EXPERT OPINION

NFV transforms passive CSP value chains into dynamic value constellations

A critical step on the road to telco cloud is network functions virtualisation (NFV). Pablo Martinez explains how the technology is moving communications service providers (CSPs) to an agile environment that enables rapid new service introduction and improved operating margins

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As every businessperson knows, there are two ways to make more money: increase revenues or decrease costs. Many words have been written about the new services and revenues that network functions virtualisation (NFV) will make possible, thanks to its elasticity and flexible support of new business models and ecosystems. However, very little is said about the second, perhaps more immediate, benefit of virtualisation – its ability to decrease service costs and improve operating margins.

NFV enables the on-demand instantiation of functions in a format that is easier to load balance and scale up or down. It allows you to move functions dynamically across distributed hardware resources in the network, while maintaining service continuity and maintaining or even improving quality of service (QoS). With that kind of real-time fluidity, virtualisation can be exploited to morph a network automatically. Its functions can be executed on the nodes running at the lowest cost at any given time, to maximise operating margins. This is an aspect of NFV that is often overlooked.

NFV lets you factor in both technical and financial optimisation. You can dynamically calibrate the right level of operational flexibility into virtualised functions to reduce operational costs, improve operating margins and confidently implement more profitable business models – even for existing services. In turn, by maximising the financial value of services, you maximise business performance.

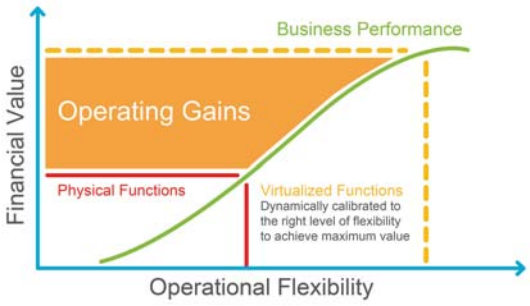

Figure 1: Financial value and operational flexibility lead to enhanced business performance through virtualisation

This kind of consideration drives the business case for NFV. Even if you do not immediately use virtualised network functions (VNFs) to offer completely new services, you can use them to increase the profitability of any service, and without increasing prices.

Orchestrating better margins

NFV is all about flexibility – making services and networks more responsive to customer needs with an infrastructure that is more elastic. But without the right kind of orchestration, this flexibility may still impair profitability.

VNFs are automatically instantiated to run on specific hardware resources based on factors such as ▶

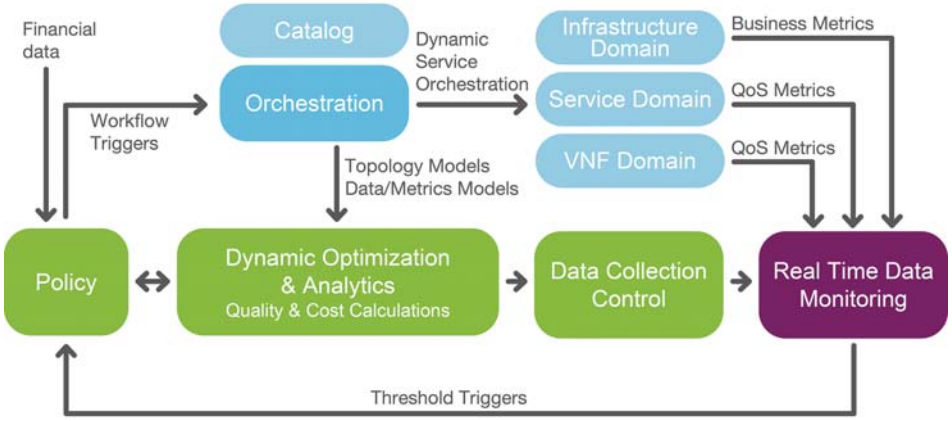

Figure 2: The virtualised operational environment consists of a closed-loop system

resource utilisation, workload levels and service level agreements (SLAs). But to fully harness the benefits of virtualisation, a comprehensive type of NFV orchestration is needed – one that is able to consider all aspects of a virtualised function, including the fluctuating costs of running it on any given hardware resource at a specific time.

This is the subject of the TM Forum catalyst project 'Maximizing Profitability with NFV.' It addresses the analytics and policies needed to dynamically determine orchestration decisions for well-rounded NFV instantiations. The mission of the project is to delineate an operational environment where VNFs are instantiated and dynamically adjusted according to policies that optimise both business value – minimal costs, maximum profitability – and customer experience.

As shown in the following figure, this operational environment consists of a closed-loop system consisting of monitoring, mediation, analytics and policy-driven instantiation and restoral. The resulting NFV orchestration considers the technical and financial metrics that make up the cost, revenue and QoS aspects of service offerings. Orchestration is optimised against a wide range of financial and technical objectives, such as infrastructure operational costs, network performance and service level agreements (SLAs). Policies are structured accordingly. The goal is a level of business agility not previously possible, enabled by the inherent flexibility of NFV orchestration.

This capability is critical. It is possible to assign functions in a way that maintains service quality but is economically inefficient at a given point in time. This can result in satisfied customers but an unsatisfactory or even negative operating margin on the provided service. Ideally, functions should run wherever operational costs are the lowest, as long as SLAs and other key criteria are also met. Some of this information is already monitored by data centres and other third parties and is accessible to CSPs. For instance, the cost of electricity can be monitored in data centre locations and network nodes and factored into cost calculations. Obviously, NFV orchestration will require a data analytics-enriched policy management capability, programmed with an algorithmic equation, to make the proper real-time determinations and maintain the specified operational cost thresholds.

The complexities of NFV require tight coordination with a highly automated OSS/BSS. For this reason, NFV orchestration should be able to work with OSS/BSS product catalogues in the larger service orchestration framework. This ensures consistency across all functions, including planning, ordering, provisioning, configuration and activation.

NFV as a source of operational efficiency

NFV removes barriers between the financial and technical aspects of running networks. This enables a more cohesive business, where customer experience, services and the network are part of one orchestration – capable of optimising business value, such as operating margins, while coordinating resources, service quality and lifecycles. The elasticity of virtualisation expands existing value creation systems, transforming them from passive value chains into dynamic value constellations. These may make it possible to operate emerging digital service ecosystems at the lowest possible cost without compromising service quality. By dynamically moving VNFs in real time, even across service provider boundaries, you can comply with and more confidently guarantee SLAs while you also maximise operating margins – something not possible with only physical functions.

New product development is widely seen as a source of greater profitability, but it is not the only source. Higher profits can also come from a more prosaic source: operational efficiency. This is achievable with NFV orchestration that allows combined business and financial objectives to play a more direct role in the daily operation of the underlying infrastructure. As a result, service providers will have more control over their reputations, branding and financial performance.

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