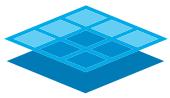
WHITE PAPER

Platform9 for vSphere vs. VMware Integrated OpenStack: 7 Key Differences



PLATFORM9

Introduction

Private clouds provide a valuable opportunity for VMware customers to increase the utility of their existing vSphere infrastructure. Those considering OpenStack to achieve automation, self-service, and programmatic infrastructure access for their users often ask us how Platform9 Managed OpenStack for vSphere (Platform9) compares with VMware Integrated OpenStack (VIO).

This brief will explain some of the key features that differentiate these two products, but the primary difference is this:

> *Platform9 Managed OpenStack takes a fundamentally different architectural approach than VMware Integrated OpenStack, enabling a fundamentally better solution for OpenStack-based private clouds for VMware vSphere customers.*

Why? Because instead of just another repackaging of OpenStack like VIO, Platform9 provides an enterprise-grade private cloud solution that incorporates existing assets and is backed by a 24/7 service level agreement (SLA).

Existing Environments

Many large enterprises and service providers have massive existing deployments of infrastructure, with proven configurations of compute, storage and network infrastructure, along with well-tested operating system (OS) images and existing VM deployments. When implementing OpenStack, organizations generally don't want to duplicate these investments; they would rather get started by reusing the applicable portions, saving time and money.

The Challenge with VIO

VIO requires customers to "reboot the stack" and start with greenfield environments. This means existing investments in pre-configured OS images, running VM workloads and network configurations must be duplicated, increasing the time required to implement OpenStack and adding risk to the process.

The Platform9 Difference

Platform9 does not require customers to reboot anything. Instead, Platform9 automatically discovers existing compute capacity (from clusters and hosts), storage (from datastores), networks (from host vSwitch mappings), VM templates (from datastores) and VMs (from datastores and clusters). Metadata about these existing resources and workloads is then reconciled with the OpenStack control plane, thus eliminating duplication and saving time.

Interoperability

Organizations that have been using vSphere for several years often have third-party applications, automation scripts, and (most importantly) IT administrators that regularly perform operations directly via vSphere.

Cloud platforms such as OpenStack need to interoperate with vSphere so that operations made directly via vSphere do not conflict with OpenStack's understanding of the underlying infrastructure.

The Challenge with VIO

VIO takes exclusive control of the vSphere resources it manages. In other words, VIO assumes that OpenStack has sole authority to perform operations on underlying resources.

The result is that other VMware and third-party applications (such as Backup/Restore or Site Recovery Manager), vSphere API-based automation scripts, and maintenance operations performed by admins will all conflict with OpenStack and are therefore unsupported.

Examples of such unsupported operations include:

- vMotion of VMs across clusters
- Storage vMotion of VMs across datastores
- VM power operations
- VM creation and deletion
- Cluster, datastore and network maintenance operations that can reconfigure datastores or clusters

The Platform9 Difference

Platform9 works by discovering the environment metadata, and refreshing that metadata every few minutes. This updated metadata is then reconciled with the OpenStack control plane, making OpenStack resilient to any changes made via vSphere directly. Therefore, Platform9 fully supports "dual-mode" operation and there are no restrictions on what operations can be performed via vSphere.

OpenStack Lifecycle and SLA

It is generally understood that running OpenStack at scale and in production can be challenging. Key challenges to consider include:

- **24/7 monitoring:** OpenStack is a complex distributed system with several services that interact with compute node agents via message queues. Failures can occur at many different sites and if not detected and fixed quickly, small failures can cause "pile-ups" that eventually affect the entire environment. To keep the system running smoothly, the entire stack needs to be monitored 24/7 to detect and address problems immediately.
- **Patches for urgent issues:** Once discovered, problems must be fixed quickly to prevent a pile-up that affects the entire cloud. Often, this requires the development of a patch to OpenStack services and rolling out that patch into production within a few hours.
- **Upgrades:** OpenStack has a major new release every six months with significant bug-fixes and valuable new features. To avoid disruption of production OpenStack deployments, IT teams need visibility on the frequency with which their OpenStack release will be updated and how it will be rolled out.

The Challenge with VIO

VIO doesn't include a 24/7 monitoring mechanism that IT can lean on. Instead, IT has to monitor all of OpenStack's footprint, so when there is a problem, it's up to IT to catch it and work through VMware's manual, time-consuming support process to help get a resolution. Patches can take weeks or months to be developed, and VIO's massive footprint (16-VM appliance) makes rolling out new patches complex and risky. In addition, there is no backup strategy while rolling out patches or upgrades to new releases of OpenStack.

In short, VIO doesn't address critical issues about the OpenStack lifecycle, thereby putting service levels at risk for the VIO cloud.

The Platform9 Difference

Platform9 is designed with a focus on not only the initial configuration of OpenStack but also managing the ongoing lifecycle. Every Platform9 deployment is monitored 24/7 (controller health, message queue health and compute node agent health), and therefore problems are detected within seconds. Since Platform9 monitors hundreds of OpenStack clouds across the globe, we detect problems that might be latent in a given OpenStack deployment. Such problems are triaged continuously and patches are developed as required. These patches can be rolled out to customers within 4-8 hours, thereby mitigating the risk of pile-ups. New OpenStack releases are tested extensively and rolled out to customers every 12 months (i.e. every two OpenStack releases).

In short, Platform9 owns responsibility for OpenStack service levels. Through a contractual service level agreement (SLA), Platform9 continuously manages and tunes the OpenStack environment, insulating customers from the need to think about, much less spend time on, OpenStack service levels.

Multi-vCenter / Regions

Many larger organizations have multiple vCenter deployments due to vCenter's scale limitations and/or infrastructure that spans multiple geographies. When using OpenStack to orchestrate vSphere, organizations should pay attention to the operational cost of managing multiple vSphere deployments.

The Challenge with VIO

VIO is limited in scope to a single vSphere environment. Managing multiple vSphere deployments requires many OpenStack deployments. Moreover, for each vSphere environment, VIO is packaged as an extremely resource-intensive, 16-VM virtual appliance that consumes 200GB of memory just for OpenStack! These factors are problematic from an operational perspective:

- Multiple OpenStack deployments dramatically increases management complexity
- Resources across multiple vSphere deployments cannot be pooled, managed and consumed via a single OpenStack API.
- Different geographies cannot be reflected via OpenStack as independent "regions"
- The total resources required just for VIO can be massive (multiple TB of memory)

The Platform9 Difference

Platform9's design simplifies managing multiple vSphere deployments:

- Each vCenter is managed by a single, lightweight and stateless vSphere gateway appliance. This gateway appliance is small, hardened, and serves as a stateless API proxy between vCenter and OpenStack. Therefore, its resource requirements are just 1-2% of that of VIO.
- Managing multiple vCenters is a simple matter of deploying multiple vSphere gateways.
- Resources in different geographies can be reflected in Platform9 as distinct "regions", similar to how Amazon Web Services reflects regions independently.

Choice vs. Lock-in

OpenStack can serve as an open API "interconnect" between compute, storage and network technologies in the data center, enabling greater freedom of choice in technology investments. However, some OpenStack options are truly open and enable choice, while others are very restricted and fail to deliver the level of interoperability that OpenStack is capable of.

The Challenge with VIO

VIO has a number of restrictions, and has been criticized by some as VMware's attempt to prevent customers from making non-VMware-friendly technology choices. Its restrictions include:

- Hypervisor: vSphere Enterprise Plus is the only supported hypervisor platform. Notable exclusions include:
  - KVM on CentOS / Ubuntu / RHEL
  - vSphere Enterprise
- Networking: VMware NSX is the only fully Neutron-compatible software-defined network (SDN) platform. Exclusions include:
  - Linux/OVS
  - Cisco/APIC
  - Juniper/Contrail
  - PlumGrid

The Platform9 Difference

Unlike VMware, Platform9 does not have a vested interest in any hardware, OS, or virtualization platform and is committed to delivering true interoperability with a wide range of these solutions, including:

- Hypervisor: Full support for:
  - vSphere Standard, Enterprise, Enterprise Plus and above. (vSphere Standard requires single host clusters in the near term)
  - KVM on CentOS 6.6 or 7.1, RHEL 6.6 or 7.1 and Ubuntu 14.04
- Networking: Full support for:
  - Linux/OVS
  - Cisco/APIC
  - VMware NSX
  - Juniper/Contrail
  - PlumGrid

Cost

While often portrayed as "free," VIO has hidden costs that must be considered.

The Challenge with VIO

There are two factors to consider when evaluating the true cost of VIO:

- VIO requires vSphere Enterprise Plus or above, creating a cost-of-entry tax.
- Teams adopting VIO need to invest in OpenStack-savvy practitioners - or invest in training the existing team - to manage and maintain VIO on a daily basis.

The Platform9 Difference

Platform9 supports vSphere Enterprise, which dramatically reduces the baseline operating costs for your private cloud. Further, with Platform9 you avoid the significant cost of setting up a new, separate team in the IT department with OpenStack skill set. Platform9 manages the OpenStack control plane transparently, without disrupting or "taxing" the IT team.

Vendor Commitment

Organizations deploying OpenStack should validate the vendor's commitment to OpenStack to ensure they have a quality experience in the long term.

The Challenge with VIO

VMware's commitment to OpenStack is unclear. After initially dismissing the technology, VMware now supports the project since customer interest in OpenStack is very strong. However:

- VMware will be conflicted with truly allowing the interoperability of technologies that OpenStack can entail. Corporate self-interest dictates that VMware will bundle and require purchasing VMware-proprietary technologies instead of truly embracing newer and better alternatives in the open source ecosystem.
- Availability of support and engineering personnel for VIO should be validated first-hand. Given the size of VMware's product portfolio, customers may be surprised to see how little support and engineering resources are actually dedicated for VIO.

The Platform9 Difference

Platform9 is 100% focused on OpenStack-based private clouds. We have no conflict of interest since we don't have a vested interest in any specific OS, hardware or virtualization platforms.

Platform9 has a sizable and growing support and engineering organization that is 100% focused on our OpenStack customers. Our team represents one of the greatest concentrations of OpenStack expertise in the world.

Summary

The following table summarizes the comparison between Platform9 Managed OpenStack and VMware Integrated OpenStack:

	Platform9	VIO
Time to Production	• 10 minutes (SaaS)	• Weeks or months
Integrates with Existing Environments	• Yes - supports any existing Linux (KVM) or vSphere environment	• No - requires greenfield environments
Interoperability	• Yes - OpenStack and vSphere coexist seamlessly	• No - OpenStack takes control; many vSphere operations unsupported
Guaranteed OpenStack SLA	• Platform9 owns the SLA	• None - IT owns the SLA
Health Monitoring and Troubleshooting	• 24/7 monitoring and fixes	• None - IT is responsible
Upgrades to Patches and New OpenStack Releases	• Included and "zero touch" for customers	• Complex and unproven
Geographically Distributed Environments	• Integrated, single pane of glass	• Silo'd management
Hypervisor Support	• KVM and vSphere Enterprise and above	• vSphere Enterprise Plus and above
Hardware Compatibility	• Any hardware that runs common Linux or vSphere versions	• Unable to use non-VMware SDN solutions
Cost	• Lower cost: Supports vSphere Enterprise and above: no OpenStack expertise required on team	• Higher cost: Requires vSphere Enterprise Plus as well as practitioners with OpenStack expertise

In summary, IT teams considering OpenStack for private clouds should recognize that VIO has significant limitations that make it operationally complex and expensive. It doesn't address the well known challenges with running OpenStack at scale in production, nor does it deliver true interoperability that any OpenStack implementation should.On the other hand, Platform9 makes it easy for customers to implement OpenStack-based private clouds, eliminating the need for OpenStack know-how on the IT team and removing operational risk. Platform9 is proven in production today with a growing set of enterprise customers who have chosen Platform9 to maximize the simplicity and choice in their OpenStack private clouds.

We recommend a side-by-side evaluation of VIO and Platform9 to enable you to assess the difference for yourself. To discuss these evaluation criteria, or to request your own Platform9 trial, please contact us at customer-success@platform9.com.

About Platform9

Platform9 transforms an organization's existing servers into an AWS-like agile and efficient self-service private cloud at any scale within minutes while leveraging the latest open source innovations. Powered by OpenStack, Platform9 is the first 100% cloud-managed platform for KVM, VMware vSphere, and Docker. Founded in 2013 by a team of early VMware engineers, Platform9 is situated in Silicon Valley.

Additional Resources

You may also find the following helpful as you evaluate Platform9:

- Blog Q&A with GE's Cody Hill on the State of the Enterprise Private Cloud
  http://platform9.com/blog/qa-with-ge-on-the-state-of-the-enterprise-private-cloud/
- White Paper: Five Things You Need for a True VMware Private Cloud
  http://platform9.com/resources/wp-5-things-vmware-private-cloud/
- Self-service and Automation using OpenStack for VMware vSphere
  http://platform9.com/resources/wp-self-service-and-automation-for-vsphere/