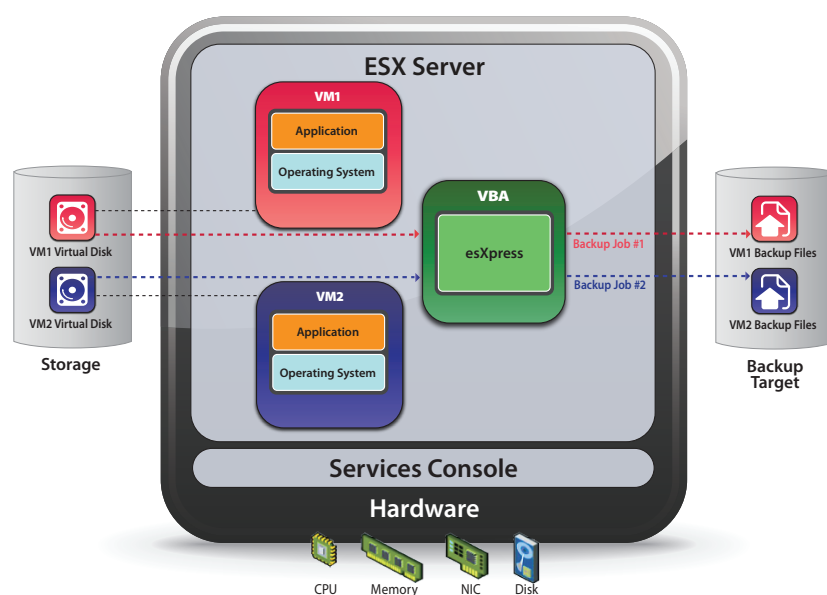


PHD Virtual Technologies Software is the world's first provider of high-availability virtual appliances for protecting VMware virtual infrastructures and data. Our esXpress product has revolutionized data protection for virtual environments by using the virtual environment itself to back up more data in less time at lower cost. esXpress has pioneered the use of "virtual backup appliances" (VBAs) – small virtual machines – to perform autonomous, fault-tolerant backup and restoration of virtual environments. esXpress scales across an enterprise's entire virtual infrastructure with no additional hardware or software required, and minimal impact on VM server, console or network performance. This unique approach, combined with an affordable, scalable per-host pricing plan, has earned esXpress over 1200 customers, 200 channel partners, and a recent VM World 2008 Gold Award for Data Protection.



The REAL Challenge of Backing Up VIRTUAL Infrastructures

For all the benefits virtualization has brought to enterprise IT infrastructures, it has also created one great challenge: how to effectively back up enterprise-wide virtual data without adding time, complexity and hardware – the very costs that virtualization was supposed to reduce?

Changing the Backup Mindset

esXpress radically alters the notion of how to protect data in virtual infrastructures: we use the virtual infrastructure to back itself up! esXpress uses virtual backup appliances (VBAs) – small virtual machines – that can be automatically deployed on an ESX

server to autonomously conduct hot full or "virtual full" backups of all your Virtual Machines. esXpress VBAs operate outside of the ESX console, leveraging a virtual appliance architecture and our own innovative disk throttling so backups can be run during business hours with no impact on VM performance on the ESX server. And esXpress backs up virtual disks at the "block level," delivering incremental backup that can be de-duplicated at the source before sending it to one or more local and/or remote storage targets simultaneously. The result? Backups are smaller and their intervals are shorter, storage capacity lasts longer, and everything performs better – VMs, hosts and networks.

One Simple Solution – Six Powerful Capabilities

PHD Software has been a pioneer in the use of VBAs for virtual backup. Today, esXpress is the only software-based data protection solution for virtual environments that installs seamlessly into your existing VMware and storage infrastructure to provide six critical data protection processes:

1. Hot Full and "Virtual Full" **Backup**
2. Source-based **Data De-Duplication**
3. 256-bit Encryption **Security**
4. Backup Data **Replication**
5. Full Disk and File-Level **Restoration**
6. Web-based, centralized **Management**

1. Backup

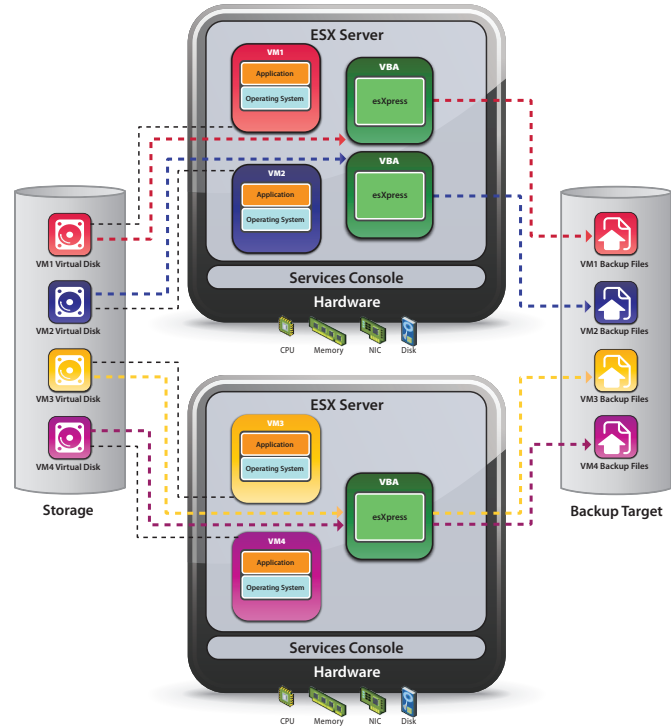
Traditionally, backup solutions for virtual infrastructures have either treated the virtual machine as a physical host, running a backup agent on each guest, or by running an agent on the console of the host itself. Both approaches are resource-inefficient, management-intensive and cost-prohibitive. From the ground up, esXpress was designed and developed to back up virtual infrastructures in a simple, smarter, more efficient, scalable and cost-effective manner.

Revolutionary VBA Architecture –

esXpress uses proprietary “VBAs” – small virtual machines that run on each ESX host - to back up all the virtual machines on that host.

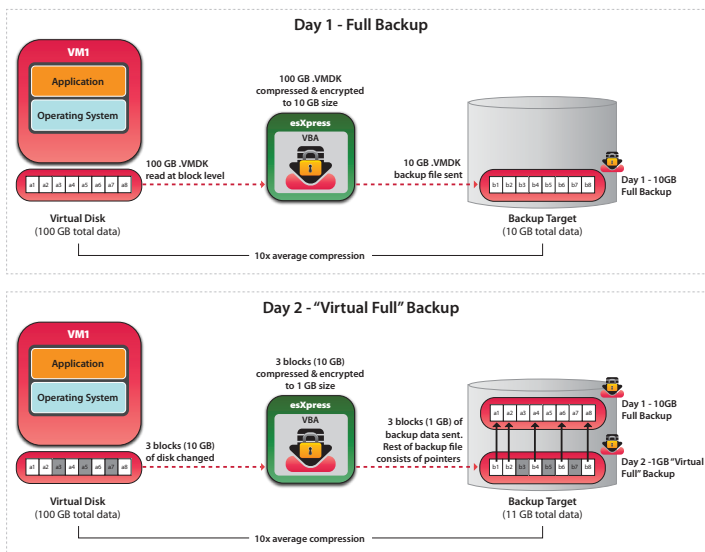
VBAs back up virtual disks, working sequentially until all VMs are backed up. Multiple VBAs can be utilized to simultaneously back up multiple virtual disks. This architecture can scale across multiple hosts.

esXpress VBAs operate as guests on the ESX server, starting up when needed and then shutting down. As a software-based solution, esXpress intelligently uses the virtual infrastructure to facilitate backups, integrating seamlessly into the existing VMware suite and your existing storage systems, and thus requiring no additional physical hardware.



Resource Throttling –

esXpress combines this truly unique VBA architecture with an innovative throttling capability that protects the resources from overconsumption during the backup, eliminating any resource contention between backups and your business-critical applications, and enabling you to back up when you want to – inside or outside your system’s peak operating hours.

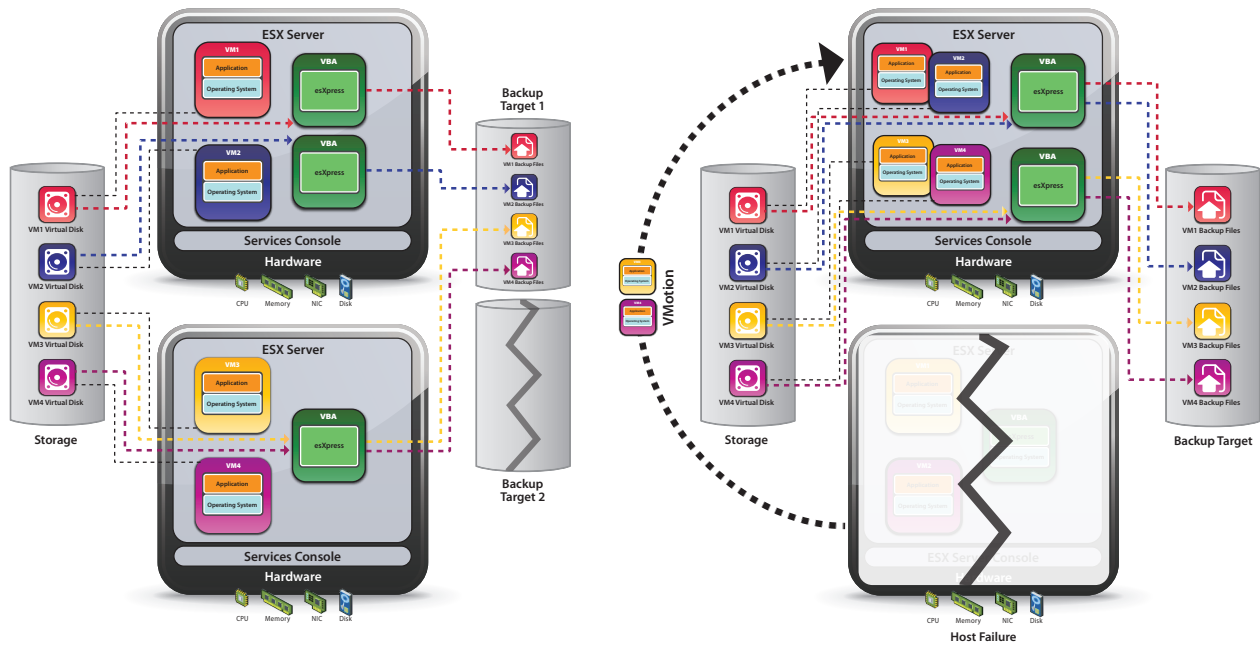


Block-Level Backup –

esXpress uses a revolutionary “block level” rather than file level process to back up data for each virtual machine, backing up only the individual blocks inside of a virtual disk (.vmdk file) that have changed since the previous backup. This facilitates both full and “virtual full” (delta) backups, and point-in-time recovery of all your virtual machines across your entire virtual infrastructure.

Storage Platform Independent –

esXpress backs up, compresses, encrypts and transports the backup data files to multiple storage platforms and targets simultaneously including local storage, iSCSI, Fibre Channel, CIFS, NFS, SSH and FTP. This enables you to scale a vendor/platform-agnostic backup solution quickly and efficiently regardless of what storage you have in place or where it’s located.

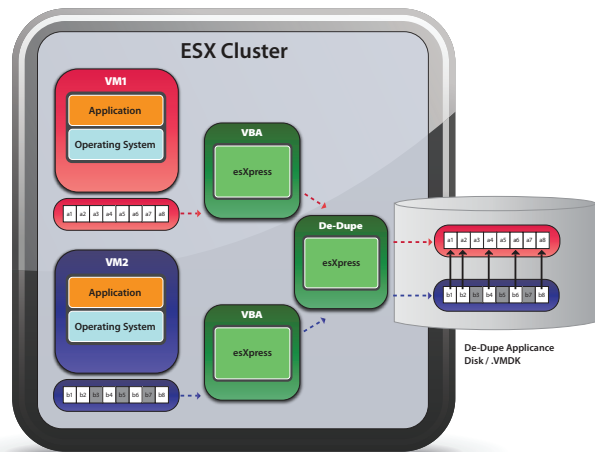


Fault-Tolerant Data Protection - esXpress is the only truly fault-tolerant virtual backup solution on the market today, providing critical protection for your virtual backups regardless of whether hosts or storage targets happen to fail. Because esXpress operates independently of hosts, if an ESX server fails, VBAs on other hosts in the cluster automatically identify and backup new VMs once they are VMotioned to the new host. If a backup target fails, esXpress automatically rolls to the assigned failover backup target.

2. Data De-Duplication

esXpress performs “source-based” de-duplication of backup data to dramatically reduce the size of backup files and the time required to generate and transport them to the target storage device. It also vastly improves restoration timeframes by enabling point-and-click restoration of individual files or a complete virtual disk with no fragmentation.

De-Duplication Appliance - To enable data de-duplication, esXpress deploys an additional virtual appliance on the ESX host. The esXpress De-Duplication Appliance uses a hash-mark indexing system for each block-level backup to eliminate duplicate blocks across VMs before they are transported to the backup target. To do this, the de-duplication appliance compares the blocks of data from two or more backed up virtual disk files from two or more VMs. It then identifies which blocks are unique and directs the VBAs responsible for backing up those VBAs to backup only the unique blocks. Only the unique blocks are transported to the backup target; the remaining blocks of the virtual disk file consist of simple pointers to similar shared blocks on the backup target.

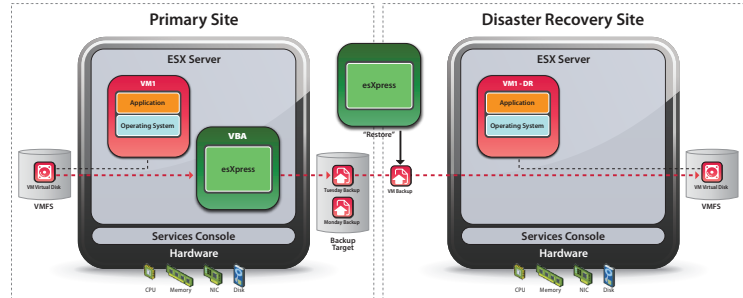


Unlike other de-duplication formats, esXpress de-duplication takes place across all VMs over their entire lifetimes – not just at single backup times! This further reduces backup file sizes and enables incredible economies of scale in backup storage. On average, esXpress data de-duplication reduces storage requirements across a virtual infrastructure by 25:1.

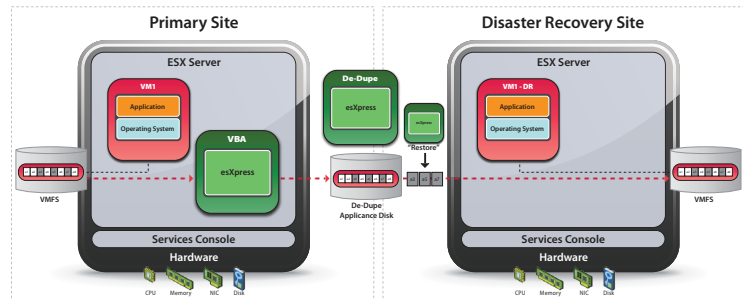
3. Replication

esXpress provides built-in replication capabilities, allowing for several different types of replication based on your disaster recovery or business continuity requirements. These include host-level complete replication of entire backup files, incremental replication of changed backup data only, and the ability to replicate an entire de-duplicated backup repository without hardware dependencies.

Simple Replication – Simple replication copies the entire backup virtual disk file from a primary VM to VM at a DR site at predetermined intervals. In this scenario, an esXpress service running in the server console on the DR host “pulls” a complete copy of the backup file for a VM from its primary backup repository and performs an automatic restore of that virtual disk file to its own VMFS, thus ensuring that its own VM is now an exact mirror of that in the primary facility. This form of replication also reduces network traffic, because the file pulled from the primary backup target and sent across the WAN is compressed and not fully expanded until it is auto-restored at the DR site.



Advanced Replication – With the addition of an esXpress Data De-Duplication Appliance, virtual servers can be replicated to a remote DR facility and kept up to date with incremental “block level” updates rather than full virtual disk file updates. Compared to Complete Replication, this approach makes more optimal use of network bandwidth and decreases restore times.



4. Restoration

esXpress provides a unique executable backup file format that allows you to restore an entire disk at the click of a button – anywhere, anytime, and without the need for a license of the backup management application. And because esXpress restores data at the block level, you can restore single files without having to go through time-consuming virtual disk mounting procedures.

Once the backup files are created and stored, esXpress provides a unique application-independent process to restore your backups for use. Each backup is an actual executable file which can be used to restore any backed up virtual disk to any destination whether or not you have access to the esXpress management application or an up-to-date license. It’s your data, it’s your backup, and you can restore when and where you need to, thus ensuring rapid recovery in almost any business continuity scenario.

When restoring multiple VMs to a single VMFS, esXpress leverages its block-level restoration process to restore all VMs to their exact state, automatically pre-allocating disks, without fragmenting the restored files on the host disk. This speeds up recovery times and improves post-restoration performance.

esXpress can also provide file-level access inside the backup data, to enable the restoration of any file back to any VM, from any point in time, with a simple click via the esXpress management console. This eliminates the time required to restore and mount a virtual disk just to find and restore a single file.

When large-scale restorations are required, esXpress provides console-directed, point-and-click restoration for all of your managed backup files, enabling worry-free and error-free restoration of your entire virtual infrastructure from the management console.

5. Management

The esXpress console centralizes control of all hosts and deployed VBAs and enables simple setup, configuration, and backup, allowing you to proactively manage the backup process within your virtual infrastructure.

esXpress provides an intuitive management interface that can be accessed from any web browser, allowing your users to manage backups from anywhere at any time. The esXpress console centralizes the management of all deployed VBAs, providing an intuitive setup, configuration, backup, and restoration platform for your global virtual infrastructure. The esXpress console can also be integrated with your existing VMware Virtual Center to provide an intuitive and familiar interface, reducing user training and ramp-up time.

6. Security

Backing up your virtual data is important, but so is securing it. esXpress uses the most powerful commercially available encryption to secure your backup data and provide a critical building block for compliance initiatives.

esXpress VBAs use industry standard encryption or optional AES 256-bit encryption to secure your backups before sending them to a local storage target or transmitting them to a remote disaster recovery site. This allows you to confidently transport backups across the WAN or into the cloud, and ensures that your backup data cannot be compromised on or offsite, providing a critical building block for regulatory compliance and corporate security. esXpress also provides multiple levels of passwords on each archive and for file-level backups.