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WHITE PAPER

The Cohesive Cloud:
VNF-Based Managed Service Implementation Strategies

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JUNIPER NETWORKS®

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INTRODUCTION

Only four years ago, the implementation of a network functions virtualization (NFV)-based cloud for many communications service providers (CSPs) was considered a radical step in the transformation process. In contrast, today few CSPs would disagree that their future, on some level, is the cloud. There are several reasons for this sudden shift, but the key drivers relate to a fundamental change in the telco rules of customer engagement and service delivery model.

This applies to both sides of the model. On the telco side, CSPs need more agile, automated and scalable methods for meeting the high bandwidth consumption demands of their enterprise customers, while these same enterprise customers that possess more complex service requirements, are also demanding more tailored and personalized services, rather than accepting a common enterprise services template that only partially meets their consumption and experience demands.

As a result, NFV and the cloud are fundamentally redefining the managed services delivery model. The new market reality results in both challenges and opportunities for a CSP in a managed services context.

Although there are several factors to consider, the overarching principle of an effective cloud virtualized managed services strategy is that it must be cohesive and more than just the sum of basic functions; it must be capable of seamlessly integrating highly programmable service delivery. However, this is a challenge, in that the cloud and software are both moving to a centralized and distributed model.

In order to appreciate the intricacies of implementing a cohesive cloud-based managed services strategy, this white paper documents the changes utilizing the two basic steps that remain fundamental to the telco deployment strategies: planning and building. Accordingly, this paper addresses the technical and business planning requirements of cohesive managed services; and explores the technical requirements associated with building a cohesive managed services platform.

# COHESIVE CLOUD MANAGED SERVICES PLANNING REQUIREMENTS

As with any major technology wave, disruptive or complementary, the impact on service delivery cannot be ignored. The cloud has an even stronger service impact from two key perspectives. First, the cloud will deliver on the promise of low-latency, customizable and personalized service delivery, which has never been achieved on the same level before. Second, and perhaps even more important, the cloud is fundamentally redefining managed services delivery models, since leading cloud use-case services, such as virtual customer premises equipment (vCPE) and software-defined wide-area network (SD-WAN), represent new ways of delivering and enhancing the reach of managed services.

Reach is critical, because it ties back to customer expectations, which are also shifting. This means that managed services must become more cohesive and consistent, since customers expect that delivery models will be uniform and not in any way vendor-specific, and tied to product performance and feature support.

This is especially vital for managed services use cases such as SD-WAN, since the primary value proposition and the promise of this technology is tied to achieving a vendor-agnostic, consistent delivery and management model. To meet these demands, CSPs must embrace new approaches to fulfill managed service delivery.

In order to examine CSPs' willingness and readiness to make this managed services transition, in the second quarter of 2016 Heavy Reading, in conjunction with Juniper Networks, conducted a major survey documenting the impacts of use cases such as SD-WAN and vCPE on service delivery. As shown in **Figure 1**, the input from the survey respondents indicated that many CSPs recognize the impact on managed service models. For example, 52 percent of CSPs surveyed stated that NFV will have a major impact on the managed services business processes.

Figure 1: Impact of NFV on Business Operations & Processes
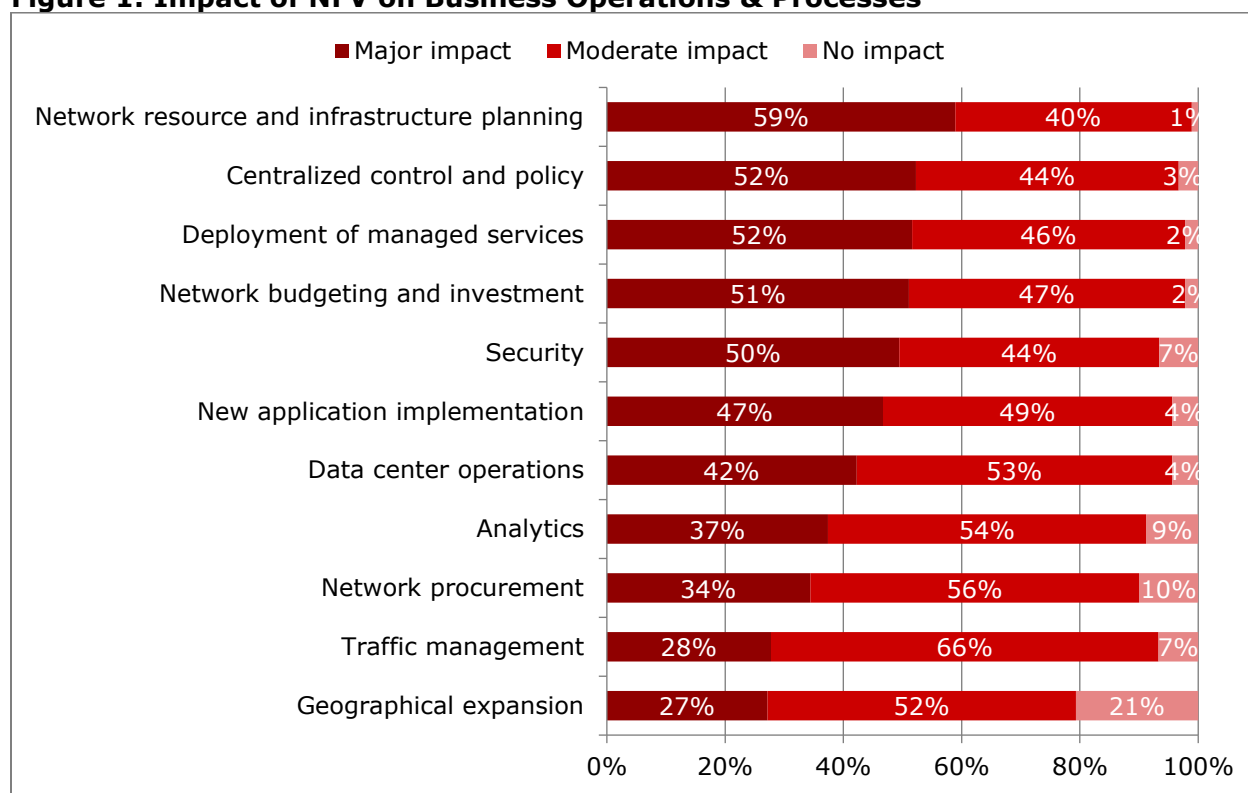
Question: *How much impact will NFV have on the following business operations and processes at your company? (N=90-92)*
Source: Heavy Reading, Juniper vCPE and SD-WAN Custom Survey, 2Q16

However, in order for this to happen, CSPs will have to proactively adapt to the new cohesive cloud model by expanding managed services portfolio reach and by also expanding cloud ecosystem and vendor relationships to support more flexible and consistent virtualized network function (VNF)-based managed service delivery models.

One of the key tenets of this new cloud managed services model is that CSPs will continue to work with partners and logically transition from a solitary, in-house-driven managed services build model. Accordingly, the next section of this white paper delves deeper into the managed services business and technical requirements of the cohesive cloud.

Managed Services Planning Business Requirements

The key takeaway from **Figure 1** is that CSPs need to factor the business case requirements into the planning process. Essentially, CSPs must recalibrate their business values and expand their business processes to ensure that they can maintain or improve the business performance of their current managed services offering.

In order to cost-justify the associated business case, CSPs must be able to deliver additional levels of value-added services (VASs) that enterprises will want to deploy. That will generate the revenue levels necessary to successfully monetize the cloud.

Monetization of new technology is often a complex undertaking, and the cloud is no different. From a managed services perspective, CSPs must reconsider and revector their pricing strategies for managed services to help their enterprise customers leverage the flexibility of the cloud to lower their total cost of ownership (TCO)-driven costs. In other words, in the cohesive cloud, TCO must be a win-win for CSPs and enterprises alike, not just solely focused on extending CSPs' VAS business margins.

In many cases, achieving this will mandate a much more collaborative partnership between CSPs and enterprises in terms of licensing and even sharing a long-term managed services vision strategy.

The bottom line is that, to be successful, CSPs need to adopt processes, either developed internally or with third parties, that enable them to rapidly test the economic feasibility of new services and rapidly model the business case and make a go-no-go decision. Specifically, they must implement a cloud-based, *pro forma* business model – which is an additional tenet of the cohesive cloud.

Managed Services Planning Technical Requirements

As presented above, a critical attribute of a cloud – if implemented correctly – is its level of business process cohesion. The same requirement will apply from a technical perspective. The reality is that even in a world where software is either distributed or centralized, there is still a need for the cloud to function holistically from an automation, scale, policy enforcement and services delivery perspective.

To accomplish this vision, several things must be addressed in the planning process. As a starting point, the planning process must possess a well-defined platform roadmap that addresses several critical questions up front. These questions include the timeline for implementing software-defined networking (SDN) and NFV, whether independently or sequentially, and to what level the underlying cloud platform will deliver the flexibility to support the seamless integration model necessary to integrate the business planning strategies documented above.

The most tangible way to measure how well technical and business requirements are interwoven is by measuring to what extent new automation driven processes are integrated into a virtualized cloud platform.

The second test of technical managed services integration efficiency is to assess the extent to which underlying cloud platforms can seamlessly support a mix using in-house resources or third-party professional services, white-labeled services and systems integrators.

The third test of platform cohesion will be the extent to which it supports advanced policy control and analytics. In other words, the cohesive cloud will be policy- and analytics-driven. In turn, this will impact managed services delivery, given that policy and analytics both apply to the end user and will be utilized to provide real-time insights into network performance and security enforcement. This relationship between cloud and security is illustrated by the relatively high score of security (50 percent major impact) in relation to NFV process impacts shown in **Figure 1**.

However, it's also important to note that both policy and analytics real-value propositions enhance the value of automation, which in turn has a positive impact on the creation of the new cohesive cloud business practices described above. This synergistic effect is not limited to a few use cases; it applies to *all* use cases, and affects both opex and capex. For example, as shown in **Figure 2**, when survey respondents were asked about vCPE's impact on opex, the top two attributes were both policy- and automation-driven.

Figure 2: Automation & Opex
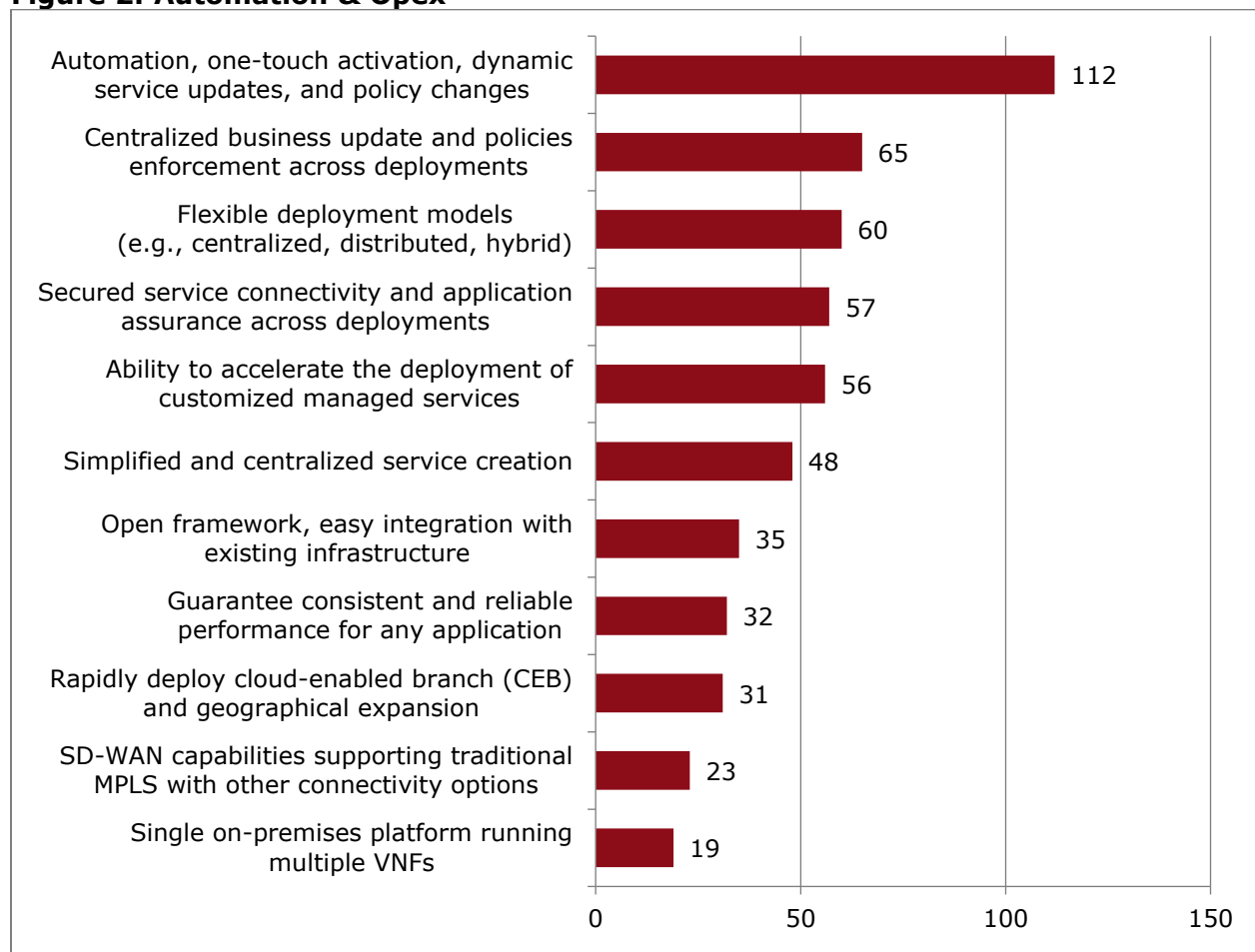
Question: Which three vCPE attributes are most important for opex reduction? (N= 91)
Source: Heavy Reading, Juniper vCPE and SD-WAN Custom Survey, 2Q16 (responses ranked)

This confirms that the cohesive cloud – and the virtualized platform on which it is built – must leverage an open, software-defined, software-driven design to be managed services use case-agnostic and able to meet current and future managed services requirements.

BUILDING A COHESIVE CLOUD PLATFORM

As documented above, one of the principal catalysts for cloud deployment is to automate and expand manage service delivery and innovation. Accomplishing this will also require that the underlying platform be open and software-extensible.

Accordingly, this section of the paper examines these platform attributes and managed services impacts in greater detail, including matching cloud platform requirements to applicable managed services business and technical processes.

The Impact of Open

Without question, one of the leading attributes of a cohesive cloud platform is openness. Of course, platform openness was a leading attribute well before the cloud evolution phase began. However, this time around, openness has a tighter definition and will be more strictly enforced.

This is because the industry is finally taking the necessary steps to embrace automation and pure software integrations, which will deliver an end-to-end open model, as opposed to the legacy definition of openness, which involved running customized and proprietary vendor software on open platforms or platforms with open attributes.

Moreover, this time around, platform openness is inherently tied to the delivery of VNF-based managed services, which has never been done before. This is vital given the very nature of services is also evolving.

As a result, cloud platforms will be required to leverage openness so that they can support a broader range of deployment scenarios, including running software on vCPE, running software on larger edge servers, running in a mix hybrid environment and even in multi-cloud deployment (e.g., private-private, private-public and public-public clouds).

To support these configurations, the cloud platform must be built to support distributed and centralized cloud. More importantly, it must be software-integrated to still appear as a single cloud from a policy, automation and analytics perspective.

Consequently, this requires a cloud platform that can be integrated with multi-vendor and other third-party platforms to seamlessly leverage the power of third-party ecosystems, open application programming interfaces (APIs), and ultimately the adoption of a common orchestration and policy-driven framework. Such a platform would also support seamless integration of operations and business support systems (OSS/BSS), accessible as a "single pane of glass," while also supporting traditional carrier-grade performance and reliability metrics.

Moreover, the adoption of an open cohesive cloud platform also positively impacts the managed services model, since it enables CSPs to build a cohesive portfolio of managed services for their enterprise customers using automated processes that will let their customer migrate their services to the cloud.

Automation is key because it lowers the cost of business acquisition and shortens the delivery cycle, validating the business model assumptions inherent in the productivity and TCO gains documented above.

CONCLUSION

In many respects, CSPs are at a crossroads. The evolution to the cloud is driving a broad range of technical and business process changes. At the same time, these CSPs are also presented with a strong business opportunity to expand the breadth of their VNF-based managed services solutions portfolio, targeting both enterprise customers and other, smaller CSPs that pragmatically decide to not deploy a telco cloud.

However, as documented in this white paper, in order to fully exploit the promise of the VNF managed service model, a cohesive cloud and underlying open platform will be mandatory to deliver the optimal balance of automation, scale, third-party software integration and policy enforcement to ensure a feature-rich, secure and well-rounded end-to-end cloud experience.

JUNIPER'S COHESIVE CLOUD PLATFORM STRATEGY

With Juniper's Cloud CPE solution for VNF-based managed services and SD-WAN, CSPs can use VNF software and open x86-based platforms to grow and deploy managed services, quickly delivering customized user experiences anywhere they are needed in the network, with just a software click or two. The Cloud CPE solution offers:

- **Rich Secure SD-WAN:** Juniper's SD-WAN solution delivers a dynamic, application-based routing stack to provide a transport-agnostic SD-WAN that powers instant WAN connections to the cloud. It is integrated with powerful security features, including next-generation firewall, AppSecure security suite, intrusion detection and prevention and unified threat management (UTM).

- **Platform for Virtual Managed Services:** The solution provides the freedom to create services as quickly as new business requirements emerge and the option to deploy them across three different models with consistent operational experiences: distributed onto the customer premises, centralized in the cloud, or a hybrid of both. Users can easily merge virtual and physical networks, with service delivery provided through VPN services in the MX Series 3D Universal Edge Routers.

- **Open Framework:** Juniper's solution avoids expensive vendor lock-in by utilizing an open framework built on standards-based protocols and open data models that allow third-party integration through APIs. This modular, extensible framework integrates easily with OSS/BSS for full business logic orchestration. Customers can expand their service catalog with a rich array of applications and use the open ecosystem to introduce new third-party VNFs. The New IP Agency (NIA) completed EANTC phase 4 test results with Juniper as an effort to drive interoperability.