

Chapter 1

Getting the Most Out of VMware vSphere

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Welcome to the brave new world of virtualization. Your mission, if you choose to accept it, is to reap the benefits of virtualization and leverage VMware vSphere to the fullest extent possible. The mission will be successful with careful planning, the right mindset, and a few tips from the professionals. Once you've successfully completed your mission, you can immediately begin enjoying the convenience, efficiency, and reliability that is VMware vSphere.

This chapter provides an overview of your virtualization mission. Looking down from a high level, you see how to determine where vSphere can best fit into your environment. The next waypoint shows how you can use the information to develop rollout plans for vSphere. Looking beyond your rollout plan, you discover how to request storage and network resources critical for a successful deployment. A preview of deployment comes next, followed by a peek into the day-to-day operation and maintenance of vSphere.

vSphere and Your Environment

VMware vSphere is comprised of many parts, some of which you may never use and others that you'll use every day. Because it's impractical to cover every combination of vSphere components and features, this book focuses on the most common configurations, but still touches on each of the features offered in the product. How you will deploy vSphere depends on your environment, the scope of your initial rollout, and the version of vSphere being deployed.

VMware vSphere is packed with so many features and options that it's highly unlikely you'll ever have the opportunity to use them all. Instead, you're more likely to hit a limitation of your infrastructure before you reach a limitation of vSphere. For this very reason, you need to think about your vSphere rollout with your feet firmly planted on the ground, your budget in hand, and realistic goals for deployment in mind.

A key topic of this book is figuring out what you need to meet your virtualization goals. Starting with a small deployment or pilot is a great way to feel out the boundaries encountered when introducing vSphere to your environment. It also gives you the opportunity to discover how to foster acceptance and adoption of virtualization, which is just as important as getting vSphere to function properly with existing infrastructure.

VMware vSphere is exciting technology. Although you may have the urge to jump ahead to full-on deployment, heed the saying, "Look before you leap." You must meet several prerequisites before you even install the software; missing just one could earn you countless hours of troubleshooting. Also, the more complex the deployment, the greater the risk of impact to other systems. Connecting to network and shared storage with reckless disregard may inadvertently take down other systems or, worse, cause irreparable data loss. If you're working with VMware ESX for the first time, take your time. Careful attention to detail during the planning phase will pay off in the long run.

Rolling out vSphere

Putting vSphere to work in your environment without proper planning works about as well as feeling your way through a cactus store with your eyes closed. In either situation, you're likely break some stuff, and while you'll eventually get through, you'll do so only after encountering some painful challenges. In order to prevent these encounters from happening, take the time to plan and prepare before you deploy.

Mapping out an unfamiliar terrain

Experienced hikers know the importance of mapping a route before venturing off into the wilderness. They prepare for the expected, pack for the unexpected, and have a plan that gets them to their camping site safely — all before the trip begins. Hikers plan because they know poor preparation is a recipe for catastrophe, and not knowing where to go can only amplify the situation.

Like an experienced hiker, mapping a path to a successful deployment is key to your vSphere rollout. You need to know safe stopping places in your rollout plan in case something unexpected arises and causes delays in your deployment. Working with key stakeholders, you collaboratively define deployment goals and understand their respective deadlines. Having a plan in place, especially one built with the key stakeholders involved, sets the right expectations upfront and provides you with partners so that you don't lose your way.

You'll need one of those

Have you ever started on a project, reached the halfway mark, and become stuck because you didn't have everything you needed? This kind of situation happens all the time in poorly planned vSphere deployments. Either something wasn't configured properly or the resources provided are fewer than requested.

A misconfiguration during deployment results in one of three scenarios: wasted time spent on troubleshooting, a "workaround" being put in place to get past the issue, or reinstalling the software only to end up right back in the same broken state. None of these scenarios are desirable, but all are preventable by confirming and reconfirming that you have everything you need before you start.

A resource deficiency is comparably frustrating, especially since you're able to complete installation and configuration, leading you to believe the problem is a misjudged requirement. Not until later does the real trouble show up — when it starts impacting the virtual environment. At this point, the effort to correct the issue is exponentially greater than it would have been if you had addressed the issue early on. Stick to your numbers when it comes to getting the resources you need, and you'll prevent a giant headache in the future.

Thinking about Networks and Storage

When virtualization-savvy people discuss their VMware vSphere infrastructure, they focus on the server hardware — number of CPUs, how many cores per CPU, how much memory — allowing the server hardware to take precedence over the other two-thirds of the infrastructure. Like tires and brakes to a car, network and storage are critical to every vSphere deployment. Leave out the critical components in either case, and all you have is a high-powered paperweight.

Keep in mind that a machine running VMware ESX is more like a tiny datacenter than a server. The network interfaces become a connection point between the outside world and the virtual switch hidden within the ESX host. The same holds true for storage area network (SAN) connections. The connections to support these capabilities differ from your common server and need to be configured as though they were being connected to additional network switches. Also, due to the nature of shared storage across ESX hosts, the storage capacity you'll be requesting from your SAN administrator will be larger than normally required for a server but optimal for an ESX host.

Administrators unfamiliar with these requirements may give you what they think you need, rather than what your ESX host actually needs. Work closely with your network and storage administrators to get what you need the first time. Not only does this make for a smooth deployment the first time, but it also educates the network and storage administrators on what needs to be provided going forward.

Taking Care of vSphere

Like anything else, a vSphere environment requires regular care and feeding. VMware occasionally releases patches and updates for your VMware ESX hosts and vCenter server. Unless it's a critical security patch, try not to be the first to apply it. Instead, browse around the vSphere discussion forums and see what experiences other administrators are having in their environments after applying each update. Don't wait too long though, or you run the risk of hitting the issue the patch is meant to fix.

The other part of looking after a vSphere environment is literally feeding the environment resources as they grow. It's inevitable — your vSphere environment will eventually run out of storage space, and running virtual machines will max out the capacity on your ESX hosts. Plan ahead to secure the resources needed to keep up with the growth in the environment, or you might have a deprived virtual infrastructure on your hands.

The vCenter of Your Universe

When all is said and done, vCenter Server is undoubtedly the piece that holds the vSphere environment together. vCenter Server is how virtual machines get cloned and customized, how ESX hosts get clustered, and how vSphere is able to do so much with such a small footprint.

vCenter Server is the brains behind ongoing management of a vSphere environment. vCenter is also the integration point for most third-party virtualization management platforms and is the foundation by which a vSphere environment is incorporated into cloud computing, which may sound like a lot, but there's more. vCenter allows for plug-ins for your favorite vSphere-related utilities, such as VMware Converter. vCenter owns licensing responsibility as well, so anything licensed in the vSphere environment leverages at least the license server capability of vCenter Server.



Like any disruptive, yet emerging, technology, *cloud computing* bears a name that represents a concept with more than one meaning. Some people hear the term cloud computing and think of a service where you can rent server resources by the hour. Other people think of cloud computing as a safe place where you can run your applications with compute power limited only by your wallet. Cloud computing experts agree on at least one point: Cloud computing involves using some set of compute resources as a service. vSphere lets you create a pool of compute resources internally, and you can manage those resources as a cloud, dynamically providing compute capacity to virtual machines, instead of passing them on as discrete components. This is why vSphere is touted by VMware as a cloud OS.

vCenter Server boasts support for management of more ESX hosts, virtual machines, and even more vSphere client connections than its predecessors. Another feature now available allows multiple vCenter Servers to be linked together, providing some level of redundancy at the management level. For a successful vCenter Server deployment, pay special attention to vCenter Server installation, configuration, and feature deployment.

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