



Virtual Machine Sprawl: Costs and Challenges

At one time, virtual machines were thought to be the antidote to server sprawl. After all, one physical server can host many virtual machines, so, the thinking went, sprawl would contract organically to an easily managed number of physical servers. That, however, proved not to be the case. Indeed, virtual sprawl occurred at a faster rate than physical server sprawl, since virtual machines could be spun up at the whim of practically anyone in the organization:

- **Testers:** Testers love virtual machines, because they can test software in any number of combinations at very little cost. Virtual machines create a safe environment to test against different parts of the infrastructure for an accurate prediction of performance. Unfortunately, these virtual machines are typically abandoned after the tests are run. Yet the abandoned virtual machines continue to strain the infrastructure and drain resources.
- **Department heads:** Department heads and various user groups love virtual machines, because they can download virtual applications and appliances and run with them immediately – often without troubling IT. Unfortunately, since they didn't trouble IT, IT is now troubled with compliance and governance issues.
- **Software developers:** Developers love how easy and cheap virtual machines are to use, thus bringing down development time and costs substantially. In no time at all, they can spin one up, load an OS and appliance, and bring new software to production level. The trouble is, the appliance may be on a trial period rather than fully licensed, causing a last-minute panic to secure licensing. Far too often, that's when IT first learns of that particular virtual machine's existence. The sudden licensing need often leads to an unexpected burden on budgets. Further, IT is suddenly and unduly strained to configure the appliance to go into production.
- **Shadow IT:** IT staff love virtual machines, because it's easy to play with almost anything in the shadows, on the clock but off the radar. Shadow IT can grow to be larger than the actual IT department's work. A large shadow IT can lead to double the costs and half the productivity.

Unfortunately, many of these users fail to decommission one virtual machine before they move on to another. The impact of this worsens over time, because many of these users overestimate their needs and over-provision resources. Last, but not least, security is typically an afterthought, if it is a thought at all.

The end result of all this well-intentioned but haphazard use of virtual machines is that it is now more difficult than ever for IT to know what virtual machine resides where, whether it is actually in use or sitting idle, and whether it is secure or a runaway risk.

To make matters worse, virtual sprawl can overtax the infrastructure and drive licensing costs through the roof. All told, it's an expensive problem in terms of costs, time, and availability of IT resources.

Until recently, there wasn't much IT could do but try to keep up by monitoring all virtual server activity, a difficult and sometimes impossible task.

Dell aims to resolve the problem by providing a uniquely integrated management platform that delivers both user flexibility and IT control. Dell Virtual Integrated System (VIS) includes VIS Creator, an automated self-service tool that allows authorized users to access a customized catalog of IT resources and deploy many of them in mere minutes. Even more impressive, Creator helps keep virtual machine sprawl from spreading out of control.

Dell VIS Creator in Action

By automating the deployment of virtual server and desktop workloads with Dell VIS Creator, IT adds efficiencies to its daily workload by freeing staff from mundane deployment tasks and long, time-consuming searches for unapproved and or/idle virtual machines.

The Dell VIS Creator also speeds the process of supplying resources to users, so work gets done without delay, but in a sensible, organized, and safe manner. The role-based self-service portal allows on-demand service around the clock, so end-users can get the resources they need,



pre-configured to support their specific workload, when they need them.

Managing Existing Virtual Workloads

VIS Creator enables IT to 'right-size' virtual resource deployments, so they are tailored for specific use cases or departments. This helps avoid over-provisioning in the first place. It also enables administrators to set 'expiration dates' for resource deployments, reclaiming the resources automatically when workloads have expired.

For existing deployments, VIS Creator lets administrators view and manage all user workloads, categorized by user, on a centralized console. Its reclamation engine scans the environment for under-utilized and over-provisioned machines and flags them for remediation. Administrators can connect to any machine and perform numerous actions, from re-deploying to destroying it. This eliminates the problems associated with abandoned machines and the danger of decommissioning a machine before the owner retrieves the work.

On the end-user console, workers can elect to retrieve their work or request an extension of service. Machines can also be configured to expire automatically, move to archives, or reused at expiration of the lease, relieving the user and IT staff of take-down headaches.

IT can locate virtual machines easily and track their usage. IT can even reclaim virtual machines, with the consent of the user, ahead of expiration, especially if the resource is underused and needed elsewhere in the organization.

Governance with Policy-Based Automation

Dell has made policy-based automation, which conforms to both IT and business processes, the cornerstone of its offering. This automation is designed to map specific sets of users to predefined resource stacks, workloads, and hardware. Administrators also define the governing policies, including access to network resources, configuration standards, and workflow processes, with built-in approvals prior to use. By presetting the policies before users can actually access virtual machines, most of the common causes for virtual machine sprawl are eliminated.

Beyond the ability to service and govern access rights for user groups, Dell VIS Creator also enables:

- **Authorized user identification and rights allocation**, which ensures users are properly authorized to access workloads and physical resources. This conforms with

applicable security measures and provides fluid usage for authenticated workers.

- **Service blueprints** delivered in a catalog of virtual workloads. This helps the company create validated and approved specifications—and processes—for the entire lifespan of virtual workloads, from building and managing to decommissioning and/or archiving.
- **Resource reservations**, which helps IT set aside dedicated resources to support ongoing operations, and then designate sections of the shared pool that can be allocated to business groups as needed.

Eliminate 'Rip and Replace'

The process changes brought about by shifting paradigms can be more disruptive to IT and business than technology changes themselves. The common response to such changes is a time- and labor-intensive, 'rip and replace' maneuver. The Dell VIS Creator minimizes this type of disruption by using policies to customize process automation. There's no need for code changes, and existing hardware—even from disparate vendors—can be unified into one pool of resources. This helps companies maximize their datacenter resources.

Dell VIS Creator makes the most of existing IT investments by providing true interoperability with multivendor infrastructure hardware, hypervisors, and applications. This freedom from vendor lock-in means Dell VIS Creator can work or be deployed in ecosystems based on VMware ESX, Microsoft Hyper-V, Citrix XenServer, or combinations of the three. It works with a wide range of imaging processes, as well, including WIM, Linux Kickstart, SuSE AutoYast, and hypervisor cloning.

Out-of-the-box plug-ins bring a wide range of image deployment options to VIS Creator, too, with support for tools from numerous vendors including BMC, CA, HP, and IBM. The same holds true of Citrix XenDesktop for virtual desktop delivery. Users can also manage and design custom data models and workflows via the Microsoft.NET and Windows Workflow Foundation-based extensibility framework.

Conclusion

Because virtual machines are so fast and easy to create and use, virtual machine sprawl tends to happen faster than physical machine sprawl. Users are prone to bypassing IT and creating VMs for their own use and on their own terms, which often conflicts with governance and compliance rules. Sometimes, the bypassers and trespassers are even IT staff engaged in "shadow IT" activities that may or may not be condoned by the company.



Unauthorized virtual machines tend to be unsecured, creating risks ranging from regulatory compliance failure to network vulnerability and data exposure. Too often, VMs are over-provisioned for the work at hand and abandoned after the work is complete, creating an enormous drain of IT resources. To make matters worse, unexpected licensing costs are almost always incurred, further taxing tight budgets.

What's needed is a comprehensive and unified management framework, in which IT administrators can control VM sprawl and expose limited functionality and deployment rights to end-users in a way that conforms with best practices and corporate policies. In short, what's needed is Dell VIS Creator.

VIS Creator enables IT staff to:

- **Create an always-on self-service portal.** This portal helps speed IT resource deployment for authorized users and

preserve IT governance and control through process automation.

- **Know where all VMs are and how they are used.** Dell VIS Creator delivers quick and easy access to VMs for reuse, archiving, and destruction. Reservations and allocation are customizable and automated. Admins can use policies to customize processes without changing code.
- **Preserve existing investments.** While the Dell VIS Creator is a vital element of the Dell Virtual Integrated Systems solution, an end-to-end platform comprising state-of-the-art servers, storage, networking, and software tools, it is fully interoperable with hardware and software produced by other vendors, thereby enabling companies to leverage their existing equipment fully.

 **To learn more about Dell VIS Creator, please visit www.Dell.com/VIS**