

ESG Solution Showcase

infinite io: Invisible Storage Intelligence

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Abstract:

Enterprise data requirements are in a constant state of evolution. Yet, only recently has enterprise storage infrastructure provided the flexibility to cater to the changing needs of application data. The emergence of multiple storage tiers, such as solid-state and cloud storage, offers a variety of performance and cost points. Moving data between these tiers seamlessly, however, can be an issue. Solutions that virtualize multiple storage solutions together can help to improve the mobility of data but can also often result in high implementation costs and solution lock-in.

infinite io, an emerging player in storage intelligence, offers an alternative approach with the industry's first network storage controller. The solution presents a storage virtualization layer that sits invisibly inside the storage network and optimizes the storage infrastructure by moving data to the right storage tier in a manner that is as imperceptible to the application as if it were simply another network switch.

Overview

Recently, the IT industry has entered an era of heightened infrastructure flexibility. After years of dominance, the traditional dual controller storage array built for spinning media is no longer the only option for storing active data. The emergence of innovations such as solid-state and cloud storage offer alternative options—and price points—for storing and protecting data.

Different applications and workloads require different levels of data accessibility, performance, and capacity. Additionally, data demands are not stagnant; they evolve over time with the organization. The one-size-fits-all approach to enterprise storage is no longer viable in an age of exponential data growth. As a result, the rapid growth of data and the resulting increase to storage hardware costs are consistent and pervasive IT storage challenges. When faced with an increasing number of infrastructure options, IT organizations are learning that storage silos are simply too costly and too inflexible. Tailoring the storage infrastructure to the demands of the application offers an opportunity to optimize storage utilization and help control costs.

Deploying the storage intelligence to more efficiently leverage the underlying storage hardware, however, whether via software-defined storage or storage virtualization, comes at a cost. This cost is often incurred during implementation, as the new abstraction layer commonly introduces a new storage target, resulting in new access and mount points for storage and impacting applications as they adapt to the new storage design.

Consequently, there is also an element of lock-in associated with these solutions. An organization would incur the cost of implementation a second time if the organization decided to move away from the deployed storage virtualization layer. As a result, some of the flexibility benefits promised by storage virtualization solutions are—in fact—negated by the subsequent lock-in created by the storage abstraction layer.

Ultimately, the opportunity still exists to optimize costs by tailoring the storage infrastructure to meet the evolving demands of applications workloads. Ideally, though, a storage virtualization solution would allow an organization to reap the benefits of lower cost storage infrastructure without the cost of changing applications, changing workflows, or remapping drives and mount points. One emerging storage player, infinite io, has devised a method of providing the intelligence to optimize the storage infrastructure for the workload, while making that intelligence invisible to the application.

Innovation from an Alternative Perspective

infinite io recently announced the NSC-110, the world's first network-based storage controller. Unlike alternative storage-centric infrastructure virtualization approaches, the NSC-110 does not require applications to be re-provisioned or new file paths to be created. The NSC-110 installs transparently in front of existing storage, migrating inactive data to on- or off-premises cloud storage in real time with data movement that is policy-based and transparent.

This invisible presence of the NSC-110 is in large part thanks to the alternate background and experience of infinite io's founders. Unlike many storage incumbents, the design team of infinite io built its experience in the networking industry, rather than defaulting to relying solely on storage engineering expertise. This alternative perspective opens up opportunities to ask new questions like, "If network switches can move data transparently, why not storage?" The result is a storage intelligence solution with some compelling capabilities, including:

- **Invisible storage intelligence:** The NSC-110 storage appliance sits inside of the network, rather than outside as a storage target. The appliance can transparently migrate data to on- or off-premises cloud storage, as if it were a switch. This resulting solution allows for the seamless integration of newer and lower cost hardware technologies while also enabling organizations to leverage their existing investment. The rip-and-replace method of existing infrastructure is not required. Additionally, the appliance has the ability to not only move data intelligently across tiers but also to deduplicate, compress, and encrypt it as well.
- **Greater understanding and performance:** To help with infrastructure planning and management, the NSC-110 can automatically calculate the expected savings of shifting data to cloud storage using industry standard storage costs along with information collected from the installed environment. While designed to help communicate the value of the end solution, this capability also enables the appliance to collect real-world usage data and provide detailed analysis back to the administrator. Both of these capabilities are available in what the appliance refers to as passive mode, where the system collects information, but doesn't reside in the data path. In active mode, the NSC-110 shifts into the data path and is designed to significantly improve performance while enabling intelligent and transparent migration of data. The NSC-110 serves in part as a flash tier, serving all metadata for the storage environment out of flash. Based on intelligent data criteria, the appliance can move data to another tier seamlessly, the entire time presenting the storage as if it was still on the initial primary system. The result is a storage solution that still appears as the same primary storage array while the cold data is invisibly migrated to the cloud.
- **Elimination of lock-in concerns:** To help eliminate concerns of lock-in, organizations can move away from the NSC-110 as transparently as they added it into the environment. The NSC-110 simply moves data back to the primary system, allowing the appliance to be removed from the environment without downtime.

Historically, there have been multiple attempts by a variety of storage technology firms to provide storage virtualization solutions, only to have those solutions meet resistance in the areas mentioned previously: the pain of integration and the subsequent concern over vendor lock-in. infinite io is still in its early stages, so the firm still has a great deal left to prove. The key architectural elements of the NSC-110 solution, however, directly target two of the top challenges typically

associated with these types of storage virtualization solutions. Thus, if infinite io can execute on the promises of its technology, the NSC-110 looks to be a promising and welcome alternative for organizations looking to optimize their storage infrastructure.

The Bigger Truth

In the wake of exponential data growth, the status quo of the traditional data storage silo is unsustainable. IT organizations are often better served when the infrastructure can adapt to the evolving demands of the data. Luckily, storage alternatives have emerged to help IT organizations optimize the environment and reduce storage costs. Unfortunately, actually getting the data to those lower cost solutions is a non-trivial matter.

The current crop of storage virtualization solutions may typically include added costs by way of implementation pains and solution lock-in. Leveraging a networking mindset, infinite io looks to provide an alternative answer with its NSC-110 networked storage controller. The end result is a layer of intelligence that optimizes the storage infrastructure environment, while remaining invisible to the application.

As with many emerging IT innovators, these are still early days for infinite io. The potential of the technology, an invisible hand that guides data to the right place, optimizes the storage infrastructure, and leaves the application alone, though, is certainly promising. Finally, with pressures from continued data growth increasing, the pains of remapping the storage environment or altering existing applications to support a new storage virtualization layer will likely continue to increase as well. In which case, a solution like the one from infinite io will potentially be a welcome addition to a wide number of IT organizations.

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