

## Continuous Data Protection (CDP) for VMware

Complete protection and continuous availability

*To continuously protect physical and virtual systems in local and remote sites—and prevent data loss due to site disasters, software errors, and hardware failures—FalconStor Continuous Data Protection (CDP) for VMware is the simplest, fastest, and most accurate all-around data protection solution for VMware environments.*

### Highlights

**Comprehensive protection for physical and virtual machines**

- > Fully integrated with VMware ESX Server
- > 24x7 backup and availability
- > Database-specific snapshot agents ensure 100% data integrity
- > Supports serverless backup to accelerate performance of third-party backup software

**Integration with VMware ESX Server enables continuous availability**

- > Restart system and services on virtual machine with up-to-date CDP mirror disk
- > Assign CDP mirror disk directly to virtual machine through Raw Disk Mapping (RDM). There is no need for VMDK conversion.
- > Utilize VMware Converter for rapid recovery to various server specifications
- > P2V recovery in just 10 minutes, with three simple steps

**Enhanced remote disaster recovery (DR)**

- > Directly replicates entire VMware system and data to remote DR site
- > Effectively utilizes hardware resources
- > Maximizes network efficiency and end-to-end security via unique MicroScan™ technology, data compression, and key-based encryption.

VMware virtualization technology is gaining popularity among businesses for its ability to consolidate numerous servers, minimize space utilization, and streamline management. However, virtual servers require the same level of data protection as physical ones do to minimize data loss and service downtime in the event of hardware or software failure. Furthermore, physical to virtual (P2V) conversion is typically a step-by-step process. Ensuring data consistency and operational continuity during this process, while securely protecting data in the “physical+virtual” environment, is critical when implementing a server virtualization solution.

To accommodate these needs, FalconStor CDP provides comprehensive data protection for VMware environments, providing continuous availability for physical and virtual machines and systems with 100% data integrity.

### Comprehensive functionality

The FalconStor CDP solution for VMware is a disk-based data protection solution that fully integrates with the VMware ESX Server to provide comprehensive backup and continuous availability in any kind of scenario, whether physical or virtual, system or data, local or remote. FalconStor CDP provides continuous and periodic protection for physical servers and virtual machine disks, incorporating features such as mirroring, snapshot, and database agents.

FalconStor DiskSafe™ runs on the application server to capture block-level changes made to a system or data disk without impacting application performance. It mirrors data to the backend CDP Server in real time and takes point-in-time snapshots. These snapshots enable companies to roll back to a desired point in time and rapidly recover data to avoid downtime due to a hardware crash, virus attack, database corruption, application crash, or human error.

Database-specific snapshot agents integrate with the CDP Server to protect database and email systems on the VMware ESX Server with 100% data integrity, which ensures transactional consistency during recovery and conversion.

### Continuous availability of virtual machine systems and data

FalconStor CDP leverages disk-based strategies to resolve the challenges associated with traditional once-a-day tape backup and tape-based recovery methods. Using cost-effective disks, FalconStor CDP eliminates data loss during the day and maximizes business continuity. Its space-efficient delta-snapshot service retains up to 255 snapshots per LUN with 100% transactional integrity. Snapshots can be mounted directly through Raw Disk Mapping (RDM) for backup, testing, or immediate recovery of files, folders, volumes, or entire virtual machines. In the event of data loss or a system crash, an administrator can follow a few simple steps to instantly recover the system and data.

## Eliminating backup windows and accelerating tape backup

FalconStor CDP provides HyperTrac™ functionality to automatically mount a snapshot from the CDP Server to a backup server in order to back up the data to a virtual tape library, such as FalconStor VirtualTape Library (VTL), or to physical tape. Backups can be done at any time. This eliminates the backup window and any impact on the virtual machine applications.

## Utilizing VMware for rapid P2V recovery

The challenge of using VMware to recover physical servers lies in minimizing its impact on daily operations while quickly and accurately converting the physical server to the virtual machine (P2V recovery) and maintaining compatibility for the file system and drivers. To overcome this challenge, FalconStor CDP protects the physical and virtual servers simultaneously, incorporating VMware as the recovery platform for the physical servers and

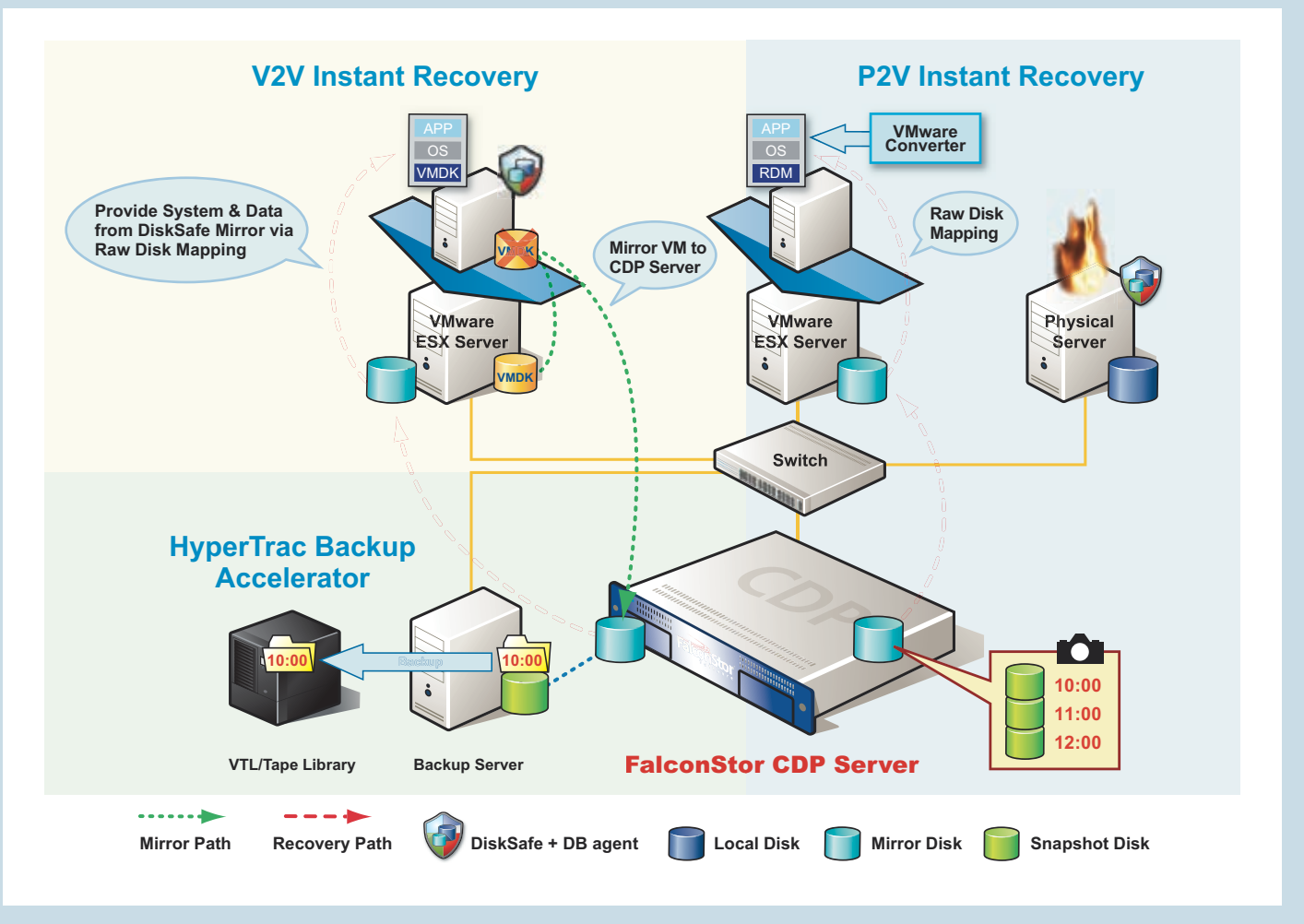
virtual machine. The mirrored disk on the CDP Server can be directly provided to the virtual machine via Fibre Channel (FC) or iSCSI. This eliminates the need for VMDK conversion, saving time and disk space. Using the VMware Converter to insert all of the drivers and VMware tools ensures compatibility of the virtual machine and hardware, and minimizes recovery time in the event of server failure.

In addition to disaster recovery, P2V makes it easier for businesses to validate the system availability. An administrator can use the P2V procedure to quickly create a testing environment on the virtual machine without affecting performance.

## Immediately extend local protection to the remote site

In addition to local site physical and virtual server protection, FalconStor CDP extends data protection to remote sites using powerful remote replication. Organizations can leverage an

### FalconStor CDP solution for VMware at local site

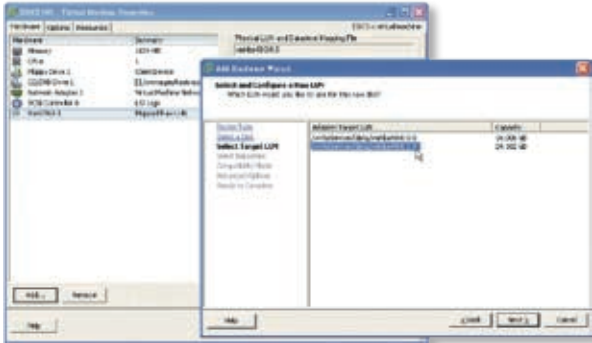


## Online P2V conversion in 10 minutes



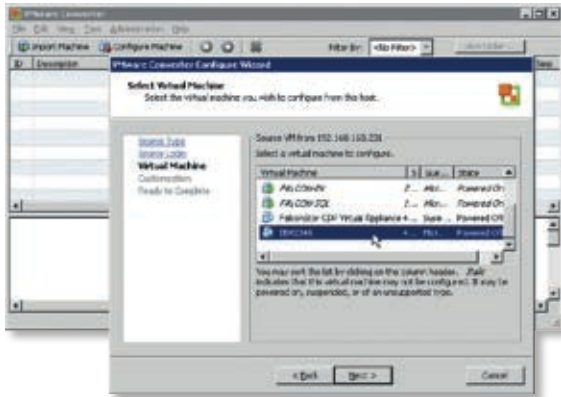
### Step 1 3 Minutes

Assign DiskSafe mirror disk or snapshot on the CDP Server directly to the VMware ESX Server via an iSCSI or FC network interface.



### Step 2 2 Minutes

Create a new virtual machine and assign the DiskSafe mirror disk to the virtual machine via RDM. This only takes 2 minutes, without requiring long VMDK conversion time or consuming VMware ESX Server disk space.



### Step 3 5 Minutes

Use VMware Converter to insert the VMware drivers and tool into the virtual machine. Boot the virtual machine on the VMware ESX Server instantly to restart services.

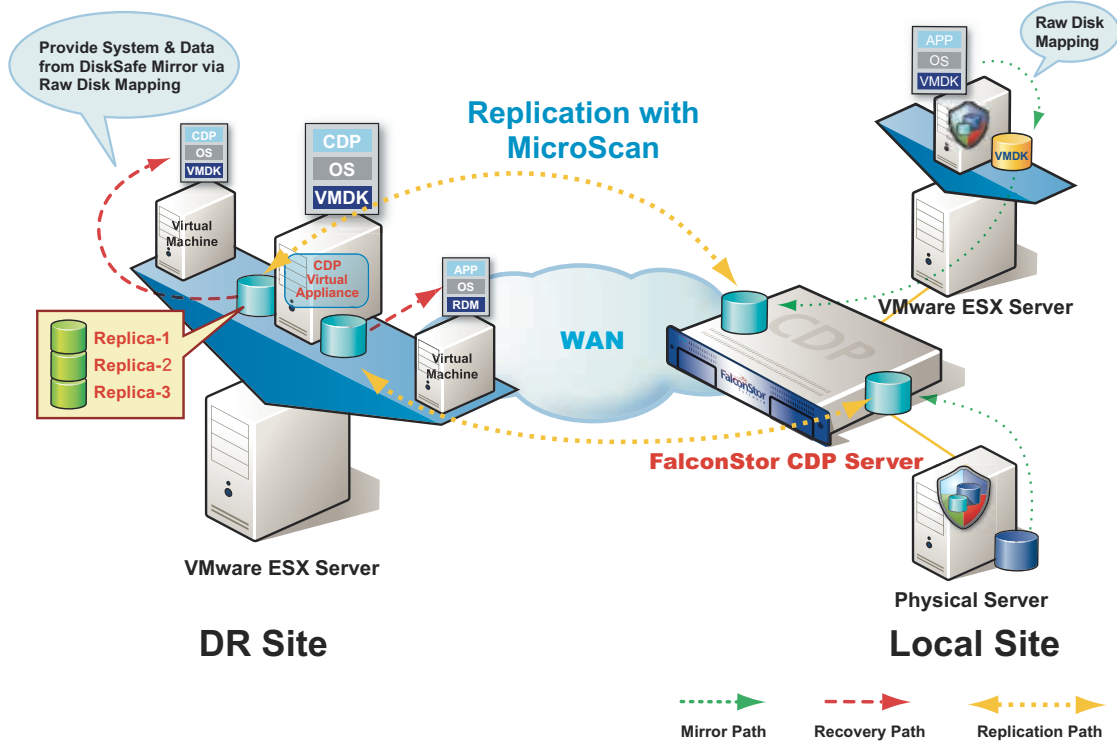
integrated FalconStor CDP Virtual Appliance to create a fully functional DR site and easily replicate all physical and virtual machine data to this location through IP networks.

If a local site experiences failure or downtime, it can recover its data from a remote site CDP server or a CDP Virtual Appliance in the VMware ESX Server to restart the services directly. Once the facilities at the local site are fixed, the remote replicated data can be written back to the local site to resume operations.

## Reduced bandwidth and cost

Network bandwidth between the local and the remote site can contribute significantly to overall remote backup/DR costs. Unique FalconStor MicroScan™ technology analyzes each data block on-the-fly, transmitting only changed sectors within the block. This dramatically reduces WAN bandwidth requirements for remote data replication by 70 to 90%, and minimizes overhead by allowing users to choose less expensive network bandwidth for remote site replication.

## FalconStor CDP solution for VMware at local and remote sites



### Remote site takes over instantaneously

When disasters occur at a local site, the system can be recovered and services can be resumed instantaneously from the remote site, either through the CDP server or CDP Virtual Appliance. No time-consuming file checking or VMDK conversion is needed.

### Background reverse recovery of local services

Once the local site is recovered, the remote replicas can be copied back to the CDP Server of the local site in the background (reverse recovery), while services are delivered continuously from the remote site. When reverse data synchronization and system recovery at the local site has finished, services can be resumed at an off-peak time, restoring system operations to their normal state before the disaster, as if it never occurred.

### About FalconStor

FalconStor Software, Inc. (NASDAQ: FALC) delivers proven, comprehensive data protection solutions that facilitate the continuous availability of business-critical data with speed, integrity, and simplicity. Our comprehensive solutions, based on the award-winning IPStor® virtualization platform, include the industry-leading VirtualTape Library (VTL) with Single Instance Repository (SIR) for de-duplication, Continuous Data Protection (CDP), Storage Virtualization, and Replication for disaster recovery and remote office protection. Our products are available from major OEMs and solution providers and are deployed by thousands of customers worldwide, from small businesses to Fortune 1000 enterprises.

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