

ESG SHOWCASE

Accelerating Advanced uCPE Adoption

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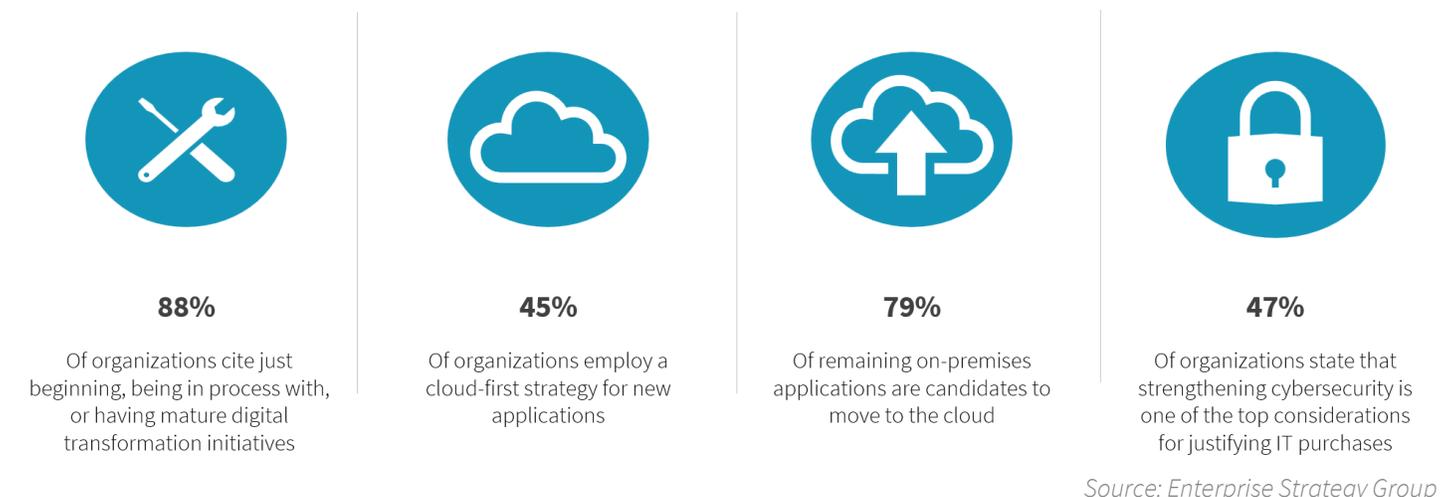
ABSTRACT: The global pandemic has accelerated organizations' digital transformation efforts, driving widespread use of collaboration solutions and cloud-based applications to enable a remote workforce. As a result, communication service providers (CoSP) of all sizes are actively deploying solutions enabling organizations to rapidly provide secure connectivity while providing flexibility and agility to deliver new, innovative services in the future. These solutions are enabled by leveraging universal customer premises equipment, or uCPE, platforms from Dell Technologies, complete with ISV ecosystems and powered by Intel® Technology.

Overview

Organizations of every size have been impacted by the global pandemic, forcing virtually all knowledge workers to work remotely. These organizations have accelerated their digital transformation initiatives (leveraging digital technologies to improve business processes, culture, and customer experiences) to ensure business resiliency and workforce productivity. Investments in laptops, collaboration tools, and hosted desktops have all increased to support this new environment. Another significant shift includes accelerating the adoption of modern cloud-based applications and workloads in the cloud. However, in a highly distributed environment like this with a much larger attack surface, it is imperative to ensure secure connectivity between all remote locations and these cloud-based applications. Figure 1 highlights the changes occurring, with ESG research illustrating that nearly nine out of ten organizations have either begun to plan or have already implemented a digital transformation effort.¹ Furthermore, almost half (45%) of these organization now report adopting cloud-first policies for new application deployments, while indicating that nearly eight in ten existing on-premises applications are candidates to move to the cloud in the next 5 years. Given the need to secure these distributed environments it shouldn't be a surprise that 47% of respondents to the same survey stated one of the most important considerations in justifying IT investments to their organization's business management team is to strengthen cybersecurity,

¹ Source: ESG Research Report, [2021 Technology Spending Intentions Report](#), January 2021. All ESG research references and charts in this showcase have been taken from this research report.

Figure 1. Current Environment



This year, 53% of the organizations that are increasing their IT budgets reported that they are doing so to implement long-term technology strategies that will give them a more flexible and resilient IT infrastructure in the event of a future major business disruption. This involves a significant shift to cloud-based applications.

To achieve this goal, innovative technologies like SD-WAN that can also host virtual network functions (VNFs), including firewalls, controllers, WAN optimizers, and network assurance software, or integrate with cloud-based security functions are increasingly in demand to provide secure connectivity between these highly distributed cloud-based application environments and remote locations (potentially including remote workers).

These technologies provide all communication service providers (CoSP) with an opportunity to play a significant role in delivering these services, and not just the tier one providers. The cost savings involved with multiple VNFs deployed on commercial off-the-shelf (COTS) platforms, generally referred to as universal customer premises equipment (uCPE), will help to democratize this technology and provide an opportunity for tier two and three CoSPs to deliver attractive solutions. Advanced uCPE solutions with pre-validated VNF ecosystems will serve to further accelerate the deployment and adoption of these solutions.

Advanced uCPE Platforms Deliver

Given the current environment, agility, flexibility, and scalability are extremely important traits for modern solutions. Consider that at the start of the pandemic, most organizations only had a couple of weeks to transition everyone to a work-from-home environment.

New services were spun up quickly, but the legacy model of deploying a new appliance for every new service is no longer tenable. Provisioning new hardware for every service requires time and resources that increase costs and complexity.

CoSPs need to consider leveraging a platform approach where a single deployed hardware device can accommodate all current and future virtual functions. That is where the concept of a uCPE platform comes in. It utilizes a single, open hardware platform that is capable of quickly adding or removing any number of virtual network functions (VNFs). Also critical is that those services can be orchestrated, provisioned, and configured remotely through a centralized, managed offering to ensure operational efficiency.

The larger the ecosystem of solutions that can be deployed on the platform, the more flexibility organizations will have in selecting their preferred partners. Minimally, these technologies should include:

- **SD-WAN technology** to provide direct internet access for cloud apps. This provides centralized policy via cloud-based portal and the ability to leverage multiple, higher bandwidth, lower cost broadband connections, as well as 4G or 5G connectivity.
- **NG firewalls** to deliver the requisite on-premises security at remote locations. Virtual form factors ensure services can be deployed quickly.
- **Network assurance software** to provide end-to-end visibility into a highly distributed and complex network environment.
- **WAN optimization technology** to expedite the transfer of large files between remote locations and private data center or cloud environments.
- **Integration with cloud-based security functions** to deliver additional security. This includes functionality like CASB and zero trust and should only require a few clicks of the mouse.
- **Opportunity for other functions**, including customized applications specific to the business or location. This would imply that the hardware provisioned for this task has sufficient CPU power to run future, currently unknown functionalities or consolidate existing workloads.

While tier one providers are aggressively building out uCPE solutions, not all CoSPs have the resources or time to build, test, certify, and operationalize a unique ecosystem solution that includes the hardware, operating system, SD-WAN, and VNF partners.

Enter Dell Technologies and its Virtual Edge Platform (VEP) that combines Intel-powered Dell hardware, global services, and support with an ecosystem of software solutions to enable current and future requirements.

Dell Technologies Virtual Edge Platforms Enable Service Providers

Dell Technologies has created a family of Intel-powered, open networking standards-based, advanced uCPE solutions to accommodate the price, space, performance, and scale needs of any CoSP customer. More importantly, Dell Technologies has also worked with technology partners to create a growing ecosystem of validated solutions that will enable tier two and tier three CoSPs to deploy uCPE with pre-validated NFV solutions with confidence.

The Dell Technologies uCPE offering is based on the Virtual Edge Platforms (VEP) that can be deployed in a range of corporate as well as home locations. The systems are optimized for virtual network environments and include:

- Dell EMC Virtual Edge Platform 4600—Ideal for environments where high performance is required. The solution includes a network-optimized Intel® Xeon D processor with Intel QuickAssist Technology for acceleration of encryption and compression as well as DPDK's advanced packet-forwarding acceleration that enables organizations to preserve compute resources while growing security workloads. To preserve operational efficiency, this solution includes zero-touch provisioning that allows CSPs to remotely add, move, or scale virtual functions. The VEP leverages a single socket 1 RU short-depth chassis.
- Dell EMC Virtual Edge Platform 1405 series—This family of VEPs is better suited for smaller locations that are space and/or power constrained (including home deployments). There are four versions that share the same compact form factor (2"H x 8"W x 8"D), and all leverage plug and play capabilities. Simply connect the network and plug it in. The rest can be done remotely. These would be ideal for work-from-home environments. These VEPs leverage the Intel® Atom

processor for reduced power and can scale up to 16 cores. They also include Intel® QuickAssist Technology in addition to DPDK to accelerate encryption and compression and efficiently scale security workloads.

It is important to note that all of the above platforms use the same Intel x86 instruction sets and therefore provide a consistent compute platform across the portfolio. This is relevant, as it will enable workload consolidation with other x86 applications. This platform approach will also create operational efficiencies and reduce hardware and maintenance costs.

Pre-validated VNF Ecosystem

All of the advanced uCPE solutions from Dell Technologies featuring Intel® Xeon® processors have been validated to work with the following technologies:

- SD-WAN—CoSPs can choose from VMware SD-WAN or Versa Secure SD-WAN solutions.
- Adva Ensemble—This includes the ability to host over 60 third-party VNFs (including firewalls, routing, WAN opt, monitoring, and IoT solutions).
- OS—Flexibility to choose either VMware ESXi or use Linux to deploy custom applications at the edge.

All of these uCPE platforms and VNF ecosystems leverage Dell Technologies' global services and support, including consulting, deployment, and educational services.

The Bigger Truth

Communication service providers of all levels are looking to take advantage of uCPE platforms to deliver agility and flexibility for its customers. The ability to rapidly deploy SD-WAN and security functions aligns well with enterprises that are accelerating their use of cloud-based services and supporting a distributed workforce and applications.

Dell Technologies provides advanced uCPE solutions via its Virtual Edge Platforms, powered by Intel, to accommodate a range of space, power, and performance requirements to accommodate any corporate or home office locations. More importantly, for tier two and tier three CoSPs, Dell Technologies has created and validated several technology partners to deliver an array of VNFs that cover SD-WAN, security, routing, network assurance, and more. This enables CoSPs to take advantage of the cost reductions offered by using VNFs, as they no longer have to deploy multiple appliances and pay for multiple hardware support contracts. It also reduces operational complexity as all of these solutions are supported by Dell Technologies' global services, supply chain, and support organizations.

The Dell Technologies VEP family enables CoSPs to deliver much-needed functionality today, as well as leverage an advanced uCPE platform to drive innovation at the edge to accelerate future needs.

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