

Hybrid Cloud: SoftLayer & VMware

How VMware Customers Can Optimize with SoftLayer,
an IBM Company

Introduction

This paper focuses on how existing VMware customers can gain a strategic advantage by leveraging SoftLayer's Infrastructure as a Service, while retaining the capabilities of their vSphere infrastructure. It assumes a cursory understanding of the features and functionality of VMware vSphere, as well as basic familiarity with SoftLayer. The goal of this paper is to educate customers on the benefits of migrating VMware environments into SoftLayer in a hybrid cloud configuration. This paper is not meant to be an exhaustive analysis or implementation guide for running VMware vSphere in a SoftLayer data center.

What is VMware vSphere?

VMware vSphere originated as a server virtualization platform that has grown into a complete Software-Defined Data Center (SDDC) solution that not only includes virtualized compute resources, but also delivers Software-Defined Storage (SDS) and Software-Defined Networking (SDN). It has enabled IT departments to transform their static server and network infrastructures into dynamic resource pools, which can be provisioned on demand based on the ever-changing needs of the organization.

Challenges for the Software-Defined Data Center

Transforming from a static IT infrastructure to a dynamic Software-Defined Data Center (SDDC) brings new challenges. For example, the SDDC allows IT departments to react quickly to changing organizational needs, but it also sets the bar higher, increasing user and management expectations that IT will always deliver a nearly instantaneous response.



USER
EXPECTATIONS



HARDWARE
CONSTRAINTS



FLUCTUATING
DEMAND

The chief challenge is that even with software like VMware vSphere to manage and optimize the data center resources, IT departments are still bound by hardware constraints. For instance, on-premises data centers have a limited amount of floor space for racks of servers, storage, and networking. Even with consolidation, the data centers are still often constrained by the amount of available power and cooling.

Demand can also be cyclical, such as seasonal workloads in the retail sector. While the demand must be met, it is often impractical to size an on-

premises data center for the peak burst capacity, especially when that capacity is only used for 3-4 months in the year. That leaves IT departments in the uncomfortable position of choosing between over-sizing or under-sizing their data centers.

That's where cloud computing comes in. Public cloud providers can deliver the compute power needed when your own data center is overwhelmed. And while all public cloud providers boast elasticity and immense scalability, this scalability often comes at a hefty hidden cost: retraining your IT operations staff on yet another management interface. That's because most public cloud providers have a one-size-fits-all approach to workload provisioning that doesn't include customers bringing their own VMware infrastructure into the cloud. **SoftLayer is different.**

You Don't Need to Sacrifice Control to get Elasticity

Adopting a cloud strategy shouldn't force you to choose between elasticity and control. With SoftLayer you don't need to trade the reliability and success of your VMware infrastructure to get the expandability your organization needs. Your experience maintaining a proven and reliable VMware infrastructure is an asset to be leveraged—not traded—to get the freedom of near boundless growth in the cloud.

By providing bare metal servers with high speed networking and storage options, SoftLayer delivers the elasticity your organization craves without forcing you to completely rewrite the book on IT operations. You get a provider that enables you to transform your existing VMware private cloud into a massively scalable hybrid cloud, without reinventing your IT department.

The Hybrid Cloud

Imagine a logical pool of server, storage, and networking resources that extends across your organization and into the Internet to include the resources you have provisioned at public cloud providers. From this pool, you can provision workloads based on cost, location, or performance.

Now imagine that you can actually manage all these resources using the same tools that you've been using for years. This is a hybrid cloud. By extending your VMware infrastructure into the SoftLayer cloud, you can tackle initiatives like Cloud Bursting, DevOps, and Disaster Recovery.

Cloud Bursting

Cloud bursting is the process of scaling out your workloads into a public cloud provider as your organization's IT demand increases beyond the capacity of your on-premises data center. Though cloud bursting alleviates the scalability challenges, it can introduce uncertainties about availability, control, and security. In this respect, SoftLayer has the advantage over other providers because you maintain control over your VMware vSphere hosts.

DevOps

DevOps is a combination of the words Development and Operations. DevOps represents the idea that the software development team works in tight connection with the IT operations team to deliver projects quickly and efficiently. One hurdle of software development is the procurement of hardware and software resources to be used for testing and development. By running VMware vSphere in SoftLayer, your IT Operations team can leverage this Hybrid Cloud to deliver the server, storage, and networking resources that the Development team needs, via the same vSphere client they have used in the past.

Disaster Recovery

Disaster Recovery or Business Continuity is a concern for nearly all organizations, but the costs to setup a compatible recovery environment in a remote data center can be formidable. VMware has made the disaster recovery process easier by incorporating replication technologies into their products. Now all you need is a remote data center that will allow you to provision bare metal servers to run VMware vSphere. SoftLayer's bare metal server offering, coupled with VMware's recovery tools makes disaster recovery preparation and testing an achievable and affordable solution.

Why SoftLayer has changed cloud computing the way VMware changed on-premises data centers?

In years past, adopting cloud computing meant leaving behind your existing data center management techniques and technologies in favor of what the cloud provider felt was best for your organization (or theirs). In most cases, all workloads had to be virtualized, yet you had no control over (or choice in) the hypervisor.

SoftLayer has changed this by giving you the choice to run your workload in a shared or dedicated environment—on virtualized or physical servers. By providing bare metal servers in the cloud, you have total control and total flexibility. For VMware customers, you can install VMware vSphere on servers in SoftLayer

data centers, and extend, not replace, your infrastructure management model.

In your organization, you have complete visibility to all the server, storage, and networking equipment.

Why should you expect less of a cloud provider?

SoftLayer provides complete transparency of the underlying infrastructure, delivering extensive management tools to simplify your provisioning and maintenance operations. In addition, you have complete control over your servers, storage, networking, and security resources, allowing you to reconfigure the cloud to suit your organization's needs, just as you would with your own data center.

By running your VMware environment in SoftLayer, you get the best of both worlds. VMware delivers maximum efficiency and the flexibility to oversee your workloads' virtual resources, while SoftLayer provides complete control and transparency of the physical infrastructure, all in a highly scalable cloud environment. Plus, in SoftLayer you don't get woken up in the middle of the night to fix hardware failures!

Let's explore some of the key areas where SoftLayer increases your VMware value proposition.



Global Reach

Whether your organization is based in a single city or spread across the globe, we can help. SoftLayer is a global provider of cloud services, with dozens of data centers worldwide. We have data centers in North America, South America, Europe, Asia, and Australia. Expanding into

foreign markets is challenging enough without the added complexity of building out a data center. As your organization expands into new markets, SoftLayer can help you reduce your startup capital investment costs by leveraging our worldwide network of data centers. In addition to removing the stress of building your own data center or computer room, you reduce your deployment time from months to days.

The global distribution of SoftLayer's data centers is also beneficial from the perspectives of scalability, business continuity, and data sovereignty. You can maintain compliance, while retaining your existing VMware infrastructure and IT staff. In fact, you can choose to centralize your cluster(s) in one location, or decentralize everything based on your organizational needs. You have total visibility of the data centers and their location, complete with detailed inter-data center latency information found in SoftLayer's Looking Glass portal: <http://lg.softlayer.com>



Servers

Today, your virtual infrastructure runs atop VMware vSphere on bare metal servers in your organization's data center. Migrating to the cloud doesn't mean you have to adopt a foreign virtualization platform or surrender control of your VMware hosts! SoftLayer delivers bare metal servers in the cloud, so that you can deploy, configure, and manage the vSphere hosts yourself. This gives you total control of the high availability, security, and performance of your virtual infrastructure, even when the hardware is miles away.

Most cloud providers offer only virtual servers, which are frequently subject to over-subscription and performance degradation during peak hours. What separates SoftLayer in the industry is our ability to deliver both virtual AND physical servers in all our data centers around the world. While

our virtual servers enjoy dedicated CPU and memory performance, sometimes you need the raw power of a physical server, like when running the VMware vSphere hypervisor to host your own virtual infrastructure.

SoftLayer provides different options based on your needs.



STORAGE



NETWORK



SECURITY

All servers are available on a monthly or hourly basis; there are no long-term yearly contracts. SoftLayer gives you the flexibility to deploy machines on an hourly basis for a proof of concept or deploy highly customized physical servers for production use on a monthly basis. You buy what you need when you need it, instead of sizing for three years in the future. In addition, because these servers are leased on a monthly basis, you can upgrade more frequently. As new hardware becomes available, you can retire existing servers and replace them with newer equipment, even on a monthly basis.

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In your data center you can customize the build of the physical servers to adhere to licensing and performance needs. Likewise, in SoftLayer the physical servers can be customized down to the number of CPU sockets and cores, giving you total control over your VMware vSphere licensing. You specify the amount of RAM, the number and type of network cards, and even configure the local storage options.

To maximize interoperability with your organization's VMware vSphere deployment, you have the choice either to bring your own VMware licenses or leverage ours. During the deployment of the bare metal server, you can choose to automatically install vSphere using our service provider licensing, or you can opt to bring your own license and install the vSphere software yourself, using our remote keyboard monitor feature in the SoftLayer customer portal. The choice is yours.

Storage

SoftLayer provides a number of storage options ranging from local Solid State Drives (SSD) to iSCSI solutions with replication and snapshot capabilities. So if you wish to run a VMware vSphere cluster with the linear scalability of VMware's VSAN, you can do so thanks to the availability of local SSD, SAS, SATA drives, and servers interconnected with high speed 10Gbps networking.

If you would like centralized, shared storage you can deploy a dedicated physical storage server running QuantaStor, which can provide extreme customization for your iSCSI, NFS, and CIFS storage needs. And while QuantaStor is powerful, you aren't limited to the software we provide. You can always deploy a physical server and use your own software and licenses.

If storage management isn't your thing, no problem. We provide iSCSI and NFS storage which may be replicated to remote data centers for business continuity. Alternatively, you can provision storage based on the I/O performance characteristics that your workloads require.

Network

The SoftLayer network is composed of three distinct networks, referred to as the triple network architecture. They include: Management (remote access and control), Public (Internet traffic), and Private (protected inter-server traffic).

Your VMware vSphere hosts can be directly managed via an IPMI KVM console that uses the Management network. In addition to having access to the server console for troubleshooting, you can also leverage this connection to remotely install and upgrade the vSphere software on your physical host.

In addition, your vSphere host is connected to the Public and Private networks. You have the options to enable redundancy of these network links, and to upgrade them to 1Gbps or 10Gbps connections. This gives you complete control over the configuration of virtual networking, allowing you to attach virtual machines to the Internet or keep them on isolated networks for greater security.

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For even more advanced network designs, you can purchase and install VMware NSX to provide full network virtualization within your cloud environment. Using VMware NSX you can eliminate the traditional scalability barriers imposed by inter-data center networking, allowing you to scale your workloads across data centers without making changes to the workloads themselves.

Security

The SoftLayer networks are securely segmented to provide isolation between customers. In addition, physical access to the data centers is heavily restricted, leveraging biometric controls and extensive video surveillance to restrict access to only authorized personnel.

To gain access to your equipment, SoftLayer provides secure VPN access via the Management network. For site to site connectivity, IPSec VPN tunnels can be established from the SoftLayer data centers to your on-premises data center. In addition, for high bandwidth and low latency requirements, such as cross-data center vMotion, another option called DirectLink is available, which connects your on-premises data center to SoftLayer via your Telecom provider's network, typically at speeds of 1Gbps or 10Gbps.

Learn more about the advantages of leveraging the SoftLayer infrastructure for VMware

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