Software-Defined Storage with HyperDup Data Services from Atlantis Computing May Change the Industry

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IDC OPINION

We are squarely in the 3rd computing platform era, and legacy enterprise storage platforms are having a difficult time cost effectively meeting the storage demands of virtual infrastructure. Performance, agility, cost, and ease of deployment are all issues. A new software-defined storage (SDS) model has arisen to address these requirements in a manner that does not include vendor lock-in and allows a common set of storage services to be flexibly leveraged across heterogeneous and, more importantly, commodity hardware platforms. There are a number of vendors, primarily smaller start-up storage players, that have at this point entered what IDC calls the SDS platform (SDS-P) market. SDS-P is growing at double-digit rates, is composed of four main segments – block, file, object, and hyperconverged – and will be a $2.8 billion market in 2017. In addition:

- Vendors in the SDS-P market typically allow different storage media, including flash-based storage, spinning disk, and cloud, to be configured and managed as different tiers, providing storage resources that closely meet an application's specific requirements. Atlantis Computing, a player in this space, is unique in the industry with its HyperDup Content-Aware Data Services technology, an SDS solution that adds main memory as a persistent storage tier and leverages it for general-purpose use like no other offering from any other vendor. Atlantis initially focused on the virtual desktop infrastructure (VDI) space, a market where projects were often delayed by enterprises to handle more pressing server-based workload issues. Despite that, Atlantis has been able to amass over 600 customers, many of whom are bellwether names well known throughout the world.

- Atlantis' introduction of a server-based product in the spring of 2014 signaled the company's entry into the much higher priority, much larger SDS-P market that is top of mind for almost every enterprise. Throughout the storage industry, awareness is still limited concerning the business and technical benefits Atlantis offers, but the company has an extremely strong value proposition that is squarely targeted at the highest priority storage issues enterprises deal with today: performance, scalability, cost, and agility. Industry trends such as server-based computing that leverages direct-attached storage (DAS), including hyperconverged architectures, the high growth rate of the SDS-P market, and an ability to accommodate the heterogeneity of 3rd Platform computing environments will push enterprises of all sizes to evaluate the value that Atlantis brings to the table. If Atlantis is able to achieve sufficient momentum and awareness among enterprise customers, it may encourage others to take a similar approach with their SDS offerings. Its benefits are undeniable.

IN THIS VENDOR PROFILE

This IDC Vendor Profile examines Atlantis Computing, an SDS player in the enterprise space. Its software products effectively leverage capacity-optimized main memory as well as flash, DAS, and SAN/NAS as persistent, tiered primary storage, delivering unprecedented performance and capacity utilization, along with enterprise-class data services, for use with any type of enterprise storage architecture. This Vendor Profile provides a high-level discussion of Atlantis Computing's technology offerings, business and technical value propositions, target markets and customers, and go-to-market strategies.

SITUATION OVERVIEW

In the 3rd Platform computing era, storage challenges are evolving in ways that make it difficult for legacy storage architectures to cost effectively deliver the performance, scalability, agility, and ease of use these environments need. Enterprises are continuing to install virtualization at a rapid rate, and most have a "virtual first" strategy that makes new application deployment on virtual platforms the default as part of a software-defined datacenter strategy that includes server, network, and storage virtualization. While SDS is also used in physical environments, the move to virtualization is an extremely strong driver for its deployment. These types of environments generally demand heterogeneous support, ease of use, and agility that hardware-defined storage has difficulty meeting. IDC sees the software component of storage for virtual environments growing at a compound annual growth rate (CAGR) of 14.7% through 2018, almost four times the growth rate of enterprise storage systems (i.e., hardware) as a whole over that same period.

IDC refers to SDS as platforms that deliver the full suite of storage services via a software stack that uses (but is not dependent on) commodity hardware built with off-the-shelf components. It should not contain any proprietary hardware components like custom ASICs or chipsets, should be able to be installed and run on multiple physical or virtual hardware instances, and is a standalone system.

The flexibility that SDS brings to the table is critical in meeting storage challenges in the 3rd Platform computing environments. The promise of SDS is that it can bring a bevy of enterprise-class data services, including features like snapshots, clones, data reduction, storage tiering, encryption, and replication, to bear against one or more logically defined storage pools that may be made up of many different types of storage available from different vendors, including flash storage, hard disk drives, and cloud storage. Although SDS was initially targeted at very cost-conscious lower-end accounts for whom ease of management was critical, as vendors have hardened their offerings to meet enterprise-class availability, scalability, and resiliency requirements, larger enterprises are leveraging it to improve storage efficiencies on a much grander scale. As the industry moves more in the direction of converged and hyperconverged solutions based around virtual computing platforms, IDC expects SDS to evolve to meet the requirements of most enterprise application environments. This by definition means that DAS will increasingly be used in these environments — interesting in light of the fact that SDS can provide an excellent migration path from shared SAN/NAS storage to hyperconverged architectures.

Storage technology refreshes are a fact of life for most enterprises. During the 2nd Platform computing era, forklift upgrades to replace aging enterprise storage platforms were commonplace. With the very high data growth rates in 3rd Platform computing environments, the traditional scale-up storage architectures of the past have difficulty meeting scalability requirements and are starting to give way to scale-out architectures that not only scale across a much wider range but also allow performance and capacity to be added separately as needed to meet specific requirements. Many of these scale-out platforms, bolstered by SDS offerings, support nondisruptive upgrades and can allow multiple technology generations to seamlessly coexist in the same storage pool.

As enterprises deploy 3rd Platform environments, migrating data to newer architectures is a concern. SDS provides a management veneer that can in many cases provide nondisruptive data migration between heterogeneous storage platforms, making technology refreshes (and hardware reconfiguration, in general) basically transparent to applications. In 3rd Platform computing environments that include one or more datacenters and increasingly private or public clouds, the requirements for data movement are much higher than they have been in the past, and the ability of SDS to support transparent data migration is yet another reason for enterprises to deploy it going forward.

Company Overview

Founded in 2006, Atlantis Computing delivers an SDS platform that uniquely leverages main memory, as well as other types of media, as a persistent, primary storage tier for transparent use with any general-purpose application running on either virtual or physical infrastructure. But Atlantis does not just provide performance improvements due to main memory's lower latencies – it offers a full suite of enterprise-class data services that have been optimized to leverage main memory to deliver other management benefits in the areas of performance, I/O reduction, data mobility, capacity utilization, and scalability in a way that no other SDS solution on the market can.

In 2009, Atlantis delivered its first product, Atlantis ILIO, for use in VDI environments and very quickly landed some of the largest desktop virtualization projects in the world, with some banking customers reaching deployments of over 100,000 virtual desktops. Since then, the company has enhanced its technology to include virtual server workloads and environments as well, significantly expanding its total available market (TAM). To date, Atlantis has raised a total of $35 million across four funding rounds, although the first two rounds were led primarily by angel investors. The company will exit 2014 with over 600 customers, many of whom are bellwether names worldwide across financial services, healthcare, government, retail, education, legal, and many other verticals.

Company Strategy

With the advent of virtualization, founder and original Atlantis CTO Chetan Venkatesh realized in 2006 that the mismatch between legacy storage architectures and the performance, cost, and flexibility requirements for enterprise storage in a virtual world demanded a change in how storage is consumed. His original vision for a solution leveraged extremely high-performance main memory, made cost effective through an application of inline storage efficiency technologies like compression, deduplication, caching, and thin provisioning. Storage operations were optimized under the assumption that main memory would be used as a persistent storage tier and to hold metadata that made these operations significantly more efficient than they could ever be when written for spinning

disk. To date, Atlantis has been granted four patents on these technologies and has eight patents pending. By being able to leverage main memory as a primary storage tier that could potentially front end any kind of heterogeneous storage (legacy or otherwise), he could deliver extremely high performance in terms of latency and throughput while significantly reducing the required enterprise storage infrastructure.

Atlantis initially targeted VDI, a market extremely ripe for the kind of disruption Atlantis brought to the table, in large enterprise environments with a direct sales approach. As the technology began to catch on, Atlantis expanded into indirect sales with channel programs. In early 2014, the company enhanced its SDS platform to accommodate the requirements of enterprise server workloads, appreciably expanding its TAM. Atlantis has established some particularly strong relationships with leading enterprise storage suppliers like IBM, Citrix, Cisco, Dell, HP, Lenovo, SanDisk, and VMware to supplement its existing storage offerings and has qualified its platform for use in other environments as well like EMC and NetApp. Cisco was, in fact, a C round strategic investor.

By the end of 2014, Atlantis had also made changes to its management team to better position the company for the future. Venkatesh, one of the original founders, became the new president and CEO. Atlantis also added a VP of Technology Solutions, Rick Dehlinger of former Citrix fame, as well as a CFO, a VP of products, a VP of technical services from EMC, and a VP of marketing. Atlantis also combined its desktop and server offerings into a single software-based platform, which they will sell under the Atlantis USX moniker. Atlantis also significantly increased channel distribution through the addition of over 160 VARs and 12 distribution partners in 2014 alone, bringing the total to over 20 distribution partners and 450 VARs worldwide. These VARs and distribution partners, including Ingram Micro and August Schell in North America and Arrow, Tech Data, and Mindware in EMEA, support the company's major push into server-based computing going forward. Going into 2015, Atlantis plans to maintain a direct sales force focused on extremely large accounts, continues to build the channel program, plans to expand globally, intends to aggressively pursue OEM opportunities, and is making investments in marketing to increase the awareness of what its HyperDup Storage technology brings to the table in enterprise environments.

Across all workloads and verticals, Atlantis emphasizes its ability to extend the useful life of existing storage resources by three to five years with a pure software-based storage consolidation solution, accelerate performance to better than all-flash array (AFA) speeds, deliver hyperconverged systems on existing x86 server hardware, make storage migration between heterogeneous back-end storage platforms completely nondisruptive, and deliver very cost-effective desktop and session virtualization solutions that in some cases require *no external storage.* Atlantis is truly unique in the industry in cost effectively turning main memory and other storage tiers, both directly attached and in the network, into extremely high-performance primary storage that can be used transparently with any application environment.

Atlantis HyperDup Storage Technology

The idea of using main memory as primary storage has major ramifications in enterprise environments. First, it allows virtually any type of backing storage technology to consistently deliver performance at memory speeds, completely removing network latencies for most I/O. This applies to SAN, NAS, and DAS; hyperconverged architectures; and cloud storage. Second, it allows a number of data services and optimization features to be implemented at the hypervisor layer in a way that provides very high

performance that is based purely on software, not expensive enterprise-class storage arrays. These features, collectively referred to by Atlantis as HyperDup Content-Aware Data Services, provide compelling capabilities for data reduction, I/O acceleration, provisioning, data mobility, security, and business continuity that meet enterprise application requirements, effectively turning even JBODs into best-of-breed enterprise-class storage. Last, it increases the effective capacity of back-end storage by up to 20 times without requiring any new external storage purchases. IBM, in fact, uses it in exactly this way when it resells Atlantis with its all-flash array, the IBM FlashSystem, into VDI environments to deliver an extremely low cost per desktop and scalability of 10,000 users in only 2U of storage.

The secret to making main memory cost effective as a primary storage layer resides in the storage efficiency features implemented by Atlantis. Across the types of 3rd Platform computing workloads that are most often deployed today, Atlantis will on average achieve data reduction ratios of 6:1. Certain environments like VDI that particularly benefit from data deduplication can achieve data reduction ratios of up to 20:1, whereas others like database may only achieve data reduction ratios in the 5:1 range. Special algorithms identify transient I/Os, preventing them from ever hitting other storage tiers beyond main memory and effectively reducing I/O traffic by up to 90% in some application environments. Atlantis' transparently managed persistent primary storage tiers deliver more than enough IOPS for even the most demanding application environments today, so administrators will never again have to overprovision storage capacity to meet performance requirements. Atlantis' SDS platform effectively provides the performance of a highly flash-optimized AFA at half the cost of traditional SAN or NAS.

To enter the virtual server market, Atlantis made some enhancements to its platform in the areas of availability and resiliency. The new server-based offering was called Atlantis USX. Enterprise applications clearly had a higher bar in these areas than desktop applications did. Atlantis created a high-availability infrastructure that would work the same way across different virtual environments, ensuring that writes were always committed in two locations prior to returning write acknowledgements to the application. This ensures that, even in cases where no external storage is required (as is the case for many session virtualization deployments based on XenApp and Atlantis), there is no single point of failure that could result in data loss. Able to support extremely high-performance and extremely scalable snapshot and clone implementations, as well as replication that is optimized to replicate only unique data, Atlantis has the capabilities to support the local and remote recovery capabilities necessary in today's "always on" datacenter environment.

With the release of Atlantis USX 2.0, Atlantis consolidated its desktop and server offerings into a single platform that could manage both types of environments. This product also could be used to provide storage to physical and cloud environments, providing the type of heterogeneous support and flexibility that most customers with legacy installations that are slowly evolving their shops toward virtualized infrastructure need. Atlantis will continue to sell a dedicated VDI and session virtualization product, but now Atlantis USX will provide storage for desktop virtualization, server virtualization, database, and other general-purpose storage all in one platform.

FUTURE OUTLOOK

Atlantis is in a position that will increasingly benefit from several key trends in enterprise storage. The move to server-based computing is clear, with hyperconverged platforms growing at a rate almost four times that of enterprise storage hardware platforms. Datacenter administrators are increasingly faced with the need to integrate physical, virtual, and cloud environments; support heterogeneous storage; and meet the performance and agility requirements driven by virtualization — all while keeping costs down. And the value in enterprise storage platforms is increasingly migrating to software. All of these trends push customers to evaluate the unique solution Atlantis brings to the table.

The benefits of leveraging main memory as a general-purpose primary storage tier include consistently high performance from any type of backing storage, an increase in the application density a given terabyte of storage can support, a significant simplification of storage infrastructure, a uniform set of enterprise-class data services that can be implemented across any type of storage, and an overall lowering of cost while maintaining significant flexibility. If this technology garners sufficient momentum among only a small number of Global 1000 accounts, it may encourage others to explore the use of main memory as a general-purpose primary storage tier in their SDS offerings that today already support flash, spinning disk, and cloud in a tiered storage model.

Interesting deployment trends with Atlantis customers point to a strong future for the company. With Atlantis' ability to increase the effective capacity of existing storage by up to 20 times, administrators faced with buying more storage hardware to handle data growth are buying a much more cost-effective, much easier to deploy software solution to the problem. Just within the past six months, several large customers have justified the purchase of Atlantis on the cost savings associated with deferring hardware purchases or avoiding maintenance fees alone, reaping the performance and management benefits of USX as a no-charge bonus. Existing customers are also using the software to make storage hardware platform upgrades transparent, bringing additional value from a product that spans hardware generations while still optimizing their performance, capacity, and functionality. Finally, with an installed base of over 600 customers, many of whom are bellwether accounts worldwide and all of whom have virtual server infrastructure (VSI), Atlantis has a very receptive audience for USX deployments.

ESSENTIAL GUIDANCE

With industry trends moving in its direction, Atlantis should be funding efforts to take advantage of them in real time. A cost-effective, general-purpose SDS platform that delivers main memory speeds for most I/O and is complete with enterprise data services optimized for execution in main memory — a complete storage software stack — if you will — is unique in the industry, and Atlantis should waste no time in capitalizing on that.

As noted previously, the virtual server-based market is significantly larger than the virtual desktop market, and while the VDI space was a great starting point for Atlantis, its success in the server space is what will make or break the company going forward. Server-based workloads have much higher

availability and resiliency requirements, and Atlantis will need to ensure that it understands and is meeting those requirements as quickly as possible.

The classic challenge with software-based solutions is that they demand more expertise and effort on the part of customers to deploy. As part of its channel efforts, Atlantis has worked with Lenovo and SanDisk to put together an integrated solution, available through the indirect channel, which offers customers a deployment model much closer to that of storage appliances. This is a hyperconverged solution, another very hot market that Atlantis should be focusing its efforts on. Working with channel partners to create more of these types of bundles that are targeted at specific verticals will make deployment easier and speed adoption.

Advice for Atlantis Computing

Almost all of Atlantis' success in the past has been on the virtual desktop side, but it has a great opportunity to leverage that success into a much larger business. Specifically, Atlantis should:

- Work as quickly as possible to harden the server offering so that there is no question as to whether it meets or exceeds enterprise availability, resiliency, and recovery requirements. (There is no indication that it does not meet these requirements, but before it takes on a concerted push into the server space, there must be no question about these capabilities.)

- Ensure that every one of its VDI customers has the opportunity to trial its server-based product, and then turn these into referenceable accounts that can be publicly used to validate the business and technical benefits that Atlantis claims as quickly as possible.

- Work with the channel to create more "appliance" like offerings targeted at specific verticals and sold by channel partners that have specific expertise in those segments; these bundles should include VDI, traditional VSI, and hyperconverged offerings.

- Fund the marketing efforts necessary to get the word out about the business and technical value that bellwether customers across all industries are getting from its Atlantis USX deployments.

LEARN MORE

Related Research

- *Worldwide Storage and Virtualized x86 Environments 2014-2018 Forecast* (IDC #250720, September 2014)

- *Storage for Virtual Environments Survey* (IDC #248298, April 2014)

- *IDC's Worldwide Storage for Virtualized Environments Taxonomy, 2014* (IDC #247940, April 2014)

- *Atlantis Computing Adds the Ability to Address Classic Server Workloads* (IDC #246448, February 2014)

- *IDC QuickPoll: Gauging the Needs of Storage for Virtual Environments* (IDC #245014, December 2013)

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