



BlueArc Scale-Right Solution for Virtualization and Cloud

SOLUTION HIGHLIGHTS

- Server virtualization catalyst for today's virtual data centers
- Storage layer impacted by high I/O and capacity requirements
- BlueArc's scale-right NAS storage provides flexibility and agility needed by virtual data centers
- BlueArc provides best per node performance at lowest cost per NFS IOP
- Tailor storage infrastructure to needs of individual business requirements
- Seamless integration into VMWare vSphere for single point of control

The data center of the 21st century is undergoing a transformation resulting from two factors: voluminous growth of data and server virtualization.

IDC estimates that data will continue to grow at a rate of 600-800% over the next four years — 80% of this data will be unstructured. The volume of unstructured data comes in two forms: textual and non-textual. Textual data comes from email, Microsoft® PowerPoint, or instant messages. Non-textual data comes from JPEG images, MP audio files and flash demos. For compliance reasons data, such as email, needs to be retained for longer periods of time than in the past. However, all of this data needs to be stored in a cost-effective manner that can scale capacity and performance.

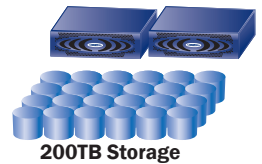
Server virtualization has been the catalyst to changing the way IT conducts business. One of the immediate benefits has been the ability to increase individual server usage which then shrinks the number of servers required to perform the same amount of work. This conversion trend is known as server consolidation. Organizations often report that they experienced acquisition and operating expense cost savings of 50% to 70%. These savings are attributed to the ability to use less floor space, to complete more work with lower utility bills and fewer software licenses and support costs per server.

While the number of physical servers has been decreasing, the performance requirement for the remaining physical servers has been increasing. Today's server technology supports multi-core processors, each capable of hosting greater than 10 virtual machines (VMs) per core. Considering that many physical servers have up to 8 CPU cores, the result is a storage environment that needs to potentially support 256 processors and their VM's containing a diverse range of applications and workloads.

While server virtualization provides cost savings, the network and storage layers have felt the real impact with the need to support such a diverse environment. With unprecedented data growth, as well as IT's need to retain data for a longer period of time, data centers have found that utilizing NAS storage is a great solution for virtualized environments that need flexibility to grow capacity while maintaining the ability to deliver high performance levels. With traditional NAS solutions, shown in the figure on the right, the relentless growth of data has driven IT organizations to deploy ever increasing NAS heads (also called storage servers or storage nodes) along with an almost mind numbing number of SAS and SATA hard disk drives. It's therefore not surprising to find this growth adds greater complexity and cost along with more equipment failures in production environments. As these environments scale, traditional NAS forces IT to compromise between scaling up for capacity or scaling out for performance.



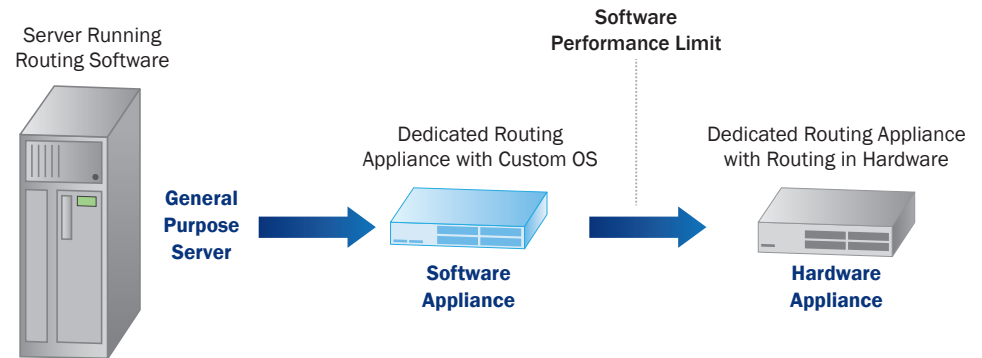
BlueArc’s unified NAS solution eliminates up to eight NAS heads from other NAS providers for each deployed BlueArc NAS head. Designed for unstructured data and mixed workloads BlueArc’s industry leading NAS architecture coupled with its scale-right approach eliminates the need to compromise and offers freedom of choice in high density random I/O environments. The key to the scale-right approach is BlueArc’s ability to scale for performance and capacity providing the flexibility and agility required by IT for virtualization and cloud.



Scale-right architecture

BlueArc’s ability to scale-right comes from focusing on two areas: hardware acceleration and decoupling the server from storage.

Hardware Acceleration



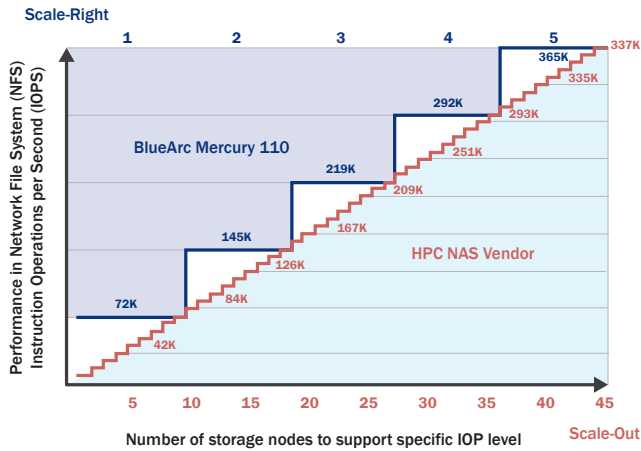
BlueArc’s hardware acceleration architecture maps to the technology progression of network routers. First generation routers were delivered as general purpose servers running router software. The second generation had evolved into a dedicated appliance with a custom operating system. The largest performance gain occurred when Cisco placed the router software on a custom silicon chip called an ASIC. This combined with the operating system created a dedicated routing appliance to deliver best-in-class, high performance networking device.

From the beginning, BlueArc’s goal was to leverage router technology’s progression by creating a silicon-based file system within a dedicated file server appliance providing hardware acceleration that is transparent to users and applications. Workload processing is offloaded to field programmable gate arrays (FPGAs) that turns hardware into software while removing the CPU from the data path. The result is parallel processing paths that run at wire speed without conflict or bottlenecks. Applications and users experience perceptible faster data throughput, up to 4 times faster depending on workload and configuration.



Decoupling the Server and Storage

The BlueArc Mercury Network Storage System participated in an industry standard benchmark that measures Instruction Operations per Second (IOPs) throughput. The results of this benchmark are graphically shown below.



The results indicate that the BlueArc Mercury 110 generates the best per node performance at the lowest cost per NFS IOP at a ratio of 1:9. In other words, BlueArc enables IT to deliver larger, more robust storage infrastructures with less storage nodes. Less storage nodes translate into a lower total cost of ownership through:

- Less complexity in cabling, software, and networking = fewer points of failure
- Lower management overhead and support costs
- Reduced floor space and power/cooling requirements

While no two business environments are exactly alike, BlueArc's scale-right approach provides IT the ability to tailor their storage environment for their business needs. However, virtualization solutions require management and BlueArc provides a comprehensive management suite for data protection, disaster recovery, integration into VMware management tools and storage tiering.

VMware® Integration

BlueArc JetCenter™ for vSphere seamlessly integrates BlueArc unified NAS storage into VMware vSphere, the industry's leading virtualization platform. Deployed as a plug-in to the vSphere user interface, JetCenter delivers simple and efficient data protection for virtual environments through a single point of control for space-efficient snapshots utilized for backup and recovery.

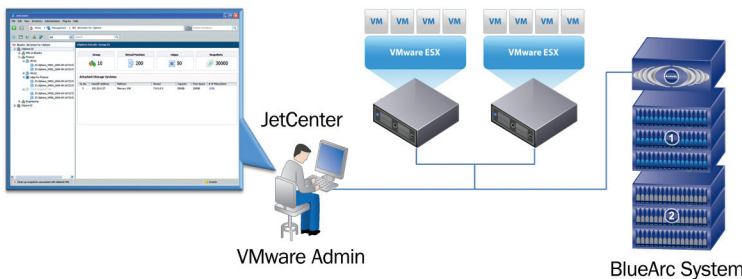


Figure 1. JetCenter Integration into VSphere

JetCenter supports:

- Creation of instant, on-demand snapshots
- Policy-based scheduling of snapshots
- Capturing orphan snapshots of deleted VMs
- Policy-based retention rules

Virtual Cloning

A powerful feature of VMware vSphere is the ability to quickly create new virtual servers with the click of a button. As new virtual machines are deployed, a considerable quantity of redundant data is stored in the form of common operating systems and applications consuming considerable storage capacity.

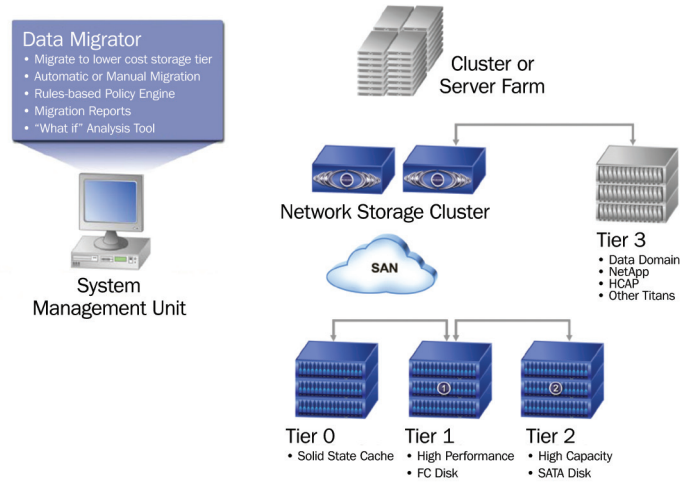


Figure 2. Rapid cloning of virtual machines

BlueArc JetClone™ provides file-level clones that act as a virtual copy of the original data file without consuming additional storage at the time of creation. The cloning process begins with a snapshot of a single or multiple set of files. When there is a need to access data, JetClone refers back to the original file and any modifications to the clone copies is saved separately to physical storage without affecting the integrity of the original file image.

For vSphere administrators, JetClone provides the ability to deploy 100's of virtual machines with nearly identical OS images providing a savings in physical storage and reducing time-to-action for users of the virtual machines. Additionally, JetClones can be used in place of original files for test and development or evaluate new features and functionality without negatively affecting the original data or end users.

Automated Storage tiering



Manually assigning and managing data to particular storage tiers can be a never-ending and complex activity. BlueArc's Data Migrator solution enables IT to automate storage tiering based on a rich set of predefined rules and policies such as file size, date of last access and path. Separate policies can be created for each data source to accommodate grouping of data by department, group or project and allow migration to a separate archive according to data grouping. What-if scenario testing enables IT to investigate the potential outcomes or affects of new rules or policies before going live.

Summary

Server virtualization has been the catalyst towards transforming the data center enabling IT to consolidate their server environments and experience cost savings. However, the affect of server virtualization has significantly impacted storage with very random I/O and mixed workloads. BlueArc's scale-right approach to unified storage solutions are designed for random, mixed workload environments. BlueArc's storage systems provide hardware acceleration for up to 4X faster processing of data along with the ability to scale for capacity and performance. BlueArc's scale-right approach allows IT to create a storage environment that is tailored to meet their specific requirements.

BlueArc goes beyond high performance storage to provide a management suite of solutions for data protection, intelligent storage tiering, and integration into VMware increasing the efficiency and productivity required by today's virtual and cloud data center environments. For more information, go to: www.bluearc.com/virtualization.



BlueArc Corporation
 Corporate Headquarters
 50 Rio Robles
 San Jose, CA 95134
 t 408 576 6600
 f 408 576 6601
 www.bluearc.com

BlueArc UK Ltd.
 European Headquarters
 Queensgate House
 Cookham Road
 Bracknell RG12 1RB, United Kingdom
 t +44 (0) 1344 408 200
 f +44 (0) 1344 408 202