



Cloudify Your VNF

A Pragmatic Solution for the VNF
Cloud Native Transformation



CLOUDIFY

The VNF Onboarding Challenge

[VNF Onboarding](#) is known to be one of the biggest challenges in the transformation to [NFV transformation](#) as noted in one of the recent SDxCentral report: [VNF Migration challenges](#).

Arguably the biggest challenge organizations will face when it comes time to operationalize VNFs is a lack of processes. Many IT organizations are in the throes of managing complex transitions to modern DevOps processes. The typical network service team has no operational processes in place for deploying and managing VNFs. On top of that, add the need to secure those VNFs and make sure they meet compliance mandates and it could be several years into the next decade before VNFs are commonplace.

Current Approaches to VNF Automation – Challenges and Limitations

To date, the primary approaches to addressing this challenge have only had various degrees of success, these include:

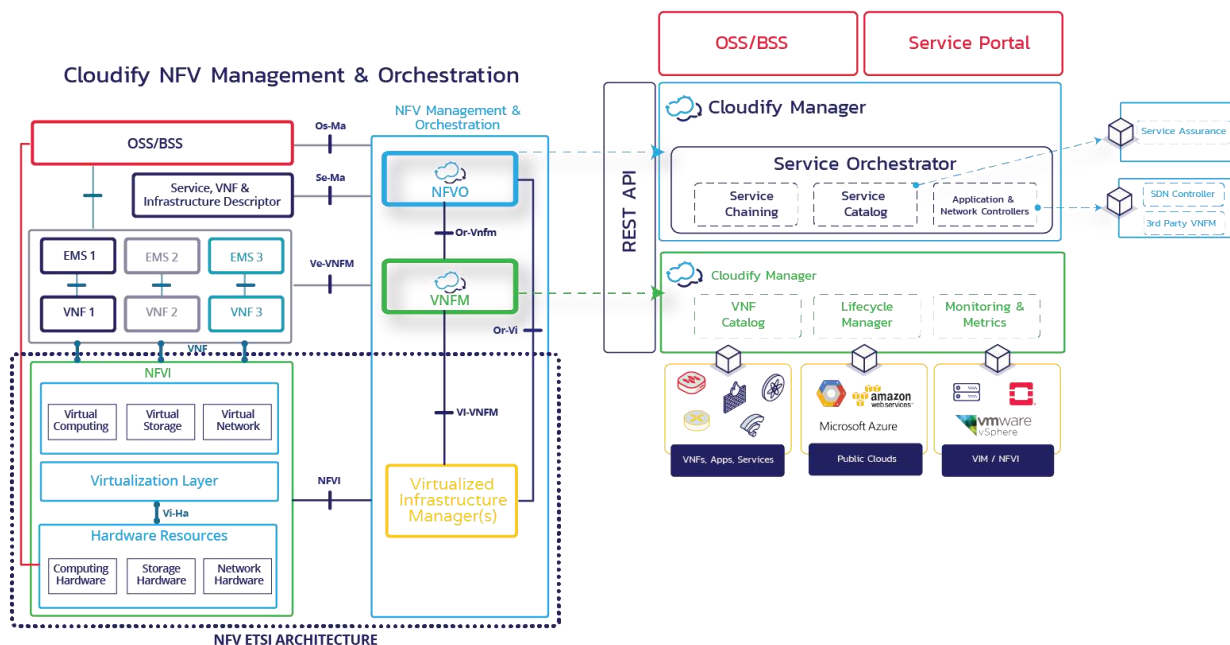
- **Homogenizing all VNFs through a common information model:**
ETSI (European Telecommunications Standards Institute) that designed the first best-practice NFV architecture, that is still quite popular to date, among other standardization bodies like ONAP the Open Networking Automation Project by the Linux Foundation, have tried to “homogenize” all VNFs through a common information model represented by a VNF descriptor. The main challenge with this approach is that it requires a lowest common denominator approach for VNFs which prevents them from showcasing their unique capabilities – and when you start adding unique features to a VNF descriptor the whole idea of normalization just renders itself as not valid anymore. As a result, vendors are not eager to adopt a common information model, as it increases the cost, while not providing much of benefits in return.
- **Generic VNFM delegates integration effort to the end user**
The other approach (also supported by ETSI) has been to define a generic VNFM for all VNFs, which basically moves the challenge of automating the management of VNFs from the vendor to the end user. The basic premise behind this approach is the assumption that you can leverage common information model in the form of a VNF descriptor. Many customers have tried to deal with this challenge by creating complex on-boarding and certification processes, however these processes still leave the heavy-lifting of automating a huge complexity in the hands of the customer, making the entire on-boarding process still very costly and slow.
- **The Cloud Native VNF Approach**
The move to a cloud native operational model is expected to disrupt this entire thinking.

The [Cloud Native VNF](#) approach places the responsibility of simplifying the operational model of a VNF to the VNF vendors themselves to define an opinionated architecture on what's required to deliver a cloud native service that supports dynamic services like auto-scaling, healing, upgrades as built-in features.

Many of the new generation network services such as [SD-WAN](#) and [vCPE](#) were built with this architecture in mind.

The challenge with this over-the-top approach is that these next generation network service providers also took the entire operational challenge of delivering those services through SaaS models, and in many aspects make carriers fairly redundant.

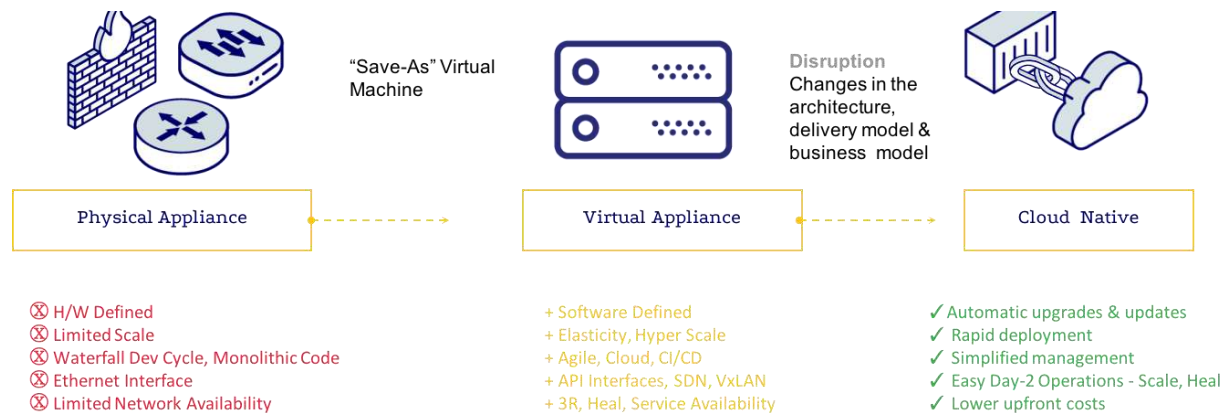
The other challenge is the transformation challenge. Many of the existing VNFs were not built for cloud native environments, and therefore need to undergo a fairly large transformation to fit into the cloud native world, and this has proven challenging.



Time to Market: Biggest Challenge with VNF Cloud Native Transformation

The large part of network functions – think routers, firewalls, load balancers, and such – have already gone through the transition from physical appliances to virtual ones, essentially becoming “virtualized” network functions, delivered via software that’s abstracted from the underlying hardware.

While this in itself is already a major evolution, with the constantly changing technology landscape this has become the first step in a larger transformation to cloud-readiness. In order to really achieve the benefits of being a cloud-native VNF, scaling and management efficiencies are needed to truly transition into operators large networks, providing the same benefits provided by existing cloud-native applications.



VNF vendors have been starting to feel these pressures, and have come to the realization that a more comprehensive transformation will be required to transform existing VNFs from a set of virtual appliances to self-managed cloud native VNFs. This process is often not trivial, and many times involves re-architecture, and requires a new skillset that is not part of the VNF vendor’s core business or traditional domain.

VNF vendors that will fail to go through this transformation process rapidly enough will find the market moving away from them, while those who have already undergone this transformation will be better equipped to transition into a cloud environments, alongside new vendors that are designed cloud-native.

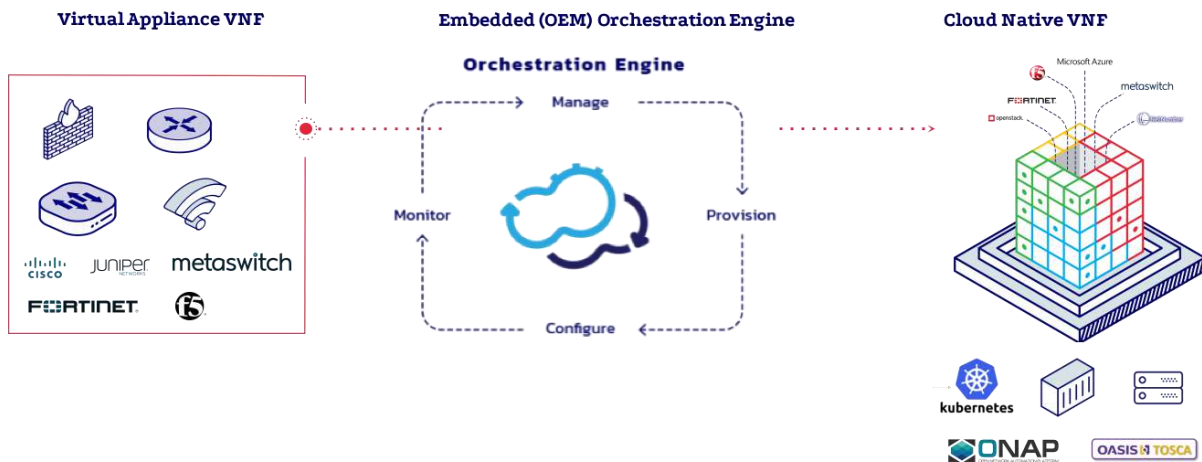
Making **the biggest challenge and risk for VNF vendors the time to market** required to transform their VNF into cloud native VNFs.

Simple Embeddable VNFM Solution

A typical cloud native VNF would need to support the following set of attributes:

- Automated, fast deployment, upgrading, and updates
- Simplified management
- Easy and automated scaling as network service demands change
- Lower upfront costs

Most of these requirements are universal for the diversity of VNFs today. The Cloudify embedded VNFM solution for VNF providers is targeted to address this part of the transformation process by providing embedded management and orchestration ([MANO](#)) that can be integrated as part of VNF vendors management suite. The solution is intended to take care of the heavy lifting from the VNF vendors and cover all of the generic aspects of VNF management and automation out of the box.

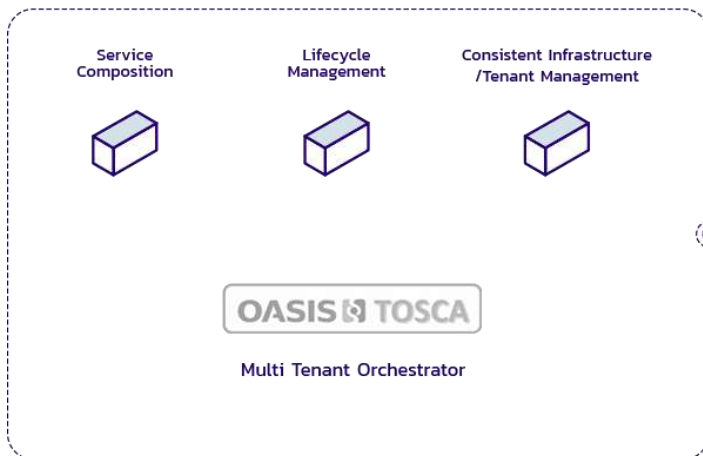


VNF vendors that embed Cloudify as their VNFM will be able to immediately enable their VNF with full lifecycle automation, multi-cloud support, standard support and a dynamic layer of many more features built for elastic environments.

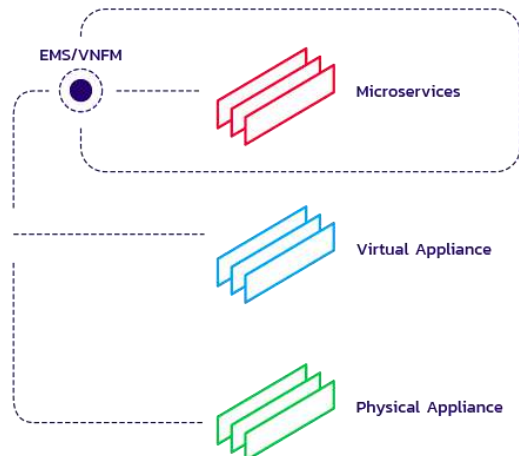
Supercharge Your Cloud Native Transformation

To simplify the VNF Cloud Native transformation process we've broken down this formerly complex process into two easy steps, with little to no coding or custom development, by making simple customization possible through a set of built-in plugins.

Generic (Operator) Orchestration

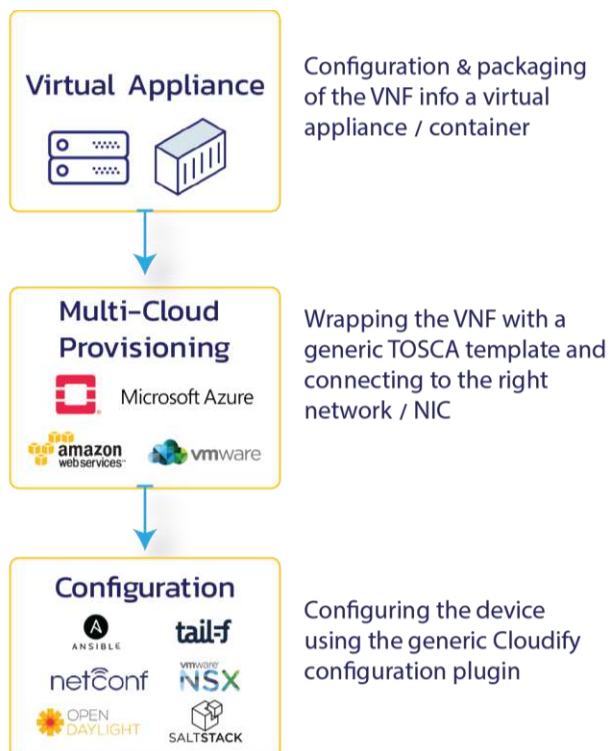


Cloud Native VNF



Step 1: Transform your VNF from an Appliance into a Cloud Service

If your VNF is already a virtual appliance, we can then transform this virtual appliance into a service by wrapping it with a generic service template that will automate the deployment process of the VNFs on multiple clouds.



Once the VNF has been templated it is ready to run on a cloud, but that's still not enough.

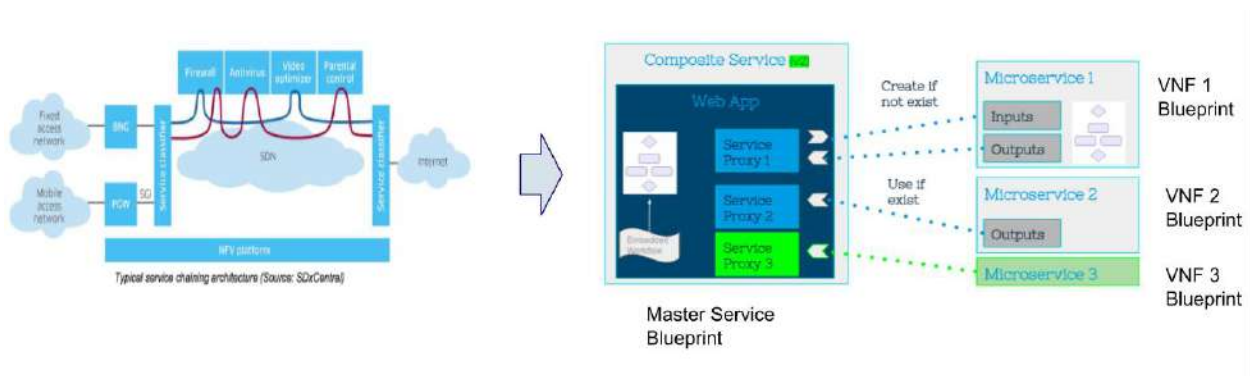


To make the VNF a (re)usable service we need to provide a way to automate the configuration and operations of the VNF itself. Historically, this step has been the most complex step, as each VNF comes with its own proprietary protocols and APIs.

Cloudify comes with a universal configuration plugin that supports a wide range of protocols such as netconf / YANG, XML, telnet, REST, among others - which significantly simplifies all aspects of configuration. This generates the configuration template per VNF by taking the original configuration file of the VNF, and templating it in such a way that it gets populated with inputs from the orchestrator. This allows Cloudify Manager to configure almost any device without writing any custom code, thus shortening a formerly timely process into hours or days.

Step 2: Simple Service Chaining

Once we transform the VNF from an appliance into a cloud-service it becomes easier to chain VNFs together as part of a larger service chain. To streamline this process, Cloudify uses a feature called “deployment proxy”. This enables the Cloudify orchestrator to chain multiple VNF services together, alongside the input and output parameters from each service, to one another.



Cloud Native Step by Step Example

Test drive Cloudify with an existing virtual appliance from our catalog

Virtual Appliance

Step 1: Learn how to wrap the virtual appliance with a Cloudify template to enable multi-cloud support

Multi-Cloud Provisioning

Step 2: Show how to configure the VNF using the configuration plugin

Configuration

Step 3: Show a fully functional VNF service chain by composing additional VNFs

Service Chaining



Case Study: Metaswitch Networks

MetaSwitch Networks, a leading provider of cloud native virtual network functions, has OEMed Cloudify's virtual network functions management (VNFM) capabilities in delivery of its own VoLTE TAS, vSBC and vIMS VNFs enabling dynamic cloud native services that automate their VNF provisioning, deployment, configuration as well as auto-healing and scaling.

metaswitch



CLOUDIFY

Copyright © Cloudify Platform Ltd. 2018 | cloudify.co

Additional Cloud Native VNF References:

Many VNF vendors have already realized the value of Cloudify and are using Cloudify to automate their VNF management processes by embedding orchestration into their management stack.

The list below is a partial list of VNF vendors who have selected Cloudify as a VNFM.

Fortinet	TOSCA-based security orchestration for Fortinet security appliances. ▶ Watch Demo
6WIND	Cloudify Manager serving as the VNF Manager and NFV Orchestrator functions for the 6WIND vRouter ▶ Watch Demo
NetNumber	Cloudify has integrated with the TITAN platform to orchestrate the deployment as well as on-boarding, service chaining, and management of its various VNFs of their signaling systems
MetaSwitch	Embedding of Cloudify's virtual network functions management (VNFM) for VoLTE TAS, vSBC and vIMS VNFs ▶ Watch Demo
ASOCS	Using Cloudify's open source automation manager, Cyrus to be fully automated and orchestrated in accordance with ONAP. ▶ Watch Demo
EXFO	EXFO leveraged Cloudify to provide a fully functional, orchestrated solution that enables the rapid turn up and management of Carrier of a Carrier Ethernet (CE) service. ▶ Watch Demo

You can try this yourself through the Cloudify hands-on VNF onboarding lab:

<https://cloudify.co/NFV/vnf-management>.

Read more about [NFV](#) & [VNFs](#) on our blog.



Learn more at: cloudify.co/academy

Copyright © Cloudify Platform Ltd. 2018 | cloudify.co