IBM PureFlex and Atlantis ILIO Cost-Effective, High-Performance and Scalable Persistent VDI

Highlights

- **Lower than PC cost**—saves hundreds of dollars per desktop as storage capacity and performance requirements are reduced by up to 95% with Atlantis ILIO™ storage optimization software.

- **Better-Than-PC user experience**—cost-effectively delivers better-than-PC performance including faster boot/login times, near-instant application launches and search speeds that will amaze users.

- **Lower project risks**—proven and flexible solutions that scale to tens of thousands of desktops without the risk of storage or network bottlenecks, while enabling high availability and disaster recovery.

- **Management at scale**—Automated deployment and configuration that reduces mistakes. Simplified architectures that lower the operational, cost and performance risks of deploying persistent VDI
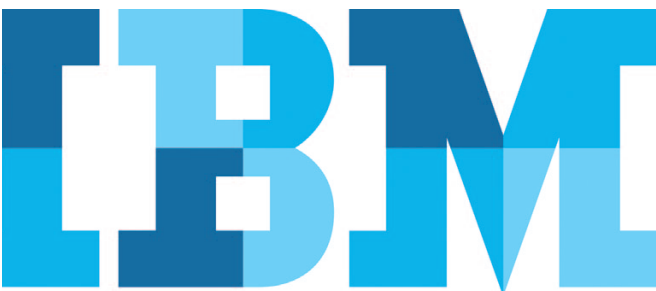
Persistent VDI Challenges

To be successful, Virtual Desktop Infrastructure (VDI) projects must please three constituents: users, IT organizations and the Chief Financial Officer (CFO). Users are looking for the same user experience they enjoy with their current physical desktops with the mobility to access their desktops and applications from any device. IT organizations want proven solutions that simplify operations, lower deployment risks and ensure high availability and disaster recovery. The CFO wants predictable CAPEX costs that are comparable to physical PCs with tangible reductions in datacenter OPEX costs. With traditional server, network and storage infrastructure, VDI projects can be fraught with risk, hidden storage and network costs, and pose scalability and performance challenges.

Most IT organizations would prefer to deploy persistent virtual desktops because that model provides the easiest transition from physical PCs and is the least disruptive to an IT organization. Persistent VDI allows users to install their own applications and keep their personal desktop environments, while desktop administrators get the benefits of centralized control without having to modify existing desktop images. These types of deployments are popular in vertical markets such as financial, legal, and others where knowledge workers require customized desktop images with dedicated, persistent storage that support a variety of different applications.

Implementing persistent virtual desktop environments comes with unique challenges. While pilots may go well, deployment risks related to storage and networking bottlenecks often arise during rollouts. As projects scale, the risks of VDI often lead to a poor user experience and infrastructure costs that skyrocket unexpectedly, delaying and in some cases entirely derailing VDI projects. High availability and disaster recovery capabilities are critical for these projects because centralizing all desktops in the data center puts them at risk in the event of server failures.
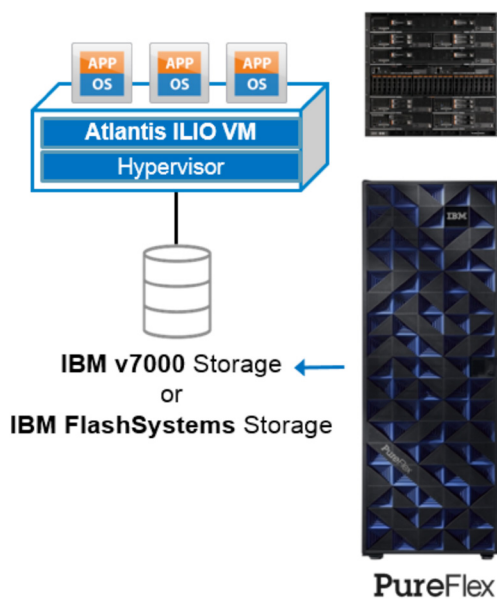
IBM PureFlex and Atlantis ILIO Persistent VDI

Together, **IBM PureFlex** and **Atlantis ILIO** storage optimization software deliver a unique solution that addresses the challenges of persistent virtual desktop environments. The integrated solution delivers consistently better-than-PC performance as projects scale, while reducing storage infrastructure requirements by up to 95%. Built on fully validated reference architectures, this virtual desktop solution supports centralized management with flexible deployment options that scale to tens of thousands of users.

Lower than PC Cost

The biggest challenges in desktop virtualization are the CAPEX costs associated with VDI storage and delivering a good user experience. VDI has seen limited adoption because the cost per desktop with traditional storage remains 50–100% more expensive than a physical PC to achieve the same performance level. IBM PureFlex optimized with Atlantis ILIO Persistent VDI™ eliminates up to 95% of the storage required for persistent VDI, while delivering performance that is significantly faster than a physical PC.

Better-than-PC User Experience

When IT organizations deploy persistent virtual desktops, users expect that the performance of their desktops in terms of boot/logon time, application launch time, desktop or outlook search and their overall desktop response time will be equal or better than their physical PCs. However, when VDI is deployed with traditional storage technologies, IT can't cost-effectively provide the storage performance and capacity required to run persistent virtual desktops at scale with equal or better than PC performance. IBM PureFlex optimized with Atlantis ILIO In-Memory Storage™ Technology enables organizations to deploy persistent virtual desktops using IBM PureFlex server RAM as primary storage for virtual desktops with IBM v7000 or IBM FlashSystems storage for user data, backup and recovery. This unique solution delivers a fantastic user experience that drives virtual desktop acceptance and adoption of VDI across your organization.
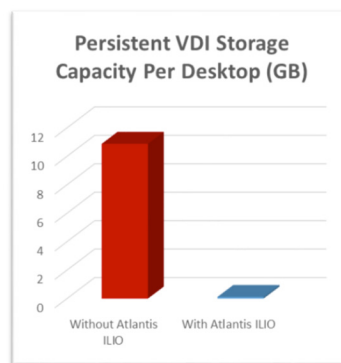
Lower Project Risks

IBM PureFlex with Atlantis ILIO provides IT with a simple, powerful and scalable platform for deploying persistent VDI that eliminates the risks of storage and network bottlenecks that often derail VDI projects. As the project scales, the solution consistently delivers high desktop performance without the risk of storage cost overruns.
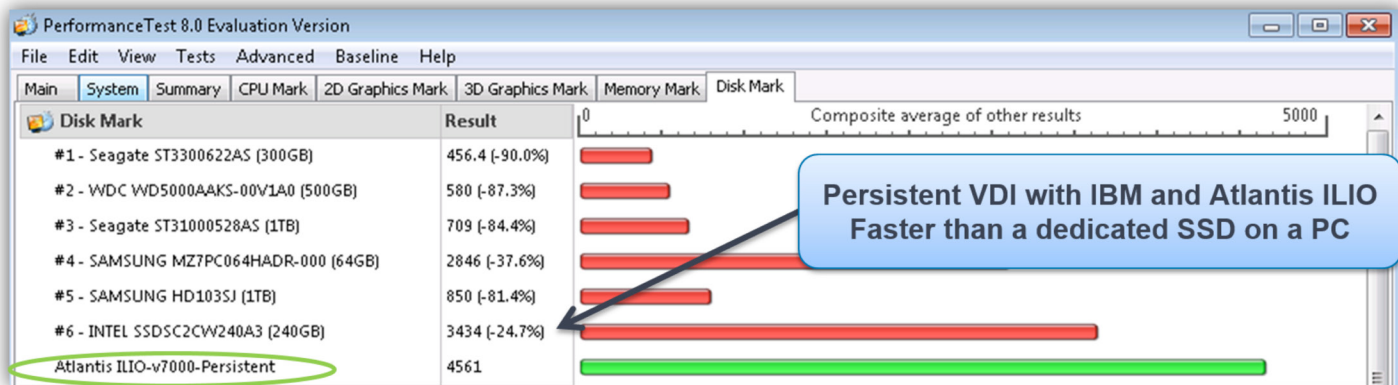
Management at Scale

IBM PureFlex and Atlantis ILIO simplify and automate the deployment of infrastructure to support thousands of persistent virtual desktops, while enabling high availability and disaster recovery. Deployment automation addresses the challenges of sizing storage and networking, making configuration mistakes and eliminates the time consuming process of integrating servers, storage, and networking. Atlantis ILIO seamlessly integrates with IBM v7000 storage and the hypervisor's high availability (HA) capabilities to provide automated recovery when a server or rack encounters a failure. In addition, Atlantis ILIO minimizes the amount of data that needs to be replicated across data centers to enable highly efficient disaster recovery (DR) for all your virtual desktops.

IBM Innovation Center Benchmark Testing

Benchmark Testing Summary	
Test	**Atlantis ILIO Impact**
Storage Capacity Per Desktop	**97% reduction**
Storage Density	**33x more users per disk**
IOPS Per Desktop	297
Desktop Performance (PassMark 8.0)	**3x faster than PC**
Desktop Performance (LoginVSI)	**4x faster LoginVSI Max baseline (1010ms)**

In order to validate the IBM PureFlex with Atlantis ILIO Persistent VDI solution, the IBM Innovation Center conducted extensive performance, scalability and reliability testing. The testing included measuring the storage density that could be achieved with Atlantis ILIO, reliability and high availability during server outages and desktop performance using industry standard benchmarking tools such as LoginVSI 3.7 (Medium

PerformanceTest 8.0 Evaluation Version

File   Edit   View   Tests   Advanced   Baseline   Help

Main | System | Summary | CPU Mark | 2D Graphics Mark | 3D Graphics Mark | Memory Mark | Disk Mark

Disk Mark	Result	0 ... Composite average of other results ... 5000
#1 - Seagate ST3300622AS (300GB)	456.4 (-90.0%)	
#2 - WDC WD5000AAKS-00V1A0 (500GB)	580 (-87.3%)	
#3 - Seagate ST31000528AS (1TB)	709 (-84.4%)	
#4 - SAMSUNG MZ7PC064HADR-000 (64GB)	2846 (-37.6%)	
#5 - SAMSUNG HD103SJ (1TB)	850 (-81.4%)	
#6 - INTEL SSDSC2CW240A3 (240GB)	3434 (-24.7%)	
Atlantis ILIO-v7000-Persistent	4561	

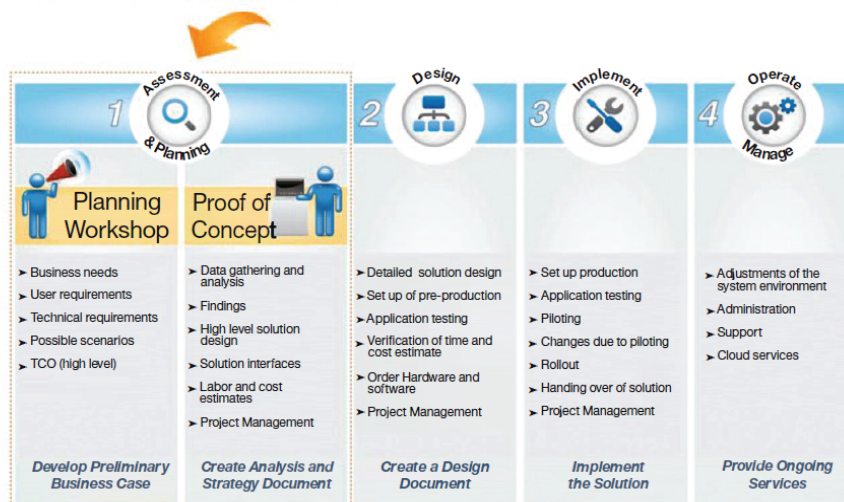**Persistent VDI with IBM and Atlantis ILIO Faster than a dedicated SSD on a PC**

workload), ioMeter and PassMark Performance Test 8.0. The results showed that Atlantis ILIO was able to increase storage density per disk by up to 33 times, while maintaining a server density of 125 virtual desktops per server (2x Intel Xeon E5-2670 with 256GB RAM). High Availability (HA) testing using Atlantis ILIO Persistent VDI 4.0 with VMware vSphere 5.1 HA was able to show automated fail-over and recovery within 10 minutes. Performance testing using ioMeter, LoginVSI and PassMark showed desktop performance that was 3-4x faster than a typical physical PC user experience with 25% faster disk performance than a PC with a dedicated SSD.

Streamlining deployment with a broad portfolio and flexible configurations

Every organization has unique business and technology needs. IBM PureFlex with Atlantis ILIO storage optimization software is designed to address a broad range of desktop virtualization requirements through smoother integration with a range of technologies:

- IBM System x® servers, IBM PureFlex™ System, IBM Storwize® V7000 Unified and IBM FlashSystems. Recognized in the industry for quality, reliability and innovation, these technologies offer powerful building blocks for the SmartCloud Desktop Infrastructure. A broad portfolio of flexible configurations offer enhanced memory, high-speed I/O and industry-leading availability and reliability features—a combination designed to reduce operating costs, simplify management and keep your virtualized desktop infrastructure up and running.

- Atlantis ILIO Persistent VDI™ is the first solution that enables Citrix XenDesktop and VMware Horizon View customers to deploy VDI immediately using existing images, while delivering virtual desktops that are faster and cheaper than PCs. The solution leverages IBM System x RAM and ILIO In-Memory Storage™ technology to run the virtual desktops with IBM v7000 or IBM FlashSystems storage for data protection and high availability. Atlantis ILIO automates the deployment of thousands of virtual desktops across dozens of racks to enable customers to go live

IBM SmartCloud Desktop Infrastructure
Best Practices and Services

1 Assessment & Planning

2 Design

3 Implement

4 Operate / Manage

Planning Workshop
- Business needs
- User requirements
- Technical requirements
- Possible scenarios
- TCO (high level)

Develop Preliminary Business Case

Proof of Concept
- Data gathering and analysis
- Findings
- High level solution design
- Solution interfaces
- Labor and cost estimates
- Project Management

Create Analysis and Strategy Document

- Detailed solution design
- Set up of pre-production
- Application testing
- Verification of time and cost estimate
- Order Hardware and software
- Project Management

Create a Design Document

- Set up production
- Application testing
- Piloting
- Changes due to piloting
- Rollout
- Handing over of solution
- Project Management

Implement the Solution

- Adjustments of the system environment
- Administration
- Support
- Cloud services

Provide Ongoing Services

IBM SmartCloud Desktop Services offers an end-to-end approach for SmartCloud Desktop Infrastructure implementation

in weeks instead of months. To make disaster recovery cost-effective, Atlantis ILIO storage optimization enables disaster recovery by making it cost-effective to replicate virtual desktops between datacenters on IBM storage, which further reduces deployment risks.

In addition, robust services can help accelerate your transition to a less complex, virtualized desktop environment, leveraging a proven execution model. SmartCloud Desktop Services use time-tested methodologies, proprietary tools and extensive expertise developed through real-world client implementations for virtual desktop environments. Robust services—including assessment and planning, design and implementation, as well as operation and management—and a phased delivery approach help speed your return on investment and reduce the risk of business disruption.

About IBM Partners

Atlantis Computing
Atlantis Computing™, winner of the prestigious Best of VM-world and Best of Citrix Synergy awards, addresses the challenges of storage-intensive applications in private and public clouds: performance, cost, disaster recovery, and the ability to scale-out on demand. Atlantis ILIO software complements virtualization solutions from Citrix, Microsoft and VMware to optimize the use of data center storage by virtualized desktops and servers, automate large-scale deployment and management, and lower implementation risks. Atlantis Computing is privately held and funded by Cisco Systems, El Dorado Ventures and Partech International, with headquarters in Mountain View, California and offices in Europe. For more information, visit: www.atlantiscomputing.com or follow us on Twitter @Atlantis-ILIO.

Why IBM and Atlantis Computing?
IBM has been a leader in large-scale virtualization for four decades, building strong intellectual capital and experience as a trusted adviser of end-user services to more than 4,000 companies. Along with IBM, Atlantis Computing has brought innovation to virtualization and shares a strong track record across virtually every industry. Together IBM and Atlantis Computing offer world-class solutions to help customers implement and manage a more cost-effective, centralized and virtualized desktop environment. Atlantis Computing is recognized as industry experts in desktop virtualization and storage, basing their success in designing and implementing some of world's largest desktop virtualization deployments. The Atlantis ILIO In-Memory Storage technology is acclaimed by industry experts and analysts as one of the most innovative solutions in the desktop virtualization industry and is the only product to have swept the "Best of VMworld U.S", "Best of VMworld Europe" and "Best of Citrix Synergy" in the same year.