



**HIGHLIGHTS**

- **Increased Storage Efficiency:** File level cloning reduces duplication and cuts storage costs
- **Clone without limits:** 256TB file systems allow 16 times more space compared to traditional NAS systems
- **Speed of Provisioning:** JetClone allows VMware administrators to rapidly provision storage for new VMs
- **Ease of Use:** File clones can be created from a vCenter-based GUI or CLI
- **Full performance:** Clone performance comparable with standard file read/write performance
- **Accelerated Cloning:** Cascading Clones allow clones to be used as the source for new file clones
- **Flexibility:** Deep Copy allows a clone that has diverged significantly from its snapshot to be broken out into an independent file

## BlueArc® JetClone™

Clone Rapidly at Scale and Reduce Costs with, Flexible, Space-Efficient, Writeable Clones

### Virtual Servers benefit from Virtual Storage or Cloning

A powerful feature of VMware vSphere is its ability to quickly create new, complete servers with the click of a button. Server provisioning tasks previously measured in days are completed in minutes by creating virtual machines from master virtual server templates. However, if each of these newly created virtual machines required primary storage this could quickly become the bottleneck to new server creation. Cloning technology solves this storage bottleneck by using virtual instead of physical storage.

A large amount of redundancy exists between virtual machines with common operating systems and applications, typical in a large-scale virtualized environment. Using cloning, common elements can be shared by all the virtual machines, with pointers to the corresponding elements in an original disk image. Each clone acts as a transparent virtual copy of the original and requires no additional storage space at the time of creation. Physical storage is allocated to the original disk image and to elements that are different between the virtual machines. Cloned images are treated by virtual machines as if they were physical storage which can be modified. Modifications specific to a virtual machine, such as file writes, are tracked separately without making changes to the underlying original image.

### Almost Unlimited Virtual Storage for Virtual Servers with BlueArc JetClone

For maximum savings and performance, BlueArc JetClone software performs cloning at the file level. Using BlueArc JetClone, multiple copies or clones of single files are made by taking snapshots of that file and saving subsequent differences separately. By referring back to the original file for most of the data, JetClone avoids making multiple copies of the common elements of the file. The file level granularity of BlueArc JetClone is ideally suited to virtual environments which uses a file structure called VMDK for data storage, and is a valuable feature for VMware customers wishing to deploy 100's of machines with nearly identical OS images. Clones can be used in place of the original for test and development, multiple simulations against large data sets and other essential enterprise operations. VMware administrators are able to quickly and easily deploy new virtual machines reducing time to market while benefiting from the tremendous savings in physical storage space.

The number of VM clones that can be created is almost unlimited because BlueArc's 256 Terabyte file system provides 16 times more space for clones and associated data compared to traditional NAS systems. This is especially important for VDI applications and large scale production environments. The ability to rapidly deploy 100's and 1000's of VMs in a single file system maximizes cost savings due to greater simplicity, ease of management, and reduced infrastructure.

**Increase Operational Efficiency:**

Using JetClone, entire development and production environments can be deployed in a matter of minutes with little incremental storage costs. This significantly increases productivity and operational efficiencies.

**Lower Total Ownership Costs**

Since Cloning does not involve copying of physical data, new applications and machines can be deployed in minutes. "Master images" of commonly used systems can be created and JetClone can be used to scale to many virtual instances without copying or moving physical data. Many virtual machines may be created and deployed at very little incremental cost and insignificant incremental physical storage.

Since JetClone creates virtual images, they do not require additional data center space, power and cooling, which results in lower infrastructure costs. Provisioning and management of these virtual images is easily done from a single console increasing productivity.

**Accelerated, Optimized VM Cloning with JetClone**

JetClone allows IT administrators to maintain maximum performance and storage efficiency by eliminating the creation of duplicate data. The fastest deduplication technology in the world cannot be any faster than not creating duplicate data in the first place.

BlueArc JetClone can be managed in VMware vSphere using the vCenter plug-in, BlueArc JetCenter. VMware administrators can quickly and easily provision new VMs from existing NFS file system capacity. The creation and management of clones takes place on the BlueArc server, ensuring that the vSphere server's computing capacity remains fully dedicated to its VMs. Clones can also be created and managed from the user filesystem view in the command line.

**Cascading Clones**

Clones can be used as the source of new clones. For example, an IT administrator can take a 'gold' template of a Windows server; clone it to create the foundation for several application-specific masters such as an Exchange server or an SQL server. These masters can then be cloned again and deployed as live virtual machines when multiple, say Exchange, servers are required.

**Deep Copy**

Deep Copy is a standard copy that allows a clone that has diverged significantly from its original snapshot to be broken out into an independent file if the user desires. Deep copy also allows any outlying file clone snapshots to be deleted from the filesystem as a space saving measure.

**Full Performance**

JetClone maintains full Read / Write performance. Auto-inquiry and auto-response for NFS and CIFS protocols are fully supported.

**Clone without Limits**

The number of file clones that can be created in a BlueArc 256 TB filesystem is almost unlimited. The benefits of cloning are now available for large scale VMware environments, with significant space savings for both virtual server and virtual desktop environments which share nearly identical OS images.

FEATURES	
Space Efficient	Stores core structures and user data as objects, rather than files.
Fast	Object-based replication improves full replication performance 2-3 x and incremental replication 26x compared to file-based replication. Benchmarked at speeds of 600-900MB/s on high speed networks.
Flexible	Enhanced tools automate system failover and failback
Cascading Clones	Use the DR system as archive by storing snapshots for longer periods on the target system than source
Deep Copy	Source can be replicated on multiple targets for maximum safety
Full Performance	CIFS/NFS Access Points and Quotas are maintained; both CLI and GUI options are available for management
Unlimited	Number of clones unlimited as long as sufficient disk space exists to accommodate new data as it is created
Files and iSCSI volumes	File clones can be created for both standard files and iSCSI volumes, with iSCSI support targeted largely towards supporting Microsoft application environments.
SYSTEM REQUIREMENTS	
BlueArc Software	BlueArc System Software 8.0 or later
Network Protocol	NFSv3, NFSv4
VMware Applications	VMware vCenter Server and Client
File System	WFS-2 for Object and File Replication WFS-1 for File replication
OPTIONAL LICENSED FEATURES	
BlueArc JetCenter	To simplify data management and protection with VMware vCenter
BlueArc JetMirror	Enables high-speed object-based replication for disaster recovery



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