

## *Use virtualization to reduce cost, increase business continuity, and create an agile database infrastructure*

http://www.microsoft.com/sqlserver/2008/en/us/virtualization.aspx

Top Benefits

* Consolidate physical servers to reduce hardware, software, and operational costs
* Choose a high-availability strategy that meets your needs
* Reduce planned downtime
* Enable simpler and faster deployment
* Scale dynamically with the needs of the business

**CONSOLIDATE SERVERS**

Consolidate with Windows Server® 2008 R2 Hyper-V™ and Microsoft® SQL Server® 2008 R2 to significantly help reduce capital and operational costs.

## Reduce server hardware investment costs

Reduce the number of physical servers in your organization by using virtualization. Fewer servers means reduced costs when you need to refresh your hardware, especially if you standardize on a common server build to benefit from bulk pricing from your preferred hardware vendor.

Using Hyper-V, you can host multiple virtual database servers on the same physical computer while maintaining full isolation at the operating system level. This enables you to manage the performance, security, manageability, and business continuity of each virtual application server independently. It also gives you the flexibility to run multiple operating systems on the same hardware where required by specific applications.

## Reduce software costs

Use the Hyper-V virtualization platform built in to Windows Server 2008 R2—eliminating the need to purchase separate virtualization software. Then, reduce software costs even further by taking advantage of premium edition licensing that allows you to purchase only one SQL Server license per processor, no matter how many instances are installed in virtual machines (VMs) on the host server. You can even use the same license when converting a physical database server to a virtual database server, and when moving SQL Server instances from one virtual machine to another.

## Reduce operational costs

Drive down the cost of managing your data center by reducing the number of servers to be managed, creating consistency across the hardware and software in your data center, and taking advantage of the centralized management capabilities of SQL Server and Microsoft System Center Virtual Machine Manager.

By consolidating your database servers, you can realize significant savings through reduced power and cooling requirements. Also, by standardizing on new, more efficient hardware, you can gain efficiencies —helping you save money and reduce your organization’s impact on the environment. Standardizing and rationalizing the software in use in your data center can also reduce training costs and increase the workload capacity of your existing IT staff. The physical space saved by reducing the number of servers can result in further savings by eliminating the need to increase data center space as your applications grow.

**ENSURE BUSINESS CONTINUITY**

Help protect revenue by ensuring business continuity and minimizing planned and unplanned downtime for your applications.

## Choose the high-availability solution that meets your needs

Virtualization enables easy-to-implement, high-availability techniques such as the ability to recover quickly from a backup of a virtual hard disk (VHD) or to protect a server running Hyper-V by using host clustering. For even greater availability, you can use SQL Server always-on technologies to implement guest clustering in a virtualized database server to help protect from failure at the SQL Server instance level, and database mirroring to help ensure availability in the event of a shared disk failure.

## Simplify cluster management

Manage cluster storage easily and effectively with Windows Server 2008 R2 Cluster Shared Volumes, which enable you to store multiple VHDs on a single volume/LUN, improving the speed of Live Migration. With cluster shared volumes, you can simplify VHD management by using file path names to identify VHDs, and store multiple VHDs on the same volume and still have them fail over

separately. VHDs can reside on the same volume/LUN as other VHDs, so the total number of LUNs that you need to maintain is reduced.

## Reduce planned downtime

Increase database availability by using Live Migration to move virtual machines between host servers without incurring downtime. When a virtual machine is moved between servers, open sessions from connected users are maintained, and users do not experience any appreciable delays. This enables you to seamlessly move a database application from an overutilized server. In this way, you can avoid unplanned downtime if that server should fail due to capacity issues, and minimize planned outages by temporarily relocating a database so that you can perform maintenance on physical host servers without interrupting service. Hot-swap storage enables you to add storage to a VM without taking it offline, and guest clustering support in SQL Server 2008 R2 enables rollover patching, ensuring that downtime is minimized.

**INCREASE AGILITY**

Deploy, manage, and optimize database servers with the flexibility required to adapt to fast-changing business requirements.

## Enable simpler, faster deployment

Simplify server provisioning by building a library of virtual machine images that can be quickly deployed as new servers are required. You can further simplify this process by using the new SQL Server Sysprep tool in SQL Server 2008 R2 to reduce the time it takes to bring a new SQL Server instance into production. Support for data-tier applications makes it easy to quickly deploy databases and their server-level dependencies. Virtual Machine Manager enables easy migration to Hyper-V by supporting fast and reliable Physical-to-Virtual (P2V) and Virtual-to-Virtual (V2V) migrations. You can also reduce deployment times for physical computers by using the ability of Windows Server 2008 R2 to boot from a VHD, removing the need to install and configure the operating system. You can deploy .vhd images of Windows Server 2008 R2 to a physical computer by using Windows Deployment Services, and then boot the computer directly from the VHD.

## Scale dynamically with the needs of the business

Increase business capacity by scaling up host servers to create a greater density of virtual machines per physical host with support for up to 64 logical processors. Increase response time by taking advantage of support for memory in excess of 1 TB. Process your workloads more quickly with improved virtual machine performance, better memory management, and a database whose performance and scalability in virtual environments is comparable with that of the physical environment. Scale out applications by copying existing VMs and deploying to additional servers. Scale up quickly by moving VMs to new, more powerful host servers as application workload increases.

## Benefit from an integrated platform

Take advantage of a fully supported, integrated virtualization platform that makes it easy to manage physical and virtual servers consistently across your enterprise, and enables administrators to take advantage of existing Windows management skills.