



FLASH

Atlantis Computing Adds the Ability to Address Classic Server Workloads

Eric Burgener

Brett Waldman

IN THIS FLASH

This IDC Flash discusses Atlantis Computing's In-Memory Storage technology and how it applies to Atlantis USX, the company's new storage software solution targeted for use with classic server workloads.

Atlantis Computing has been shipping a software-defined storage solution targeted for use in virtual desktop infrastructure (VDI) environments, or what IDC refers to as centralized virtual desktops (CVDs), since 2009. The central intellectual property around which this product is based is called In-Memory Storage technology by Atlantis Computing. Their desktop product, Atlantis ILIO, runs as a dedicated virtual machine (VM) in each host, allowing the RAM in that host to be addressed as primary storage to provide better than physical PC performance for virtual desktops running there.

Atlantis Computing's software-defined VDI storage technology is applicable to two virtual client computing (VCC) market segments tracked by IDC – the centralized virtual desktop and the virtual user session (VUS) submarkets. On February 11, 2014, Atlantis Computing announced a version of its product called Atlantis USX, which is targeted for use in virtual server environments. For the foreseeable future, the percentage of virtual machines deployed for server workloads is quite a bit larger than that deployed for desktop workloads.

Adding support for server workloads definitely increases Atlantis Computing's market opportunity. Based on IDC's forecasts for the virtual machine market, the availability of Atlantis USX will increase the number of virtual machine instances with which the company's products can be used by three to four times.

SITUATION OVERVIEW

As a technology, VDI has offered desktop administrators the promise of much easier management than physical environments. Customer adoption of this technology has been limited by, among other things, the high per-desktop costs for configurations that leverage enterprise-class storage to host the desktops. Target devices, such as PCs and laptops, now often include internal solid state drives to improve performance and have continued to come down in price, and enterprise storage, in particular, has been significantly more expensive than the consumer-class ATA drives that are in use in most physical desktop environments – especially if enterprises are looking to provide virtual desktop performance comparable with that of physical PCs. For customers looking to build and manage their

own on-premise VDI infrastructure using enterprise-class storage area networks, it has been difficult to justify the higher cost per desktop of VDI environments.

As a result of the attempt to address the high cost per virtual desktop, the VDI market has been experiencing a lot of innovation. With legacy networked storage architectures, storage costs make up the lion's share of per virtual desktop costs, so storage has naturally been an area of focus. Atlantis Computing plays in this arena and has production installations with a number of marquee names with its Atlantis ILIO product.

Atlantis ILIO creates what look like NFS or iSCSI data stores that can be hosted on server RAM in each virtual server. These data stores provide the storage for the virtual desktops. In-line deduplication and compression are used to make the most out of relatively expensive (on a dollar-per-gigabyte basis) RAM storage, enabling servers with 200-256GB of RAM to generally support 100-140 virtual desktops per host. The solution deploys transparently to applications, hypervisors, and most workflows, reducing the amount of storage required (outside of the RAM) by as much as 90% for persistent virtual desktops and potentially more for nonpersistent virtual desktops. With their very high levels of data redundancy across desktops and need for very high IOPS, VDI environments are particularly well matched to what Atlantis ILIO delivered.

Like Atlantis ILIO, Atlantis USX leverages Atlantis Computing's In-Memory Storage technology. With Atlantis USX, Atlantis Computing's new storage software solution, Atlantis Computing will be targeting database, email, Web and file serving, and Hadoop workloads. Atlantis Computing's expectation that enterprises are struggling with storage performance and costs on these workloads is in line with IDC research, but these applications (with the possible exception of Hadoop) have characteristics very different from virtual desktop environments:

- Within a given set of mixed virtual server workloads, data redundancy will generally not be as high.
- Many applications run on virtual servers have much more stringent requirements for high availability (HA) and disaster recovery (DR), with aggressive recovery point objectives (RPOs) and recovery time objectives (RTOs) that must be met without any data loss.
- Individual server applications tend to have much larger storage footprints than the typical virtual desktop.

There are two critical questions for enterprises looking to leverage Atlantis USX with server workloads:

- Does Atlantis USX deliver memory-class performance while still meeting enterprise requirements for HA, rapid recovery without data loss, and DR?
- How does the total cost of ownership for Atlantis USX-based configurations compare with other storage options, particularly those that leverage flash?

FUTURE OUTLOOK

According to IDC forecasts, the number of VM instances deployed for CVD and VUS together will be one-fourth to one-third the number of VM instances deployed against classic server workloads like

database, email, and file and Web serving through 2016. With a viable In-Memory Storage solution for server workloads, Atlantis Computing can now potentially sell its software-based storage solutions across a much greater number of VM instances.

Atlantis USX will provide extremely high performance for server workloads. A new storage pooling model has been introduced that allows customers to create storage volumes for individual VMs by pooling storage resources from performance and capacity pools in any combination. Performance pools are backed by main memory, whereas capacity pools are backed by flash and/or spinning disk.

In-line primary data deduplication technologies deployed in the server market today generally achieve data reduction ratios of 3:1-6:1. Data reduction ratios vary by application workload, but the ratios achievable by Atlantis USX will be a key determinant in the cost effectiveness of this storage solution relative to other options. The data reduction ratios, combined with the main memory capacity, will have a direct impact on the VM densities a virtual server could support, and hence the storage cost per VM. Converged infrastructure solutions that boast extended memory capabilities, like the Cisco UCS and the IBM x86 architecture servers, might be particularly good platforms for the use of Atlantis Computing's In-Memory Storage technology for server workloads.

Atlantis Computing has introduced a new capability in Atlantis USX to address the unique HA and recovery requirements of server workloads. With its desktop product (Atlantis ILIO), Atlantis Computing was primarily leveraging native hypervisor failover capabilities for HA, but with Atlantis USX, the company wanted to move to an approach that offers a stricter data consistency model for the storage service that worked the same way on all hypervisor platforms. Atlantis Computing's approach implements an active-active HA model for the Atlantis USX storage service that provides recovery without data loss in the event of VM or host failures, coexisting with native hypervisor failover capabilities that are used to protect the rest of the virtual infrastructure. Atlantis USX also supports an optional "thin replication" capability that can be used to create DR configurations at remote sites for the USX data stores.

Why This Is Important for Enterprise Customers

Atlantis Computing's In-Memory Storage technology is interesting for several reasons. First, it is transparently applicable to all types of applications, not just the applications that have been specifically written or configured to operate in main memory (like in-memory databases). Second, the reduction in external storage infrastructure requirements not only lowers primary storage costs but also secondary storage costs associated with the protection of that storage through backup. This reduces not only local backup requirements but also network bandwidth and remote requirements for backups that are being replicated to remote sites. Floor space, power, and cooling costs also come down significantly. This much smaller and simpler storage infrastructure is also easier to manage. Finally, this technology minimizes network latencies in storage access times and significantly improves storage performance by handling most I/O directly from the main memory within the virtual server.

This technology holds significant promise for server workloads of all types that can fit in the effective RAM densities enabled by the Atlantis USX data reduction technologies. How the cost of Atlantis USX compares with other high-performance storage technologies will be a critical determinant in its market success. Atlantis Computing's existing VDI customers, all of which also have server workloads running on virtual infrastructure, will likely be the first customers to try this technology. But if successful,

customer testimonials from some of these marquee names will certainly spark more widespread interest in this technology.

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Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

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