Maximizing the flexibility of network services delivered by SD-WAN

Enea’s open uCPE virtualization platform enables CMC Networks to offer customized service configurations for enterprise customers

The Problem
CMC Networks, a Global Telecommunications Carrier headquartered in South Africa, servicing the largest Pan African and Middle Eastern network, envisioned a new business opportunity in Software-Defined Wide Area Networking (SD-WAN).

CMC observed they could grow and enhance their SD-WAN business significantly by delivering to their customers a set of networking services selected and configured to match the specific needs of each customer.

To achieve this flexibility, CMC required the ability to deploy unique combinations of services from multiple vendors on a flexible software platform located at each customer premise.

This Universal Customer Premise Equipment (uCPE) platform would need to meet all applicable open standards for hosting software-based network services and in parallel minimize the costs of acquisition, installation and operation at remote customer locations.

The Solution
To address CMC’s business and technical challenges, Enea delivered Enea NFV Access, a virtualization and management platform for white-box uCPE deployments.

Enea NFV Access provides CMC with the flexibility to deploy Virtual Network Functions (VNFs) from multiple vendors, running in a virtualized environment on appropriately-sized servers from industry-standard suppliers.

CMC can now supplement basic SD-WAN connectivity with additional customer-requested functions such as next-generation firewalls or routers, all provisioned, configured and updated remotely using Enea uCPE Manager to minimize operational costs while maximizing security.

By adopting this second-generation SD-WAN architecture, CMC is able to grow their managed SD-WAN services, while facilitating their customers’ business transformation.

Benefits provided by Enea NFV Access
- Small footprint on COTS hardware minimizes system cost
- Open standardized interfaces prevent vendor lock-in
- Supports any combination of VNFs, white box servers, and orchestrators for customized solutions
- Zero Touch Provisioning and automation framework simplifies deployment and lifecycle management
- The same solution for entry-level and high-end platforms
- Cloud based management using NETCONF: no OpenStack

Transforming business operations with SD-WAN
Enterprises worldwide are adopting Software-Defined Wide Area Networking (SD-WAN) to reduce the costs of their networking infrastructure by reducing the dependence on MPLS, while improving the performance of their cloud-hosed applications, enhancing users’ experience and increasing their business productivity.

An SD-WAN is a virtual WAN architecture that allows enterprises to leverage any combination of transport services, including MPLS, LTE, 5G and broadband internet services, to securely connect users to applications.

Traditional WANs based on conventional routers are not cloud-friendly. They typically require backhauling all traffic, including that destined for the cloud, from branch offices to a hub or headquarters data center where advanced security inspection services can be applied. The delay caused by backhaul impairs application performance resulting in a poor user experience and lost productivity.

Unlike the traditional router-centric WAN architecture, SD-WAN is designed to fully support applications hosted in on-premise data centers, public clouds or private clouds, as well as Software-as-a-Service (SaaS) solutions like Salesforce, Office365 and Dropbox, while delivering the highest levels of application performance.

An SD-WAN uses centralized control to securely and intelligently direct traffic across the WAN. By continuously monitoring applications and WAN transport resources, an SD-WAN can quickly adapt to changing network conditions to maintain the highest application performance and availability, while reducing dependence on MPLS.

Limitations of first-generation SD-WAN solutions
First-generation SD-WAN products were vertically integrated, comprising proprietary software running on dedicated hardware appliances, with no flexibility for changes or enhancements to the function set after deployment at the customer premise.

This represents a significant limitation in the case of a customer who, for example, has standardized on a specific security vendor across their IT network or who wants to add a newly-released next-generation firewall to their SD-WAN after deployment.

The challenge for CMC Networks
CMC Networks addressed these limitations by delivering to their customers a set of networking services selected and configured to match the specific needs of each customer, with the capability for these services to be changed or upgraded after deployment. To achieve this objective, CMC required the ability to deploy unique combinations of network functions from multiple vendors on a flexible software platform located at each customer premise.

This Universal Customer Premise Equipment (uCPE) platform would need to meet all applicable open standards for hosting software-based network services while at the same time minimizing the costs of acquisition, installation, configuration and operation at remote customer locations.
Finding the right virtualization platform

CMC determined their business and technical goals are best addressed by a system architecture based around a software virtualization platform fully compatible with open standards for hosting Virtual Network Functions (VNFs) in a uCPE environment.

For scalability, the virtualization platform should support hardware ranging from low-end appliances up to high-end servers. For maximum efficiency across onboarding, installation, configuration and lifecycle management, the platform supports centralized, secure cloud-based management while interfacing seamlessly with standard orchestration and OSS/BSS solutions.

To accelerate time-to-market, CMC ensures their platform vendor provides integration and onboarding services, with a proven track record of working with third-party VNF vendors to validate the correct operation of multi-vendor end-to-end solutions.

CMC surveyed and evaluated virtualization and management platforms from multiple software vendors, some of whom leverage an IT background while others stemmed from within the telecom industry.

As a result of this selection process, CMC selected Enea NFV Access as the uCPE software virtualization platform and Enea uCPE Manager as the cloud-based management solution, both supported by the expertise of the Enea Global Services organization.

Enea NFV Access delivers the flexibility that CMC Networks’ customers need

Enea NFV Access is a software virtualization platform optimized for uCPE-based SD-WANs. Fully compatible with all applicable open standards, it has been validated with both VNFs and hardware platforms from multiple ecosystem partners, ensuring maximum flexibility for customers in their vendor selection. Its onboarding wizard enables accelerated system deployments through efficient VNF onboarding, while it integrates with third-party orchestrators and service automation tools through standard interfaces.

Enea NFV Access reduces system costs and complexity by implementing virtualization and management without the overhead of OpenStack. Full support for any standard server based on Intel architecture- or Arm-based processors enables customers to choose the hardware platform that best matches the resource requirements of their applications.

Integrated end-to-end management with Enea uCPE Manager

Complementing Enea NFV Access, Enea uCPE Manager controls the provisioning, configuration and management of customer premise functions such as SD-WANs. Deployed in either a private or public cloud data center, Enea uCPE Manager enables customers to reduce the lifecycle operational costs of their SD-WANs by automating software upgrade management as well as the monitoring of events and alarms.

Enea uCPE Manager delivers the robust security required by enterprise end-users through secure management communications, secure boot and role-based access control policies.

Summary: Accelerating enterprise business transformation

The combination of Enea NFV Access and Enea uCPE Manager enables CMC Networks to provide uCPE-based managed SD-WAN services to new types of customers. It’s now cost-effective for them to support enterprises who have specific requirements for VNF vendors or need the flexibility to change and expand the range of services in their SD-WAN after initial deployment. Through this second-generation SD-WAN architecture, CMC grows and expands the market for their SD-WAN services while accelerating their customers’ business transformations.

For more information

- CMC Networks: www.cmcnetworks.net
- Enea: www.enea.com

CMC Networks is a global telecommunications carrier, providing services for over three decades, serving the data communications needs of wholesale carriers and governments across the globe. CMC holds the largest Pan African Network servicing 51 out of 54 countries in Africa, and in addition has an extensive Middle Eastern and West Asian network which extends into other regions via their wholesale partner programs. The CMC Carrier Interconnect model enables delivery into the Americas, Europe, and the Gulf countries. CMC provides its customers with a broad portfolio of carrier grade network solutions including Ethernet, MPLS, DIA and Private Line services.

The Carlyle Group is CMC’s majority shareholder.