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we deliver.

Four Stages to Virtualization Maturity

Stage 1: Acclimation

- Get comfortable with it as a concept and tool
- Deploy for test/dev
- Deploy for non-business-critical DR
- Some production deployments — but tactical
- No change to operations processes
- Limited virtualization tool deployments

Stage 2: Strategic consolidation

- Comfortable with concept, use, maturity, stability
- Shift mindset from server to virtual server
- Spread production deployments widely
- Begin deployment for some business-critical DR
- Painfully transition from server sprawl to virtual server life-cycle management
- Experimenting with live migration and resource management tools

Stage 3: Process improvement

- Using live migration, starting to trust a resource management tool
- Can utilization rates be increased?
- Deploy for business-critical DR
- Begin bifurcating applications between priority and nonpriority
- Developing new operational efficiencies
- Process improvement spreading/butting up against network, storage, security, development

Stage 4: Pooling and automation

- Trust a resource management tool
- Implementing production policies for automation
- Some mission-critical DR deploys
- Pooling and internal cloud development
- Chargeback/utility tracking
- SLA and QoS focus



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Before you attempt to deploy a private cloud, you must take virtualization efficiency to the next level. To do so, you should first determine how mature your virtualization operations are by taking Rose's virtualization maturity assessment. We recommend firms be at Stage 3 to ensure they've got enough virtualization maturity to start building or deploying an internal cloud.

If your organization, like nearly half of all enterprises, is in the strategic consolidation stage, then you have a ways to go before you're operating your virtual server environment as a common pool with strong economic efficiencies. Sure, it's a lot more cost-effective than when you had one physical box per application, but the road to cloud requires that you embrace several best practices.

Some of the most common challenges for enterprises include:

Getting over virtual machine sprawl.

We often characterize the strategic consolidation stage of virtualization maturity as the "hero" stage, because it's during this period that huge cost savings are achieved for the business. Through the consolidation of workloads via virtualization, you can save the company significant money on capital cost reduction and avoidance. You can even accelerate time-to-market, as it's all too easy to deploy new VMs in just minutes. But where a virtual environment and a cloud diverge is around life-cycle management of all those VMs.

Most IT shops lack consistent procedures for tracking VM deployment, usage, ownership, and evolution as patches, clones, and new VMs are built and deployed for each user. As a result, most virtual environment administrators don't deal with these issues until they run out of space in the virtual pool. Cloud must have constant cleanup procedures to avoid sprawl and drive economic value.

Forcing standardization that ensures efficient management.

As an IT ops professional, you have trouble saying no to the business and struggle with balancing their requests against the capabilities of IT and staying within your budget and resource constraints. Clouds can't meet their economic objectives without pushing this balance more toward the needs of IT. This means that just as public clouds limit the types of configurations you can deploy, so should your internal cloud. To ensure highly efficient operations, you need to enforce deployment only from VM templates, provide a small set of VM configurations, and allow little network and storage variation.

Moving from managing VMs to managing the pool.



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Most organizations in the first three stages of virtualization maturity manage VMs much as they had managed physical servers before - as single machines or workloads. Managing an internal cloud requires a shift in thinking from VMs to a pool, where you look at your virtual infrastructure as a collective used to host many workloads. This requires a different style of management. It starts with a change in capacity planning, where you go from placing new workloads and growing the pool to driving up the overall utilization of the pool and refreshing its consumption.

Changing your placement philosophy from bricks to Tetris.

Most VM administrators approach workload placement using linear thinking like that of a bricklayer: Deploy VMs onto available machines and storage volumes until that volume can't accommodate the next workload, then start filling up the next host. This approach is straightforward until you run out of capacity. Cloud administrators fill their servers more like a skilled player of the game Tetris, squeezing as many VMs onto as few hosts as possible to keep the pool of resources highly utilized and not firing up new equipment until absolutely necessary. This requires evacuating workloads no longer in use, too. This approach keeps the size of the pool as small as possible and thus the most cost-effective.

Ways to Become Cloud Ready

Transforming your IT ops organization into an efficient Stage 4 organization ready to manage all of your x86 assets as a cloud will take time. We've found that the average large enterprise takes 12 to 18 months to move from Stage 1 to Stage 2, 18 to 48 months to move from Stage 2 to Stage 3, and three to five years to exit Stage 3.

Small and mid-sized firms can move much faster.

This may be discouraging given the top-line pressure to get moving on cloud. But to take advantage of cloud doesn't require a wholesale move. You can step into cloud now with smaller projects and focused investments.

Use Test And Development, Greenfield, And Partners As Direct Flights To Internal Clouds

1. Turn test and development into a self-service center.

All new applications enter your shop here, so take a collection of test lab resources, virtualize them, and vend them to your developers through a portal. Use role-based access control (RBAC) deployment tools such as Surgient, SOASTA CloudTest, and VMware Lab Manager to help with automation and selfservice processes. Maintain a library of VM templates and learn life-cycle management by enforcing their use.



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2. Set up a greenfield cloud for a priority new project. If a business unit is willing to invest with you in cloud computing, collaborate on setting up a brand new cloud environment just for them. Use this testing ground to understand how to manage a cloud environment, then expand the cloud to incorporate additional projects. There are a variety of cloud infrastructures you can configure and deploy as a starting point. A faster way to start down this path is by investing in a converged infrastructure solution that is preconfigured to operate as a cloud-like environment.

3. Get a partner to set up a hosted cloud for you. Another fast path to cloud learning is to outsource your internal cloud to an IaaS cloud provider that can set up a hosted cloud on your behalf. These environments are similar to traditional hosting except that a cloud infrastructure is placed atop the rented resources and the provider manages the environment for you - and only you. These cloud environments are walled off from the public Internet and the hoster's public cloud environment via your specified security parameters. Be sure to select a partner who will teach you how they operate this environment, however.