

## Customer Profile

GlassHouse Technologies is a global provider of data center infrastructure consulting services. In a rapidly changing data center environment, GlassHouse partners with customers to define a strategy, execute that plan and operate their environment.

## Business Objectives

- Centralize desktop delivery
- Lower desktop costs
- Increase flexibility

## VDI Challenges

- Quickly provisioning lab components
- Storage CAPEX costs
- Poor desktop performance

## Atlantis ILIO Solution

- Atlantis ILIO Image Management used to instantly provision nested ESX Virtual Machines including ESXi hypervisors, Routers, VDI brokers, profile virtualization tools, application virtualization and virtual desktop images
- Atlantis ILIO reduced storage requirements by 90%
- Atlantis ILIO boosted desktop performance by offloading 80% of the IOPS being serviced by the Storage System.

# GlassHouse Builds Cloud-based vLAB for VDI using Atlantis ILIO

## VDI Proof of Concepts in Deployed in 1 Day

### Business Objectives

GlassHouse Technologies is a global provider of datacenter infrastructure consulting services that enable their customers to deploy desktop virtualization more effectively. In 2009, GlassHouse recognized the need for a way to quickly test complex Virtual Desktop Infrastructure (VDI) environments that included different combinations of hypervisors, VDI brokers, application virtualization solutions, and profile virtualization technologies. Every customer deploying VDI was going through a traditional Proof of Concept that included weeks or months of procuring hardware, installing VDI components and integrating everything into a working environment. GlassHouse decided that it would be more efficient to create a cloud-based virtual lab or vLab, that would enable customers to select specific VDI components and click a button to dynamically provision an entire dedicated VDI deployment in hours.

### VDI Challenges

When GlassHouse first decided to build vLab, they faced three key challenges:

#### Storage Costs

In order for vLabs to deliver performance comparable to a physical implementation, each Proof of Concept would require expensive Storage Area Network equipment for a small number of desktops.

#### Performance

In order to have a successful vLab Proof of Concept, the performance of the virtual desktops needed to meet or exceed that of physical PCs. Using traditional storage, desktop tasks including boot, login and operating of standard VDI workloads could potentially overload available storage and cause the POC to fail.

#### Provisioning Lab Components

GlassHouse needed to find an efficient way to quickly provision lab components including virtual desktops, VDI brokers, application virtualization and profile virtualization solutions.

“The idea was that if we attack this intelligently by using Atlantis ILIO, we can offload 80-90% of the storage I/O demand and keep the cost of vLab down for customers.”

**Rob Daly**  
Sr. Consultant  
GlassHouse Technologies

## GlassHouse vLab

vLab is an advanced multi-tenant cloud-based computing platform enabling the dynamic configuration of full featured datacenter environments including dedicated storage, hypervisors, application virtualization solutions and full featured VDI configurations. Leveraging vLab, one can model virtual desktop deployments prior to investing in new technologies. This approach saves time and resources by dynamically creating a “virtual data center” based on a specific VDI system configuration and customized inputs. vLab demonstrates the value and capabilities of desktop virtualization solutions without the typical procurement, installation, integration and financial impacts incurred through conducting a traditional POC.

VDI Components	Configuration Options
Hypervisors	VMware vSphere
VDI Brokers	VMware View, Citrix XenDesktop
Application Virtualization	Microsoft App-V, VMware ThinApp, Citrix XenApp
Profile Management	AppSense Environment Manager

To learn more about GlassHouse vLab, download the vLab [datasheet](#)

## The Atlantis ILIO Solution

Atlantis ILIO is a VDI storage and performance optimization solution that integrates with VDI solutions to cut storage costs, provide more storage options, increase desktop performance and streamline image management. Atlantis ILIO instantly reduces the amount of VDI storage needed and boosts VDI desktop performance by inserting ILIO into each VDI server rack.

### Atlantis ILIO: VDI Storage Reduction

Atlantis ILIO consolidates physical storage by eliminating duplicate information contained in virtual machine images in real-time before it hits the SAN. Storage needs are further reduced by providing massive amounts of IOPS storage throughput at the VDI rack level by handling locally most of the Microsoft Windows operating system and application traffic - effectively offloading SAN and NAS storage. In addition, Atlantis ILIO enables customers to choose or repurpose less expensive storage options.

### Atlantis ILIO: VDI Performance Acceleration

Atlantis ILIO makes VDI desktops perform up to 10 times faster by efficiently optimizing Microsoft Windows VM storage access requests at the file system level, lowering network latency and offloading up to 90% of storage traffic from the network and storage systems. The result is faster VM boot times, increased desktop and application performance and fast virtual cloning. In addition, Atlantis ILIO eliminates VDI bottlenecks caused by boot storms, logon storms as well as IO bottlenecks due to antivirus scanning.

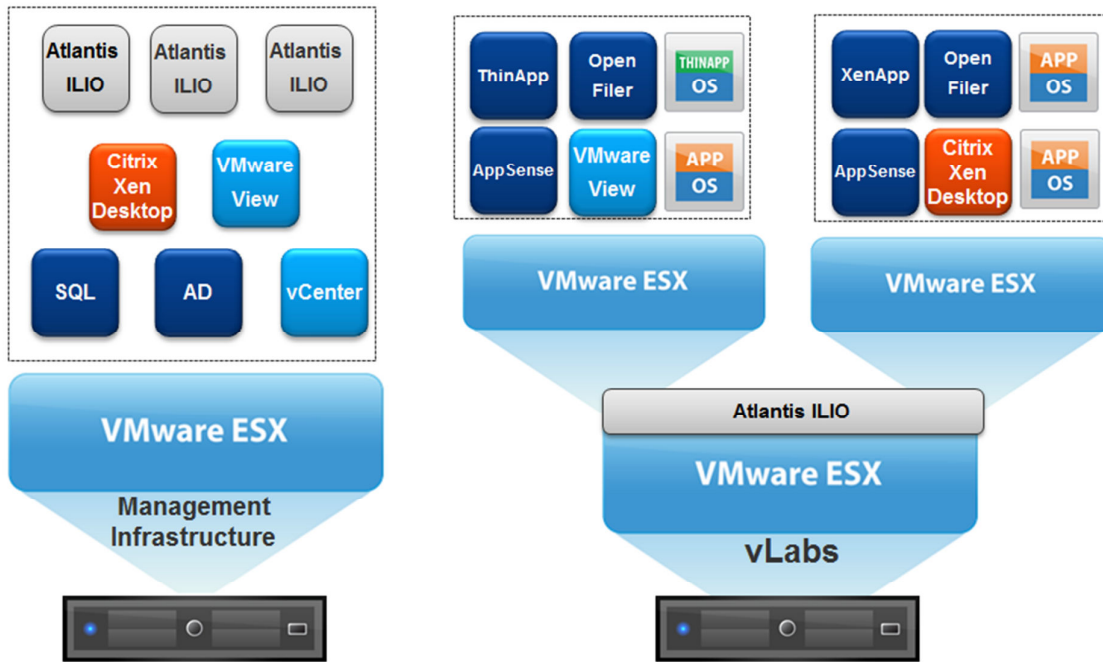
### Atlantis ILIO: Streamlining Image Management & Provisioning

Atlantis ILIO enables enterprises to transform the way IT organizations manage VDI desktop images from manually configuring, upgrading and patching hundreds of monolithic images to managing a single set of master image components. By taking a new approach to image management for VDI, ILIO provides the benefits of centralized image management with the ability to allow users to install applications and give administrators the ability to instantly patch and update all VDI desktops images.

"We have been using Atlantis ILIO in our vLab to reduce storage by up to 90%, offload IOPS on our storage system by up to 80% and instantly provision VDI image components including as VMware View, VMware ThinApp, Citrix XenDesktop, Microsoft App-V and AppSense for enterprise customer proof of concepts (POCs)"

**John Premus**  
Service Director for Virtualization  
GlassHouse Technologies

## GlassHouse vLab Atlantis ILIO Deployment



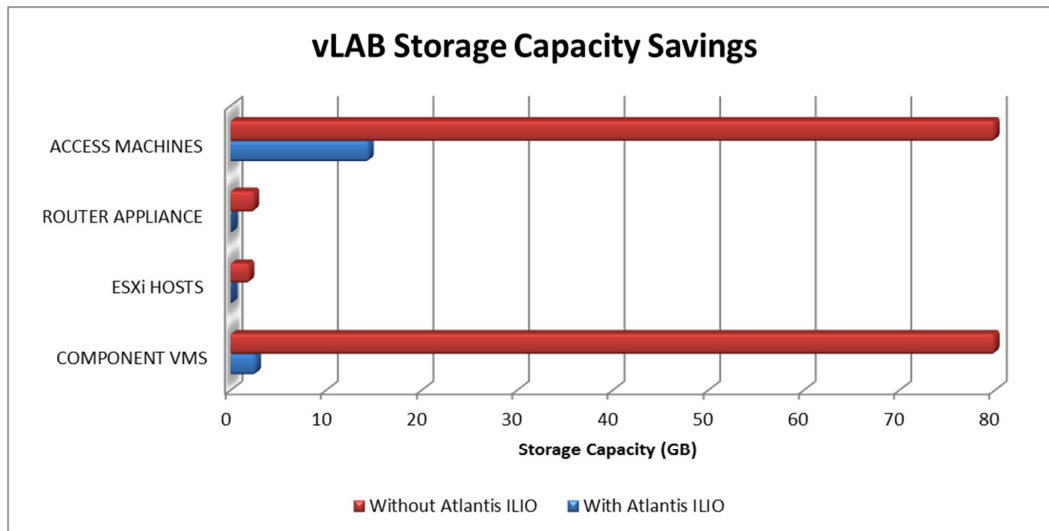
GlassHouse deployed Atlantis ILIO as a virtual appliance running on VMware ESX in both the vLab management infrastructure and on all vLab servers. Atlantis ILIO provisions all the vLab components including nested ESX hypervisors to build fully functional VDI proof-of-concept environments

These vLab VDI tests may include the VDI broker, application virtualization, profile virtualization and virtual desktop images. To take maximum advantage of Atlantis ILIO's inline deduplication and storage IOPS offload, GlassHouse created several dedicated ILIO environments; each with the sole purpose of serving a specific Operating System image into the Labs. Through this segmentation approach, the ILIO storage offload cache was able to fine tune itself to the core virtual machine image being served. A greater storage cache efficiency was achieved on each ILIO appliance – driving exceptional performance. This approach enabled Glasshouse to achieve a 90% reduction in storage consumption and 80% offload of storage IOPS based on the homogeneity of the images connected to each Atlantis ILIO appliance.

## Atlantis ILIO VDI Deployment Results

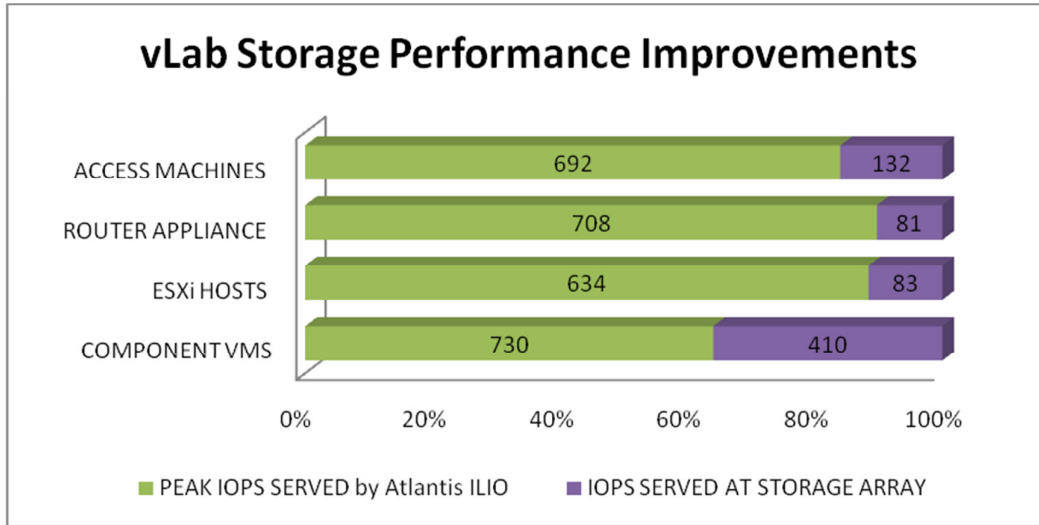
Metrics	VDI Before Atlantis	VDI After Atlantis
Storage Usage	164GB	17GB
Peak Storage IOPS	3,470	706
Image Layers/Clones	361	68

## Storage Capacity



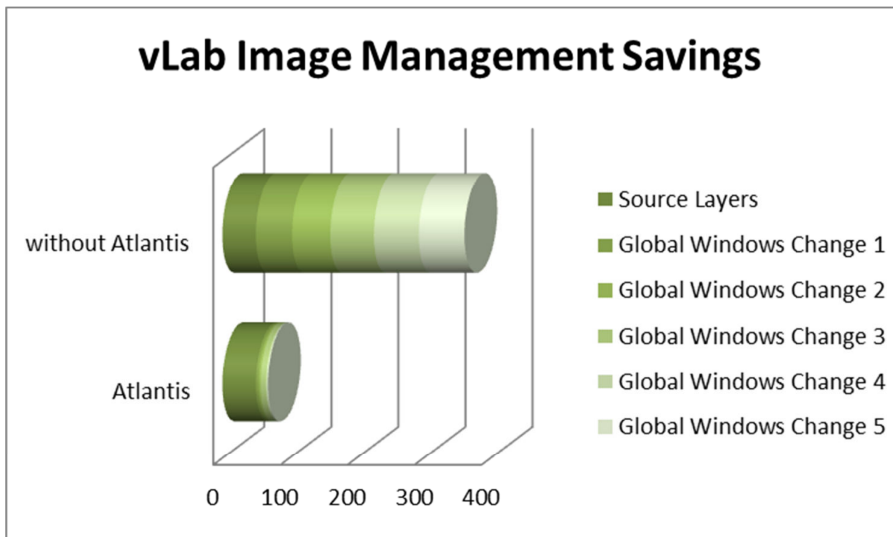
By using Atlantis ILIO, Glasshouse vLab was able to reduce the amount of storage capacity it consumed by 90% for each vLab POC it deployed.

## Storage Performance Improvement (Measured in IOPS)



By using Atlantis ILIO, GlassHouse vLab was able to offload over 80% of the IOPS served by the storage array. This IOPS offload resulted in faster performing desktops along with a dramatic decrease in the number of storage disks needed for vLab.

## Image Management



Atlantis ILIO’s image composition enabled GlassHouse vLab to provision file-level changes to Windows image layers instantly without needing to clone the environment or update each layer individually. The ability to instantly provision changes to the lab environment is what allows GlassHouse to deliver customers a VDI proof-of-concept with complex combinations of VDI brokers, application virtualization, profile virtualization and operating systems – in hours and not days.