



HIGH PERFORMANCE NETWORK STORAGE FOR THE FEDERAL GOVERNMENT

BlueArc, a world leader in high performance network storage, is an ideal choice for Federal organizations demanding the highest levels of storage performance and scalability. Whether you're running HPC applications in design, simulation, and complex analysis or looking for a fast, scalable storage platform to consolidate huge amounts of distributed storage in order to ease management, lower cost of ownership or meet green initiatives, BlueArc Unified Storage Solutions are designed and architected to meet current and future requirements of today's Federal enterprise data centers and high performance applications with new levels of storage performance, scalability, and reliability.



BlueArc's hardware platforms, Titan and Mercury, are designed from the ground up for the most stringent requirements of today's Federal data intensive applications. BlueArc platforms, featuring the SiliconFS hardware accelerated file system, scales throughput, IOPS, and capacity well beyond conventional software-based file servers. The unified storage architecture combines SAN-like performance and scalability with NAS-style ease of use and implementation. BlueArc systems leverage open standards such as NFS, CIFS, iSCSI, and NDMP so there's no need to wrestle with custom file systems, special interfaces, or proprietary installations.

BlueArc's Federal customers include the Department of Energy National Labs, NASA, Department of Defense (Army, Air Force, and Navy), Department of Justice, National Institutes of Health, Department of Commerce, major Federal System Integrators, and groups within the National Intelligence Community.

“My team evaluated BlueArc, HP and NetApp for our high performance storage requirements. Only BlueArc met and exceeded our end-to-end performance expectations. We highly recommend BlueArc for government solutions based on performance and sincere customer focus.”

— Government IT Director,
Southwestern US site

Solution Capabilities

BlueArc's high-performance, ultra-scalable architecture makes it a perfect solution for just about any Federal application or IT initiative.

High Performance Computing

HPC applications are data-intensive, requiring storage that can scale capacity and performance far beyond the levels required for typical business applications. Federal agencies have struggled to balance increasing scale and performance level requirements with the resulting cost and management complexity. BlueArc's Titan achieves this balance, delivering industry-leading application performance and sustained responsiveness in a platform that is easy and inexpensive to manage.

Consolidation

After years of expansion and consolidation, federal agencies are left with a proliferation of highly diverse, distributed, and often incompatible storage and computing systems. The result: escalating costs, poor application performance and unnecessary management complexity. BlueArc Federal Solutions can be used to consolidate huge amounts of dispersed storage into a single platform that is fast, highly scalable, easy to manage, and usable for a diverse range of business and applications needs—all at a very reasonable cost.

Design and Simulation

Federal integrators have built more complex and powerful design and simulation systems than ever before despite budget constraints. BlueArc can provide greater storage capacities and higher performance for design and simulation than just about any other solution in a platform that is simple to install, configure and manage. The result: significantly higher quality designs and simulations without a ballooning IT staff and budget.

Life Sciences

Advances in genomics and proteomics research, discovery, visualization, and clinical activities have generated vast quantities of data for storage manipulation, and analysis. BlueArc storage systems can process, store and provide thousands of researchers with easy, quick access to petabytes of data and millions of information files.

Electronic Data Discovery

New laws for legal document discovery have driven Federal agencies to formalize new records management policies and develop improved archiving standards. Electronic discovery requires processing huge volumes of data efficiently and accurately for the stringent requirements of legal review. With their hardware-accelerated design and object-based file systems capable of processing millions of files at lightning speed, BlueArc storage systems are perfect solutions for EDD.

Imagery and Analysis

Digital imagery collection methods have advanced year after year, resulting in huge numbers of massive, highly detailed image files that need to be stored and accessed quickly and easily. With its object oriented file system and high performance features such as RAID striping across multiple arrays, BlueArc storage systems easily handle huge file and data capacities without sacrificing storage performance.

SiliconFS File System

BlueArc's SiliconFS File System serves as the common point of integration for all elements of a storage solution—storage servers, information services and the storage ecosystem. Specifically, the file system spans single nodes, server clusters, virtual servers, and even extends to external, third party storage devices. The ability to support multiple applications with various protocols and mixed mode-security enables simultaneous access to native CIFS and NFS based files from shared directories. The ability to consolidate disparate systems and applications extends even further with iSCSI for block based access.

Virtualization Framework

Also, BlueArc provides a comprehensive set of virtualization tools at multiple levels within the system to simplify the administration of file system functions and ensure high utilization of system resources. First, the SiliconFS Global Namespace or "Cluster Namespace" unifies directory structures and presents a single logical view of the data providing global access to all data from any node in a cluster, regardless of client operating system, disk technology, or file system location.

Next, Virtual file systems are assigned to virtual servers, which are best described as logical representations of physical network storage servers. Each virtual server can be assigned its own set of IP addresses, management policies, and file system protocol to fit the requirements of a particular department, project, application, or user group.

Finally, SiliconFS logically organizes the RAID storage into Virtualized Storage Pools by striping data across storage sub-systems and then allocates storage for each file system from the storage pool. This assists provisioning as file systems can expand as needed by pulling unallocated free space from the pool on demand without any downtime.

Intelligent Tiered Storage

BlueArc's Intelligent Tiered Storage is comprised of Policy Based Data Migration and Dynamic Read Caching. These advanced features allow administrators to set policies based on common file attributes or access patterns to ensure that data is automatically and transparently migrated to the appropriate tier of storage in order to optimize cost and performance.

For example, a policy based on the last time a file was accessed will migrate older files to slower tiers transparently. Should greater access frequency trigger the need for higher performance, the data migrates back to a higher performance tier of storage. Also, for information with a very low probability of recall, backups or archive files can migrate to external

TITAN HIGHLIGHTS

GWACS

- Available on GSA FSS IT 70 Schedule Contract # GS-35F-0330J
- Available on NASA SEWP IV Contract # NNG07DA20B
- BlueArc Corporation qualifies as a Small Business for Federal Procurements

Performance

- Hardware-accelerated protocol processing, based on a patented FPGA design, that achieves 20Gbps throughput and more than 195,000 IOPs
- Patented "SiliconFS" object-based file system for super fast lookups even with millions of stored files

Scalability

- Modular hardware design and advanced virtualization framework that scales storage effortlessly up to 4PB (Usable) and file systems to 256TB (Usable) without the usual forklift upgrades
- More than 8 million files per directory
- Up to 60,000 user sessions and thousands of compute nodes
- Simultaneous CIFS, NFS and iSCSI multi-protocol Support

Ease of Management

- Cluster Namespace for a unified multiple file system directory structure
- Intelligent Tiered Storage across multiple, best in class storage tiers with policy based data migration and caching
- Easy-to-use management interfaces, including GUI based HTTP or HTTPS and CLI with Telnet or Serial, along with full scripting capability
- Virtualized environment with easy soft or hard user quota management

Flexibility

- The Titan platform delivers the highest performance and scalability available through a hardware accelerated architecture
- BlueArc's Mercury platform features a hybrid-core architecture leveraging CPU's and FPGA's to separate data movement and management
- All platforms leverage the SiliconFS File System and are available with all software features

storage such as tape for long term retention. This is ideal for customers who would like to consolidate multiple applications under a common storage system.

In environments characterized by large, dynamic unstructured data sets, administrators often have trouble predicting when a spike in demand will occur for a particular file. BlueArc’s Dynamic Read Caching instantly copies files to a high performance storage tier for use across physical or virtual servers. It is triggered by accessing a file from a slower tier of storage. While the file is being delivered to the requester, a background copy is made to a high-performance cache tier, ensuring that subsequent accesses will be delivered at maximum speed. This aggregates bandwidth and faster response time for read intensive applications to prevent a quality of service issue.

Data Protection

In addition to the hardware based protection built into BlueArc’s architecture such as redundant components and RAID, BlueArc provides a comprehensive suite of Data Protection Information Services. At a high level these include: active/active local, campus and extended clustering for high availability, instant file system recovery from snapshots, multiple checkpoints for file system rollback, synchronous and asynchronous replication, and integrated anti-virus and backup. These numerous protection methodologies together protect against all threat profiles to include logical, physical and site outages.

Clustering of up to 8 active/active nodes increases system availability by shortening planned and un-planned recovery times. Also, rolling cluster upgrades allow for each cluster in a node to perform sequential, minor firmware updates without disruption or downtime.

In support, BlueArc’s snapshot functionality creates a cumulative history of data without duplication, using references to create different views of the file system. Administrators can create an automated schedule that can be integrated into data migration, replication and backup policies. Also, a high degree of recovery point granularity is maintained with up to 1,024 snapshots per volume available.

Synchronous and asynchronous replication provides the highest level of protection against threats to the application, system, and data center. BlueArc’s multi-stream replication features allow administrators to create one or more identical copies of data while keeping the source and targets synchronized.

Service and Support

BlueArc offers three levels of Hardware Service Plans—Standard, Premium, and Premium Plus—along with local spare parts depots that provide the required availability and response times using each customer’s unique in-house capability. Software support, along with

BlueArc Titan Family Overview

SPECIFICATION	MERCURY 50	MERCURY 100	TITAN 3100	TITAN 3200
Product Class	Lower Mid-range	Mid-range	High End	High End
Cluster Nodes	2	8	8	8
Max Storage Capacity	1 PB	2 PB	2 PB	4 PB
Max File System Size	256 TB	256 TB	256 TB	256 TB
NFS Throughput	700 MB/s	1100 MB/s	1200 MB/s	1900 MB/s
Performance (Ops/Sec)	60,000	100,000	100,000	200,000
Storage Options	All BlueArc storage array options are available with each platform			
Software / File Services	All software and file system options (NFS, CIFS, iSCSI) available			
HARDWARE SPECIFICATIONS				
Number of Slots	4-slot chassis – Titan only			
Chassis Backplane bandwidth	40Gbps non-blocking full duplex			
Power Supplies	Dual, load sharing, hot swappable power supplies			
Cooling	Hot-Swappable N+1 fan assembly			
Cluster Interfaces	2x10GbE Active/Active Ethernet XFP			
Height	EIA 4U (7”) – Titan, 3U (5.1”) - Mercury			
Width	IEC Rack Compliant (19”)			
Depth	25” Titan, 27” Mercury			
Weight	75 Pounds Titan, 55 Pounds Mercury			
MTBF	500,000 hours per Titan			
Thermal Rating	1433 BTU/h (Typical per Titan), 853 BTU/h (Typical per Mercury)			
Power Rating	450W max Titan, 310W max Mercury			
AC Rating	110VAC: 4.1A max Titan, 2.8A max Mercury 230VAC: 2.0A max Titan, 1.4A max Mercury			
Network Interface	1GbE/10GbE, Link Aggregation, Jumbo Frame, VLAN Tagging			
Data Interfaces	SFP, XFP, 2048 IP addresses per BlueArc			
Storage Interfaces	Fibre Channel, SFP			
Number of Ports	Four or Eight FC ports, 2 or 4 Gbps switched or PTP			
Supported Disk systems	RC16TB Dual H/W FC Controller 16 Drive/3U FC or SATA RC16SA Dual H/W FC Controller 16 Drive/3U SATA RC12: Dual H/W FC Controller 12 Drive/2U SAS or Nearline SAS SA-48 Dual H/W FC Controller 48 Drive/4U SATA Dense HDS WMS 100, AMS 200, 500, 1000, 2100, 2300, 2500 HDS USP: USP/NSC, USP-V, USP-VM DataDirectNetworks (DDN) S2A9900, 6620 Texas Memory Systems (TMS) RAMSAN			
Protocols Supported	CIFS v1/v2, NFS v2/v3/v4, UDP, TCP/IP, FTP, iSCSI, NDMP v2/v3/v4			
Management Protocols	HTTP, SSL, SSH, SNMP v1/v2, NIS, DNS, WINS, NTP, NIS, AD, LDAP, Email Alerts			
Standard Warranty	3 years Hardware, 90 day software			
Compliance	RoHS6, UL, FCC Part 15 Subpart B, class A			

7x24 telephone support, can be purchased separately or together with hardware support for minor maintenance or major enhancements. Extended support plans may be purchased for better value in yearly increments. BlueArc also offers Professional Services such as Network Assessment Service and Storage Assessment Service, along with Data Migration and custom requirements, and has Education Services with hands-on and classroom instruction to ensure quick and successful BlueArc system deployment. Classes are taught at either the customer’s facility or BlueArc Headquarters in San Jose, CA. All of our services are to ensure a quick and successful deployment of BlueArc technology.

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