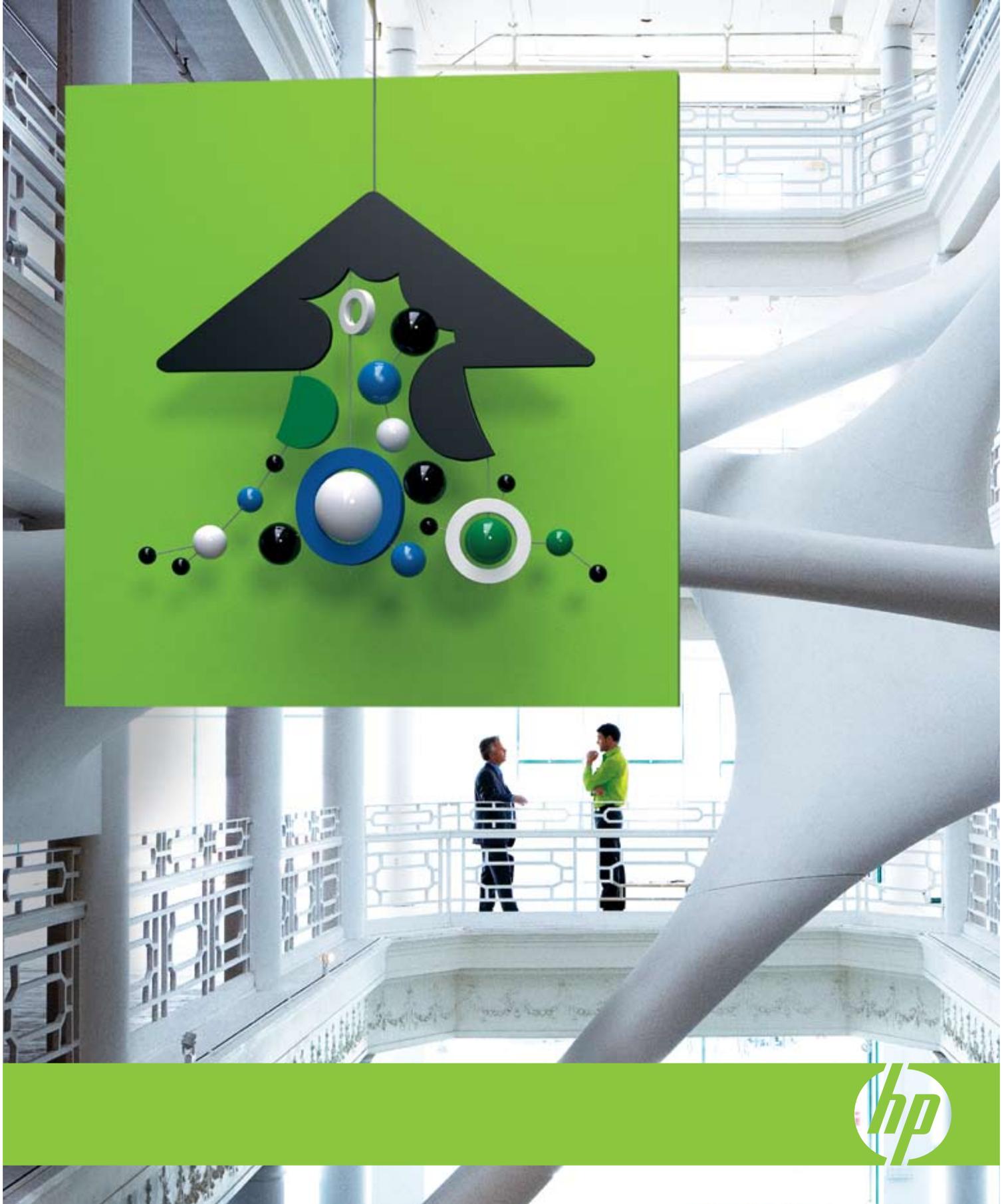
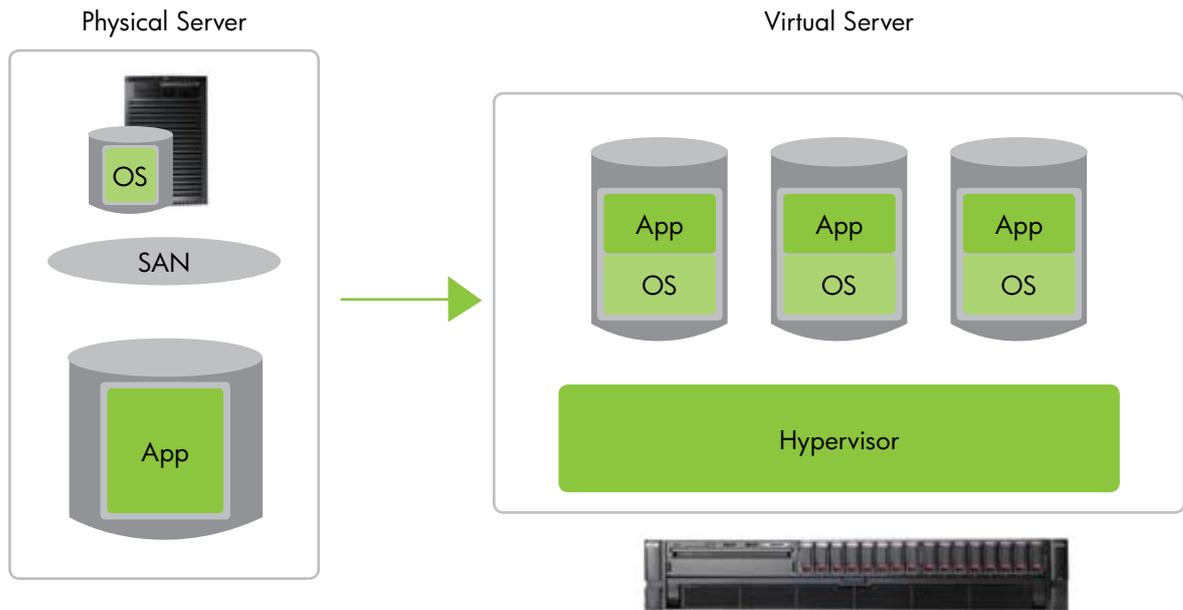


HP Data Protector software

Assuring Business Continuity in Virtualised Environments



Would not it be great if your virtual server environment actually translated to a better reality? One where you could enjoy the benefits of virtualisation without having to worry about issues associated with data protection.



- Dedicated Resources
- Under Utilised (< 15% CPU on average)

- Shared Resources
- Maximised Utilisation (consistent load)

Protecting virtual machines and their application data with frequent backups and minimal impact to the virtual infrastructure has become one of the biggest information management challenges for technology organisations to overcome.

Lose your fear of losing your data. HP Data Protector software can provide complete data protection for your virtualised environment, including support for the whole virtual machine and all of its application data. Let us explore how.

What is server virtualisation?

In the physical world, a server is dedicated to a specific workload. Servers are built with dedicated resources like central processing units (CPU), memory, and network connectivity in the form of network interface cards for Ethernet or host bus adaptors for Fibre Channel or other options.

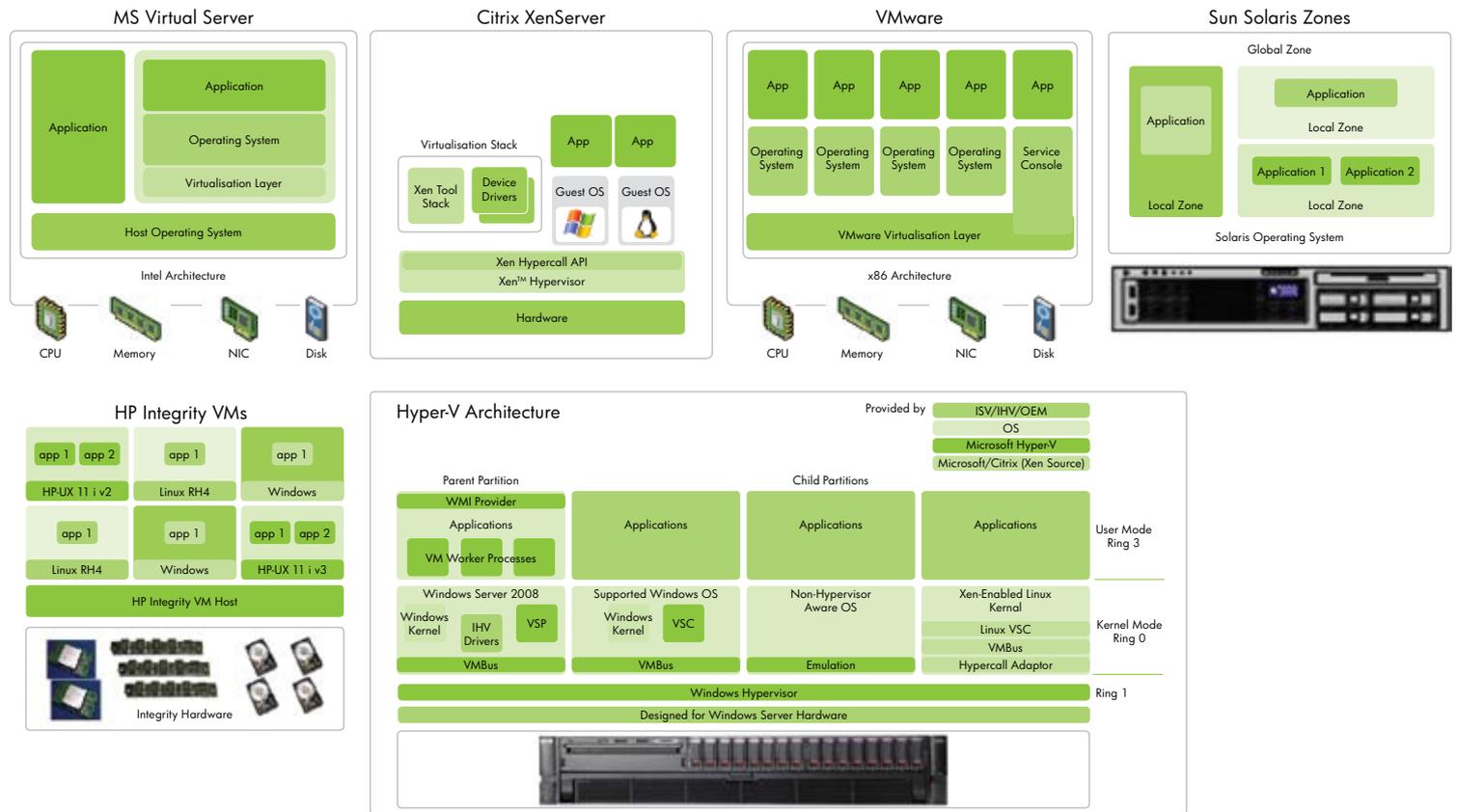
Physical servers become virtual platforms when the first piece of software installed on the bare metal is a hypervisor. The 'host' server is now ready to have 'guests' or virtual machines (VM) loaded. The hypervisor coordinates all communication between

the VM and the CPU, memory, disk and network. The hypervisor allows VMs running different operating systems, (that is Windows, Linux, UNIX) to efficiently share these resources concurrently.

Why are so many environments rapidly adopting virtualisation?

More and more customers are rapidly adopting virtualised server environments. Physical servers are, on average, using less than 15 per cent of the available processing power available to them. There is the occasional spike and most of the time the server moves along at a steady pace. This 'under utilisation' has only increased with the introduction of powerful dual-core, and quad-core CPUs, from chip manufacturers. Virtualisation is the answer. These new CPUs are virtualisation aware, embedding functions in the silicon to improve the performance of virtual machines. The virtualisation paradigm is based upon consistent and expected workloads for each VM on the host server. The hypervisor can then spread the workloads throughout these powerful CPUs.

Figure 2: HP Data Protector – Protecting all virtualised environments



Benefits to virtualised server environments include reduced costs and accelerated business growth as server utilisation is optimised in real time, increased data availability, reduced power consumption as a result of reduced server footprints, risk mitigation and quality improvement as IT is aligned with the business.

The rapid adoption of server virtualisation is accelerating the deployment of high-utilisation virtual machines, which is in turn increasing storage capacity, because the physical servers are now running multiple virtual machines. All of the virtual machines require their own storage capacity usage. This chain of events is forcing IT managers to rethink their backup methodologies.

What are the challenges that arise when protecting components in a virtualised environment?

Protecting data in a server virtualised environment adds another layer of challenge and complexity for the backup administrator, thus, leaving gaps in a total protection strategy. Protection is now required

at two levels, first the virtual machine (VM) and second, the application data residing inside the virtual machine.

The most widely used backup method employed in virtualised environments is placing an on-line backup agent inside the virtual machine. This is the standard backup method used in the physical world today. The on-line agent is 'application aware', communicating to the application that a backup or restore is occurring.

What happens when a backup is performed with an on-line agent placed inside a virtual machine? The on-line agent consumes resources just as it did in the physical world. CPU, memory and network interfaces are all called upon to support the backup process. The difference in a virtualised environment is that all virtual machines are impacted, not just the standalone server in the physical world. The paradigm of consistent workloads is broken, and the physical server hosting the VMs is also impacted.

Data Protector is the one solution that maintains multiple snapshots providing point-in-time recovery of the virtual machines at the click of a button.

VMware provides two options to protect virtual machines. The first option draws on the Snapshot Manager in the Virtual Infrastructure client (SM-VI). Snapshots created with SM-VI through the service console place a burden on the host system's resources impacting all virtual machines and the host itself. There is also an option to offload the backup process to a proxy server using VMware Consolidated Backup (VCB). This method helps solve resource and performance issues but, like SM-VI, is not 'application-aware' leaving application data in a crash-consistent state. There is no guarantee of recovering application data from a crash-consistent state. Leaving you to run time consuming data integrity tools or with total data loss.

You can deploy one of the previous methods to try to solve these problems, each with its advantages and disadvantages, but none solving the problem completely to attain optimal business continuity and data availability.

HP Data Protector optimises backup in a virtualised environment

With HP Data Protector, you benefit by having powerful software which manages both the physical and virtual environments. HP Data Protector software

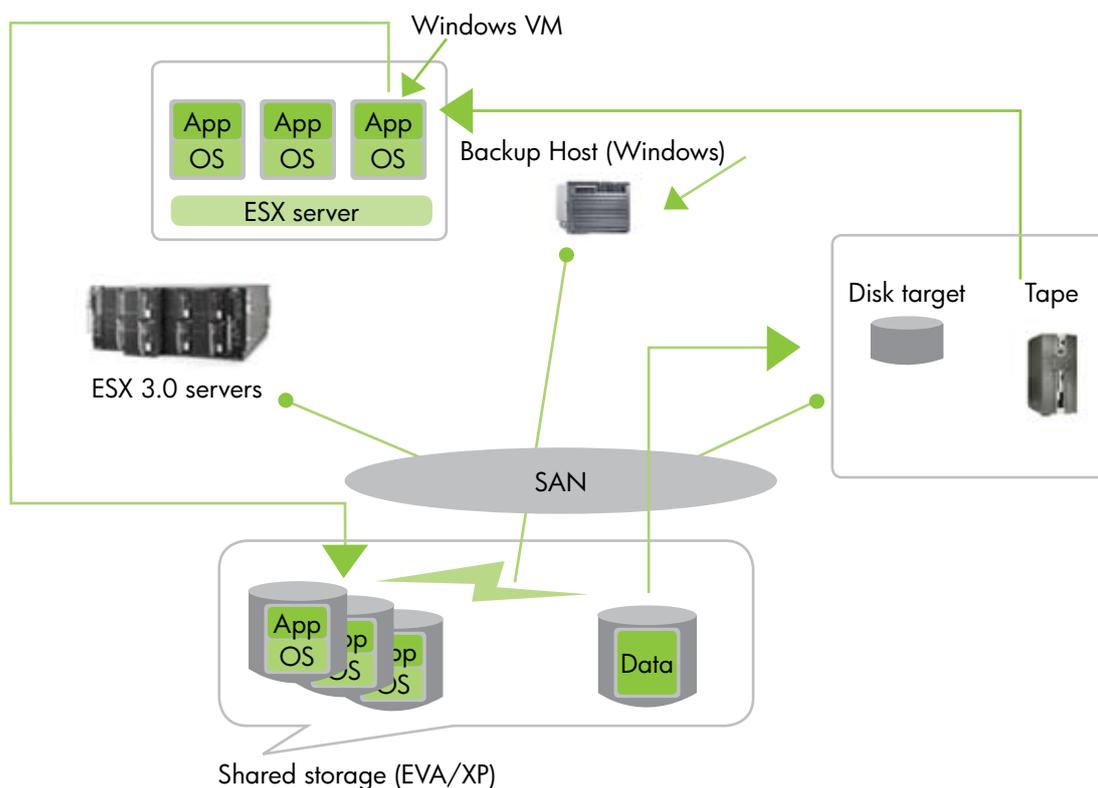
supports all leading virtualised environments, such as VMware, Microsoft Virtual Server 2005, Windows Server 2008 Hyper-V, Citrix XenServer, Sun Solaris Zones and HP Integrity VM – and in each case, with a similar variety of options and flexibility in protecting your data.

For Hyper-V and Citrix XenServer, you can load the Data Protector agents directly on the virtual machines for single object backup and recovery, leveraging the rich and seamless Data Protector application integrations – and providing the ability to restore those applications to virtually any point in time. And with other operating systems, such as Solaris Zones, HP Integrity VM and Microsoft Virtual Server 2005 (with VSS support), you now have the additional option of loading a Data Protector agent directly on the hosting OS – enabling SAN-based backups, and enabling robust disaster recovery by providing the capability to protect and restore an whole VM with crash-consistent, snapshot-based backups at the click of a button.

So, choose your hypervisor and Data Protector will be there to back you up!

For those virtualised operating systems where both the VM and the hosting operating system can be protected with Data Protector, the business continuity in your environment can be truly maximised.

Figure 3: Zero Downtime Backup and Instant Recovery of VMware



Advanced Protection for VMware Environments

HP Data Protector software provides complete, advanced, and easy to use protection for VMware environments. Using a fully integrated VMware application agent, you can initiate or schedule a snapshot-based, on-line backup of virtual machines at any time – and it can all be managed through the Data Protector user interface. The VMware application agent fully supports key VMware infrastructure components, such as VMotion and DRS. VMware Consolidated Backup (VCB) is also supported, so that the backup can be completely offloaded from the ESX server and Virtual Machines (VM) if desired. You can simply choose whether you would prefer to install the agent on the ESX server itself, or a VCB proxy server – providing maximum flexibility to meet the needs of every environment. Within this VMware ESX-based backup methodology, incremental snapshots are also supported, to further reduce the impact on both the ESX servers and the network.

Additionally, you have the option to combine the versatility of the VMware agent with the power of Data Protector's Zero Downtime Backup and Instant Recovery components. In such a configuration, the snapshots can first be taken to protect the VM itself, and then the application data is protected using Zero Downtime Backup/Instant Recovery (supported on any HP EVA or XP disk array). This combination is a unique solution in the industry, and provides the best of both worlds:

- Impact-free backup at all layers
- No load on the ESX servers or VMs
- Instantaneous recovery of all application data

HP Data Protector software with the Zero Downtime Backup (ZDB)/Instant Recovery (IR) component provides an additional option when backing up and restoring data in a virtualised environment. It provides the option to mix and match backup methods to suit your specific requirements, providing complete protection for your VMware environment while maintaining data integrity throughout. If recovery is required, it happens in seconds or minutes with HP Data Protector software, not hours or days.

- ZDB performs a zero impact backup of your application data without impacting other virtual machines or the physical server. ZDB offloads processing to the storage array which creates a consistent copy of the application data.
- ZDB is application aware, eliminating the requirement to run tools to check the database integrity or delete corrupted data.
- ZDB allows backups to be performed more frequently than once a night empowering backup administrators to choose the desired recovery time and recovery point objective to accommodate specific service level agreements. SLAs for mission-critical applications can now be met in virtual environments with ZDB/IR.
- ZDB coordinates the creation, rotation and deletion of data copies on the array through the Data Protector graphical user interface.
- Additionally, there is no need to buy a specialty product to protect your virtual environment – HP Data Protector does both.

Maintaining data integrity is imperative when restoring data. Integrity is important, whether a single file or a complete system is being restored. Instant Recovery (IR) allows HP Data Protector software to instantaneously recover data directly from the replicas on disk. With Instant Recovery, ZDB can now keep track of multiple rotating replicas on disk. IR provides administrators with great management and automation flexibility and makes consistent data available to virtual or physical machines in seconds or minutes, all from the Data Protector graphical user interface.

Data Protector in a Virtualised Environment

Features

- Snapshot-based backup of the virtual machine (VM) through integration with VMware Consolidated Backup (VCB)
- On-line backup of the application data on the VM
- Zero Downtime Backup (ZDB) extends on-line backup by using array-based replication to protect your application data maintaining data integrity throughout
- Instant Recovery further extends ZDB by allowing instant restore from the disk copy
- 30 – 70% lower costs than competitive solutions with a simple and flexible licensing model
- Solid reputation of HP and breadth of product coverage over 10 years with more than 20,000 customers and nearly half of the Global 500

Benefits

- Impact free, crash-consistent file and image-level protection of virtual machines
- Point in time protection of business-critical data without any impact to the applications (stays on-line while being backed up)
- Frequent backups with zero impact to the system
- Recover business-critical data in seconds/minutes instead of hours
- Lowest total cost of ownership (TCO) in enterprise backup
- Time tested and validated in the industry and customer base – product maturity

Conclusion

With HP Data Protector software, you benefit by having one powerful software solution which manages both your physical and virtual environments. You can choose your hypervisor and know that your data will be protected. In addition, HP Data Protector software provides you with multiple options to simplify the management of VMware backup and recovery. Finally, it provides unique and competitively advanced capabilities for HP storage customers with Zero Downtime backup and Instant Recovery. Frequent backups can be performed with no impact.

For more information

Interactive digital hub site:

<http://www.hp.com/go/imhub/dataprotector>

General Web page:

<http://www.hp.com/go/dataprotector> (Note: The latest HP Data Protector software support matrices can be found by clicking 'Support Matrices' from this page)

Direct link to Quickspecs with detailed product specifications, ordering information and more:

<http://www.hp.com/go/quickspecs>

To learn more, visit

www.hp.com/go/imhub/dataprotector

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