



Fearful of Running Edge Virtual Network Functions? Try RES

Advantech's Remote Evaluation Service lets service providers and enterprises configure and test pre-integrated flexiWAN SD-WAN, Enea NFV Access, and Intel®-based network appliances orchestrated by UBiqube MSAActivator™.

ADVANTECH

In many enterprises, no two branch offices are the same because the number of employees, the work those employees do, and the access to applications they need can vary dramatically. When it comes to building out a branch office network, this variation makes it difficult to find a one-size-fits-all solution from a single vendor.

ENEAA

Over-specified universal customer premises equipment (uCPE) platforms result in surplus components and higher-than-necessary capital expenses. While underspecified single-vendor platforms save money initially, they can cost more down the road in the event of an early and costly replacement.

flexiWAN

Advantech has developed its Remote Evaluation Service (RES) to help enterprises and communications service providers (CommSPs) evaluate and benchmark a range of Intel® architecture-based servers running a complete network functions virtualization infrastructure (NFVI). RES offers a number of test-drive portals that focus on specific services.

UBiqube

The RES SD-WAN Test-Drive Portal allows customers to test performance and functionality of a flexiWAN-based SD-WAN solution that utilizes Enea NFVI platform on Advantech uCPE white boxes all orchestrated by UBiqube's integrated automation platform MSAActivator™. It provides communications service providers (CommSPs) and system integrators with an easy-to-use framework to validate different SD-WAN configurations and evaluate critical aspects such as scalability, security, usability, and openness.

Advantech RES Benefits: From Cloud Automation to White Box Optimization

The Advantech RES SD-WAN Test-Drive Portal is configured to emulate a variety of network configurations that represent the functionality that would be in place in a branch office. Advantech developed the service to enable customers to do the following:

- **Accelerate their evaluation process:** The RES SD-WAN Test-Drive Portal quickly kicks off cloud-orchestrated SD-WAN evaluation without the need to ship hardware, license software, and set up the network.
- **Choose from a range of uCPEs:** The service is configured with multiple Advantech uCPE white box servers to support various performance requirements.
- **Simplify decision making:** Customers can test pre-validated MANO, SD-WAN, and NFVI stacks that have been configured to perform well together.

Solution Brief | Fearful of Running Edge Virtual Network Functions? Try RES

- **Mix and match components:** Software and hardware can be combined in different ways to find the configuration that has the compute load and the perfect features that together match the compute, throughput, and storage needs of the branch office.
- **Quick Start SD-WAN:** Users can quickly learn the functionality of the Enea uCPE manager, flexiWAN SD-WAN controller, and UBiqube single pane of glass, reproducing everyday situations on real-world networking gear.

How It Works

The RES SD-WAN Test-Drive Portal environment has been created in an Advantech lab at its Taipei development center (see Figure 1) and is accessible through a remote access server. The lab can be configured to emulate a customer's specific branch office requirements. From any computer, a CommSP or integrator can easily orchestrate SD-WAN and the NFVI while managing the entire system and testing the performance.

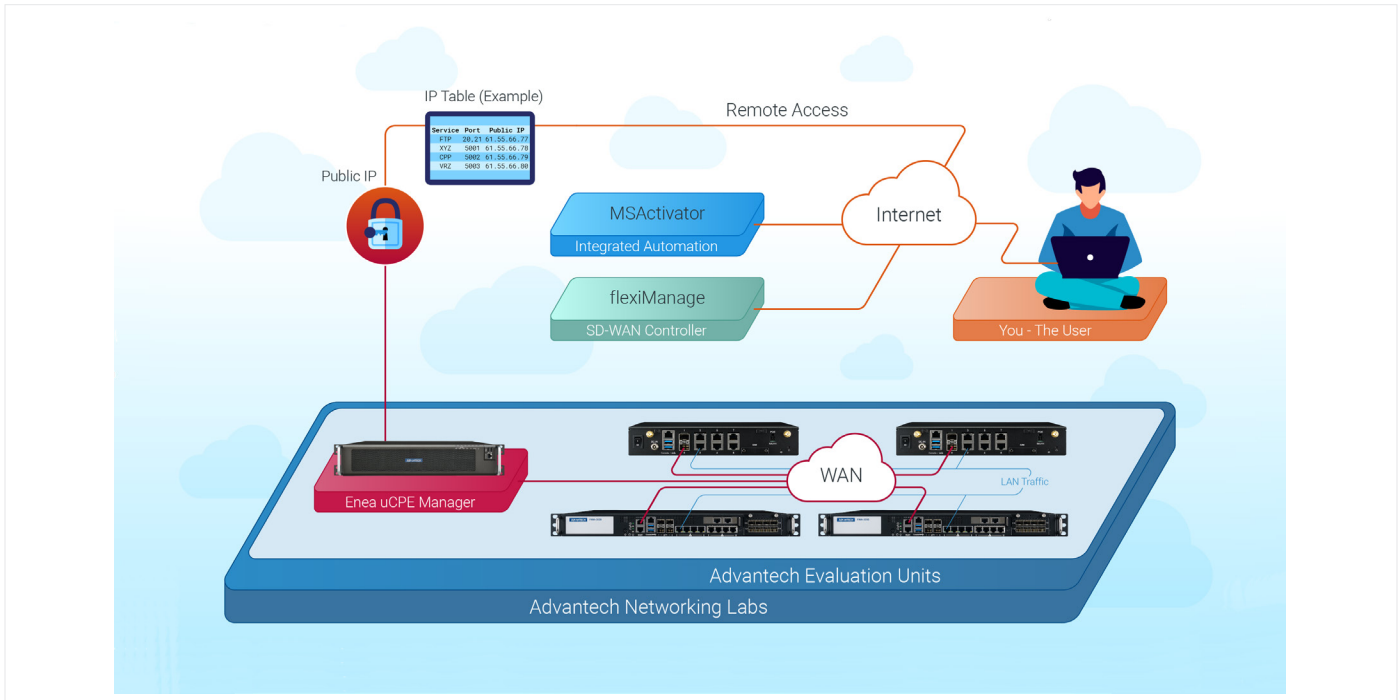


Figure 1. Overview of Advantech Remote Evaluation Service lab

Hardware Platform: Advantech FWA-1012VC/ FWA-3050 uCPEs

Advantech's open white-box uCPE designs, using Intel® Xeon® processors in feature-flexible appliances, provide the range of bare-metal server platforms needed by CommSPs and system integrators to transform conventional deployment models in the enterprise WAN. Advantech's white box uCPE range covers a broad set of configurations and price points.

Two platforms make up the underlying hardware for the RES, the Advantech FWA-1012VC and FWA-3050. Customers can test both white boxes to determine the SD-WAN performance level that is ideal for their application.

The **Advantech FWA-1012VC** is designed for Intel Atom® C3000 processors with up to eight cores. It supports flexible RAM capacities with ECC, multiple SSD drives via SATA and/or M.2 interfaces for reliability and higher levels of availability, and a variety of integrated gigabit Ethernet ports with both copper and optical SFP connections depending on the model. The FWA-1012VC offers an optional integrated Wi-Fi access point and 4G/LTE connectivity. The 4G/LTE option with dual-SIMs can provide failover protection for the primary WAN connections and can also be bonded with the wireline WAN ports for higher bandwidth.

The **Advantech FWA-3050** is a 1U network appliance that utilizes the Intel Xeon D-2100 processor family that can

be configured to fit a wide range of uCPE deployments with flexible WAN connectivity. The network appliance supports up to 256 GB of ECC memory for highly virtualized environments. There are four fixed 10 GbE SFP+ ports and eight 1 GbE RJ45 ports for flexible network connectivity. The FWA-3050 has been verified as an Intel® Select Solution for uCPE and supports optional Intel® QuickAssist Technology (Intel® QAT) for applications that need accelerated encryption and decryption. This helps improve the performance of data security applications' cryptographic operations for use in network security applications. The FWA-3050 is purpose-built for branch office and access deployments, with Advantech Advanced Lights Out Management based on Advantech code base BMC and IPMI suite.

uCPE Access

When a customer uses the RES, the cloud-based automation from UBiqube will connect to cloud-based managers built into the Enea NFV Access to control the uCPE.

Enea NFV Access is a complete virtualization platform with a small footprint that is designed for uCPE deployment. The software supports both NFV virtual network functions (VNFs) or containerized NFs. Figure 2 shows a block diagram of the platform as used in the RES application, including its system management, virtualization and containerization layer, virtual switching, data path acceleration, and security features.

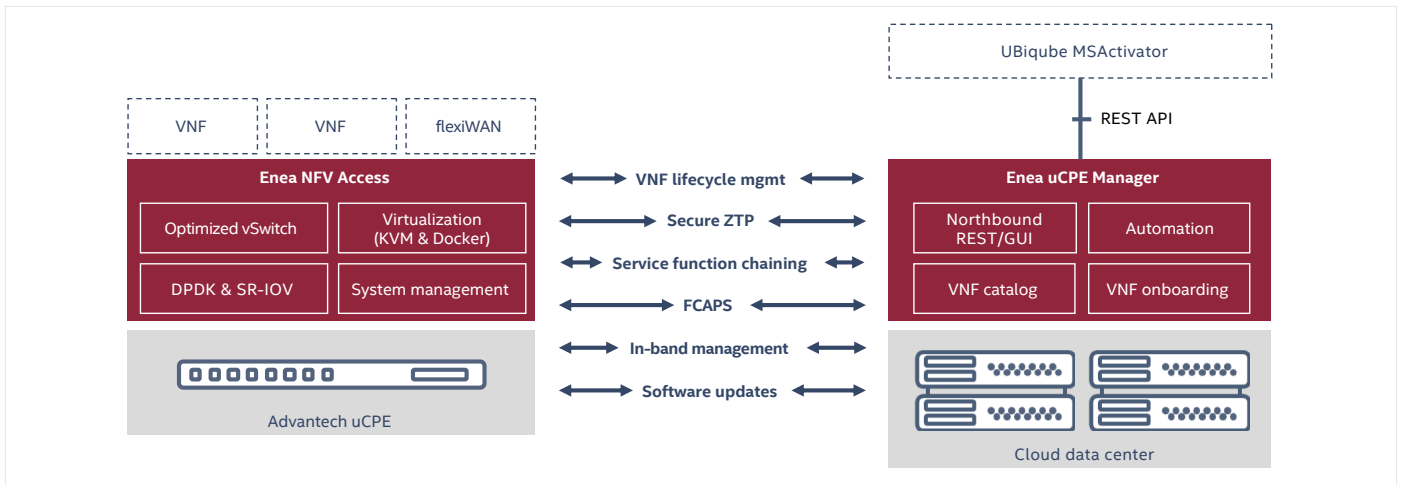


Figure 2. Enea NFV Access block diagram

Management of both uCPEs and VNFs is an important component of RES SD-WAN Test-Drive Portal. Enea NFV Access includes the Enea uCPE Manager, a virtualized infrastructure manager (VIM) and VNF manager that manages the uCPE and the lifecycle of the VNFs using NETCONF/YANG. The Enea uCPE Manager provides remote management for small and large network sizes. The uCPE Manager also integrates with third-party orchestrators using REST APIs and can utilize multi-VIM orchestrators for integration with OpenStack or VMware.

NETCONF/YANG offers a management framework that consumes very few uCPE resources. This is an important part of reducing the footprint to allow more cost-efficient white box hardware.

flexiWAN SD-WAN

The foundation established by the Enea NFV Access and Advantech servers enables RES users to configure and test the flexiWAN SD-WAN. flexiWAN is an open source VNF that supports SD-WAN routing of data flows as well as network management, orchestration, and automated deployment capabilities.

Different from typical closed SD-WAN solutions, flexiWAN slices SD-WAN to horizontal layers that include a networking infrastructure layer and an application framework. Through an SDK, networking applications can be dynamically loaded to the flexiEdge router or flexiManage management. This allows CommSPs or enterprises to modify the core SD-WAN functionality, add or expand features to optimize traffic flows, or provide unique data security features.

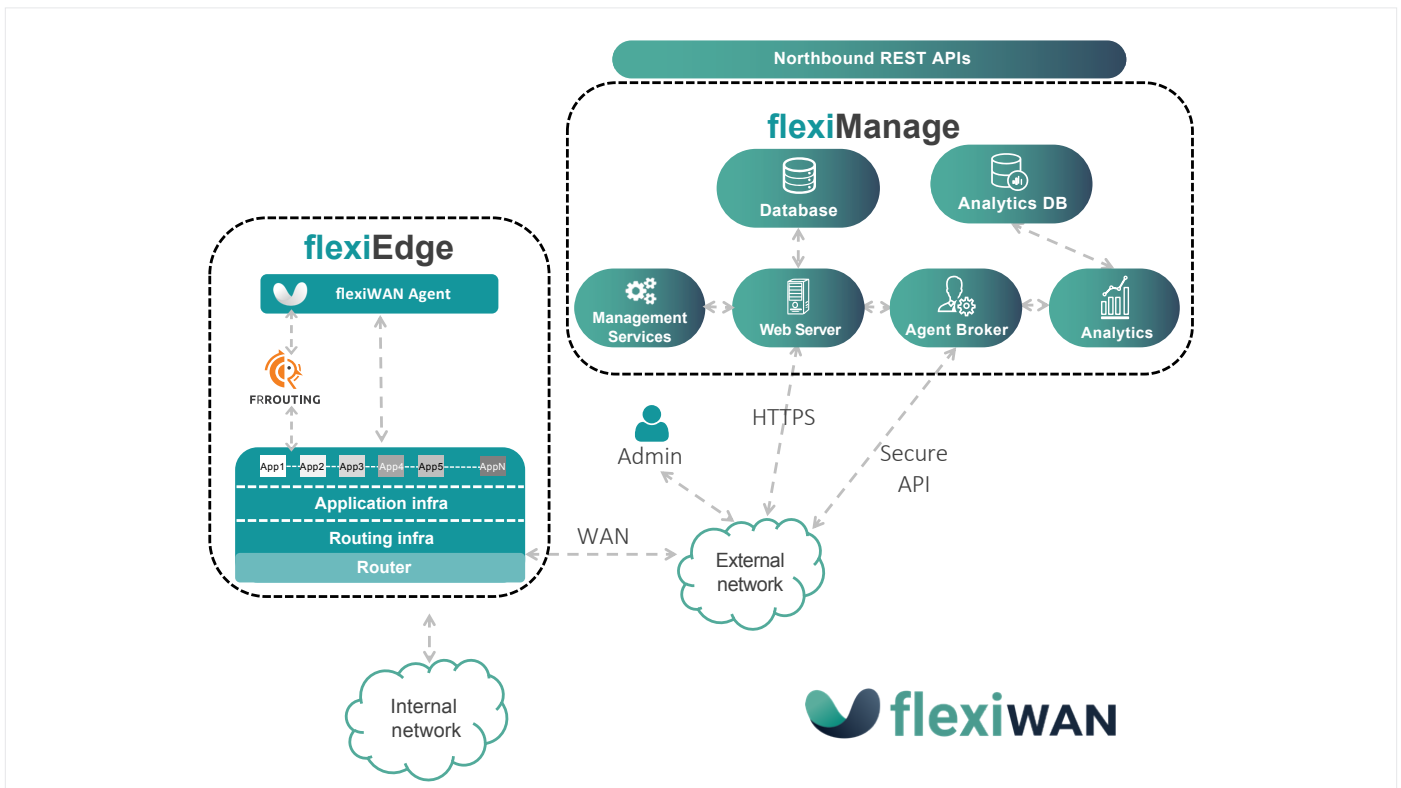


Figure 3. flexiWAN SD-WAN architecture including the flexiEdge and flexiManage software

Solution Brief | Fearful of Running Edge Virtual Network Functions? Try RES

As seen in Figure 3, the flexiWAN solution comprises flexiEdge software that runs on a uCPE in a branch office and provides routing and SD-WAN services. flexiEdge can also be installed in the cloud for cloud-to-enterprise connectivity or service delivery by CommSPs. The centralized flexiManage software manages all of the flexiEdge instances and provides configuration, provisioning, software upgrade, and orchestration of flexiEdge devices and applications.

UBiqube MSAActivator™

UBiqube is the leader in Integrated Automation Platforms. Multi-domain and multi-vendor integration for infrastructure automation is the essence of the MSAActivator™ framework. MSAActivator™ uses highly abstracted device and function modeling to eliminate the integration pain associated with distributed infrastructures and provides an easy path to holistic multi-domain process automation.

With its abstraction layer, it allows businesses to achieve efficiencies due to the ability to scale in a vendor agnostic manner. MSAActivator™ can take any device and set up an adapter to communicate to that device. From that microservices are extracted that allow for workflows to be built that enable automation. A visual workflow editor (BPM) allows a layer of abstraction that permits engineers or developers to automate business processes without worrying about the underlying fabric of the digital landscape.

The benefit of MSA is that it simplifies the complexities of managing a multi-domain, multi-vendor infrastructure through a “single pane of glass.” It is the Integration Automation Platform (IAP) that is needed for today’s networks to be future ready (see Figure 4).



Figure 4. MSAActivator Integration Automation Platform

In the RES lab, MSAActivator™ (see Figure 5) is integrated with the Advantech hardware platform, ENEA uCPE manager, flexiWAN SD-WAN, and open source firewall offering a seamless user experience from the initial deployment to day two change management.

Conclusion

SD-WAN services are growing because they enable greater network agility and high speed access to cloud computing

resources. Many technologies are involved in an SD-WAN service and they each impact the service performance, including the NFVI, network appliance platform, and the SD-WAN software itself. The RES SD-WAN Test-Drive Portal, enabled by UBiqube and Advantech’s Intel® technology-based platforms, is an innovative way to test the performance of the Enea NFVI and flexiWAN SD-WAN software and to make load and configuration adjustments that fine tune the solution for needs of their customers.

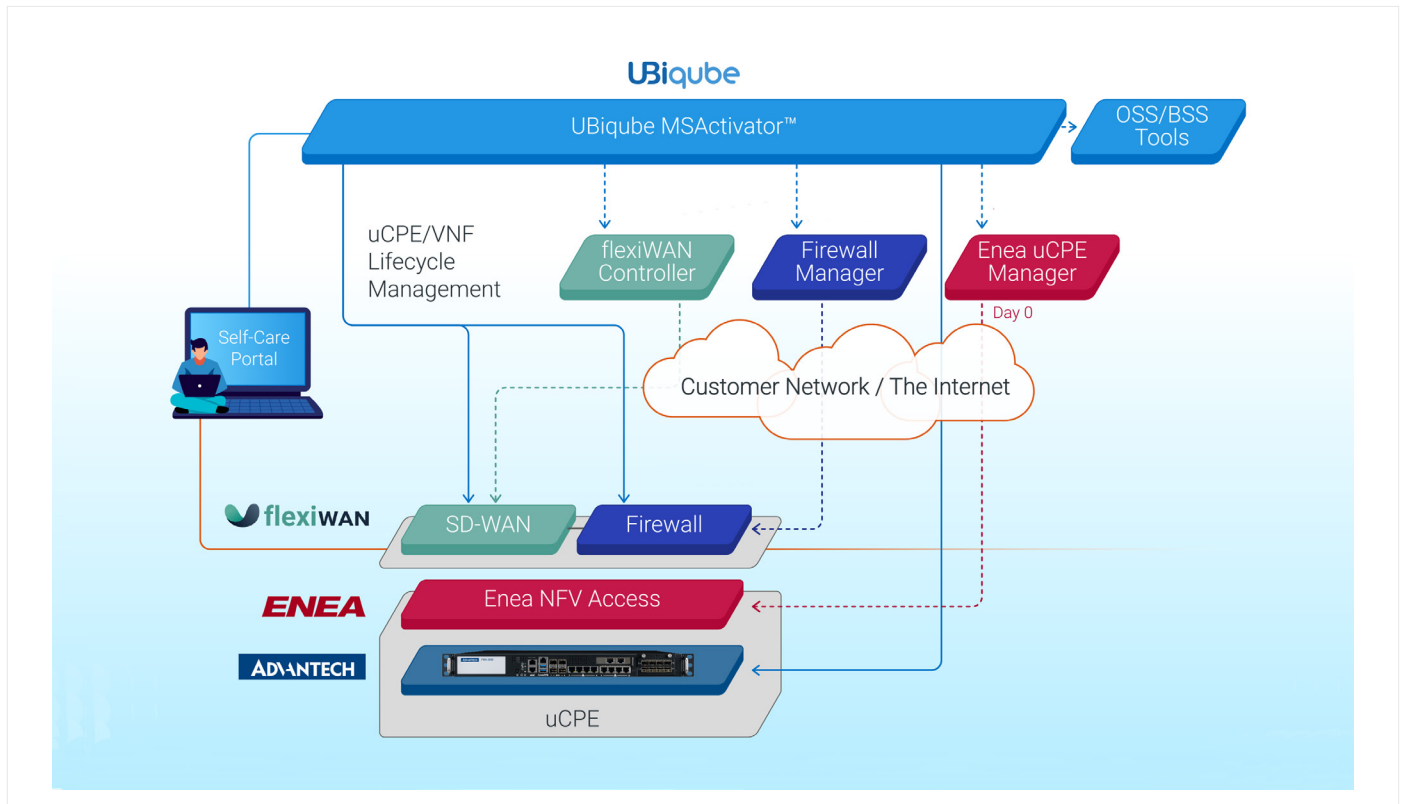


Figure 5. MSActivator provides automation to the Advantech RES lab

For More Information

Enea and Advantech are members of the Intel® Network Builders ecosystem: <http://networkbuilders.intel.com>

Advantech RES SD-WAN Portal: <http://flexiwan.testdrive-advantech-nfv.com/>

Advantech uCPE White Boxes: www.ucpe.tech

Enea NFV Access: www.enea.com/nfv

Ubiqube's Integration Automation Platform: <https://ubiqube.com/>

flexiWAN: <https://flexiwan.com>



Intel technologies may require enabled hardware, software or service activation.

No product or component can be absolutely secure.

Your costs and results may vary.

Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy.

© Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others.

0520/DO/H09/PDF

Please Recycle

342625-002US