Innovative solutions for optimizing your IT infrastructure

IBM

Virtualization with IBM i operating system, PowerVM and Power Systems

Success can be simple

Today's on demand businesses rely on a variety of IT infrastructure technologies—from messaging systems to firewalls and file servers to database and Web application servers. The complete picture can be very complex and expensive. But it doesn't need to be—not any more.

To help simplify your IT infrastructure, IBM Power Systems servers with IBM PowerVM virtualization technologies, and the IBM i operating system (formerly known as i5/OS®) provide innovative technology to integrate mixed computing environments and applications and simplify IT infrastructures. These IT optimization offerings can help reduce IT complexity and total cost of ownership while maximizing computer resources usage, simplifying IT management and matching business needs with the right applications. The Power Systems family with PowerVM and IBM i offers an integrated design and an uncomplicated approach to help manage unpredictable growth. Integrating the operating systems, middleware, database, security and storage into one system means that your infrastructure should be flexible, scalable and easy to use. The agility of a Power Systems infrastructure can increase your capability to meet unexpected customer and market demands while simultaneously reducing your infrastructure management costs.

Reduce complexity and costs with innovation

IBM Power™ servers are based on 1 to 64 POWER6™ processor cores supporting virtualization and system management innovations. IBM PowerVM provides advanced virtualization technologies for small, mid-sized and large companies with almost any type of IT environment. An example is PowerVM dynamic logical partitioning, which enables a single Power server to run multiple operating systems simultaneously—including IBM i, AIX®, Linux®, as well as Microsoft® Windows Server®, Linux and VMware via integration with IBM System x™ or BladeCenter® platforms. Essentially, it offers businesses of any size true enterprise-level functionality in a business computer. This means fewer servers and associated staff so you can save money and reinvest in growing your business.

Maximize computer resources usage

The Power Systems family gives you the freedom to run a wide variety of business applications without the costs and complexity often associated with managing multiple physical servers. PowerVM can help eliminate underutilized servers because it is designed to pool resources and optimize their use across multiple application environments and operating systems. Through advanced dynamic logical partitioning (LPAR) capabilities, a single partition can act as a completely separate IBM i, Linux or AIX operating environment. PowerVM can automatically adjust pooled processor resources across multiple operating systems, borrowing processing power from idle partitions to handle high transaction volumes in other partitions.

With PowerVM on the Power Systems, you have both the power and flexibility to address multiple system requirements in a single machine. PowerVM Micro-Partitioning™ supports up to 10 dynamic logical partitions per processor core. So, depending upon the Power server, you can run up to 254 independent servers—each with its own processors and memory resources within a single physical Power server. Consolidating systems with PowerVM can help cut operational costs, improve availability, ease management and improve service levels, while allowing businesses to quickly deploy applications. PowerVM technology can even enhance your ability to simplify networks and centralize multiple business operations.

In addition, Power Systems running the IBM i operating system makes it easy for you to include powerful integrated System x or BladeCenter options to manage your Intel® processor-based servers. These flexible and cost-effective offerings deliver a tightly integrated and easily managed solution that helps provide an efficient alternative to running Windows® Server, Linux or VMware on multiple standalone servers.

Simplify management of IT resources

The Power Systems family with the IBM i operating system delivers an advanced storage architecture that can provide you with more flexibility than other UNIX®, Windows and Linux server environments. Typical server farm implementations have dedicated disk drives attached to every server, meaning that your server administrator must manage each server's capacity separately. With the Power Systems family and IBM i operating system, all disks can be managed as a single pool of RAID-5 or mirrored, protected storage, which helps simplify data administration and improve productivity by boosting storage utilization rates. One pool of disk drives can be managed by the IBM i operating system and space can be allocated to each of the multiple operating environments. One consolidated backup can greatly reduce the cost and effort required to

protect your valuable data stored in applications on a variety of servers. Through storage virtualization, the IBM i operating system can deliver excellent performance to multiple workloads, maximize the utilization of the storage resources and reduce the storage management costs typically associated with server farms. IBM i 6.1 (formerly known as i5/OS V6R1) can now provide storage for additional IBM i 6.1 partitions on POWER6 processor-based servers as well as AIX and Linux partitions.

Logical partitions and integrated System x and BladeCenter solutions can also use Virtual Ethernet technology on Power Systems. Over 4,000 individual virtual networks can be defined to provide fast, very secure connections among these multiple operating environments for effective application-to-application communications.

Additional devices such as tape, CD-ROM and DVD drives can be used by logical partitions and integrated System x or blade servers. This can help minimize the hardware requirements for deploying IBM i, AIX, Linux and Windows applications and maximize the utilization of these resources. In addition to sharing physical I/O resources, this integration enables you to extend your IBM i management skills and best practices into these additional operating environments.

Match business needs with the right applications
IBM Power Systems can help your business grow by simplifying the IT infrastructure needed to support today's diverse applications. In addition to running IBM i applications, Power servers can run AIX, Linux and Windows[1] applications.

AIX applications
AIX is an open, UNIX operating system that allows you to run the applications you want, on the hardware you want— IBM Power servers. AIX in combination with PowerVM provides you with new levels of flexibility and performance. AIX delivers high levels of security, integration, flexibility and reliability— essential for meeting the demands of today's information technology environments. AIX partitions support the powerful Live Partition Mobility capabilities of PowerVM, helping to eliminate planned downtime.

Through PowerVM LPAR technology, your business can now run AIX applications on the same system with IBM i and Linux applications. This capability takes advantage of the strengths of LPAR and the shared storage technologies of the IBM i operating system. AIX applications can complement the rich portfolio of IBM i applications to provide you with greater flexibility and application choice.

Linux applications
One of the most important developments in business computing in recent years is the arrival of Linux. Linux, an open source operating system that implements UNIX standards, is rapidly becoming the accepted standard for fundamental infrastructure applications like Web servers, firewalls, file servers and e-mail servers. Now, thanks to the powerful combination of the scalability, reliability and manageability of a Power server and the flexibility of Linux, you can take advantage of a new way to reduce the complexity of your IT infrastructure and expand your application environment—with the potential to greatly reduce cost.

Taking advantage of advanced PowerVM technologies, your business can consolidate multiple standalone infrastructure servers on up to 254 Linux partitions on a single Power server—automatically moving processors and dynamically adding storage resources between individual partitions to support your changing business demands. Linux partitions can also leverage IBM i operating system for its storage resources, making it easier and less expensive to create and manage Linux environments on your Power server.

Linux supports an array of open source solutions to run your infrastructure. In addition, IBM is working with leading Linux solution providers to expand the set of business applications and solutions available for the Linux operating system on Power Systems. PowerVM Lx86 extends this portfolio by supporting selected Linux on x86 applications within a Linux for Power environment. IBM works with the open source community, Red Hat, Inc. and Novell, Inc. to deliver Linux distributions for IBM's POWER™ processor-based servers.

Windows applications via integration with System x and BladeCenter
Integrated System x and BladeCenter solutions for Power Systems and the IBM i operating system can improve management and administration of a combined IBM i and Windows Server, Linux or VMware operating environment. An iSCSI Host Bus Adapter enables the integration of System x and BladeCenter to support Windows Server, Linux and VMware operating environments. Collectively, these offerings can give you the reliability, flexibility and scalability to support applications requiring x86 servers, while using the storage, networking and systems management features of the Power Systems family and IBM i operating system and easily integrating with IBM i applications and data.

When you consolidate and integrate multiple Intel processor-based servers through integrated System x or BladeCenter offerings, you can manage your diverse applications together in a single system environment and take advantage of flexible storage management, network integration and device sharing. Utilizing Virtual Ethernet networking between System x, BladeCenter and Power Systems can reduce the cost and complexity of maintaining performance and security in a network of multiple servers. Integrated System x and BladeCenter solutions mean that you don't have to forego other system benefits just to run Microsoft Exchange, SQL Server®, Citrix or other x86 applications that extend core business applications on the IBM i operating system.

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For more information

To learn more about the Power Systems family, contact your IBM representative, IBM Business Partner or visit the following Web site: **ibm.com**/systems/power

PowerVM™