

The ultimate platform for server virtualization

AMD Opteron™ processor-based servers with Microsoft® Windows Server® 2008 Hyper-V™

What is server virtualization?

Server virtualization, also known as hardware virtualization, enables multiple operating systems to run on a single physical machine in virtual machines. Server virtualization allows IT managers to use specific software to divide a single, physical server into multiple partitions — or virtual servers — each acting as its own individual server.

The end result to IT? A manageable way to build power-efficient, highly flexible, and scalable solution platforms without purchasing multiple physical machines. The benefit for the business? Help to maximize revenues, return on investments, and shareholder value.



The benefits of server virtualization.

From utilization to service levels to hardware costs, virtualization helps IT managers do more with less:

- **Increased server utilization.** Very few companies are able to physically accommodate an ever-expanding datacenter. The power and space required are just not economically feasible. Without virtualization, servers may utilize only five to 15 percent of their total potential; with virtualization, server utilization can increase dramatically.
- **Improved IT service levels.** With server virtualization, IT staff is able to quickly deploy multiple operating systems and applications to fewer servers. With less time spent procuring, racking, and stacking hardware, they can be free to focus on more business-critical initiatives.
- **Streamlined manageability and security.** For IT organizations, business needs are always changing. The ability to rapidly deploy new servers in an integrated physical and virtual IT management framework can help administrators lower operational costs and create more agile infrastructures, while enhancing their administrative productivity.
- **Decreased hardware costs.** Simply put, virtualization allows organizations to reduce their server count. More workloads can exist on fewer servers, helping to reduce new server demand and making more efficient use of existing hardware resources.
- **Extended useful lifespan of legacy systems.** As older-generation hardware becomes more difficult and costly to maintain, virtualization technology can be used to re-host legacy environments.
- **Reduced facility costs.** Reducing the total number of physical servers in the datacenter can also help IT departments reduce their overall power consumption, cooling costs, and space requirements.

It's a solution brought to life by AMD and Microsoft.

Through intense collaboration, AMD and Microsoft have taken virtualization to new heights. It begins with cooperation on product specifications to optimize at the system level. AMD provides simulation tools to enable development prior to hardware, as well as the necessary prototype hardware and support to enable Microsoft development. And finally, the two companies share methods and data related to functional, stress, and performance testing.

AMD Opteron™ processors and AMD-V™ technology.


AMD Opteron™ processors provide a solid foundation for the evolution to x64-based virtualization. Giving companies the ability to run both 32- and 64-bit virtual machines on the same server allows for maximized IT investments. The combined effects of Direct Connect Architecture, an integrated memory controller, HyperTransport™ technology, and AMD Virtualization™ (AMD-V™) technology help to make shared resource advantages of virtualization simpler to achieve — enabling you to support more users, more transactions, and more resource-intensive applications in a virtual environment.

AMD-V is designed to help virtualization software more efficiently run applications in separate, isolated environments — as well as hide the complexity of hardware infrastructure to help simplify management. Plus, it leverages Direct Connect Architecture to provide fast and efficient memory handling. Simply put, AMD Opteron processors are designed to help decrease platform power consumption, create a cooler datacenter, better leverage the existing power infrastructure, and utilize space more efficiently.

Microsoft® Windows Server® 2008 Hyper-V™.

With Microsoft® Windows Server® 2008 Hyper-V™, everything needed to support server virtualization is built right into the operating system as Windows Server 2008 Hyper-V, a next-generation, hypervisor-based server virtualization technology. A virtualization platform that provides exceptional flexibility, Hyper-V combines dynamic, reliable, and scalable platform capabilities. Add to this a single set of integrated





management tools with Microsoft System Center and the result is the ability to simultaneously manage both physical and virtual resources, creating an agile and dynamic datacenter.

Windows Server® 2008 Hyper-V™ is a cost-effective server virtualization technology that allows you to make full use of your server hardware investments. Providing a great solution for isolation and resource management, it helps increase hardware efficiency by enabling multiple workloads to co-exist on fewer servers. Offering total scripted control of a set of connected virtual machines, it is easy to deploy, manage, and use — for increased administrator productivity.

Why AMD and Microsoft work better together.

As a team, AMD Opteron™ processor-based servers and Windows Server 2008 Hyper-V are ideally suited to handle the rigors of memory-intensive virtualization software. They do it with:

- **Broad OS support.** Broad support for simultaneously running different types of operating systems including 32- and 64-bit systems across different server platforms, such as Windows, Linux®, and others. AMD and Microsoft have been collaborating since 2002 to evolve the x86 platform to 64-bit and multi-core technology, while maintaining 32-bit application compatibility.
- **Memory support.** AMD Opteron processors include an integrated memory controller that provides Windows Server 2008 Hyper-V with the fast and secure memory access needed to drive virtualized environments. Windows Server 2008 Hyper-V provides support for large memory allocation per virtual machine, making it an ideal platform for both enterprises and small to medium businesses alike.

- **Scalability.** AMD's Direct Connect Architecture has proven scalability that easily handles growing numbers of virtual machines, users, and transactions. With Windows Server 2008 Hyper-V support for multiple processors and cores at the host level and improved memory access within virtual machines, you can now vertically scale your virtualization environment to support a large number of virtual machines within a given host — and continue to leverage quick migration for scalability across multiple hosts.
- **Power efficiency.** The AMD Opteron processor is designed to provide high performance while helping conserve power. Windows Server 2008 Hyper-V fully supports AMD's power management tool — enhanced AMD PowerNow!™ technology — which can adjust power consumption of the processor according to usage, without hampering performance.
- **Hardware-enabled virtualization.** AMD Opteron processors provide AMD-V™, hardware-assisted virtualization technology which consists of hardware extensions to the x86 system architecture. Windows Server 2008 Hyper-V utilizes AMD-V to help eliminate much of the processor overhead normally associated with software-only virtualization solutions.

server *virtualization*

How can server virtualization meet your business needs?

From increasing OS portability to reducing server sprawl to freeing up IT for more business-critical efforts, server virtualization provides a myriad of business benefits. Here are four core scenarios that are enabled by Windows Server® 2008 Hyper-V™:

- **Server consolidation.** One the main benefits of server consolidation is lower TCO — not just from lowering hardware requirements, power and cooling costs, and management costs. Another benefit is infrastructure optimization — from asset utilization to the balancing of workloads across different resources. Additional benefits of server consolidation are improved flexibility of the overall environment and the ability to freely integrate 32- and 64-bit workloads in the same environment.
- **Business continuity and disaster recovery.** Natural disasters, malicious attacks, and even simple configuration problems like software conflicts can cripple services and applications until administrators resolve the problems and restore any backed up data. AMD's Enhanced Virus Protection* helps protect against certain viruses, worms, and other malicious attacks. Windows Server 2008 Hyper-V provides support for disaster recovery within IT environments and across datacenters using geographically dispersed clustering capabilities.
- **Test and development.** Using virtual machines, development staffs can create and test a wide variety of scenarios in a safe, self-contained environment that accurately approximates the operation of physical servers and clients. Windows Server 2008 Hyper-V helps maximize utilization of test hardware, contributing to reduced costs, improved lifecycle management, and test coverage. With extensive guest OS support and checkpoint features, Windows Server 2008 Hyper-V provides a great platform for your test and development environments.
- **Dynamic datacenter.** AMD Opteron™ processor-based servers and Windows Server 2008 Hyper-V, together with your existing system management solutions, provide self-managing features for dynamic systems and operational agility. With features like automated virtual machine reconfiguration, flexible resource control, and quick migration, you can create a dynamic IT environment that leverages virtualization not only to respond to problems, but also to anticipate increased demands.

From building power-efficient, highly flexible, and scalable solution platforms to helping maximize revenues, return on investments, and shareholder value, the benefits of server virtualization go beyond the IT department — impacting the enterprise as a whole.

Servers based on AMD Opteron processors and Microsoft Windows Server 2008 Hyper-V? They're just another example of how AMD and Microsoft work better together.



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*As part of a comprehensive security program, AMD strongly recommends enabling Enhanced Virus Protection (EVP) and using up-to-date third-party anti-virus software.