



BREQWATR VALIDATES ITS PRIVATE CLOUD APPLIANCE AS A vCPE SOLUTION

Breqwatr is a turn-key private cloud appliance that combines web-scale engineering with consumer grade design to provide the capability and promise of the public cloud in a simple to use on-premise appliance. For this project, Breqwatr leveraged the CENG N Infrastructure to successfully demonstrate the Breqwatr Cloud Appliance (BCA) as a device agnostic virtual customer premises equipment (vCPE) platform.

CLOUD PROJECT OVERVIEW

Breqwatr's hyper-converged appliance begins with a linearly expandable four-node fully functional cloud, complete with scale-out storage and compute. It is driven by the simple to use, consumer interface that end-users need, while providing the availability, resilience and performance organizations demand. In re-thinking self-service, Breqwatr has put the user experience at the forefront of their design principles. In keeping with modern cloud economics, the Breqwatr Cloud Appliance is available via a unique Cloud-as-a-Service subscription model.



Figure 1. Breqwatr Cloud Appliance (BCA) Integrated in CENG N Infrastructure

THE CHALLENGE

Private cloud solutions are expensive, complex, and require a strong technical understanding to deploy and manage on a regular basis. This often requires that an organization hire IT personnel to manage the infrastructure. Even with these drawbacks, private clouds are becoming increasingly necessary for storing sensitive information by organizations of all types. This has led to the need for simple to use private cloud solutions that are enabled and maintained by a vendor; eliminating the need for in house technical talent on the end of the client.

THE SOLUTION

Breqwatr addresses this challenge with their Breqwatr Cloud Appliance (BCA), a turn-key hyper-converged appliance that allows organizations to harness the value of the public cloud from the security of their own data centre.

The BCA is an integrated hardware and software solution that unifies compute, storage, and network with a curated version of OpenStack that is customizable to the needs of each individual client. Its added value of monthly subscription-based billing has made it a powerful tool to any organizations looking to build a private cloud. To further expand their markets with service providers, Breqwatr has taken steps to offer their solution with vCPE functionality.

THE PROJECT

To successfully validate the viability of the BCA as a host for vCPE applications Breqwatr followed a two-phase project. First, the BCA was deployed into the CENG N infrastructure using CENG N's hardware hosting and cloud tenancy services. The next phase involved using five different vendor virtual network functions (VNFs) to demonstrate easy deployment and normal functionality for clients in any corporate or small office environments. The five VNFs were categorized as either a Virtual Load Balancer or a Virtual Firewall. Three of the VNFs were tested as a firewall to demonstrate that the BCA can protect against Denial of Service (DoS) attacks, while the other two, load balancer VNFs, demonstrated the BCA's ability to route requests from the client's virtual machine (VM) to each of the two web servers alternately.

CENG N MEMBERS



RESULTS

Upon integration in the BCA on CENGn's Infrastructure, Breqwatr worked to validate functionality of five vendor VNFs (2 Load Balancers, 3 Firewalls) on their private cloud solution:

Test-1 Load Balancer Test Scenario:

- Citrix Netscaler VPX
- F5 Big IP VE

Complete setup and configuration of VNFs were demonstrated with the Citrix Netscaler Load Balancer and the F5 Big IP. The vCPE application and web server were configured so the user could browse the load balanced Virtual IP (VIP) and see the web server content behind it. This effectively demonstrated the capability of the BCA to run each load balancer VNF.

Test 2 Firewall Test Scenario:

- Cisco ASA v
- Juniper vSRX
- Fortinet FortiGate VM

These VNFs' were configured and licensed on separate projects and networks prior to the testing. Breqwatr showcased each VNFs functionality on their private cloud application. To demonstrate this testing scenario, an initial attack on the cloud was launched and shown to successfully infiltrate the network. With the integration of each firewall VNF, the attack was prevented, proving each VNF was successfully integrated with the BCA.

With the validation of BCA IaaS on five different vendor VNFs, Breqwatr displayed the versatility of their private cloud as a vendor agnostic, easy to use, and scalable vCPE solution. Video recordings can be found at: <https://breqwatr.com/resources/videos/>

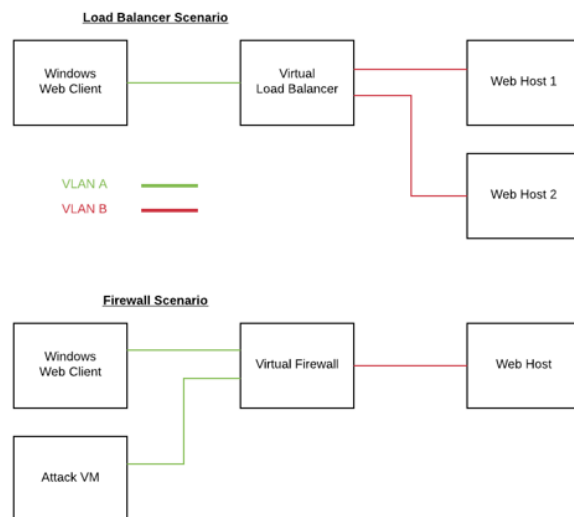


Figure 2: Firewall & Load Balancer Testing Scenarios

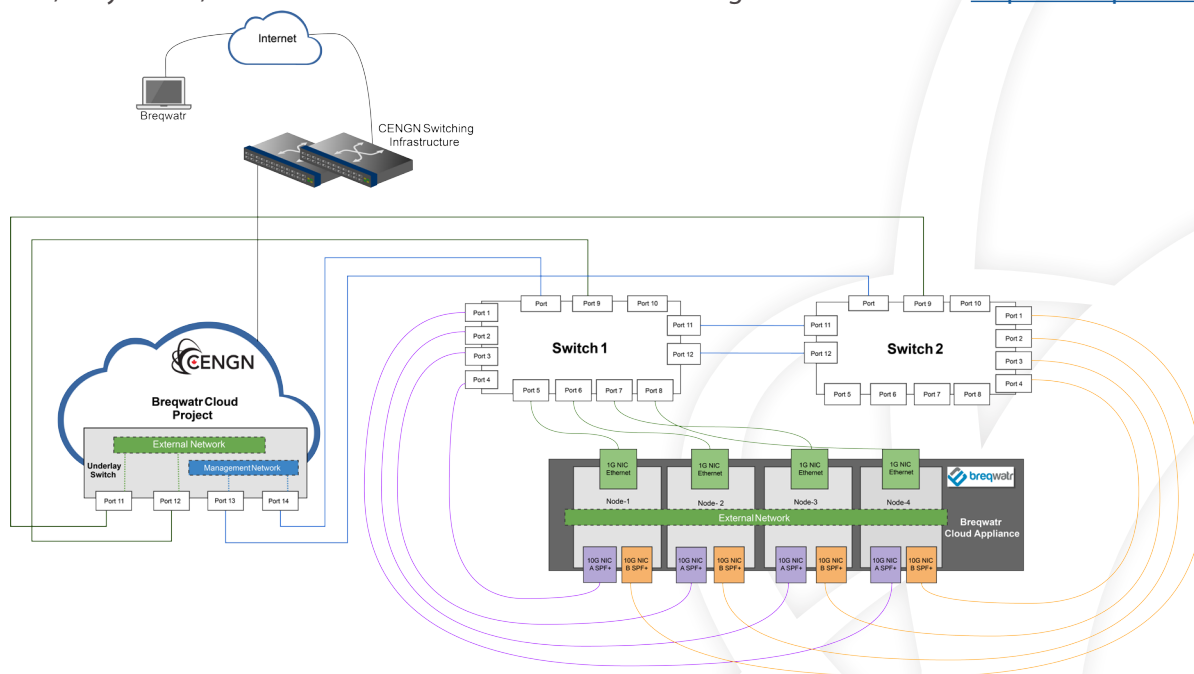


Figure 3: Breqwatr Cloud Appliance connecting to CENGn Infrastructure

CONCLUSION

Breqwatr successfully validated their BCA as an efficient vCPE IaaS Cloud appliance for mid-market & enterprise customers through the utilization of CENGn's cloud infrastructure. They were also able to create step-by-step demos during their project testing for future clients to use when enabling their cloud solution. Moving forward Breqwatr can now position their BCA as proven vCPE capable within the private cloud market.