RE-THINKING SD-WAN and vCPE FOR IMPROVED SERVICE AGILITY

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The enterprise and service provider markets are going through major infrastructure transformation to keep up with growing demand for IT services. As they seek to support and explore new services, new Internet of Things initiatives and the new flexibility that comes with the advent of cloud computing, Software-Defined Networking and Network Function Virtualization, they face this fundamental question: what are the most efficient and effective ways to deploy new network capabilities?

There is enormous potential for reaping benefits from a more DevOps-focused strategy for the enterprise or service provider network. Existing cloud providers like Amazon, Microsoft, Google and others have shown the blockbuster success that can be achieved when a business is free to explore, experiment, test and rapidly roll out new offerings. But most businesses, historically locked into vendor-specific, proprietary boxes, have not been able to realize these benefits. Service providers have been hampered by excessively long development and roll-out timelines because they have not been able to independently update hardware and/or software. A DevOps approach opens up the same service and delivery agility that cloud providers are using to achieve market dominance.

With the rapid emergence of cloud applications, there has been some progress toward increased innovation and network elasticity. But this has also meant higher demands on network bandwidth and quality of service, reliability, security and storage so that end users have the consistent experience that they need to safely, quickly access their applications. Many of those issues are best addressed by moving compute, connectivity and storage closer to where the applications are being used at the network edge. There are a wide range of applications (virtualization, business analytics or enabling Internet of Things use cases, for example) where smarter end-points can increase network efficiency, position intelligence where it is most needed and enable new services.
DELL EMC’S APPROACH TO THE ENTERPRISE EDGE

To get that new power and intelligence at the network edge, a new architecture is needed that supports and flows naturally into enterprise and service provider efforts around SDN and NFV.

Customer premises equipment (CPE) is critical enterprise infrastructure. It is the point of connectivity for secure connections, links business central locations with other branches and offices, and ties applications back to enterprise or service provider data centers. In legacy networks, enterprises use private and expensive MPLS connections, hardware-based networking appliances and then start adding other proprietary vendor boxes, each with its own function: security, WAN optimization, enterprise applications, voice and so on. Multiple CPE from multiple vendors poses a challenge for maintenance, management and most of all, deployment time for new or improved services. Unexpected interoperability issues among vendors often results in major delays, new costs or negative impacts to business operations and the enterprise end-customer experience.

The same risks are possible in software-defined environments, without a strategic approach to validation. Furthermore, the steps that have been taken thus far toward software-centric networks often have not been sufficiently innovative.

Many traditional IT hardware vendors have simply uncoupled their hardware from their software and moved that software onto a Commercial Off-the-Shelf server instead of a proprietary one. This arrangement can improve capital and operating expenditures to an extent, but it still leaves enterprises to deal with multiple vendors for the applications they wish to make available, open to risk from lack of interoperability validation and not fully leveraging the potential that comes from software-centric networks.
At the same time, Communication Service Providers and Managed Service Providers have often been limited to providing a software-defined WAN (SD-WAN) controller or hosting services with limited potential for offering new and useful, data and analytics-based offerings to the enterprise.

Dell EMC takes a new approach to solving enterprise service agility holistically: from the service provider level, to enterprise IT, to individual branch offices of multi-site businesses. Drawing on Dell EMC’s converged infrastructure expertise, we assembled a combination of software and services that re-envision and streamlines the edge architecture while expanding enterprise and SP capabilities, built upon the Dell Embedded Box PC 5000. This solution, developed jointly by Dell EMC, SD-WAN/SD-Security specialist Versa Networks, and global IT professional services expert Tech Mahindra, brings together a unique combination of flexibility and innovation to support digital transformation.

For service providers, this SD-WAN and vCPE solution means the capabilities to:

- Increase service agility through the ability to build, rapidly deploy and operate new managed services
- Grow your market opportunity
- Lower capex and opex
- Create richer services that utilize data and analytics
- For the enterprise, the advantages include:
- Reduction of MPLS and WAN costs
- Improved application performance
- Simplification of the WAN and branch network
- Increased branch security
THREE ASPECTS OF A BEST-OF-BREED SD-WAN and vCPE

Hardware. Software. Service and support. All three of these aspects must be mindfully addressed in a successful SP and enterprise solution for wide-area networking and security, and Dell EMC has brought together the skills and experience of top providers to turn network agility into practical, profitable reality.

Versa Networks brings in its Versa FlexVNF solution for creating next-generation managed services for virtual CPE, SD-WAN and SD-Security. Versa FlexVNF is purpose-built software with many carrier-grade operational capabilities that can be leveraged by either an SP or the enterprise, including full multi-tenancy and an NFV-based architecture with built-in elasticity. Versa enables SPs and large enterprises to easily integrate multiple virtualized network and security functions (VNF) into comprehensive managed services or enterprise architectures. The cost and time savings of this approach are game-changing: Versa SD-WAN implementations have a track record of up to 50 to 60% savings in opex due to the self-service, plug-and-play, automated deployment nature of Versa’s solution, as well as up to 70 to 80% savings in capex by moving to open CPE hardware such as Dell EMC’s.

IT specialist Tech Mahindra has extensive experience across a broad range of enterprise business solutions, and provides innovative and customer-centric technology services. With nearly 120,000 professionals in 90 countries around the world, Tech Mahindra serves the technology needs of the world’s top companies.

TechM provides the wrap for service enablement and service management with the Dell EMC and Versa SD-WAN solution bundle. As part of service enablement, TechM assesses customer traffic patterns, consumption modes, service provider mix, and system to provide a right-fit design. TechM assists in selection of the right service provider with the best service options from over 80+ communications service provider partners across the globe.
TechM manages the planning, staging of the Dell Embedded Box PC 5000 boxes, site activities and rollouts with zero downtime; and enables the deployment of Versa Director and configuration in customer clouds or public cloud environments as applicable, along with the Versa Analytics components. TechM has achieved over 80% automation for the build phase, ensuring a swift, smooth deployment process.

TechM also makes sure that the lights are on during business-as-usual operations, with necessary IT service management tools and processes from their Network Operating Centers (NOCs). For addressing changes and troubleshooting, about 60% of faults follow an auto-remediation process based on the workflows and run books for the solution. Incremental Moves, Adds, Changes and Deletes (MACDs) are carried out as part of Life Cycle Management by TechM, along with proactive and preventive maintenance of the setup that includes patching, version uplifts and so on. TechM provides integration services with customer/service provider management systems for a unified view and centralized service impact management.

Dell provides the Embedded Box PC 5000 at the heart of this solution, to support specific use cases for enterprise and enable SPs to capture new vertical markets. With its long history of IT excellence, Dell EMC provides rugged, reliable hardware that meets enterprise and SP-class demands for capabilities and reliability in the most challenging environments. Additionally, Dell EMC has validated interoperability for this SD-WAN and vCPE solution to minimize the business risks of operating in a software-defined world. Together, Dell EMC, Versa and Tech Mahindra have focused on solving problems and creating an interoperable ecosystem that will provide rapid return on investment.
HOW DOES IT WORK?

The Dell EMC + Versa SD-WAN and vCPE solution simplifies the enterprise edge architecture: one box with a comprehensive software solution and the services to go along with it.

The Dell Embedded Box PC 5000 is optimized for wall, DIN-rail or VESA mounting. With plug-and-play deployment capabilities, all the Embedded Box PC 5000 needs is an Internet connection to quickly establish a secure network path and complete, advanced functionality for SD-WAN – without the months of delay that can come with establishing an MPLS circuit. The Dell Embedded Box 5000 automatically identifies itself to the network, seeks out and downloads appropriate configuration details and discovers what devices it serves. Deployment of this single box at the enterprise network edge establishes connectivity, security, storage capabilities, data collection and some network steering functions without multiple, application-specific boxes or even multiple COTS servers.

This is accomplished through the integration of Versa FlexVNF, with its enablement of management and analytics applications. Versa’s software plugs into network management software to provide a holistic view of the software elements that form the ecosystem. This makes it easier to deploy applications within a large corporate network, hosted either by the enterprise itself or by a managed services provider. If time to market is a concern, then end users can also leverage resources such as Amazon Web Services or other hosted instances of cloud resources to deploy the application. Versa software operating in the corporate, carrier or hosted data center provides intelligent insights and visibility.
Once the embedded PC is up and running, Versa FlexVNF capabilities that can be promptly utilized include:

**Routing.** Total cost of ownership for enterprise operations and applications are closely tied to circuit performance capabilities, and the Dell EMC + Versa SD-WAN and vCPE can be used with a combination of business-grade Internet connections, 4G/LTE and/or existing MPLS connections to ensure cost-effective transport that maintains desired levels of quality of service.

**Traffic Steering.** Versa FlexVNF can recognize different types of traffic at different locations: cloud applications like Office 365 and Salesforce, voice, video collaboration, corporate business applications and even social media and consumer traffic, to name a few. It can identify more than 2,600 applications to allow businesses to quickly and easily prioritize their network traffic. For example, a retail bank branch can ensure that its banking application traffic is assigned to an MPLS connection, while guest Wi-Fi traffic from customers is sent over a broadband connection to avoid impacting business-critical applications.

**Security.** Versa FlexVNF provides a broad set of software-based security functions, including stateful and next-generation firewalls, malware protection, URL and content filtering, IPS and anti-virus, DDoS and VPN/next-generation VPN.
Analytics and Deep Packet Inspection. Versa Analytics is a real-time big data solution purpose-built for Versa FlexVNF and the managed services and enterprise WANs they are deployed in. It provides visibility and control, base lining, correlation, prediction and a feedback loop into all Versa VNFs.

Operations readiness. Versa FlexVNF supports standard protocols and log formats, including Syslog, IPFIX and SNMP, making it compatible with existing network management, monitoring, and reporting systems.

New branches can be swiftly connected and brought online with full capabilities. Other market offerings still require coordination among multiple vendors for hardware, security and individual application enablement, with potential months of wait time before full deployment. The Dell EMC + Versa SD-WAN and vCPE solution supports best-of-breed options on all of those fronts together in a single solution, with Tech Mahindra services to speed deployment and to provide ongoing monitoring.
REDUCED RISK FROM A BEST-OF-BREED DISAGGREGATED SOLUTION

One of the primary values of this SD-WAN and vCPE solution is that it has been rigorously tested for interoperability of the software elements. Dell EMC understands the risks that software-defined and cloud environments pose for enterprises and service providers. In developing our SD-WAN and vCPE solution, we have devoted a substantial amount of effort to making sure this works: simply, automatically and from end-to-end, with the level of reliability that enterprise customers expect.

This is a best-of-breed solution that has come together under the auspices of Dell EMC, built on Dell EMC hardware and leveraging Dell EMC’s history, reach and expertise. Unlike white box vendors, we make certain that not only has interoperability of solution elements been assured, but that the tools are in place for service providers and enterprises to get the most value out of them.

Dell EMC’s goal is to make sure that the bulk of the design, integration and interoperability assurance has been completed in a ready-to-deploy solution, so that our customers can configure to their liking and move forward quickly with both initial deployment and testing and trialing new services.

After all, modern enterprise connectivity depends not simply on a reliable connection, but on the services that connection enables: security and quality of service. But in order to capture new markets and create new revenue streams, service providers have to offer more intelligent services. Those are primarily expected be based on edge computing capabilities like the ones provided in the Dell EMC + Versa SD-WAN and vCPE. The ability to deliver regularly accessed content with much lower latency is one potential use case, along with other MEC solutions such as the ability to analyze local data and trigger customer interactions based on such data.
Although SD-WAN is one use case for this vCPE equipment, it offers a platform for other scenarios as well. For instance, the emergence and increased adoption of IoT projects will draw enterprise IT departments into closer relationships with network service providers to enable and support their IoT endeavors.

This new business model will focus not simply on connectivity or device, but on value-added services that generate new revenue sources. Many of those opportunities will be based on big data analytics capabilities – and edge analytics like those enabled by the Dell EMC + Versa SD-WAN and vCPE -- that derive new value from IoT devices across verticals that include manufacturing, utilities, healthcare and others. Versa Networks has found that for its clients, the ability to deliver security and visibility for third-party applications opens up 100%+ upside revenue potential per customer.

In Vodafone's fourth annual Internet of Things Barometer survey, it found that IoT now accounts for 24% of the average IT budget. Dell EMC knows that IoT will require IT to be brought into a closer relationship with operations technology, and we believe in architecting our solutions for analytics – because data-based intelligence is the lifeblood of services. Along with a holistic approach to security (especially for potentially vulnerable network edge devices) and supporting choice and flexibility in implementation through partners so that clients can customize according to their needs, Dell EMC builds all of this upon a baseline of high-quality computing resources for reliable support of innovative endeavors.

Ultimately, one of the unique features of this offering is the chance to better understand an enterprise's ongoing operations and applications – for the business to identify and act on potential operating efficiencies, or for a service provider to address the specific needs of any given segment or vertical. By utilizing this joint SD-WAN and vCPE solution, not only can service providers spot those new service opportunities, they can differentiate on time-to-market because of the level of integration and ongoing services in the ecosystem that Dell EMC, Versa and Tech Mahindra have cultivated.
WHY CHOOSE DELL EMC?

In a competitive global economy, relying on a Tier One hardware provider like Dell EMC means working with a company that understands the demands placed on enterprise IT and how those customers can be best served.

Rugged and ready to go. Dell provides its Embedded Box PC 5000 within weeks, not months. This hardware is designed with the expertise of our rugged device engineers to meet MIL-STD-810G standards: ruggedized, fanless and highly reliable in a wide variety of extreme environments. Dell also designs its embedded PCs for 24x7x365 use within these environments, with long planned product availability of five years and five additional years of support after that.

Quality is crucial. Unlike some embedded PC vendors who cut corners with unreliable components, Dell prioritizes the use of quality components to ensure dependability and avoid downtime and negative impacts on an enterprise's reputation. Dell EMC provides a baseline of dependable hardware backed by advanced product reliability engineering, and global hardware support from Dell EMC ProSupport services.

Right-sized for your customers’ needs. Dell EMC caters to the scale needs of our customers, supporting competitive price points on minimum order quantities of one and small batches. But no volume is too large for our international organization to support. We also provide financial flexibility through Dell Financial Services to enable customers to shift technology investments from CAPEX to OPEX.
A global footprint to service global businesses. Dell EMC’s global footprint ensures that no matter where in the world your users are, you get the support you need to navigate regional differences in networks, regulations and technical expertise. In partnership with Tech Mahindra, our SD-WAN and vCPE solution provides the support that enterprises need to deploy a distributed network efficiently within a region or around the world.

Dell EMC and its partners deliver hardware and IT expertise you can trust, with operations and support on a global scale. Wherever you are in the world, Dell EMC is there, too.

Leverage Dell EMC’s hardware excellence and flexible branding options. An OEM-Ready version of the Embedded PCs is also available, with a look and feel as if they were designed and built by your company. Service providers or enterprises can put their stamp on customer-facing equipment, whether it is used for Wi-Fi access, edge storage and analytics, surveillance, industrial application support or other implementations.

A reliable, intelligent, secure distributed network offers a host of opportunities on which both enterprises and service providers can capitalize. Dell EMC, Versa Networks and Tech Mahindra are offering the tools to do so with a streamlined SD-WAN and vCPE architecture.

So what new business endeavors can Dell EMC help you enable? Contact our experts for a discussion of how the Dell EMC + Versa SD-WAN and vCPE can help you attain new service agility and value.
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