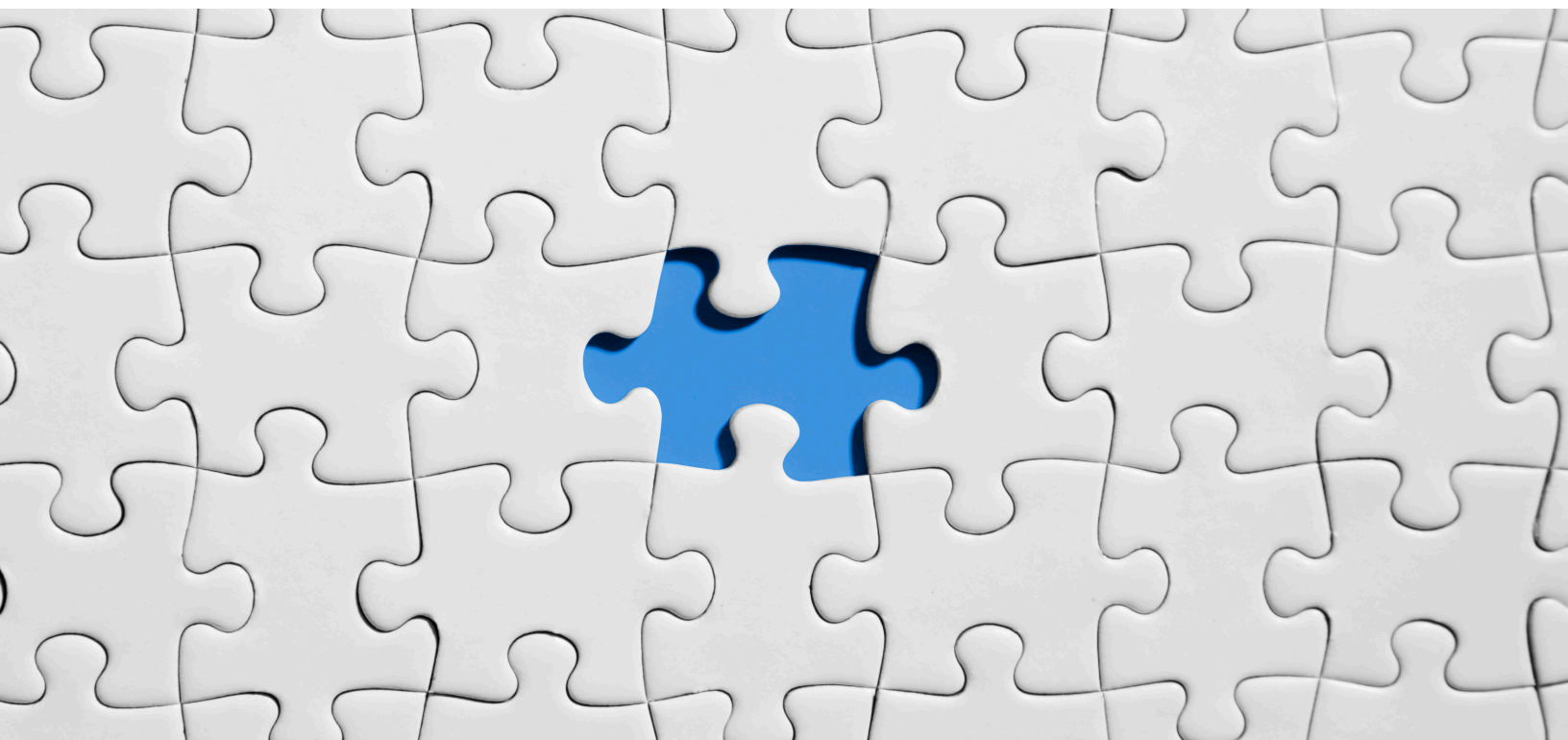


Y NOT VMWARE CLOUD ON DELL EMC - A ONE-STOP SHOP



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Cloud as a Service has come a long way. It all started with Infrastructure As a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Now we are in the era of providing a Datacenter as a Service solution to meet ever-changing business needs and customer demand. Let's take a closer look at this.

Managing a Datacenter always adds overhead expenses. But how can these expenses be controlled effectively without impacting business needs. You guessed it – Infrastructure as a Service will help organizations reduce cost and operational overhead. This article examines the best way to leverage a VMware Cloud on Dell Technologies Storage.

This is the game changer that many businesses are seeking. Now, their Developers can concentrate on building applications and not worry about backend or utilization/bottlenecks of the infrastructure. It also relieves pressure from a CEO/CFO as they now need to manage just one vendor. Specifically, it brings in cloud-like ease-of-use to on premises workloads and provides supreme reliability between on-prem) and public cloud environments.

This article will illustrate why VMware Cloud on Dell EMC is a preferred solution versus VMware Cloud on AWS, how easily VMware on Dell EMC is configured,

VMware Cloud on AWS

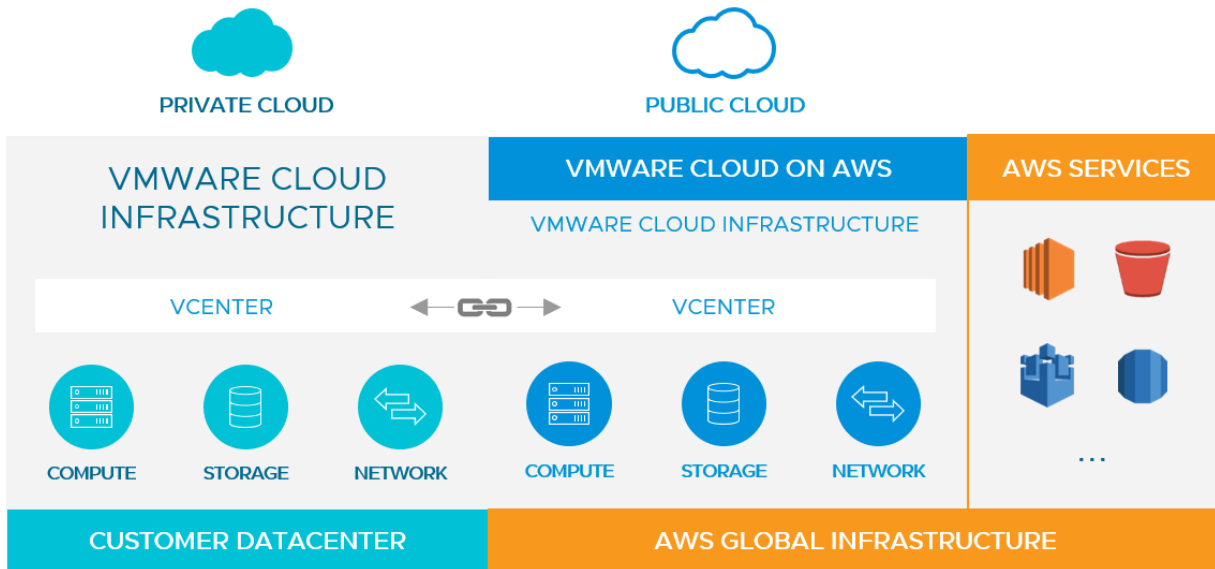


Figure 1: VMware Cloud on AWS^[1]

Figure 1 depicts a vSphere-based Cloud on AWS provided by VMware, containing vSphere, NSX, vSAN, Vcenter, built on a bare metal using AWS infrastructure. If the data center is on premises we will have to connect to VMware Cloud (VMC), VMware's software-defined data center (SDDC).

Let's look at the following prerequisites for configuring which would be required for setup^[8]:

1. First, log on to VMware and create a My VMware Profile
2. Create an AWS account (requires admin privilege)
3. Click on the Activation link sent by VMware

There are two parts for Configuration:

1. First is configuring VSAN.

To Configure a VSAN, VMware provides a Default Configuration of RAID 1. If unsure what RAID size is required, VMware recommends using VMC Sizer. More info on configuring Workloads can be found at vmware.com

- b. Second step in configuration is Networking. There are 2 gateways which are part of the configuration. i.e management Gateway & Compute Gateway. Management gateway is comprised of ESXi host, vCentre, NSXi Manager, etc.

Management gateway will be managed by VMware while Compute Gateway is managed by customers. Customer environment will have a VPN gateway and will need to connect to the VMware Cloud Compute Gateway through Internet Protocol security (IPsec) Virtual Private Network (VPN) to connect to VMware Cloud. The other part of the Compute gateway will connect to AWS Virtual Private Cloud (VPC) via an Elastic Network Interface (ENI).

Available deployment types:

Green Field

This less likely option will have a new ISO (an ISO image or .ISO file is a computer file that is an exact copy of an existing file system), Open Virtual Appliance (OVA) into the VMware cloud to spin up on the new environment.

Brownfield

Two options are available.

- L2 Extension – This option enables putting the customer network into the VMware cloud.
- L3 Cutover – This would replicate customer environment, turn it off, and bring it up on VMware Site.

To move these workloads, any of these functionalities can be used; Migration, HCX (a VMware Cloud on AWS), Site Recovery (DRS).

VMware Cloud on Dell EMC

This Dell Technologies infrastructure installed in the data center is a new, completely managed Datacenter-as-a-Service (DaaS) solution which provides for a customer's workload and elasticity of the public cloud with the required security and control of on-premises infrastructure. The VMware Cloud tools on Dell EMC VxRail hardware is one of the best enterprise solutions sought by businesses.

VMware Cloud on Dell EMC delivers an easy, simple solution between the public cloud and on-prem environments. This new concept enables organizations to focus on business innovation. IT staff can divest from maintenance activities and work on value-added services. IT Architects can make use of VMware's hybrid cloud control plane to simplify workload management and developers can accelerate application development by building for just one environment^[2].

VMware Cloud on Dell EMC eases the difficulties of managing multiple clouds for CIOs/CTOs. It provides one vendor to negotiate with for all data center needs, and also offers cloud through predictable subscription pricing. CIOs now have a foundation for to move their organization one step closer to IT as a Service, delivering on the promise of utilizing technology to drive business strategy.

What CEO's would be interested in

Figure 2 shows Total Cost of Ownership (TCO) when running on a Dell EMC VMware Solution realizes \$593,908 in savings, a 45% lower projected five year TCO than using Amazon Elastic Compute Cloud (Amazon EC2) [5].

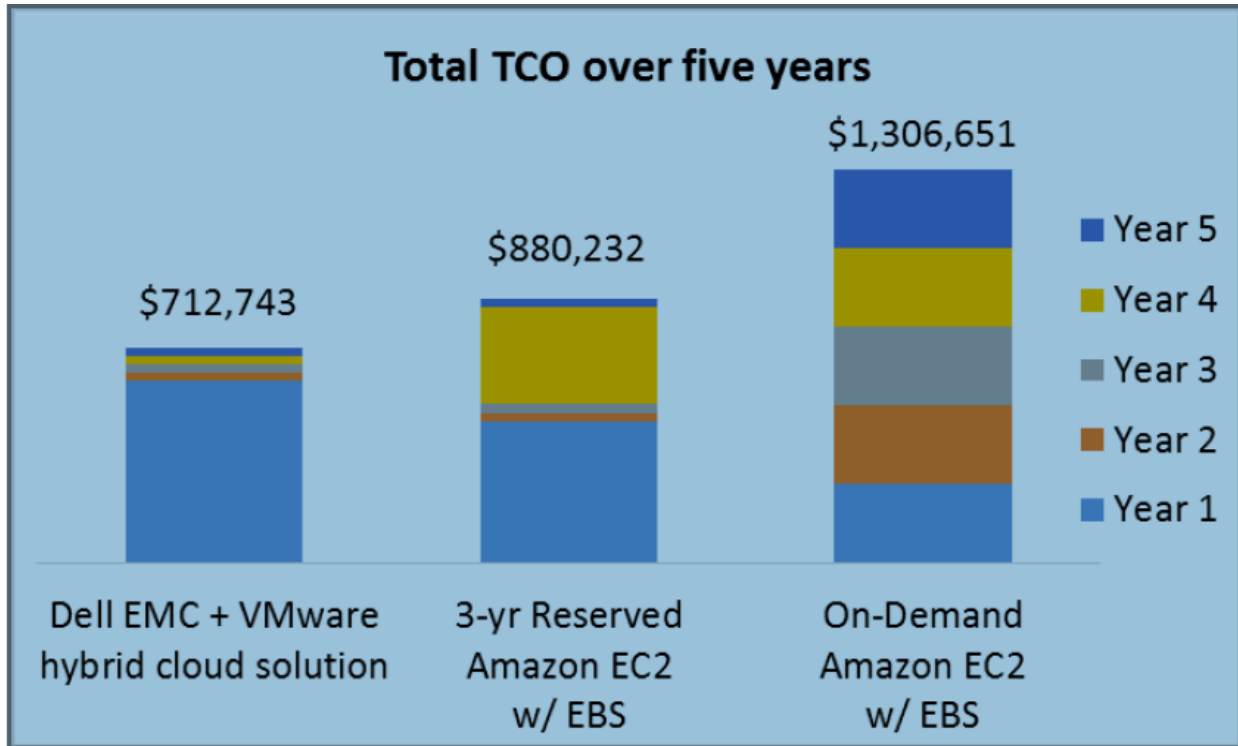


Figure 2: 5-year TCO for Dell EMC VMware Vs Amazon EC2 [3]

Building of VMware Cloud on Dell EMC

The VxRail Hyper Converged Infrastructure (HCI) appliance includes a half-rack or full-rack system composed of three or more VxRail servers, with support for up to 24 nodes. Powered by VMware Cloud Foundation, the appliance runs the VMware SDDC platform, which includes VMware vSphere, VMware vSAN and VMware NSX virtualization technologies that deliver compute, storage and network resources, respectively ^[5].

With VMware Cloud on Dell EMC, IT teams don't have to worry about planning, deploying or managing the infrastructure, helping to simplify and streamline operations and free up personnel for other tasks. The system also enables organizations to move from a Capital expenditure a CapEx to an OpEx accounting structure, lowering initial capital outlay. In addition, the cloud services model provides greater agility and easier resource allocation, while helping to meet security and compliance requirements by keeping data on-site. Plus, the platform supports such features as self-service provisioning and resource elasticity for further streamlining operations ^[4].

Bringing the Cloud to the Data Center

As with any technology, VMware Cloud on Dell EMC and AWS come with limitations. But, for organizations that can work with these limitations, the new platforms could offer important benefits. However, administrators must first assess whether either product will fit their workload requirements, taking into consideration contributing factors, such as TCO and available on-site resources^[4].

VMware Cloud on Dell EMC offers distinct advantages for industries like Banking and Finance, but others like Retail and Fast Moving Consumer Goods(FMCG)will also benefit from it. VMware Cloud on Dell EMC delivers value to any edge location where business is transacted and there is a need for compute, storage or networking capabilities^[6].

The offering's management software lets IT administrators monitor the state of server racks, tracking the steps engineers take to resolve technical issues. It can also automatically patch, and upgrade on-premises systems end to end.

The subscription-based service supports containers and Kubernetes along with linking to services offered by cloud providers, while maintaining their applications on VMware's infrastructure. Users will be responsible for their own data, which remains on premises at their respective core data centers or edge locations.

Security for VMware Cloud on Dell EMC is supplied via the micro segmentation capabilities of VMware's NSX offering for both legacy and more modern applications, with encryption features protecting data both at rest and in-transit.

Provisioning of VMware Cloud on Dell EMC

To access the VMware Cloud on Dell EMC Portal, log in to VMware Cloud Services. First-time users will not have any SDDC configured yet. The first step would be to add an SDDC location. This will be the physical site location, i.e. where the rack is to be delivered and installed. There is also an option to provide site contact. Once completing the order process, choose either 110A or 220V Power requirements; 110 may be needed for certain edge use cases.

The Rack includes everything, hyper converged infrastructure, networking and back up battery power. Each rack uses a 130 Amp Circuit. Please note locking plugs are required. There are few questions that must be addressed about the site to ensure space is adequate. Up to 3 to 5 hosts in the half height rack can be chosen. There are several managements required in the SDDC. It is a good idea to connect with the Network(n/w) team to allocate viable IP address space. On the cloud side VMware creates groups of isolated resources that are dedicated to customer organization. These are of lifecycle management, monitoring, and troubleshooting. To manage remote SDDC racks, VMware uses Velocloud to create a secure tunnel (like an IPsec Tunnel). This requires a single IP address from an existing network which could be static or dynamic. This network can be an on prem firewall but must reach internet on port 443 and UDP on 2426. The outer band network is for management ports, which can be used only by VMware to perform lifecycle management and troubleshooting tasks. The SDDC management subnet is most familiar to vSphere Admins. These networks will be subnetted and used for ESXI management interfaces like Vmotion, VSAN. There is a check box to determine access to the above ports. It has a 3-year or 1-year term commitment. Think of it like a reserved instance in the public cloud. The longer commitment gives a better value for money. After your final review click on order and voila, next would be to configure it to the site ^[7].

Why Customers are Excited

Customers are very excited to move to VMware Cloud on Dell EMC. It's easy-to-use portal to order, monitor and connect resources. It's fast and easy to deploy as there is no software to install; everything is pre-installed before it arrives in the customer's data center. It's always up to date as VMware takes care of hardware and software lifecycle management, ensuring Dell Technologies always has the latest fixes and patches. Plus, having a single vendor and one bill to pay eases vendor management. It's a Complete SDDC.

It has all the hardware and software required in it to meet application needs. A technician will work with onsite Coordinator to rack and stack and power up the machines in the customer's data center. Once the top of rack network switches are connected to the data center infrastructure, VMware can configure the uplink connections.

These are Layer 3 point-to-point networks that enable connection to the SDDC to deploy, migrate or access workloads. The Uplinks are configured through the same hybrid cloud portal that was used initially to order the SDDC. There are two top of rack switches in the rack. Each can connect to 1 or 2 devices for a maximum of 4 uplinks. Customers should work with their Network Engineers to obtain a set of /30 bit subnet mask IP's Network for these connections. VMware Engineers will configure the upstream IP address on the Layer 3 devices.

Each SDDC rack includes a vCentre Server. We can choose to access it through a local LAN connection or through a secure Wireless Access Network (WAN) tunnel. If we decide to change the method of access, DNS caches would take up to an hour to make those changes. VMware Cloud on Dell EMC includes NSXT, i.e. all workloads connect to a network segments. Once we create a connection to a network segment in portal its immediately available in vCentre^[7].

When a Network Segment is created, it gives a name and will request to specify the IP that will be used in the segment. DHCP server can also be chosen as well as the address range for the VM's that use Dynamic IP's. It's easy to open the vSphere Client directly from the Portal. As a vSphere admin, log in as cloud admin account which has all the permissions needed to manage the workloads in SDDC. A random password is generated during initial deployment and can be changed once logged in if preferred. In the vSphere client, you will find all the resources available in the SDDC. Click on the Network tabs to find the same NSXT segments that were visible in the Portal.

Figure 3 depicts a Data Center-as-a-Service architecture.

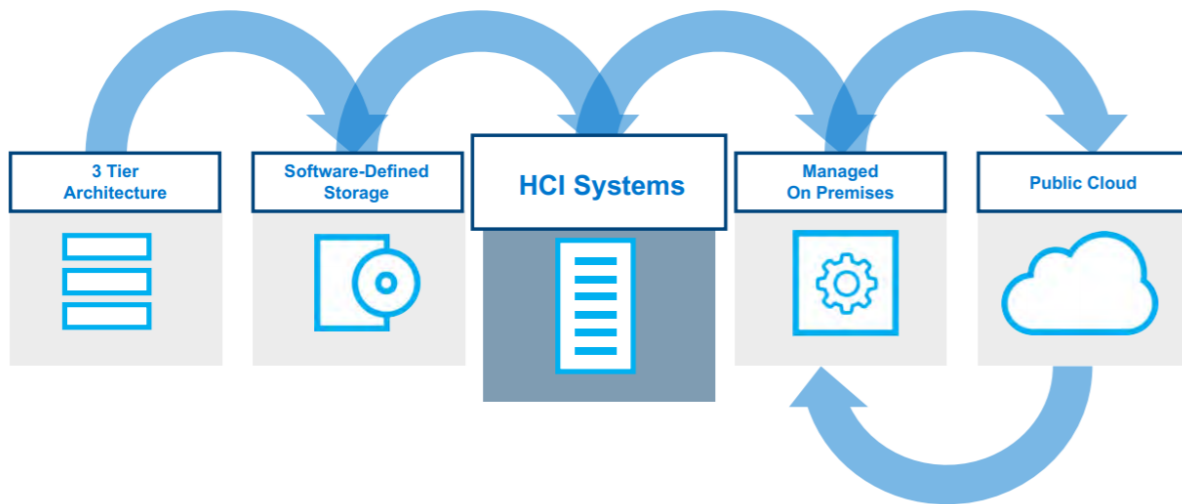


Figure 3: It's All Happening at the Same Time ^[5]

Conclusion

In this article, we looked at the difference between configuring an AWS and a VMware Dell EMC Cloud Solution. We determined that cost of ownership for a 5-year period on the latter is a better offering and QoS which can constitute every aspect of that infrastructure and make it available as a DevOps to enterprises.

The shift from a CapEx to OpEx is one of the main things companies like about public cloud, and Dell and VMware are delivering what businesses need. The service delivers on-premises infrastructure that is more attractive and more aligned with what we see from the public cloud providers.

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