Executive summary

Give DevOps teams self-service resource pools within your private infrastructure with Dell Technologies APEX cloud and storage solutions

We confirmed several real-world use cases in a VMware vSphere with Tanzu environment

The fast-paced needs of modern application development and delivery have pushed some companies to subscribe to public cloud-based solutions such as Amazon Web Services (AWS). It can be frustrating for a DevOps team to wait for a separate IT team to approve every individual resource request. Beyond frustration, this fragmented approach can waste time and money as the teams deliberate over resource usage instead of innovating in their own areas. What some companies don't realize, however, is that ITOps teams can use VMware® vSphere® technology to deliver public-cloud-like self-service to private cloud solutions such as those in the Dell Technologies APEX portfolio.

At Principled Technologies, we validated key use cases and functionality for a solution comprising Dell Technologies APEX Private Cloud and APEX Data Storage Services running a VMware vSphere with Tanzu environment. The solution allowed us to set up namespace self-service that could enable DevOps teams to create resources within an ITOps-defined quota; set up VM and Kubernetes cluster self-service that dev teams can use to create and destroy clusters and VMs at will; and configure storage policies within VMware vSphere that dev teams could then use to assign storage with specific quality of service (QoS) to clusters and VMs. We then verified the functionality of each of these features by using them to create a simple containerized application and VM appliance and ensuring that the two could communicate with each other. Though each feature we tested would directly empower a theoretical DevOps team, setting up these capabilities would allow ITOps teams to establish limits up front without the need to approve individual DevOps requests.

Create custom storage policies

that leverage a variety of classes and tiers of storage

Enable DevOps to provision and manage their own resources

Namespace, VM, and cluster self-service enables DevOps to build and tear down Kubernetes® clusters and VMs at will

Avoid cloud cost spirals

with on-premises managed hardware

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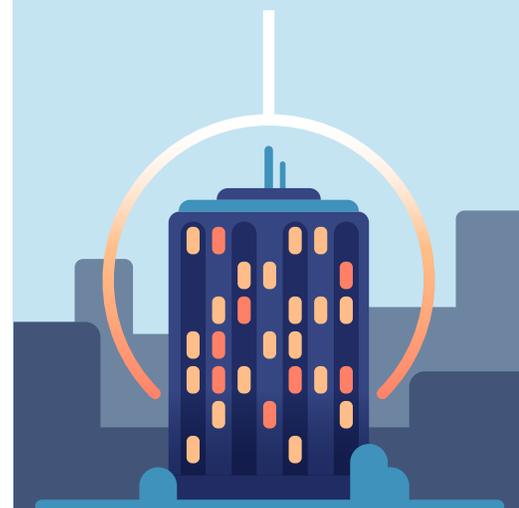
DevOps and ITOps often have two competing resource-related goals:

DevOps wants to be able to quickly provision resources themselves.

ITOps wants to ensure all provisioned resources stay within planned limits.

Our use cases

We used four use cases to test a self-service app development environment on private infrastructure. This self-service approach could save both time and money for DevOps and ITOps, as each could focus on their own needs rather than devoting time to creating and processing infrastructure requests.

✓ Configuring storage policies in VMware vSphere with Tanzu

We set up storage policies that enabled us to leverage different storage classes and assign low, medium, and high storage tiers to different resources within the environment.

✓ Setting up namespace self-service

We set up a VMware namespace service that could enable an app development team to provision their own VMware vSAN™ storage resources within a test environment. We then set up a high-performance, high-QoS production namespace that a company could use in its production environment. Finally, we verified that we could use namespaces to establish resource quotas for VMs, memory, and disk usage. After establishing a quota, a dev team would be free to provision clusters and VMs within the established resource limits.

✓ Setting up VM and cluster self-service

Modern development workflows may require devs to use both containers and VMs. We set up VM and cluster self-service that could enable a development team to provision and deprovision both Kubernetes clusters and VMs using the self-service namespaces we configured earlier.

✓ Confirming self-service use

We confirmed that a DevOps team would be able to use the aforementioned features to implement a modern app using self-service. We created and destroyed Kubernetes clusters and VMs within the dev namespace we set up, and we were able to assign storage with high quality of service to each of those resources. Additionally, we configured a containerized application and a VM appliance and enabled each to communicate with the other.

With the above functionality, organizations could create independence for DevOps and ITOps by enabling each to focus on projects rather than devoting time to resource requests and management. These organizations could thereby streamline DevOps/ITOps interactions to better support modernized app infrastructure and a more agile development process. This could reduce management complexity, as organizations would be able to maintain a unified resource pool and consistent governance framework.

Read the report at https://facts.pt/MO2uvKh ▶

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