

Enhanced Protection and Manageability of Virtual Servers

Scalable Options for VMware Server and ESX Server

Companies relying on the benefits of virtualized environments to reduce cost and maximize operational efficiencies are often challenged by limited manageability, data protection and disaster recovery options.

Key Benefits

- ▶ Enables Consolidated Backup of Virtual Servers
- ▶ Enables hot backups of Virtual Machines
- ▶ Simplifies and expands data protection and recovery options
- ▶ Improves backup efficiency and reliability
- ▶ Facilitates implementation of tiered storage
- ▶ Increases application and data availability

Many organizations rely on VMware Server and ESX Server to extend their datacenter beyond the limitations of a physical infrastructure to a virtual environment. Virtualized environments help centralize systems, improve hardware utilization and maximize available resources. However, they also disrupt data management and limit options for data protection.

While VMware enables the use of traditional backup and recovery methods to protect VMware Server and ESX Server, CommVault helps consolidate virtual servers for improved data protection, increased availability and reliable disaster recovery.

The CommVault® Solution

CommVault Unified Data Management Enables Consolidation with Virtualized Servers

CommVault helps deploy virtual servers by enabling the replication of data and applications from physical to virtual servers. CommVault provides a single console from which to easily manage all aspects of data protection, archive management, recovery management and replication of physical and virtual servers. It also facilitates the implementation of tiered storage allowing administrators to easily migrate data to less expensive storage.

CommVault's Unified Data Management enables the ability to browse a virtual machine's backup sets and restore them to the source virtual machines as if the backups were created locally. This eliminates the administrator's burden of manually tracking the location of backup sets as they relate to specific virtual machines, and eases the transition from physical to virtual systems.

- ▶ Extend data protection options beyond traditional methods
- ▶ Recover to dissimilar hardware
- ▶ Easily move data from a virtual server into a backup server environment
- ▶ Leverage file level granularity across all platforms
- ▶ Assist in the transition to a new storage infrastructure

Consolidated Backup of VMware

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Reliable Disaster Recovery for VMware

CommVault enhances and extends VMware's disaster recovery benefits with unique capabilities that enable organizations to:

- ▶ Quickly recover data and applications
- ▶ Accelerate the process of rebuilding a backup environment

CommVault Galaxy® software simplifies and accelerates the process of rebuilding the backup environment and re-establishing the index database, so that actual data recovery can begin much quicker. With the backup environment re-established, CommVault's granular recovery capabilities allow restores of single objects, instead of entire application databases or volumes. The same granular recovery benefits apply to VMware virtual machine file system environments, and applications including Microsoft Exchange and SQL Server, Oracle, Lotus Notes, GroupWise and SharePoint Portal Server.

Replication of Virtual Data for Simplified Migration and Management

CommVault Continuous Data Replicator delivers data replication into Virtual Machine environments. CDR provides continuous, real time capture and wide area replication of Windows data written to disk. CDR operates on Windows host-based environments and is fully supported on Windows virtual machines hosted on ESX Server or VMware Server systems. When deploying a virtual environment, CDR helps migrate and centralize Windows data from physical to virtual machines. CDR offers the ability to continuously replicate data from physical to virtual (P:V), virtual to virtual (V:V), or virtual to physical (V:P) for centralized protection and disaster recovery preparedness.

Backup Methods and Options for Protecting VMware Virtual Servers

CommVault supports VMware virtual machines and enables several backup methods for protecting file system, data and applications within VMware virtual environments.

Backup from a Virtual Machine Using Virtual Disk Files

- ▶ Leverage application awareness
- ▶ Preserve scheduling, storage reporting and compliance per original client view
- ▶ Does not require scripting
- ▶ Easily manage and share dissimilar hardware

CommVault can treat virtual machines as "real" machines. This method is best suited for protecting and recovering an entire virtual machine, including its configuration, operating system and application data. Galaxy iDataAgent(s) installed on virtual machines enable data to be backed up directly from virtual machines just as if they were separate physical servers. By combining real system support with virtual disk file support, Galaxy makes it easy to recover on dissimilar hardware.

Backup from the ESX Server Service Console Using ESX Image Files

- ▶ Leverage standard command line utilities or snapshots to perform full image backup
- ▶ Reduce backup time
- ▶ No SAN required

For installations that do not use a SAN, and other environments where VMware Consolidated Backup will not be used, it is still possible to perform full image backups from the Service Console, with appropriate scripts to utilize the VMware command line interface. This alternate method of Full Image backup using VMware Consolidated Backup snapshot directly backs up the snapshot of the Virtual Machine's VMFS disk image on the datastore. Total backup time is greatly reduced as no new image file set is created, and no additional disk space is needed except what is required to maintain the snapshot file.

Backup from a VCB Proxy Server on a SAN Using VMware Consolidated Backup

- ▶ Extend data protection and enhance disaster recovery
- ▶ Eliminate LAN traffic
- ▶ Preserve scheduling, storage reporting and compliance per original client view

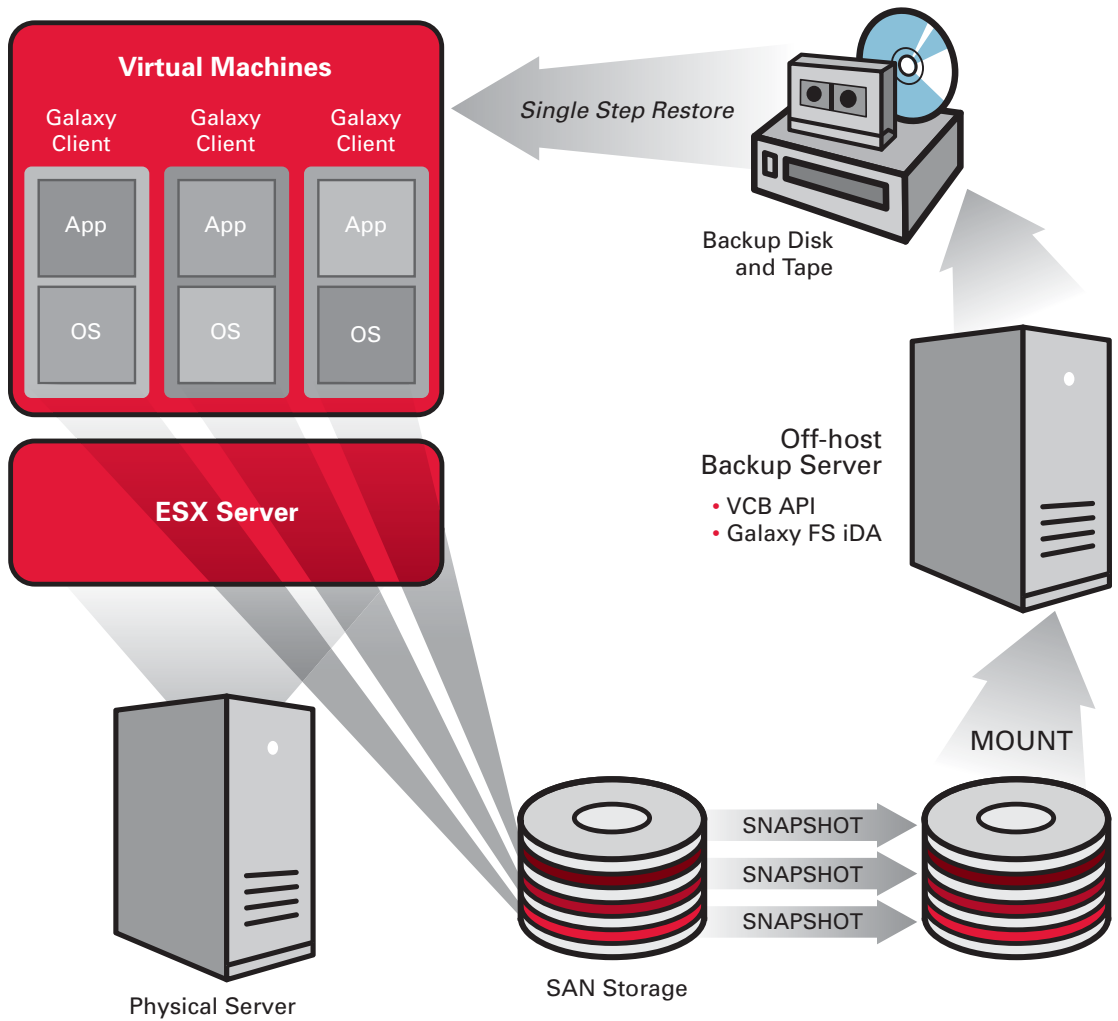
VMware Consolidated Backup (VCB) provides a set of drivers and scripts that enable LAN-free backup of Virtual Machines. A File backup can be

performed for Virtual Machines running Windows, while a Full Image backup can be performed for Virtual Machines running any operating system. These backups are performed from a VCB Proxy Server running Microsoft Windows 2003. CommVault leverages Virtual Machine snapshots to facilitate the backup from the VCB Proxy Server directly on the SAN. This method is ideal for companies looking to eliminate LAN traffic through the use distributed SAN environments.

Leverage VCB snapshots to perform off-host backup of virtual machines

Perform file level, single step restore back to the source

Manage data protection, archiving, recovery and replication of physical and virtual from one console



Key Features and Benefits

Features

Benefits

Full, incremental, differential and synthetic full backup options

Enables most efficient data protection possible, and with appropriate use of storage media to ensure just as rapid recovery from synthetics as from full.

Configurable Auxiliary copies

Configure Auxiliary copies from inline, selective, synchronous, or cascading. This enables compliance with data protection and retention policies and ensures recovery due to data availability.

Granular backup job control and management

Fine tune operation. Control all jobs by queue, pre-emption, priority, on demand restart, and update interval. Suspend, resume or kill any job using the Job Controller Window at will.

Multi-streaming and multiplexing

Improves backup performance and helps meet shorter backup windows.

Round-robin load balancing of backup load

Perform faster backups in smaller operation windows by distributing backup loads among UNIX, Linux, NetWare and Windows Media Agents.

VMware Consolidated Backup framework

Easily offload backup from production or critical ESX servers while maintaining integration with existing backup schemes. Enables file or image backups.

Encapsulation of Virtual Machines into files

Create full system backups by backing up single files for archival or disaster recovery purposes.

Object-level recovery

Easy, fast recovery of file system, database and application data using a single data object.

Easy right-click selection among multiple file versions

See multiple versions of the same file, and easily select all, some, or one to recover the exact version that your business user requires. This can enable recovery of multiple versions of the same VMware virtual disk files, for selection from multiple point-in-time copies.

OnePass Restore volume-level recovery

Speeds recovery and reduces tape wearing by restoring all data using a single pass through the tape without needing to recover multiple versions of the same file like other backup offerings do.

Hardware independent of Virtual Machines

Allows for cost effective disaster recovery plans: last generation hardware may be used for disaster recovery instead of requiring identical hardware at primary and disaster recovery site.

Key Features and Benefits (continued)

Features

Benefits

Unified Architecture

Provides additional granularity that can be used to enhance protection and simplify management. It also reduces learning curve and increases reliability.

Distributed relational index

Eliminates issues typically associated with managing backup catalogs. Relational structure ensures high-speed performance. Built in redundancies ensure recoverability and eliminate the need for administrative management of the index.

Configurable Firewall Support

Depending on your needs and configuration, as few as two ports are required to backup through a firewall – saving money and resources.

Dynamic and static disk sharing

Increases ROI from expensive disk storage, by sharing access to disk with static and dynamic configurations.

Data aging

Saves disk space and reduces backup failures, by removing data that has aged past your immediate-term retention requirement. This can also be overridden for specific backup jobs that you need to retain.

Span disk mount points

Configurable to “spill and fill” or fill and spill”. This reduces problems with disk management by enabling Galaxy backup to work across multiple mount points and treat them as a single backup to disk device.

Disk space monitoring with configurable watermarks

Saves disk space and reduces backup failures, by monitoring available disk space, tracking disk usage for trend analysis and capacity planning and by triggering automatic alerts and pruning of data when watermarks are reached.

Mixed drive support in the same library

Avoid the need for expensive add-on or third party software to manage different types of tape drives in the same library.

Shared library management

Increase ROI by providing shared access to libraries from multiple backup servers, making it easier to deploy, manage, and maintain than other backup offerings.

Shared drive management

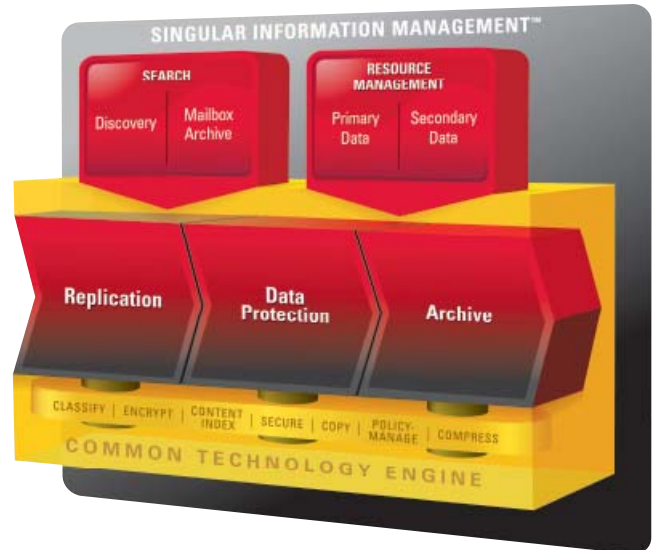
Append data to removable media to fully utilize capacity, rather than wasting space and increasing costs.

Unique Benefits of CommVault Software

The CommVault suite of software includes data archiving, data protection, replication & snapshot management, and data resource management. When used in combination, these capabilities provide unique and compelling benefits for managing data—all from a single console.

As additional CommVault capabilities are added, they are managed from the same console to reduce administrative time. They also leverage the same data management infrastructure including servers and storage devices, to reduce costs.

- ▶ One console from which to easily browse and share resources and perform disaster recovery
- ▶ One software solution, schedule of data movement and application index to maintain
- ▶ One admin team to manage



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