed for NFV", ensuring "better interoperability, stability, and security" across the NFV environment. Furthermore, Red Hat Consulting delivers design and installation services, mentoring, as well as training and certification services for OpenStack.

Red Hat works closely with an extensive system of partners, which helps them "offer flexible and complete solutions" that work best for the needs of the customer. Their partners include Affirmed, Amdocs, Atos and Cisco.

Amdocs

- HQ: Chesterfield, Missouri (corporate), Saint Peter Port, Guernsey (registered office)
- Website: https://www.amdocs.com/
- Date founded: 1982
- Number of employees: 25,000
- Revenues (2019): 4.1 billion USD

Offering:

As "the industry's first software and services portfolio to leverage ONAP (Open Network Automation Platform)", Amdocs NFV enables service providers to accelerate adoption and monetisation of NFV and SDN.
Amdocs help service providers with the whole process, starting with strategy and planning, as well as implementation (helping service providers deploy the platform and integrate it into their (hybrid) networks, and with operations (the services to help ongoing operation, assurance and optimisation of the platform).

Amdocs has a wide ranging NFV partner ecosystem, including 160+ VNFs from leading industry vendors, including Affirmed, Mavenir and Juniper and Palo Alto. In collaboration with these partners, Amdocs is able to their NFV portfolio to enable "fast, low-cost design, fulfilment and monetisation of hybrid network services"

Netcracker Technology

- HQ: Waltham, Massachusetts
- Website: https://www.netcracker.com/
- Date founded: 1993
- Number of employees (Owler):7000
- Revenues (Owler): 1.8 billion USD

Offering:

The Netcracker SDN/NFV portfolio comprises “several market-ready solutions built on a common platform powered by Agile Virtualisation Platform and Practice” (AVP), and the portfolio “helps service providers seamlessly transition to cloud networks and services”. Their solution is designed to combat the “key challenges of commercialisation, multivendor services and optimal efficiency”, and enables service providers to start with any virtualised service and incrementally add new services”, thus providing greater efficiency and agility.

They have a “robust” partner ecosystem and a digital marketplace of commercially ready services, as well as consulting and professional services, and they have worked with Swisscom, Deutsche Telekom, Etisalat and Vodafone.
Netcracker have received multiple awards, including the 2019 MEF award for Orchestration, Service Automation and Technology Leadership, as well as the 2019 TM Forum Excellence Award for operational transformation and agility.

VMware

- HQ: Palo Alto, California
- Website: vmware.com
- Date founded: 1998
- Number of employees (2019): 24,200
- Revenue (fiscal year 2019): 9 billion USD

Offering:

VMware’s vCloud NFV is an ETSI-compliant NFV platform for Communications Service Providers, providing a “fully integrated, modular, multi-tenant” NFV platform offering “compute, storage, networking, management and operations capabilities”
Their cloud combines a “carrier grade NFV infrastructure” with VMware vCloud Director for Service Providers acting as the Virtualised Infrastructure manager (VIM).

VMware have also developed the VMware Ready for NFV certification program, bringing together “the largest ecosystem of VNF vendors,

orchestration providers and system integrators". Named partners include Affirmed Networks, Cisco, Fortinet and F5.

Ciena

- HQ: Hanover, Maryland
- Website: ciena.com
- Date founded: 1992
- Number of employees (2018): 6,013
- Revenue (2018): 3.1 billion USD

Offering:

Ciena have developed a distributed-NFVI software, a "complete, modular solution specifically optimised" for the distributed NFV environment. The software is built to address deployment issues related to distributed-NFV use cases, allowing for rapid implementation of advances and providing flexibility in deployment.

Their software is capable of being deployed on any physical server, including an x86-based commercial-off-the-shelf server, and each component is licensed to operate individually or as a complete stack, thus eliminating vendor lock-in BluePlanet, a division of Ciena (founded 2006, blueplanet.com, headquartered in San Francisco Bay Area) provides intelligent and automated NFV orchestration capabilities for instantiating, managing and chaining VNFs. It conforms to the ETSI MANO guidelines, and they further leverage APIs and other technologies to simplify integration with different OSS, SDN, and VIM platforms.

Their open, vendor-agnostic strategy enables customers to use the VNFs and cloud infrastructure of their choice to "simplify the operationalisation of new NFV-based services and scale them according to customer demand"

Start-ups you may not have heard of

Nefeli networks

- HQ: Berkeley, California

- Website: nefeli.io
- Date founded: 2016
- Number of employees (Crunchbase): 11-50
- Revenue (Crunchbase): unknown, Nefeli Networks have gained 9.2 million USD in venture funding

Offering:

Nefeli Networks develops orchestration and infrastructure solutions for network application. They have developed a platform that is able to virtualise "entire classes of network appliances into composable building blocks to create rich, scalable, and easy-to-manage network services". The aim is to "creat[e] the next generation of software for managing and operating large scale networks".

The founders, CTO Sylvia Ratnasamy, an associate professor of computer science at the University of California, Berkeley, and Chairman Scott Shenker (co-founder and initial CEO of Nicira before its acquisition by VMware), also co-founded LeanNFV.org, the entity behind the Lean NFV open architecture, about which you can read more here.

Zeetta

- HQ: Bristol, UK
- Website: https://zeetta.com/
- Date founded: 2015
- Number of employees: 25 (full-time)
- Revenue (Crunchbase): unknown, raised 4.1 million USD in venture funding

Offering:

Zeetta Networks is a "network automation company that delivers digital transformation with intelligence and automation". "They offer Open Networking solutions for heterogenous networks based on SDN and Network Virtualisation technologies", which they sell through their commercial proposition: NetOS®, a network control and management platform for enterprises and managed service providers.

NetOS was deployed in the UK's first public trial of an urban 5G deployment, at the 5G Layered Reality event in Bristol in March 2018. The demonstration showed several use cases, "including Smart City Safety and real-time HD VR/AR applications, supported over the same physical infrastructure with dedicated network slices". NetOS was used to provision and operate these network slices on-demand, each with their individual latency and bandwidth requirements.
The work of Zeetta Networks has been recognised by multiple industry bodies, including GSMA's Global Mobile Awards, TMF's Excellence Awards and the 5G World Awards, as well as being recognised as a "Gartner Cool Vendor" for Communications Service Provider Network Operations in 2019.

netElastic systems

- HQ: Santa Clara, California
- Website: https://netelastic.com/
- Date founded: 2016
- Number of employees (Crunchbase): 11-50
- Revenue (zoominfo): 6 million USD

Offering:

netElastic state that their vision is to help providers succeed with their network transformation goals. Since they were founded in 2016, they have worked with 40% of the top carriers in the world, as well as many smaller carriers to understand their infrastructure challenges.

They are a "leading innovator of NFV software for carriers with a suite of products leveraging low-cost hardware" (SDX central). Their solutions are purpose-build to meet the needs of carriers, and include "market-leading scalability and performance, massive multi-tenancy, core network integration, and always-on high availability clusters". By providing carrier-class performance and significant cost benefits, netElastic is helping to change the economics of networking.

netElastic have been nominated for numerous industry innovation awards, including Light Reading's Leading Lights Award for Most Innovative NFV Product Strategy and Network Virtualisation Europe's Most Innovative NFV Solution Award. In 2019, they further achieved Winner's Circle Status, the

highest recognition level as the Intel® Network Builders Winner's Circle Program.

InManta

- HQ: Leuven, Belgium
- Website: https://inmanta.com/
- Date founded: 2016
- Number of employees (Linkedin): 11-50
- Revenue: unknown

Offering

Inmanta have developed an "innovative, integrated" approach for management and orchestration (MANO), which provides capabilities for end-to-end delivery of telecommunication services, and aligns with key industry standards including TOSCA and ETSI NFV.

Their solution manages and automates the full service lifecycle and is built on an open framework that easily integrates with VNFs, OSS/BSS, SDN, physical and virtual devices, datacentre resources and cloud platforms.
Inmanta won the international Call for Innovation on SDN/NFV 2.0, organised by Swisscom, Telia and Proximus

NFWare

- HQ: San Francisco Bay Area, California
- Website: https://nfware.com/
- Date founded: 2015
- Number of employees (Crunchbase): 11-50
- Revenue (Crunchbase): 2.5 million USD (venture funding)

Offering

NFWare have developed "virtually the world's fastest networking software", offering a virtualised IP routing solution for Service Providers, Operators and Data Centres. NFWare have developed a virtual carrier grade NAT as well as a

virtual load balancer, “the industry’s fastest software load balancer for high-loaded deployments”, both of which are able to run on standard x86 servers.

Described as “A Leading VNF product” by SDxCentral, a Telco Cloud Hot Tech Innovator by ABI Research report, as well as reaching the Top-50 prominent industry vendors, according to Technavio and was awarded Solution Partner Status by Intel Winners’ Circle Program.

Partners and customers of NFWare include intel, Telefonica, Nokia and Lenovo

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