IBM Power Systems

Business Partner Guidebook

Your Roadmap to Success with IBM Power Systems

Max Facts ™

eBook

Edited by Jim Hoskins

IBM Power Systems Business Partner Guidebook

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IBM Power Systems Business Partner Guidebook

Second Edition

Your Roadmap to Success with IBM Power Systems

Edited by Jim Hoskins

(version 2.0e)

Clear Horizon

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Notices

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Your Eight-Step Quick Start

Take these eight steps to "hit the ground running" as a new IBM Business Partner.

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site. If you have any questions, call PartnerWorld for help. (Follow the link in the "More on the Web" box to get the right phone number for your country.)

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> - Get plugged in to IBM product and program communications

4. Understand the Express Seller Program

Express Seller is designed to help IBM Business Partners accelerate sales of IBM products and services to small and mid-size businesses. IBM provides key offerings that meet your clients' business needs at competitive prices and provides extensive marketing support including "air cover" advertising and customizable materials to help you generate leads.

> **MORE ON THE WEB**
> - Express Seller Toolkit

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IBM maintains a search page that allows you to quickly find detailed product information from IBM announcement letters (one of these is released for every product IBM announces),

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> **MORE ON THE WEB**
>
> • Find detailed IBM product information quickly

6. Learn to Find Competitive Information

IBM consistently updates information about the competitors you will encounter and their products. Explore this valuable tool so you will be ready when you need it. You will need your user ID and password.

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>
> • Find competitive info

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IBM offers eligible Business Partners some "quick-learn training modules" under the name "Know Your IBM (KYI)," which can help you learn what you need to know about IBM offerings. You can earn points by completing these modules

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>
> • "Know Your IBM" training modules

and then redeem the points for merchandise at participating retailers. You can earn additional points for reporting sales through KYI.

KYI is more general training that will give you a "high-level" view of IBM offerings. The road maps provided by IBM will guide you to more-detailed training opportunities.

8. Make Your Training and Certification Plan

Certification is required for selling IBM Power Systems. IBM offers many opportunities to learn and to demonstrate your knowledge through certification. Now is a good time to make your plans.

Introduction

About This Guidebook

This MaxFacts™ interactive guidebook brings together—all in one place—the resources you need to be successful as an IBM Power Systems Business Partner. It contains information gathered and adapted with permission from multiple IBM and non-IBM sources. Also, there are embedded links to more-detailed information and news available on the Internet, so you always have the most current information at your fingertips. We are confident you will find this a useful reference tool.

As we are always working to better help you succeed, please forward any comments on or suggested improvements to this guidebook to info@maxpress.com.

Products May Vary from Country to Country

Keep in mind that the specific products and services offered by IBM sometimes vary from country to country. As such, you will need to get into the details of your own country's offerings by following the "More on the Web" links provided throughout this guidebook with your country selected in the upper area of the screen.

How to Use This MaxFacts™ Interactive Guidebook

This guidebook has been specially designed to be read on your computer screen using the free Adobe Acrobat Reader

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Links provided throughout this guidebook (anywhere you see a "More on the Web" box or embedded within some figures) will lead you to additional information related to the topic at hand resident on the Web. In this way, this guidebook is a "three-dimensional guide" providing you with information about the topics at the level of detail you choose. To follow a link, simply click on it and a Web browser window will appear on your screen with the requested information. If the link brings you to a password-protected area (e.g., on the IBM PartnerWorld or COMP Web sites), you will be prompted to enter your IBM-issued user ID and password before you are presented with information.

When you are finished exploring, just close or minimize the Web browser window and you will arrive back at the guidebook. You are encouraged to explore all links that interest you

to get the most out of this guidebook. You must have an active connection to the Internet to use the embedded links.

To navigate around within this guidebook, you can:

- Step forward or backward a page at a time using the standard Acrobat Reader navigation toolbar shown along the bottom of your screen.

- Click on the "Bookmark" links shown on the left side of your screen to go directly to that part of the guidebook.

- Click on the "Table of Contents" section and click on the links to go directly to that part of the guidebook.

- Search for keywords in the document using the Acrobat Reader "Find" function (found on the toolbar).

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1

Welcome to the Team

In this chapter, we cover some basics about working with IBM.

Why Team with IBM?

If you are seeking to truly differentiate yourself in the marketplace by extending your market reach with more profitable end-to-end solution offerings, IBM is uniquely positioned to help you make this happen. IBM provides you with an integrated portfolio of tower, rack-mount, and blade hardware offerings and channel programs that when coupled with our software, options, services, and storage expertise creates a channel partner that can take your business wherever you want it to go.

Innovation That Matters

By providing innovative technology that delivers flexibility and high performance, easy to administer programs, and flexible financing options, IBM has an unmatched understanding and appreciation of channel importance that translates into success and prosperity for our partners.

It is an exciting time to be involved with information technology. The worlds of business and computer systems are

blending in ways that will result in productivity break-throughs greater than the sum of their parts. Teaming with IBM will allow you to provide the insight, solutions, and innovation that matter to help your customers succeed.

> **MORE ON THE WEB**
>
> • About IBM's patent portfolio

A Smarter Planet

The Smarter Planet Leadership Agenda was born out of a need for change coupled with the unique opportunities now emerging for leaders of businesses and institutions world-wide. We find ourselves at this moment because the crisis in our financial markets jolted us awake. We are seriously focused now on the nature and dangers of highly complex global systems. And this isn't our first such jolt. Indeed, the first decade of the twenty-first century has been a series of wake up calls with a single theme: the reality of global integration. The world is increasingly becoming instrumented, interconnected, and intelligent.

The problems of global climate change and energy, global supply chains for food and medicine, new security concerns ranging from identity theft to terrorism—all issues of a hyperconnected world—have surfaced since the start of this decade. The world continues to get "smaller" and "flatter." But we see now that being connected isn't enough. Fortunately, something else is happening that holds new potential: the planet is becoming smarter.

> **MORE ON THE WEB**
>
> • A Smarter Planet info on IBM.com

That is, intelligence is being infused into the way the world literally works—into the systems, processes, and infrastructure that:

- Enable physical goods to be developed, manufactured, bought, and sold

- Allow services to be delivered

- Facilitate the movement of everything from money and oil to water and electrons

- Help billions of people work and live.

One key element of the smarter planet agenda is the notion of a dynamic infrastructure that can adapt to meet changing needs. In fact, the dynamic infrastructure strategy will help guide the development and deployment of IBM hardware, software, and services.

IBM Power Systems are Smarter Systems

"Success on a smarter planet demands smarter systems..."
The technology industry has entered a new cycle of tech innovation and growth, which IBM calls "smart computing." Like prior cycles of mainframe computing, personal computing, and network computing, smart computing will power a seven- to eight-year period when business and government investment in technology grows at twice the rate of the overall economy. Smart computing will be more complex than what came before—blending elements of hardware, software, and network technologies.

Similar to earlier cycles, smart computing will grow rapidly because it will help business solve problems that it couldn't't address before; in this cycle, smart computing will help companies optimize process results and the returns from their balance sheets. Unlike the horizontal technologies of personal computing and network computing, smart computing will have a highly vertical industry focus. Vertical solutions will differ significantly from vertical offerings in the past—thus the advent of verticals 3.0 as a result. Tech vendors will have great growth opportunities in this new cycle, but also big challenges in navigating the shift to Smart Computing.

Performance Redefined

Everyone knows what "performance" meant for IT in the past. Built on the foundation of POWER7 processor technology, Power Systems servers and blades continue to excel and extend industry leadership in these traditional benchmarks of performance. But the IT landscape is evolving rapidly. And, as processes become more interrelated and complex, IT is being called upon to solve challenging new problems— and implement new projects, both with higher service levels and in a more cost effective manner. IBM has the systems, software, and expertise to help clients implement projects that make their IT an enabler of innovation and a catalyst for business change.

Deliver Services Faster, with Higher Quality and Superior Economics

Today's IT performance means delivering services faster, with higher quality and superior economics. The emerging measures of IT performance are around agility and the ability to help the business capitalize on new opportunities. IT is measured on providing an infrastructure that can handle rapid growth and manage business risk while meeting higher required service levels. And of course it is expected that new services will be delivered with tighter budget constraints—with IT expected to do more with less and find the lowest cost solutions possible.

Watson and Optimized Systems

Today, intelligence is increasingly being embedded in every operational process—from supply chain management, to human resources and payroll, to financial, security, and risk management. And now, as more of the world becomes instrumented—everything from roadways, power grids, consumer goods, and food—businesses need the ability to analyze the "big data" coming from these sources in real time. Optimized systems will increasingly be designed to address the unique needs of specific workloads and big data analytics, combining servers and software with critical skills and domain expertise.

Watson is emblematic of this new approach of optimized systems design in the era of smarter computing. It combines IBM DeepQA analytics software, POWER7 processor-based servers, and innovative skills from IBM Research. Watson was designed to answer Jeopardy! questions posed in natural

language in less than three seconds, using massively parallel POWER7 processor performance to execute thousands of complex analytics tasks simultaneously. Watson, however, is not a supercomputer. It uses commercially available IBM Power 750 servers that are also deployed by thousands of businesses today to run optimized systems for everything from complex analytics to transaction processing.

But Watson's breakthrough is not in natural language processing alone. Watson represents an impressive leap forward in systems design and analytics. Its IBM DeepQA software pioneers a new kind of analytics for unstructured text and big data. Powered by IBM POWER7 processor technology, Watson is an example of the complex analytics systems that are becoming increasingly common and critical to business success and competitiveness in today's data-intensive environment.

Power Architecture

POWER processor technology is an instruction-set architecture that spans applications from consumer electronics to supercomputers. POWER is built on an open architecture, making it an open ecosystem that supports freedom of design. Learn more about the world of POWER at www.power.org.

Power is Integrated Design and Development

A totally integrated approach to the design, development, and testing of each and every Power server ensures the resiliency required for today's IT infrastructure. All POWER7 server models include innovative reliability, availability and serviceability features that help you avoid unplanned downtime.

And, with Capacity on Demand, Hot-Node Add and Active Memory Expansion—Power Systems enterprise servers ensure you can keep your most important applications available, even as you add capacity to handle new business demands.

Power Systems are also optimized with the ability to securely run multiple applications on AIX, IBM i, and Linux operating systems on a single server—so you can manage fewer systems with lower costs and higher utilization. No longer do you need to manage complex and inefficient server farms with each server dedicated to a single application or operating environment. Now you can consolidate workloads and significantly reduce costs throughout your infrastructure, while dramatically improving your ability to meet changing processing demands.

Power Systems Software options enable you to manage both physical and virtual environments, including the capability to control data center energy usage and orchestrate processing resources to better meet business goals. And Power solutions are designed to provide you with a road map to continuous availability of mission-critical applications—even when an expected or unexpected interruption occurs.

Today's POWER7 systems combine industry-leading performance, scalability, and modularity to enable you to get the most from your investment and build a flexible, responsive infrastructure that easily adapts and grows based on your business needs. With a virtualization hypervisor built into every Power System, all performance benchmarks are achieved in a virtualized environment, unlike competitive systems that can be subject to lower performance when using third-party virtualization software.

These systems also leverage IBM's mainframe heritage and experience in building the most available UNIX, IBM i, and Linux systems in the industry. POWER processor-based systems have long been known for mainframe-inspired reliability, availability, and serviceability (RAS) features such as First Failure Data Capture. We extended that capability to include Processor Instruction Retry, Alternate Processor Recovery, Partition Availability priority, Live Application Mobility, and Live Partition Mobility. These features are designed to assist you in eliminating systems-related planned and unplanned outages.

Power is an IBM Software Stack

Deploying Power Systems Software technologies enables businesses to fully exploit Power Systems servers. Realize the benefits of leadership IBM PowerVM virtualization with AIX, IBM i, and Linux operating systems options on a single server—as well as IBM PowerHA for availability, and IBM Systems Director for energy, security, and platform management. IBM's integrated approach to developing the Systems and Systems Software together enables unique benefits that deliver the higher system utilization, availability, and flexibility that clients have come to enjoy with Power Systems.

Power is Virtualization without Limits

Enterprise clients are leveraging virtualization not only to reduce costs and maximize their IT infrastructure investments, but also to provide more flexibility, higher application avail-

ability, and improve response time to business needs. The unique capabilities of PowerVM are enabling clients to achieve extremely high levels of sustained utilization—80 to 90 percent in some cases—while delivering greater flexibility in deploying your virtual machines—all built upon the advanced resiliency features and uncompromising performance of the Power Systems platform.

PowerVM offers Micro-Partitioning with the ability to run up to 10 partitions per processor core, and dynamically move processor, memory, and I/O resources between partitions to support changing workload requirements. PowerVM Live Partition Mobility enables active partitions to be moved between servers—no matter what size of partition you are running—virtually eliminating application downtime for planned systems maintenance. Live partition mobility can also be used to upgrade workloads between POWER6 and POWER7 processor-based servers without an application outage.

VMControl complements PowerVM by providing automated virtualization management that minimizes time to provision virtual machine images and enables management of system pools. With POWER7, PowerVM, and VMControl virtualization software supports up to 1000 virtual machines on a single system, providing massive consolidation capability for exceptional costs savings.

Power is the Future of UNIX with AIX

AIX is an open standards-based UNIX operating system designed to comply with the Open Group's Single UNIX Specification Version 3. AIX exploits decades of IBM technology

innovation and is designed to provide the highest level of performance and reliability of any UNIX operating system. According to ITIC's 2010 survey, AIX scored the highest reliability ratings among 15 different server operating system platforms.

According to IDC, Power Systems with AIX leads in worldwide UNIX server revenue share. In addition, with the introduction of POWER7, there has been an acceleration in client migrations to Power Systems through the IBM Migration Factory in order to take advantage of the exceptional performance, scalability, virtualization, and resilience of POWER processor-based systems and Power Systems Software. The latest AIX 7.1 release features new cluster-aware integration with PowerHA, as well as the ability to run AIX 5.2 Workload Partitions to facilitate application migration and reuse. The AIX operating system is available in three editions for a range of capability and flexibility for both mid-size and large enterprises.

AIX 7 and the previous release, AIX 6, are binary compatible with previous versions of AIX, including AIX 5L. This means that applications that ran on earlier versions will continue to run on AIX 7 or 6—guaranteed.

Power is Total Integration with IBM i

IBM i is an integrated operating environment with a more than 20-year reputation for exceptional cost effectiveness, security, and business resilience. IBM i integrates a trusted combination of relational DB2 database, security, Web services, networking, and storage management capabilities. ITG

reports that costs to use Power Systems and IBM i 6.1 average 41 percent less than x86 servers and Microsoft Windows.

The latest IBM i 7.1 release includes enhanced DB2 support for XML and column-level encryption, automatic movement of hot data to solid-state drives, enhancements to RPG to extend applications to mobile devices and Web services, plus enhanced virtualization and resiliency options.

IBM i 6.1 includes expanded options for virtualization, upgraded storage and availability management, breakthrough Java performance, support for POWER7 and POWER6 and BladeCenter, and a broad range of middleware and tools to help drive application transformation.

Power is Scalable Linux, Ready for x86 Consolidation

Both Red Hat and Novell SUSE Linux run natively on Power Systems, offering a scalable alternative for open source applications. Reducing x86 server sprawl through consolidation and virtualization is a key priority for many companies today. Linux on Power Systems with PowerVM provides a scalable, virtualized alternative to running Linux on x86 servers.

PowerVM Lx86 cross-platform virtualization technology also enables x86 Linux workloads to run without recompilation and take advantage of the scalability of Power Systems. This means Power Systems clients can immediately benefit from the latest Linux applications.

Power is Resiliency without Downtime

Power Systems solutions benefit from decades of IBM experience in designing and deploying high availability hardware

and software. PowerHA SystemMirror disk clustering solutions are available to help keep your systems—and your business—running 24x7x365.

PowerHA SystemMirror for AIX and IBM i Editions are data-center and multi-site resiliency solutions designed to help protect critical business applications from outages: planned or unplanned. PowerHA is integrated with cluster aware capabilities in both the AIX and IBM i operating environments. PowerHA pureScale technology delivers levels of database scalability and availability unmatched on UNIX or x86 systems, and is offered as a component of DB2 pureScale.

Power is Data Protection and Compliance

IBM offers tools to protect data from threats and unauthorized access on Power servers running AIX, i, and Linux workloads. Data encryption capabilities to protect file systems, data and backup are an integral part of the AIX and IBM i operating systems, both of which also support role-based access control. Whether you want to manage the security of your Power servers, or include other elements in your infrastructure—IBM solutions provide intuitive administration that helps you to define, enforce, and audit your business security policy.

Power is Sustainable IT Infrastructure

Many companies are running into floor space and energy challenges in their data center due to the explosion in data and growth in IT applications. Analysts have projected that up to 70 percent of large enterprise clients will face the need for major changes to their data centers in the next few years. It

is becoming critical for these clients to begin to create a more sustainable and cost efficient IT infrastructure. In addition, being socially responsible yields real business benefits. The POWER7-based systems deliver extraordinary new capability to expand an enterprise's IT capability without expanding its floor space or even energy consumption. As an example, the Power 795 delivers over four times the compute capacity of the Power 595 in the same space and energy envelope. POWER7 technology can potentially quadruple the capabilities of a data center without having to change the size, configuration, or power and cooling infrastructure. Efficiencies in space, power, costs, and labor, as well as the potential for new market opportunities, await the company that focuses on building a more sustainable business and IT infrastructure. Enable the sustainability of your business by improving the efficiency of operations, assets, and people, while reducing costs, improving your public image, and opening the door to new opportunities.

Power Systems energy management solutions monitor and control energy usage to help you manage energy efficiency in your data center. Each Power server has EnergyScale technology built into the POWER7 processor. Through consolidation and virtualization with PowerVM, businesses have realized dramatic energy savings. And with IBM Systems Director Active Energy Manager you can identify trends in your energy usage and thermal profile, turn off processor cores or limit the energy draw across one or a group of Power servers, and track environmental data from applications used to monitor air conditioning units, uninterruptible power supplies and intelligent power distribution units.

Power is Management with Automation

With platform management technologies on Power Systems, businesses not only get a complete picture of their systems and how well they are operating, but also the tools to deploy, optimize, and maintain these systems at maximum effectiveness and efficiency. The result is optimized workload performance, energy efficiency, and cost control. On Power Systems, server virtualization management is integrated with network and storage management for complete resource control.

IBM System Director Editions for Power are sized for every data center. It is simpler than ever for a single operator to manage both physical assets and virtual resources. With IBM Systems Director for platform management and Tivoli for enterprise service management solutions, Power Systems offer a unified systems management solution that can improve service delivery. VMControl provides automated virtualization management and minimizes the time it takes to provision virtual images and manage system pools. Leverage "performance plus" by deploying virtualization, availability, and management software to fully exploit Power Systems servers.

Power is Optimized Systems Designed for Smarter Computing

From online self-evaluation tools and workshops to comprehensive assessments and complete migration services, IBM services teams and IBM Business Partner experts around the world can help you determine where to begin or how to make the most of your current Power Systems solutions.

2

General Power Systems Resources

This chapter provides you with some general information and valuable resources that will help you as you sell IBM Power Systems.

The IBM PartnerWorld Web Site

IBM maintains a Web site called PartnerWorld, which has a great deal of information of use to all IBM Business Partners worldwide. On the site you will find the latest presentations and marketing materials (such as brochures, data sheets, and case studies) as well as competitive information, consultant reports, IBM white papers, education and events, tools, technical support, and much more.

Business Partners who invest the most in IBM receive higher-value benefits and resources. This investment is recognized through three PartnerWorld membership levels: Member, Advanced, and Premier. Qualification for these membership levels is based on the Business Partner's attainment

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> - IBM PartnerWorld news and newsletters
> - PartnerWorld membership levels
> - Help with your user ID and password

according to a point system. Points are earned by acquiring skills, developing and selling solutions, driving IBM revenue, and achieving customer satisfaction.

In this guidebook, we have summarized and provided direct links to a great deal of PartnerWorld information of interest to Power Systems Business Partners. As such, this guidebook is your personal "guide" to the PartnerWorld Web site. Just the same, we encourage you to spend some time browsing the PartnerWorld site so you can get a feel for the full scope of resources available to you.

You will need your IBM-assigned user ID and password to access some areas of PartnerWorld. If you don't have your user ID and password, you can contact IBM PartnerWorld for help. (Follow the link provided in the "More on the Web" box.)

Power Systems Education

As with almost any endeavor, time spent educating yourself and your team on appropriate topics such as selling techniques and Power Systems solutions will help you succeed. In fact, IBM Business Partners are required to achieve certification prior to selling IBM Power Systems. In this chapter, we discuss options for you to obtain the education you need.

Required Certifications for Power Systems

IBM requires that all IBM Power Systems Business Partners maintain a minimum number of sales and technical certifications (via Prometric tests) in order to be authorized to sell Power products. All new Business Partners (or existing Busi-

ness Partners adding new products from IBM or a distributor) are required to meet these certification requirements throughout their contract period and no later than six months from their contract and/or product start date.

As part of the POWER7 product announcements, all IBM Business Partner firms approved to market IBM Power Systems with AIX and Power Systems with IBM i products will be required to recertify their skills on these products to maintain product approval.

> **MORE ON THE WEB**
>
> - Power Systems certification requirements
> - Power Systems recertification requirements

Follow the links in the "More on the Web" box to learn about the detailed requirements for your situation.

IBM Systems College

The IBM Systems College is your one-stop education resource for all STG brands including System z, Power, Storage, System x, BladeCenter, and Retail Store Solutions. Find the most current education, as well as roadmaps, certification information, tools, resources, and much more by platform or job role. With hundreds of on demand learning opportunities, there is sure to be something you can use to help you be successful today and over the long term. The IBM Systems College also provides information on IBM skills mastery, mastery tests, and certifications.

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> - Power Systems sales
> - Power Systems technical

Know Your IBM (KYI)

Know Your IBM is a permission-based interactive marketing and selling resource designed for you, our Business Partner sellers. It provides net, customized, online education modules focusing on strategic product and solution areas. The education helps increase your understanding and awareness of the key features and business benefits of IBM products, solutions, and offerings. Incentives offered in conjunction with Know Your IBM are designed to encourage you to complete the education modules and provide you rewards for performance. Incentives are awarded at the individual rep level, not to the firm.

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> • Know Your IBM training modules

Social Media Resources for IBM Business Partners

Social media is quickly growing in importance for businesses of all sizes. Whether you are already involved in social media

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>
> • IBM PartnerWorld communities
>
> • Twitter search results for IBM Power Systems
>
> • Search Twitter for mentions of your business or competitors
>
> • Google blog search results for IBM Power Systems
>
> • Search blog for mentions of your business or competitors
>
> • LinkedIn social network (has an IBM Business Partner Group)
>
> • Use Twitter to Grow Your Business (IBM Software Business Partner Blog)

or just getting interested, the "More on the Web" box pro-vides some links that will be of interest to you.

Performance Benchmarks

Trying to judge the performance of servers by comparing the individual component (processor, disk, memory, etc.) speci-fications can be misleading. A better way to compare the performance of serv-ers is to run specially designed software that simulates various types of workloads and measures the time it takes to complete tasks. This is known as benchmark testing. You can find de-tailed information on benchmark testing and the latest bench-mark testing results for Power Systems by following the link in the "More on the Web" box.More on The Web

MORE ON THE WEB
• Power Systems performance benchmarks

Success Stories, References, Case Studies

It is often helpful to make prospective customers aware of other businesses that have successfully implemented solu-tions based on Power Systems. For this reason, IBM main-tains a database of existing customer success stories, complete with company profiles, identified needs, solutions, and resulting benefits. IBM Business Partners can use these success stories with customers to advance the sell cycle. To see what is available, simply follow the links provided in the "More on the Web" box.

MORE ON THE WEB

- Power Systems success stories

Power Systems at Winn-Dixie (4:59)

Sources for Competitive Marketing Information

IBM maintains a Web site called "Comp" which is a worldwide portal for information that will help you win in competitive marketing situations. It includes a searchable set of reports, presentations, and quick reference cards about the marketplace, competitors, and competitive products. You

MORE ON THE WEB

- IBM "Comp" Web site
- IBM Power Systems Competitive Sales Tool

will find materials developed by IBM as well as outside sources such as Gartner, IDC, DH Brown, and IDEAS International.

At the "Comp" site you can also download the "IBM Power Systems Competitive Sales Tool," which is updated regularly and is the most extensive source of competitive information. Be sure you also sign up to automatically receive email notification when a new version of the tool is posted.

Sales Plays and Kits for Power Systems

IBM sales plays and kits provide you with strategies and tools to help you generate new opportunities in your territory. Each

play fo-
cuses on
a set of
common

> **MORE ON THE WEB**
>
> • [Full list of Power Systems sales plays and kits on PartnerWorld](#)

client pain points and recommends specific solutions to ad-
dress them. They help you offer your clients more complete
solutions, make your deals more profitable, and increase your
win odds.

In this section, we will review some key sales plays and
kits for Power Systems.

Power Advantage for Large Enterprise

This play targets the current Power Systems' customer install
base in LE & MM in order to drive system upgrades and prod-
uct refreshes from older POWER4/5/6 system footprints to

new POW-
ER7-based
servers.
The Power
Advantage

> **MORE ON THE WEB**
>
> • [Power Advantage for Large Enterprises client presentation](#)
> • [Power Advantage for Large Enterprise sales play dashboard](#)

sales play focuses on the client value and benefit that POW-
ER7 systems provide by delivering services faster, with higher
quality and superior economics.

Power Advantage for Midmarket

Power Advantage for Midmarket can help clients deliver new
services faster with higher quality services and superior eco-
nomics. Grow your Power base by focusing on existing Power
clients running workloads on POWER5/POWER6 or competi-

tive x86 servers and move them up to POWER7 blades or Power 710 to 750 servers. This play offers financial incentives for clients to get a "No Charge Migration Assessment" or to do proof of concepts and/ or trials to encourage these workloads to be moved up to POWER7.

> **MORE ON THE WEB**
>
> - Power Advantage for Midmarket sales play dashboard
> - Power Advantage for Midmarket client presentation

Power Migrate for Large Enterprise

This play targets both Sun and HP UNIX LE clients running Solaris on SPARC and HP-UX on Itanium/PA-RISC systems and looks to motivate client migration and consolidation onto IBM POWER7 systems. The play capitalizes on the window of op-

> **MORE ON THE WEB**
>
> - Power Migrate for Large Enterprise play dashboard

portunity/uncertainty from Oracle buying Sun and the lack of clarity from both HP and Oracle on their UNIX processor road map. With the refresh of the entire Power Systems product line with the POWER7 processor and AIX 7, now is the time to virtually sweep the data center floor and consolidate the Oracle/Sun and HP-UX systems onto POWER7 systems—allowing clients to improve service and availability while dramatically reducing costs and complexity.

Power Migrate for Midmarket

An historic shift is underway of clients migrating from Sun and HP UNIX systems to IBM Power Systems. Over the last four and a half years alone, more than 2600 businesses have migrated their competitive UNIX systems to Power. With the introduction of POWER7, that pace has accelerated with over 500 clients migrating in just the first half of 2010.

> **MORE ON THE WEB**
>
> • Power Migrate for Midmarket Enterprise play dashboard

This play targets both Sun clients running Solaris on SPARC and HP UNIX clients running HP-UX on Itanium/PA-RISC systems. These systems can be consolidated to IBM POWER7 systems.

HP and Oracle customers are experiencing uncertainty around these two vendors' UNIX processor road maps. This play capitalizes on the window of opportunity and uncertainty around Oracle buying Sun and the uncertainty that HP UNIX customers face with HP-UX on Itanium/PA-RISC systems. With the POWER7 refresh of the entire Power Systems product line plus the new AIX 7, now is the time to literally sweep the data center floor and consolidate competitive servers onto POWER7 systems. HP UNIX and Oracle/Sun customers can improve service and availability while dramatically reducing costs and complexity.

Power Cloud for Large Enterprise

This play is designed to enable customers to start moving mission-critical workloads to the cloud, while leveraging the

unique performance, scalability and RAS capabilities of IBM Power Systems. The unprecedented interest and projected IT spend on cloud computing is coming from organizations that are seeking to transform the way they deliver IT services and improve

> **MORE ON THE WEB**
>
> • Power Cloud for Large Enterprise play dashboard

workload optimization so they can respond more rapidly to changing business demands. As a result, organizations are demanding an IT infrastructure and service delivery model that enables growth and innovation. An effective cloud computing environment built with Power Systems helps transform data centers to meet these challenges, leveraging the differentiated virtualization and enterprise qualities of service to support mission-critical workloads. Cloud computing can significantly reduce IT costs and complexity while improving resource utilization and service delivery, as well as managing risk.

Power i for Midmarket

This play targets existing IBM clients with previous generation AS/400, iSeries, and System i servers, and helps you to present a compelling offer to replace these servers with POWER7 Power Systems servers. Replace their current system and deliver significantly lower operational costs and

> **MORE ON THE WEB**
>
> • The Power of i client presentation

more performance. Upgrade their system in partnership with a leading ISV with new Solution Editions. Deliver real busi-

ness value with DB2 Web Query or superior availability with PowerHA.

There are three tactics associated with the Power i sales play. The first offers new POWER7 processor-based servers to improve performance and reduce costs. The second helps clients meet pressing business requirements with IBM i Solution Editions, and the third play with PowerHA delivers a highly available IT environment. The POWER7 server tactic can reduce costs, while Solution Editions delivers a cost effective option for implementing updated business solutions, and PowerHA reduces business risk by delivering highly available services.

Power Stack

This play allows Power sellers to reshape the IT discussion and establish selling opportunities beyond current data center or infrastructure sales scenarios. Power Analytics targets large enterprise clients of all sizes with entry points from customized solutions (POWER7 with DB2, Cognos, SPSS, iLog, InfoSphere) to the fully optimized and integrated Smart Analytics System 7700.

MORE ON THE WEB

- Power Stack play dashboard

STG Sales Navigator

The Smarter Systems Widget has gone mobile and is now the STG Sales Navigator, and can be used from your desktop or a smartphone. You'll have access to the same content that you had via the Widget, but now you can access it any time, any

place. Note that you'll have to register first to use the new Navigator, and you will need a w3-enabled device to access much of the content. And, if you're a Mac or Linux user, you can use the Navigator, too.

> **MORE ON THE WEB**
>
> • STG Sales Navigator

Attaching Power Software to Your Proposals

Including IBM Software to your solution sales gives you a way to enhance your productivity, accelerate sales, and increase deal size today while creating offerings that are more attractive to your clients than ever before. The IBM Software portfolio automatically exploits available threads on POWER7 to improve performance and value. IBM Business Partners and their clients can leverage processing power without rewriting their applications, achieving better cost/performance than with competitive offerings.

> **MORE ON THE WEB**
>
> • IBM Software for POWER7

Attaching Storage to Your Proposals

Whenever you are proposing the sale of a Power System server, it only makes sense to include the needed storage devices in the original proposal. Selling storage with servers is known as "clothing" the servers with storage devices. Properly clothing a server allows you to offer a complete solution while also increasing your profits. IBM's line

> **MORE ON THE WEB**
>
> • Storage products for Power Systems

of storage devices falls under the System Storage brand and includes disk storage, tape storage, and storage management software. IBM System Storage offers storage solutions that are architected and tested to provide critical data on demand for IBM Power Systems applications.

Attaching Services to Your Proposal

Attaching IBM Global Technology Services to your IBM solution sales gives you a way to enhance your productivity, accelerate sales, and increase deal size today while creating ongoing revenue opportunities for the future—creating offerings that are more attractive to your clients than ever before.

CIOs, IT directors, and business leaders in client organizations of all sizes across all industries see tremendous value in IBM Global Technology Services. Our offerings can provide powerful supplements to their internal resources, opportunities to save money, and programs to enhance the effectiveness of their technology investments. And IBM gives you a way to complement your resources and capabilities. The result is that IBM Global Technology Services

> **MORE ON THE WEB**
>
> • Service offerings for Power Systems

can help increase your client satisfaction because you can offer a more complete solution. IBM Global Services provides structured and standardized approaches backed by industry-leading experts who can help plan, design, install, configure, tune, test, and support solutions; speed time to value; reduce risk; and minimize disruption to IT and business operations.

Attaching Training to Your Proposal

When selling servers to your clients, don't forget to ask them about their skills, especially if they are buying new technology. You want your clients to have the latest skills so they can implement solutions faster and see a shorter ROI. Clients with skills are more loyal to the brand and will be in a better position to take advantage of upgrades and new technology in the future.

When you create a proposal, add an IBM Education Pack to the deal. The EdPack allows clients to train anyone (or everyone) in their company and they have up to one year after activation to take the IBM Technical Training. EdPacks can be used for our online classes, face-to-face classes, technical conferences, and private classes (either F2F or online). The advantage to adding it to the deal is that the client doesn't have to go back for another PO for the skills transfer. It's included in the deal upfront. Tier 1 partners buy directly from IBM. Tier 2 partners buy from their distributor. More information about EdPacks can be found online.

> **MORE ON THE WEB**
>
> - IBM Training info on IBM.com
> - Training Paths for AIX
> - Training Paths for IBM i

IBM Web Content Syndication (for Your Web Site)

IBM Web Content Syndication automatically delivers IBM product and marketing content to your Web site. It combines the power of content syndication, automatically sending and updating content, with built-in lead tracking capabilities.

The Web Content Syndication Center provides simple, fast, on-line registration, implementation, and support. The Partner Console allows you to view the latest news and content, manage your company's profile, and view and manage leads.

Syndicated content is available for IBM Hardware, Software, and Services in 11 local languages. Syn-

> **MORE ON THE WEB**
> - Web content syndication info on PartnerWorld
> - Web content syndication registration

dicating IBM content enables you to save time and money, and with its customization features, is an easy fit into every Business Partner's Web marketing strategy. This PartnerWorld benefit is available at no cost to all registered PartnerWorld members.

Quick Reference for IBM Power Systems Mobile App

The free Quick Reference for IBM Power Systems mobile app—now available for Android, BlackBerry, and iPhone— provides quick and easy access to the latest Power Systems product in-

> **MORE ON THE WEB**
> - Quick reference for IBM Power Systems mobile app

formation, success stories, social networks, and Power experts.

IBM Global Financing

IBM Global Financing (IGF) continues to focus on meeting customer needs by concentrating on key business areas: leasing and lending, remarketing and refurbishing, and asset

management. IGF conducts business in more than 40 countries, financing IBM and non-IBM hardware, software, and services, with a full range of flexible, low-rate offerings. IGF's customers find that financing their information technology solutions offers many advantages in both robust and difficult economic climates because financing frees up

> **MORE ON THE WEB**
>
> - Presentation: IBM Global Financing solutions for Power7 BPs
> - IBM Global Financing info on IBM.com

their capital for other investments. Many information technology installations, including those for customer relationship management, data mining, and e-business require a substantial investment. IGF financing enables customers to pay for their new technology in affordable monthly payments during the life of the project. Our customers run the gamut from the smallest, family-owned business purchasing a single server and software to the largest, multinational corporation, acquiring tens of thousands of PCs for offices on several continents. In addition to working directly with customers, we work with IBM Business Partners to provide financing for their clients and to help them build their own businesses.

Technical Support for Business Partners

Technical sales support from IBM provides Business Partners with extensive pre-sales support through the PartnerWorld program online via the Web and by voice. Voice support can be accessed via PartnerWorld Contact Services, the single point of entry to all key support organizations. PartnerWorld

Contact Services provides access to Techline for hardware and software technical sales support, as well as Competeline for win

strategies and competitive information. Systems Business Partners entitled through the PartnerWorld program have access to:

- Remote solution design assistance/review

- Technical marketing assistance

- Product and promotion information

- Configuration assistance

- Competitive product information

- Sales strategy information

- Solution assurance assistance.

Follow the links in the "More on the Web" box to access Technical Sales Support online (region selectable).

Solution Assurance

Business Partners are responsible for having their own equivalent Solution Assurance Quality Practice and for conducting their own technical reviews. Solution Assurance support and education should be provided by the Distributors. In some cases, IBM may conduct these reviews or provide assistance.

Please contact your local IBM Sales team for geo-specific offerings.

All Solution Assurance collateral such as checklists, user guides, and installation guides are available through the Solution Assurance Library (see the "More on the Web" box).

MORE ON THE WEB

- Solution Assurance library

3

Power Systems Quick Reference

In this chapter, we explore the IBM Power Systems you will be selling and offer some resources that will help you succeed. There are two basic categories of Power Systems today: Power Express and Power Enterprise. We will explore them both.

MORE ON THE WEB

- Power Systems info on IBM.com
- Customer brochure: Power Systems brochure for large enterprises (pdf)
- Customer brochure: Power Systems brochure for midmarket (pdf)

POWER7 Express

IBM Power Systems Express offerings are products, solutions, and services that matter to mid-size businesses. An integrated approach to the design and testing of Power Systems Express servers ensures that midsize businesses can rely on the higher

MORE ON THE WEB

- POWER7 Express systems

quality of service needed for a cost and energy efficient IT

infrastructure. Now let's take a look at the members of the POWER7 Express family.

Power 710 Express

Built on the leadership performance of the POWER7 pro-cessor, the Power 710 Express (<u>Figure S.1</u>) is a one-socket server that supports up to eight POWER7 cores in a dense, rack-optimized form factor. As a high-performance infrastruc-ture or application server, the Power 710 Express contains innovative workload-optimizing technologies that improve performance based on client computing needs. In addition, it includes Intelligent Energy features that help increase perfor-mance and optimize energy efficiency, resulting in one of the most cost-efficient solutions for UNIX, IBM i, and Linux de-ployments.

The Power 710 Express is a high performance, easy-to-own, energy efficient, elegantly simple, and reliable server. The Power 710 Express server is fueled by the outstanding performance of the POWER7 processor with a choice of AIX, IBM i, or Linux operating systems and solutions from thou-sands of ISVs that can set your business apart from the com-petition.

Here are some quick Power 710 Express facts:

- A high-performance, energy efficient, reliable, and secure infrastructure and application server in a compact 2U pack-age; With POWER7 workload-optimizing technologies, the Power 710 Express server can deliver fast transactions with the AIX, IBM i, and Linux operating systems.

Specifications

POWER7 processor modules (one per system)	4-core 3.0 GHz or 6-core 3.7 GHz or 8-core 3.55 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	4 GB to 128 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to six SFF drives
Disk drives	Up to six SFF SAS drives
Disk capacity	Up to 3.6 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	Model 8231-E2B: Four PCI Express 8x low profile Model 8231-E1C: Five PCI Express Generation2 8x low profile
Standard Ethernet	Model 8231-E2B: Four virtual Ethernet 10/100/1000 Mbps ports (or) Two virtual 10 Gigabit Ethernet ports Model 8231-E1C: Two Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	Model 8231-E2B: One controller for SAS DASD/SSD and DVD-RAM Optional protected 175 MB cache with RAID 5, 6 Model 8231-E1C: One controller for SAS DASD/SSD w/ RAID 10 and DVD-RAMOptional protected 175 MB cache with RAID 5, 6
Other integrated ports	Three USB, two HMC, two system ports
GX slots	One GX++
Operating systems	AIX, IBM i, Linux for POWER

- [Power 710 Express details on PartnerWorld](#)
- [Power 710 details on IBM.com](#)
- [Power 710 Express competitive info on COMP](#)
- [Power 710 Express blog search](#)
- [Power 710 Express Twitter search](#)

Power 710 Express virtual tour

Figure S.1. IBM Power 710 Express server at a glance (and links to more detail).

- An easy-to-buy, install, and manage server that can seam-lessly fit into your existing infrastructure, resulting in faster deployment time and time to value.

Power 720 Express

As a distributed application server, the IBM Power 720 Express (Figure S.2) is designed with capabilities to deliver leading-edge application availability and enable more work to be processed with less operational disruption for branch office and in-store applications. As a consolidation server, PowerVM Editions provide the flexibility to use leading-edge AIX, IBM i, Linux for Power, and x86 Linux applications and offer comprehensive virtualization technologies designed to aggregate and manage resources while helping to simplify and optimize your IT infrastructure and deliver one of the most cost-efficient solutions for UNIX, IBM i, and Linux deployments.

The Power 720 Express with IBM i provides a technology foundation with proven reliability and security for the small or mid-size company seeking a complete, integrated business system to avoid increased spending and staffing requirements while becoming more responsive to your customers, improving productivity, and keeping data secure. IBM i integrates features to simplify your IT environment and delivers a complete, cost-effective business system that can grow with a business. And the Power 720 delivers the performance and capacity to run new and existing core business applications on a single server, to greatly integrate and simplify your IT environment.

Specifications

POWER7 processor modules (one per processor card)	4-core 3.0 GHz or 6-core 3.0 GHz or 8-core 3.0 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	4 GB to 256 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to eight SFF drives
Disk drives	Up to eight SFF SAS drives
Disk capacity	Up to 4.8 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	Model 8202-E4B: Four PCI Express 8x plus optional four PCI Express Generation 2 Low Profile Model 8202-E4C: Five PCI Express 8x Generation 2 plus optional four PCI Express Generation 2 low profile
Standard Ethernet	Model 8202-E4B: Four virtual Ethernet 10/100/1000 Mbps ports (or) Two virtual 10 Gigabit Ethernet ports Model 8202-E4C: Two Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	Model 8202-E4B: One controller for SAS DASD/SSD and DVD-RAM Optional protected 175 MB cache with RAID 5, 6 Model 8202-E4C: One controller for SAS DASD/SSD with RAID 10, and DVD-RAM; Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	Three USB, two HMC, two system ports, two SPCN
GX slots	One GX++
Operating systems	AIX, IBM i, Linux for POWER

- Power 720 Express details on PartnerWorld
- Power 720 details on IBM.com
- Power 720 Express competitive info on COMP
- Power 720 Express blog search
- Power 720 Express Twitter search

Power 720 Express virtual tour

Figure S.2.   IBM Power 720 Express server at a glance (and links to more detail).

Here are some quick Power 720 Express facts:

- Reliable, secure distributed application server or consolidation server for UNIX, IBM i, and Linux workloads

- IBM i delivers a highly scalable and virus-resistant architecture with a stable database and middleware foundation for efficiently deploying business processing applications.

Power 730 Express

The IBM Power 730 Express server (Figure S.3) is designed with innovative workload-optimizing and energy management technologies to help clients get the most out of their systems; that is, running applications fast and energy efficiently to conserve energy and reduce infrastructure costs.

The IBM Power 730 Express server delivers the outstanding performance of the POWER7 processor in a dense, rack-optimized form factor and is ideal for running multiple application and infrastructure workloads in a virtualized environment.

Take advantage of the Power 730 Express server's scalability and capacity by leveraging our industrial strength PowerVM technology to fully utilize the server's capability. PowerVM offers this capability to dynamically adjust system resources to partitions based on workload demands, enabling a dynamic infrastructure that can dramatically reduce server sprawl via consolidation of applications and servers.

The Power 730 Express server is a two-socket high-performance, reliable, and energy-efficient server supporting up to 16 POWER7 cores and a choice of AIX, IBM i, or Linux op-

Specifications

POWER7 processor modules (two per system)	8-core 3.0 GHz or 8-core 3.7 GHz or 12-core 3.7 GHz or 16-core 3.55 GHz
Sockets	2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	8 GB to 256 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to six SFF drives
Disk drives	Up to six SFF SAS drives
Disk capacity	Up to 3.6 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	Model 8231-E2B: Four PCI Express 8x low profile Model 8231-E2C: Five PCI Express 8x Generation2 low profile
Standard Ethernet	Model 8231-E2B: Four virtual Ethernet 10/100/1000 Mbps ports (or) Two virtual 10 Gigabit Ethernet ports Model 8231-E2C: Two Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	Model 8231-E2B: One controller for SAS DASD/SSD and DVD-RAM Optional protected 175 MB cache with RAID 5, 6 Model 8231-E2C: One controller for SAS DASD/SSD with RAID 10, and DVD-RAM; Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	Three USB, two HMC, two system ports, two SPCN
GX slots	Two GX++
Operating systems	AIX, IBM i, Linux for POWER

- Power 730 Express details on PartnerWorld
- Power 730 details on IBM.com
- Power 730 Express competitive info on COMP
- Power 730 Express blog search
- Power 730 Express Twitter search

Play video

Power 730 Express virtual tour

Figure S.3.   IBM Power 730 Express server at a glance (and links to more detail).

erating systems. Combine the outstanding performance with PowerVM and the workload-optimizing capabilities of POWER7 and you are now ready to run multiple application and infrastructure workloads in a virtualized environment while driving higher utilization and reducing costs.

Here are some quick Power 730 Express facts:

- High-performance, dense, and energy-efficient server ideal for running multiple-application and infrastructure workloads in a virtualized environment

- Consolidation of UNIX and x86 Linux workloads.

Power 740 Express

As a small- to mid-size database server, the Power 740 Express (Figure S.4) is fueled by the outstanding performance of the POWER7 processor, making it possible for applications to run faster with fewer processors, which can result in lower per core software licensing costs. The Power 740 Express also supports innovative workload-optimizing and energy management technologies to help clients get the most out of their systems; that is, running applications quickly and energy efficiently to reduce costs.

As a consolidation server, businesses can further reduce costs and energy consumption by combining the Power 740 Express performance, capacity, and configuration flexibility with industrial-strength PowerVM virtualization for AIX, IBM i, and Linux. The Power 740 Express is designed with large memory and I/O capacity to satisfy even the most demanding

Specifications

POWER7 processor modules (one or two per system)	4-core or 8-core 3.3 GHz or 4-core or 8-core 3.7 GHz or 6-core or 12-core 3.7 GHz or 8-core or 16-core 3.55 GHz
Sockets	1 or 2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	8 GB to 512 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to eight SFF drives
Disk drives	Up to eight SFF SAS drives
Disk capacity	Up to 4.8 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	Model 8205-E6B: Four PCI Express 8x plus optional four PCI Express Generation2 Low Profile Model 8205-E6C: Five PCI Express 8x Generation2 plus optional four PCI Express Generation2 low profile
Standard Ethernet	Model 8205-E6B: Four virtual Ethernet 10/100/1000 Mbps ports (or) Two virtual 10 Gigabit Ethernet ports Model 8205-E6C: Two Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	Model 8205-E6B: One controller for SAS DASD/SSD and DVD-RAM Optional protected 175 MB cache with RAID 5, 6 Model 8205-E6C: One controller for SAS DASD/SSD with RAID 10 and DVD-RAM; Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	Three USB, two HMC, two system ports, two SPCN
GX slots (12x)	Two GX++
Operating systems	AIX, IBM i, Linux for POWER

- Power 740 Express details on PartnerWorld
- Power 740 details on IBM.com
- Power 740 Express competitive info on COMP
- Power 740 Express blog search
- Power 740 Express Twitter search

Power 740 Express virtual tour

Figure S.4.   IBM Power 740 Express server at a glance (and links to more detail).

processing environments and can deliver business advantages and higher client satisfaction.

The Power 740 Express is a one- or two-socket server that supports up to 16 POWER7 cores in a flexible 4U rack-optimized form factor. The Power 740 offers large memory capacity, outstanding performance of the POWER7 processor, PowerVM, and workload-optimizing capabilities to enable companies to get the most out of their systems by increasing utilization and performance while helping to reduce infrastructure and energy costs. The new Power 740 Express Model 8205-E6C adds increased memory capacity and additional high bandwidth Generation 2 PCI-Express slots to provide even greater performance capabilities.

Here are some quick Power 740 Express facts:

- For small to mid-size database servers

- For consolidation of UNIX, IBM i and x86 Linux workloads and virtualized application servers.

Power 750 Express

The IBM Power 750 Express server (Figure S.5) delivers the outstanding performance of the POWER7 processor. The performance, capacity, energy efficiency, and virtualization capabilities of the Power 750 Express make it an ideal consolidation, database, or multiapplication server.

As a consolidation or highly virtualized multiapplication server, the Power 750 Express offers tremendous configuration flexibility to meet the most demanding capacity and growth requirements. Utilize the full capability of the

Specifications

POWER7 processor modules (one per processor card)	4-core 3.7 GHz or 6-core 3.7 GHz or 8-core 3.2 GHz or 8-core 3.6 GHz
Sockets	1 or 4
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	8 GB to 512 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to eight SFF drives
Disk drives	Up to eight SFF SAS drives
Disk capacity	Up to 2.4 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	Two PCI-X 2.0; Three PCI Express 8x
Integrated Virtual Ethernet	Four Ethernet 10/100/1000 Mbps ports (or) two 10 Gigabit Ethernet ports
Integrated SAS controller	One controller for SAS DASD/SSD and DVD-RAM, optional protected 175 MB cache
Other integrated ports	Three USB, two HMC, two system ports, two SPCN
GX slots (12x)	Two
Operating systems	AIX, IBM i, Linux for POWER

- [Power 750 Express details on PartnerWorld](#)
- [Power 750 details on IBM.com](#)
- [Power 750 Express competitive info on COMP](#)
- [Power 750 Express blog search](#)
- [Power 750 Express Twitter search](#)

Power 750 Express virtual tour

Figure S.5. IBM Power 750 Express server at a glance (and links to more detail).

system by leveraging industrial-strength PowerVM virtualization for AIX, IBM i, and Linux. PowerVM offers the capability to dynamically adjust system resources based on workload demands so that each partition gets the resources it needs. Active Memory Expansion is a new POWER7 technology that enables the effective maximum memory capacity to be much larger than the true physical memory. Innovative compression/decompression of memory content can enable memory expansion up to 100 percent. This can enable a partition to do significantly more work or enable a server to run more partitions with the same physical amount of memory.

For database servers, the leadership performance of the POWER7 processor makes it possible for applications to run faster with fewer processors, resulting in lower per core software licensing costs. The POWER7 processor contains innovative technologies that maximize performance based on client workloads and computing needs.

Here are some quick Power 750 Express facts:

- For consolidation of UNIX, IBM i, and x86 Linux workloads and virtualized application servers

- For medium to large database servers.

Power Blade Servers

In this section, we explore the Power Systems component of the IBM BladeCenter family and guide you to resources that will help you succeed.

What Is a BladeCenter Server?

The term "blade server" refers to a thin, ultra-dense enclosure that houses microprocessors, memory, disk storage, networking, and other functions. Multiple blade servers are inserted into a standardized, rack-mounted, mechanical box called a "chassis" like books are placed into a bookshelf. The resulting computer system is called a BladeCenter. The chassis is equipped with interconnecting midplanes (which provide the electrical connection between blades) and redundant components to achieve increased density, reduced electrical power requirements, higher reliability, and lower costs compared with other servers. Systems-management software helps with deployment, reprovisioning, updating, troubleshooting, etc., for local or remote configurations consisting of hundreds of server blades. Collectively, these characteristics are making the BladeCenter concept very popular in the marketplace.

The blade servers offered by IBM fall under the IBM BladeCenter name. BladeCenter is a broad platform that allows users to integrate and centrally manage a collection of servers, storage devices, and networking functions that collectively provide more computing power at a lower cost and

MORE ON THE WEB

- [Overview of BladeCenter servers](#)

IBM BladeCenter:
The right choice (6:55)

MORE ON THE WEB

*IBM BladeCenter
Video Library*
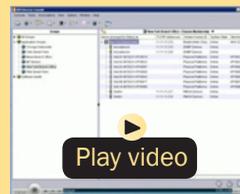
*IBM BladeCenter
Configuration Manager
Demo (4:46)*

in a smaller space (i.e., smaller footprint) than traditional server "box" approaches. To achieve this, BladeCenter uses a modular design packaged in high-density rack enclosures that employ techniques that enable using more powerful micro-processors. You can quickly respond to changing workloads by re-purposing existing server blades or installing additional server blades in a "pay-as-you-grow" fashion.

IBM BladeCenter can help you implement new applications and functions affordably to address more and better business opportunities. With easily integrated IBM products providing a highly secure and robust platform for information sharing, you can more easily attain a collaborative working environ-ment, keep your business up and running, and attain high levels of business resiliency.

BladeCenter servers have four elements:

- Chassis—The mechanical enclosure that holds everything else, including various optional modules that fit into bays in the chassis to provide additional function. The chassis is designed to be installed in a rack.

- Modules—Components that are installed in hot-swap module bays provided in the BladeCenter chassis. These modules provide a number of common functions needed by the installed blades, the chassis, and the other modules. Modules include things like power supplies, systems-management modules, cooling fans, and network switches. IBM has published the specifications for the BladeCenter modules and options. This should result in a greater variety of options from a wider range of vendors than before.

- Blade servers—Processors, memory, and other circuitry packaged on a card that is installed in the chassis. The server blades used in BladeCenter are of three basic types: Intel/AMD processor-based, IBM POWER microprocessor-based, or Cell Broadband Engine-based.

- Expansion options—Cards installed in the blades that add function like additional network Ethernet attachments, fibre channel attachment, etc.

Chassis

In this section, we look at the chassis for the basic mechanical structure of a BladeCenter server.

BladeCenter S Chassis

The IBM BladeCenter S (Figure C.1) is the industry's first blade chassis uniquely designed for small and mid-size offices and distributed environments. Building-in simplicity and economy, BladeCenter S is designed to get big IT results from the smallest IT staffs. Small enough to sit under your desk, the

Specifications

Form factor	Rack/7U incorporates blade server bays and hot-swap storage high-availability midplane
Blade bays	Up to six 1- or 2-processor, and up to three 4-processor
Disk bays	Up to two disk storage modules; each one can incorporate up to six 3.5" SAS, Nearline SAS or SATA, or an intermix of the disks
Standard media	Optional DVD multi-burner accessible from each blade server
Switch modules	4 switch module bays
Power supply module	Up to 4 (hot-swap and redundant 950 W/1450 W with load balancing, auto-sensing, and failover capabilities)
Cooling modules	4 hot-swap and redundant blowers standard
Systems management	1 management module standard
I/O ports	Keyboard, video, mouse, Ethernet, USB
Systems management	Open and easy systems management and deployment tools
Predictive failure analysis	Hard disk drives, processors, blowers, memory
Light path diagnostics	Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives, and expansion card
External storage	Support for IBM System Storage solutions (including DS and NAS family of products) and many widely adopted non-IBM storage offerings
Limited warranty	3-year customer-replaceable unit and on-site limited warranty

- BladeCenter S chassis details on PartnerWorld
- BladeCenter S chassis details on IBM.com
- BladeCenter S chassis competitive info on COMP
- BladeCenter S configuration details
- BladeCenter S options
- BladeCenter S blog search
- BladeCenter S Twitter search

Figure C.1. IBM BladeCenter S chassis at a glance (and links to more detail).

new BladeCenter S chassis makes it easy and cost-effective for small and mid-size businesses to obtain IT results at levels traditionally reserved for large enterprises.

With six blade servers and a fully integrated Storage Area Network (SAN), the chassis simply plugs into an average wall socket, helping eliminate the need to own and operate costly data centers.

Within a single chassis, BladeCenter S supports virtually all of your applications—including those running on Microsoft Windows, Linux, IBM AIX, and IBM i—and integrates the hardware and software most used by mid-size businesses.

Here are some quick BladeCenter S chassis facts:

- All in one—integrates servers, storage, networking, and I/O into a single chassis.

- No special wiring needed—uses standard office power plugs with 100–240V.

- Flexible modular technology—integrates a family of IBM blade servers supporting a wide range of operating systems and applications.

- Easy to deploy, use, and manage—allows you to focus on your business, not your IT.

- Helps build greener IT infrastructures—IBM Cool Blue technology delivers a portfolio of tools that help plan, manage, and control power and cooling.

BladeCenter E Chassis

IBM BladeCenter E (<u>Figure C.2</u>) delivers a powerful platform to meet these requirements; it integrates servers, storage, networking, and applications so organizations can build robust IT infrastructures. The result is a data center packed with more operating horsepower that leaves a small carbon footprint.

With its best-in-class energy-efficient design, BladeCenter E enables organizations to reduce power consumption without compromising processing performance. In fact, the system is up to 11 percent more efficient in power and cooling compared to the HP c-Class chassis to run the same configuration in the data center. With these power savings, an organization can operate at full potential with lower energy costs—and can go green and save.

Here are some fast BladeCenter E facts:

- Maximizes productivity and minimizes power usage through energy-efficient design and innovative features

- Delivers extreme density and integration to ease data center space constraints

- Protects an organization's IT investment through IBM BladeCenter family longevity, compatibility, and innovation leadership in blades

- Supports the latest generation of IBM BladeCenter blades, providing investment protection

- Choice of 2000 W or 2320 W power supply to meet your IT infrastructure needs.

Specifications

Form factor/height	Rack-mount chassis/7U
Blade bays	Up to 14
Switch modules	4 switch module bays
Power supply module	Up to four 2000 W or 2320 W (hot-swap and redundant with load-balancing and failover capabilities)
Cooling modules	2 hot-swap and redundant blowers standard
Standard media	Optional DVD multi-burner
Systems management hardware	1 Advanced Management Module standard; add an optional second module for redundancy
I/O ports	Keyboard, video, mouse, Ethernet, USB
Systems management software	Open and easy systems management and trial deployment tools
Light path diagnostics	Chassis has LEDs for power status, location, over temperature, information and status indicators on both front and back; power supplies, blade servers, management module, switch modules and blowers have light path diagnostics
External storage	Support for IBM System Storage solutions (including DS and Network Attached Storage (NAS) family of products) and many widely adopted non-IBM storage offerings
Limited warranty	3-year customer-replaceable unit and on-site limited warranty

- [BladeCenter E chassis details on PartnerWorld](#)
- [BladeCenter E chassis details on IBM.com](#)
- [BladeCenter E chassis Announcement Letter, Feb 06](#)
- [BladeCenter E chassis competitive info on COMP](#)
- [BladeCenter E configuration details](#)
- [BladeCenter E blog search](#)
- [BladeCenter E Twitter search](#)

BladeCenter E virtual tour

Figure C.2. IBM BladeCenter E chassis at a glance (and links to more detail).

BladeCenter H Chassis

The BladeCenter H (<u>Figure C.3</u>) is a powerful platform built with the enterprise customer in mind, providing industry-leading performance, innovative architecture, and a solid foundation for virtualization. This next-generation chassis is a workhorse—it runs applications quickly and efficiently, enabling organizations to maximize their investment and succeed in a highly competitive market. The powerful BladeCenter H delivers the performance customers need to make informed decisions.

With IBM Open Fabric Manager, BladeCenter H can help organizations run applications even more efficiently by delivering a flexible, open, and connected infrastructure. IBM continues to build on its reputation for helping customers find innovative IT solutions with BladeCenter H, which delivers even more capabilities to the BladeCenter family. The 9U chassis provides the standard BladeCenter functionalities with the added performance of high-speed I/O and the fastest blades.

Here are some fast BladeCenter H facts:

- Delivers high performance, energy efficiency, and versatility to run the most demanding applications in larger data centers

- Integrates new high-efficiency power supplies for leading energy efficiency

- Provides easy integration to promote innovation and help manage growth, complexity, and risk

Specifications

Form factor/height	Rack-mount chassis/9U
Blade bays	Up to 14
Switch modules	Up to 4 traditional, up to 4 high-speed, and up to 4 bridge module bays
Power supply module	Up to 4 hot-swap and redundant 2980 W ac high-efficiency power supplies with load-balancing and failover capabilities; Operating at 200-240 V
Cooling modules	2 hot-swap and redundant blowers standard, additional fan packs on power supplies
Systems management hardware	Advanced Management Module standard; add an optional Advanced Management Module for redundancy
I/O ports	USB-based keyboard, video, mouse (KVM), Ethernet, USB
Media	2 USB connections and an optional DVD multi-burner
Systems management software	Systems management and trial deployment tools
Predictive failure analysis	Internal storage, processors, blowers, memory
Light path diagnostics	Blade server, processor, memory, power supplies, blowers, switch module, management module, internal storage, and expansion card
External storage	Support for IBM System Storage solutions (Including DS and NAS family of products) and many widely adopted non-IBM storage offerings
Limited warranty	3-year customer-replaceable unit and on-site limited warranty

- BladeCenter H chassis details on PartnerWorld
- BladeCenter H chassis details on IBM.com
- BladeCenter H chassis competitive info on COMP
- BladeCenter H configuration details
- BladeCenter H options
- BladeCenter H blog search
- BladeCenter H Twitter search

BladeCenter H virtual tour

Figure C.3.   IBM BladeCenter H chassis at a glance (and links to more detail).

- Protects your investment by being compatible with the entire IBM BladeCenter family

- Provides more than 12 percent greater performance per watt compared to the competition.

BladeCenter HT Chassis

IBM BladeCenter HT (Figure C.4) is a telecommunications-optimized version of IBM BladeCenter H. It delivers outstanding core telecom network performance and high-speed connectivity (more than 1.2 Tbps of aggregate throughput on the backplane) to the BladeCenter family. It is uniquely designed to support end-to-end, next-generation-network (NGN) applications, spanning the control, transport, and service planes for telecommunications equipment manufacturers and service providers.

Here are some quick BladeCenter HT chassis facts:

- With a design that delivers investment protection, IBM BladeCenter HT integrates the server blades, switches, networking, storage, I/O, and management platforms that are supported across the BladeCenter family

- Network infrastructure costs may be reduced with an open, standards-based, commercial off-the-shelf (COTS) platform supporting a large portfolio of world-class, next-generation network (NGN) solutions and applications

- Network infrastructure performance is increased with dual-core and quad-core Intel, AMD, and IBM POWER processor blades

- BladeCenter HT chassis details on PartnerWorld
- BladeCenter HT chassis details on IBM.com
- BladeCenter HT chassis competitive info on COMP
- BladeCenter HT (8740) configurations details
- BladeCenter HT (8750) configuration details
- BladeCenter HT (8740) options
- BladeCenter HT (8750) options
- BladeCenter HT blog search
- BladeCenter HT Twitter search

BladeCenter HT virtual tour

Figure C.4.   IBM BladeCenter HT chassis (and links to more detail).

- High-speed connectivity and throughput are dramatically increased with multi-terabit networking (more than 1.2 Tbps throughput on backplane) and 40 Gbps per blade server

- Network flexibility and interoperability are improved by bridging new services to control gateways supporting SS7, VoIP, legacy PSTN, WAN devices, and network interfaces with special-purpose telecommunications blades

- Network resources are efficiently consolidated while high scalability for NGN applications such as IPTV, VoD, and IMS are delivered, with higher port concentrations and 10 Gbps Ethernet network bandwidth

- Numerous operating systems and applications are supported, including Linux, Windows, AIX, and Sun Solaris 10—allowing you to choose the ones that best suit your needs in a single platform

- Certified testing by Underwriters Laboratories (UL) of the BladeCenter HT chassis is in progress, and when complete the BladeCenter HT chassis will be covered under a UL-certified NEBS Level 3/ETSI test report, which will be available for customer review

- Management tools integrated into BladeCenter help simplify administration and maximize the efficiency of network management staffs to help lower costs and improve control of the central office or data center (IBM Director)

- Flexibility and choice are increased with a single family of compatible systems, designed for deployment in a telecom central office or data center environment.

Power Blades

These blade servers use the IBM POWER family of processors.

PS700, PS701, and PS702 Express

The IBM BladeCenter PS700 (Figure J.1), PS701 (Figure J.2), and PS702 (Figure J.3) Express blade servers are built on

Specifications	PS702 PS700 PS701
Form factor	Single-wide blade server for BladeCenter E, BladeCenter T, BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	Four 64-bit 3.0 GHz POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (std/max)	Base offering: 8 GB (2 x 4 GB); Express offering: 16 GB (4 x 4 GB), up to 64 GB maximum per blade, 8 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz (4 GB DIMMs) 800 MHz (8 GB DIMMs)
Internal disk storage	Two 300 or 600 GB 2.5" Serial Attached SCSI (SAS) 10K rpm non-hot-swappable disk drive; No disk drive required on base offering
Networking	Integrated Virtual Ethernet adapter (IVE) Dual Gigabit and support for optional dual-gigabit Ethernet
I/O upgrade	One PCI-E CIOv Expansion Card & one PCI-E CFFh High Speed Expansion Card
Optional connectivity	1 and 10 Gbps Ethernet, 4 and 8 Gbps Fibre Channel, 4X InfiniBand, SAS Expansion
PowerVM	PowerVM Express Edition: Includes Virtual I/O Server (VIOS) with Integrated Virtualization Manager and PowerVM Lx86; PowerVM Standard Edition: Adds shared processor pools and micropartitioning; PowerVM Enterprise Edition: Adds active memory sharing and live partition mobility
Systems management	Integrated systems management processor, IBM Systems Director Active Energy Manager, light path diagnostics, Predictive Failure Analysis, Cluster Systems Management (CSM), Serial Over LAN, IPMI compliant
Operating systems	AIX V5.3 or later, AIX V6.1 or later, IBM i 6.1 or later, SUSE Linux Enterprise Server 10 for POWER (SLES10 SP3) or later, SLES11 SP1 or later, Red Hat Enterprise Linux 5.5 for POWER (RHEL5.5) or later, RHEL5.1 or later
High availability	IBM PowerHA family

- PS700 Express details on PartnerWorld
- PS700 Express details on IBM.com
- PS700 Express competitive info on COMP
- PS700 blog search
- PS700 Twitter search

POWER7 Chip animation

Figure J.1.   IBM BladeCenter PS700 Express at a glance (and links to more detail).

Specifications

Form factor	Single-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	Eight 64-bit 3.0 GHz POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (std/max)	Base offering: 16 GB (4 x 4 GB); Express offering: 32 GB (4 x 8 GB), up to 128 GB maximum per blade, 16 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz (4 GB DIMMs) 800 MHz (8 GB DIMMs)
Internal disk storage	One 300 or 600 GB 2.5" Serial Attached SCSI (SAS) 10 K rpm non-hot-swappable disk drive; No disk drive required on base offering
Networking	Integrated Virtual Ethernet adapter (IVE) Dual Gigabit and support for optional dual-gigabit Ethernet
I/O upgrade	One PCI-E CIOv Expansion Card and one PCI-E CFFh High Speed Expansion Card
Optional connectivity	1 and 10 Gbps Ethernet, 4 and 8 Gbps Fibre Channel, 4X InfiniBand, SAS Expansion
PowerVM	PowerVM Express Edition: Includes Virtual I/O Server (VIOS) with Integrated Virtualization Manager and PowerVM Lx86; PowerVM Standard Edition: Adds shared processor pools and micropartitioning; PowerVM Enterprise Edition: Adds active memory sharing and live partition mobility
Systems management	Integrated systems management processor, IBM Systems Director Active Energy Manager, light path diagnostics, Predictive Failure Analysis, Cluster Systems Management (CSM), Serial Over LAN, IPMI compliant
Operating systems	AIX V5.3 or later, AIX V6.1 or later; IBM i 6.1 or later; SUSE Linux Enterprise Server 10 for POWER (SLES10 SP3) or later; SLES11 SP1 or later; Red Hat Enterprise Linux 5.5 for POWER (RHEL5.5) or later; RHEL6.1 or later
High availability	IBM PowerHA family

- PS701 Express details on PartnerWorld
- PS701 Express details on IBM.com
- PS701 Express competitive info on COMP
- PS701 blog search
- PS701 Twitter search

✓ Minimize complexity
✓ Improve efficiency
✓ Scale easily

Play video

POWER7 Innovation

Figure J.2.   IBM BladeCenter PS701 Express at a glance (and links to more detail).

Specifications

Form factor	Double-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	Sixteen 64-bit 3.0 GHz POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (std/max)	Base offering: 32 GB (8 x 4 GB); Express offering: 64 GB (16 x 4 GB), up to 128 GB maximum per blade, 16 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz (4 GB DIMMs) 800 MHz (8 GB DIMMs)
Internal disk storage	Two 300 or 600 GB 2.5" Serial Attached SCSI (SAS) 10K rpm non-hot-swappable disk drive; No disk drive required on base offering.
Networking	Integrated Virtual Ethernet adapter (IVE) Dual Gigabit and support for optional dual-gigabit Ethernet
I/O upgrade	Two PCI-E CIOv Expansion Card & two PCI-E CFFh High Speed Expansion Card
Optional connectivity	1 and 10 Gbps Ethernet, 4 and 8 Gbps Fibre Channel, 4X InfiniBand, SAS Expansion
PowerVM	PowerVM Express Edition: Includes Virtual I/O Server (VIOS) with Integrated Virtualization Manager and PowerVM Lx86; PowerVM Standard Edition: Adds shared processor pools and micropartitioning; PowerVM Enterprise Edition: Adds active memory sharing and live partition mobility
Systems management	Integrated systems management processor, IBM Systems Director Active Energy Manager, light path diagnostics, Predictive Failure Analysis, Cluster Systems Management (CSM), Serial Over LAN, IPMI compliant
Operating systems	AIX V5.3 or later, AIX V6.1 or later; IBM i 6.1 or later; SUSE Linux Enterprise Server 10 for POWER (SLES10 SP3) or later; SLES11 SP1 or later; Red Hat Enterprise Linux 5.5 for POWER (RHEL5.5) or later; RHEL5.1 or later
High availability	IBM PowerHA family

- PS702 Express details on PartnerWorld
- PS702 Express details on IBM.com
- PS702 Express competitive info on COMP
- PS702 blog search
- PS702 Twitter search

Play video

POWER7 overview (German)

Figure J.3. IBM BladeCenter PS702 Express at a glance (and links to more detail).

the proven foundation of the IBM BladeCenter family of products—easy-to-use, integrated platforms with a high degree of deployment flexibility, energy efficiency, scalability, and manageability. They minimize complexity, improve efficiency, automate processes, reduce energy consumption, and scale easily: these are the benchmarks that matter on a smarter planet. They are the premier blades for 64-bit applications.

The POWER7 processor-based PS blades automatically optimize performance and capacity at either a system or virtual machine level and benefit from the new POWER7 processor, which contains innovative technologies that help maximize performance and optimize energy efficiency. They represent one of the most flexible and cost-efficient solutions for UNIX, i, and Linux deployments available in the market. Further enhanced by its ability to be installed in the same chassis with other IBM BladeCenter blade servers, the PS blades can deliver the rapid return on investment that clients and businesses demand.

Delivering on the promise for a highly dynamic infrastructure, the BladeCenter PS blades help in delivering superior business and IT services with agility and speed—all in a simple to manage highly efficient way. The PS700, PS701, and PS702 Express blades have been preconfigured and tested by IBM and are based on proven technology. Utilizing a 3.0 GHz 64-bit POWER7 processor and available in a four-core, eight-core, or sixteen-core configuration, they are optimized to achieve maximum performance for both the system and its virtual machines. Couple that performance with PowerVM and you are now enabled for massive workload consolidation to drive maximum system utilization, predictable performance, and cost efficiency.

Here are some quick PS700/701/702 facts:

- Consolidate on IBM BladeCenter Power Blades and virtual-ize applications to better utilize resources and amplify the already-significant advantages of BladeCenter efficiencies

- Simplifies your deployment with flexible configurations that make it easy to implement the right system and the ability to run AIX, IBM i, and Linux operating systems simultaneously

- Elegantly simple scalability allows easy expansion and pay-as-you-grow flexibility for the utmost in investment protection, performance growth, and time to value

- A secure, resilient infrastructure solution that helps drive down costs, reduce risk, improve energy efficiency, and en-hance flexibility.

PS703 and PS704 Express

The IBM BladeCenter PS703 (Figure J.4) and PS704 (Figure J.5) Express are the premier blades for 64-bit applications. Minimize complexity, improve efficiency, automate processes, reduce energy consumption, and scale easily: these are the benchmarks that matter on a smarter planet. The new POW-ER7 processor-based PS blades automatically optimize per-formance and capacity at either a system or virtual machine level and benefit from the new POWER7 processor, which contains innovative technologies that help maximize perfor-mance and optimize energy efficiency. They represent one of the most flexible and cost-efficient solutions for UNIX, i, and Linux deployments available in the market. Further enhanced

Specifications

Form factor	Single-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	Sixteen 64-bit 2.4 GHz POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (std/max)	Base offering: 16 GB (4×4 GB); Express offering: 32 GB (4×8 GB), up to 128 GB maximum per blade, 16 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz (4 GB DIMMs) 1066 MHz (8 GB DIMMs)
Internal disk storage	One 300 or 600 GB 2.5" Serial Attached SCSI (SAS) 10K rpm non-hot-swappable disk drive or two 1.8" 177 GB Solid State Disks; No disk drive required on base offering
Networking	Integrated dual gigabit Ethernet ports; Virtualized ethernet provided by PowerVM VIOS
I/O upgrade	One PCI-E CIOv Expansion Card and one PCI-E CFFh High Speed Expansion Card
Optional connectivity	1 and 10 Gbps Ethernet, 4 and 8 Gbps Fibre Channel, 4X InfiniBand, SAS Expansion
PowerVM	PowerVM Express Edition: Supports 2 VMs/server and includes Virtual I/O Server (VIOS) and PowerVM Lx86 PowerVM Standard Edition: Scales to 10 VMs/core and adds suspend/resume and shared storage pools PowerVM Enterprise Edition: Adds active memory sharing and live partition mobility
Operating systems	AIX V5.3, V6.1, or AIX 7.1; IBM i 7.1 or 6.1.1; SUSE Linux Enterprise Server SLES11 SP1 or later; Red Hat Enterprise Linux 5.6 for POWER or later; RHEL6.0 or later
High availability	IBM PowerHA family

- PS703 Express details on PartnerWorld
- PS703 Express details on IBM.com
- PS703 Express competitive info on COMP
- PS703 blog search
- PS703 Twitter search

BladeCenter PS703 virtual tour

Figure J.4. IBM BladeCenter H with PS Blades, PS703 Express at a glance (and links to more detail).

Specifications

Form factor	Double-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	Thirty two 64-bit 2.4 GHz POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (std/max)	Base offering: 32 GB (8 x 4 GB); Express offering: 64 GB (8 x 8 GB), up to 256 GB maximum, 32 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz (4 GB DIMMs) 1066 MHz (8 GB DIMMs)
Internal disk storage	Two 300 or 600 GB GB 2.5" Serial Attached SCSI (SAS) 10 K rpm non-hot-swappable disk drive or four 1.8" 177 GB Solid State Disks; No disk drive required on base offering
Networking	Integrated quad gigabit Ethernet ports; Virtualized ethernet provided by PowerVM VIOS
I/O upgrade	Two PCI-E CIOv Expansion Cards and two PCI-E CFFh High Speed Expansion Cards
Optional connectivity	1 and 10 Gbps Ethernet, 4 and 8 Gbps Fibre Channel, 4X InfiniBand, SAS Expansion
PowerVM	PowerVM Express Edition: Supports 2 VMs/server and includes Virtual I/O Server (VIOS) and PowerVM Lx86 PowerVM Standard Edition: Scales to 10 VMs/core and adds suspend/resume and shared storage pools PowerVM Enterprise Edition: Adds active memory sharing and live partition mobility
Operating systems	AIX V5.3, V6.1, or AIX 7.1; IBM i 7.1 or 6.1.1; SUSE Linux Enterprise Server SLES11 SP1 or later; Red Hat Enterprise Linux 5.6 for POWER or later; RHEL6.0 or later
High availability	IBM PowerHA family

- PS704 Express details on PartnerWorld
- PS704 Express details on IBM.com
- PS704 Express competitive info on COMP
- PS704 blog search
- PS704 Twitter search

Figure J.5.   IBM BladeCenter PS704 Express at a glance (and links to more detail).

by their ability to be installed in the same chassis with other IBM BladeCenter blade servers, the PS blades can deliver the rapid return on investment that clients and businesses demand.

Delivering on the promise for a highly dynamic infrastructure, the BladeCenter PS blades help in delivering superior business and IT services with agility and speed—all in a simple to manage, highly efficient way. The PS703 and PS704 Express blades have been preconfigured and tested by IBM and are based on proven technology. Utilizing a 2.4 GHz 64-bit POWER7 processor and available in 16-core or 32-core configuration, they are optimized to achieve maximum performance for both the system and its virtual machines. Couple that performance with PowerVM and you are now enabled for massive workload consolidation to drive maximum system utilization, predictable performance, and cost efficiency.

Here are some quick PS703/704 facts:

- Consolidate on IBM BladeCenter PowerBlades and virtualize applications to better utilize resources and amplify the already-significant advantages of BladeCenter efficiencies

- Simplifies your deployment with flexible configurations that make it easy to implement the right system and the ability to run AIX, IBM i, and Linux operating systems simultaneously

- Realize innovation with a flexible, scalable architecture that lets you choose the right solution for your dynamic business and delivers the utmost in investment protection, performance growth, and time to value

- A secure, resilient infrastructure solution that helps drive down costs, reduce risk, improve energy efficiency, and enhance flexibility.

JS12 Express

The IBM BladeCenter JS12 Express blade server ([Figure J.6](#)) is the perfect alternative to a traditional AIX, IBM i, or Linux rack-mount or tower server. The JS12 Express blade server, combined with a BladeCenter S chassis, provides exceptional value and expandability in an attractively packaged and highly efficient design. And, specifically for an office environment, this combination can reside in your office quietly, securely, and looking like it belongs, with an acoustic treatment for quiet operation, a set of security doors to protect vital data and servers, and optional dust filtering to expand IT into virtually any environment. For small database and application serving, the BladeCenter JS12 Express blade server delivers great performance, expandability, and capacity to satisfy the needs of clients looking for an easy-to-use, integrated platform with a high degree of deployment flexibility, scalability, and manageability.

Here are some quick JS12 facts:

- For replacing traditional UNIX, IBM i (formerly known as i5/OS), and Linux servers

- For small database and application serving

- For a complete business system with an integrated database and application server.

Specifications

Form factor	Single-wide blade server for BladeCenter E, BladeCenter S, BladeCenter H, BladeCenter HT, or BladeCenter T chassis
Processor cores	Two 64-bit 3.8 GHz POWER6 with AltiVec SIMD and hardware decimal floating-point acceleration
Level 2 (L2) cache	4 MB per processor core; 4-way set associative
Memory (std/max)	xBase/Express offering: 4 GB (2 x 2 GB); up to 64 GB maximum per blade, 8 DIMM slots, ECC Chipkill DDR2 SDRAM running at 667 MHz (2, 4 GB DIMMs) 400 MHz (8 GB DIMMs)
Internal disk storage	Zero to two 73, 146, or 300 GB 2.5" serial attached SCSI (SAS) 10 K rpm disk drives; integrated RAID-0 or -1 standard on blade server with support for disk mirroring
Networking	Integrated Virtual Ethernet adapter (IVE) dual gigabit and support for optional dual gigabit Ethernet daughter card
I/O upgrade	Integrated PCI Express connector for high-speed expansion cards, integrated connector for legacy expansion cards
Optional connectivity	1 Gbps Ethernet Expansion Card, 4 Gbps Fibre Channel, 4X InfiniBand, iSCSI Expansion Card, SAS Expansion Card
PowerVM Standard Edition (built-in)	Virtual LAN, POWER Hypervisor, Micro-Partitioning, Virtual I/O Server with Integrated Virtualization Manager, shared dedicated capacity, shared processor pool, PowerVM Lx86
PowerVM Enterprise Edition (optional)	All the features of PowerVM Standard Edition plus Live Partition Mobility and Active Memory Sharing
Operating systems	AIX V5.3 or later; IBM i V6.1 or later; SUSE Linux Enterprise Server 10 for POWER (SLES10 SP2) or later; Red Hat Enterprise Linux 4.6 for POWER (RHEL4.6) or later; RHEL5.1 or later
High availability	IBM PowerHA family

- JS12 Express details on PartnerWorld
- JS12 Express details on IBM.com
- JS12 Express competitive info on COMP
- JS12 blog search
- JS12 Twitter search

JS12 overview

Figure J.6. IBM BladeCenter JS12 Express at a glance (and links to more detail).

BladeCenter Open Fabric (I/O)

In this section, we examine some options collectively called the BladeCenter Open Fabric. This is a portfolio of integrated server I/O that offers an open, high-performance, and comprehensive set of interconnects and smart-management tools to help run your business. Integrated across all blades, switches, and chas-

> **MORE ON THE WEB**
>
> • BladeCenter Open Fabric info on IBM.com

sis, BladeCenter Open Fabric supports open standards and industry interoperability across five I/O fabrics, including Fibre Channel, InfiniBand, Ethernet, iSCSI, and serial attached SCSI (SAS), helping to simplify blade I/O management and deployment so you can concentrate on realizing innovation in your business.

BladeCenter Open Fabric Manager

IBM BladeCenter Open Fabric Manager is designed to help you manage growth and complexity by making it easy to manage I/O and network interconnects for up to 100 BladeCenter chassis—up to 1400 blade servers. BladeCenter Open Fabric Manager helps make blade deployment EASY: Once installed, the utility is resident in the Advanced Management Module (AMM) so you can preconfigure LAN and SAN connections. Thus, I/O connections are made automatically when you plug in a blade. And no special tools or training is required; just manage with the easy-to-use GUI. Clients can also purchase the optional Advanced version which enables automatic failover to a predefined spare blade pool, thereby maintaining

MORE ON THE WEB

- BladeCenter Open Fabric Manager info on IBM
- BladeCenter Open Fabric Manager competitive info on COMP
- BladeCenter Open Fabric Manager blog search
- BladeCenter Open Fabric Manager Twitter search
- BladeCenter Open Fabric Manager on YouTube (multiple videos)

Play video

IBM BladeCenter Open Fabric Manager (Alex Yost) (4:50)

a high-availability environment for mission-critical applications.

In contrast to typical competitive tools that support only a small number of proprietary blades and switches, BladeCenter Open Fabric Manager is OPEN and allows you to manage a wide range of industry Ethernet and Fibre Channel switches—Cisco, Nortel, Brocade, QLogic.

BladeCenter Open Fabric Manager is the right choice now and into the future. The software can even be deployed on existing hardware through a firmware upgrade, helping you protect your current BladeCenter investments and giving you the flexibility to deploy precisely the solution you need to help your business realize innovation.

Virtual Fabric

As the deployment of server virtualization technologies becomes more prevalent within data centers, more dynamic performance is needed to provide sufficient network I/O bandwidth to satisfy these demands. With Virtual Fabric,

IBM can help you break the I/O bottleneck by allowing you to allocate bandwidth where needed, delivering maximum application agility. Offering a full range of virtualization and convergence capabilities, the same network hardware can act as Ethernet, iSCSI, or FCoE, and bandwidth can be allocated in

increments from 100 Mb to 1 Gb. Choose the Emulex adapter and IBM System Networking BNT switch for advanced virtualization capabilities leveraging IBM Networking OS (BLADEOS) to carve up virtual pipes between the adapter and switch, or combine the Broadcom adapter with either of our Brocade or Cisco 10 Gb switches for general-purpose virtual fabric capabilities.

Here are some overall virtual fabric highlights:

- Full range of capabilities including Ethernet, iSCSI, and FCoE

- Virtualize any 10 Gb switch supporting multiple protocols through the switch-independent Virtual Fabric

- Quadruple the number of adapters by server, while reducing switch modules

- Get up to eight virtual ports operating anywhere between 100 Mb and 10 Gb

- Benefit from true line-rate 10 Gb performance.

IBM BNT Virtual Fabric 10 Gb Switch Module

The IBM System Networking BNT Virtual Fabric 10 Gb Switch Module for IBM BladeCenter offers the most bandwidth of any blade switch and represents the perfect migration platform

for clients who are still at 1 Gb outside the chassis by seam-lessly integrating in the existing 1 Gb infrastructure. This is the first 10 Gb switch for IBM BladeCenter that is conver-gence ready—able to transmit Converged Enhanced Ethernet (CEE) to a Fibre Chan-nel over Ethernet (FCoE)

> **MORE ON THE WEB**
>
> • BNT Virtual Fabric 10 Gb Switch Module Redbook info
> • BNT Virtual Fabric 10 Gb Switch Module info on PartnerWorld

capable top-of-rack switch. This feature will be available through a future firmware upgrade at no additional cost.

This offering will also work with BladeCenter Open Fabric Manager, providing all the benefits of I/O virtualization at 10 Gb speeds.

Here are some quick BNT Virtual Fabric 10 Gb Switch Mod-ule facts:

• Single-wide high-speed switch module

• Fourteen internal auto-negotiating ports: 1 Gb or 10 Gb to the server blades

• Two internal full-duplex 100 Mbps ports connected to the management module

• Up to ten 10 Gb SFP+ ports (also designed to support 1 Gb SFP if required, flexibility of mixing 1 Gb/10 Gb)

• One 10/100/1000 Mb copper RJ-45 used for management or data

• Supports IBM Virtual Fabric for IBM BladeCenter

- VMready brings VM awareness to the network for improved VM mobility

- Stacking support.

QLogic Virtual Fabric Extension Module

IBM was among the first to deliver Fibre Channel over Ethernet across System x and BladeCenter, and this new module

takes this a
step further
by offering
clients I/O
convergence

> **MORE ON THE WEB**
>
> - QLogic Virtual Fabric Extension Module Redbook info
> - QLogic Virtual Fabric Extension Module info on PartnerWorld

inside the chassis. Clients using the IBM BNT 10-port 10 Gb Ethernet Switch Module for their LAN traffic can now combine it with this module and a Converged Network Adapter such as the QLogic 2-port 10 Gb CNA to converge their LAN and SAN on a single network.

Emulex 10 GbE Virtual Fabric Adapter II/Advanced II

The Emulex 10 GbE Virtual Fabric Adapter II and Emulex 10 GbE Virtual Fabric Adapter Advanced II are enhancements to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters allow IBM clients to simplify their I/O infrastructure by reducing the number of switches needed inside the chassis. The Emulex 10 GbE Virtual Fabric Adapter II is a dual-port 10 Gb Ethernet card that supports 1 Gbps or 10 Gbps traffic, or up to eight virtual NIC (vNIC) devices.

The virtual NICs are configured to meet the client's mix of network connectivity and throughput demands for today's complex server application environments. Each physical 10

Gbps port can be divided into four virtual ports with bandwidth allocation in 100 Mbps increments to the maximum 10 Gbps per physical port. The Emulex 10 GbE Virtual Fabric Adapter II Advanced adds FCoE and iSCSI hardware initiator functionality.

The Emulex 10 GbE Virtual Fabric Adapter II supports the BNT Virtual Fabric 10 Gb Switch Module in IBM Virtual Fabric Mode. A firmware update is planned that will

> **MORE ON THE WEB**
>
> • Emulex 10 GbE Virtual Fabric Adapter II Redbook info
> • Emulex 10 GbE Virtual Fabric Adapter II info on PartnerWorld

enable this card to function in Switch Independent Mode with other IBM BladeCenter 10 GbE switch offerings from Cisco and Brocade, and the 10 Gb Ethernet Pass-Thru Module for IBM BladeCenter.

Emulex 10 GbE Virtual Fabric Adapter/Advanced

The Emulex 10 GbE Virtual Fabric Adapter for IBM BladeCenter is a dual-port 10 Gb Ethernet card that supports 1 Gbps or 10 Gbps traffic, or up to eight virtual NIC devices.

> **MORE ON THE WEB**
>
> • Emulex 10 GbE Virtual Fabric Adapter Redbook info
> • Emulex 10 GbE Virtual Fabric Adapter info on PartnerWorld

The virtual NICs are configured to meet the client's mix of network connectivity and throughput demands for today's complex server application environments.

MORE ON THE WEB

- Brocade Converged 10 GbE Switch Module Redbook info
- Brocade Converged 10 GbE Switch Module info on PartnerWorld

▶ Play video

Brocade Converged 10 GbE Switch Module overview (2:43)

Brocade Converged 10 GbE Switch Module

The Brocade Converged 10 GbE Switch Module and Brocade 2-Port 10 Gb Converged Network Adapter are part of a leading Converged Ethernet solution for IBM BladeCenter that offers Fibre Channel investment protection, maximum bandwidth and performance, and simplicity in a converged environment. The Brocade Converged 10 GbE Switch Module also features Dynamic Ports on Demand capability through the Port Upgrade Key. This capability allows you to enable any combination of Fibre Channel and Ethernet ports based on your infrastructure requirements, and to experience Converged Ethernet benefits without significant investment.

Broadcom 2-port 10 Gb Virtual Fabric Adapter

The Broadcom 2-port 10 Gb Virtual Fabric Adapter for IBM BladeCenter is part of IBM's comprehensive networking portfolio of 1 GbE and 10 GbE adapters and delivers industry-leading performance and scalability per watt, reducing requirements for power and cooling. Protocol offloads enable

effi-
cient
use of
com-
puting

> **MORE ON THE WEB**
>
> - Broadcom 2-port 10 Gb Virtual Fabric Adapter Redbook info
> - Broadcom 2-port 10 Gb Virutal Fabric Adapter info on PartnerWorld

resources, support more virtual machines per CPU, and re-
duce the number of servers required to support data center
demands. These adapters allow IBM clients to simplify their
I/O infrastructure by reducing the number of switches need-
ed inside the
chassis.

Broadcom 10 Gb (Gen 2) 2-port and 4-port Ethernet Expansion Cards

The Emulex 10 GbE Virtual Fabric Adapter for IBM BladeCen-
ter is a dual-port 10 Gb Ethernet card that supports 1 Gbps or
10 Gbps traffic, or up to eight virtual NIC devices. The virtual
NICs are configured to meet the client's mix of network con-
nectivity and throughput demands for today's complex server
application environments. Each physical 10 Gbps port can be
divided into four virtual ports with bandwidth allocation in 100
Mbps increments to the maximum 10 Gbps per physical port.
The Emulex 10 GbE Virtual Fabric Adapter Advanced adds
iSCSI hardware initiator functionality.

> **MORE ON THE WEB**
>
> - Brocade 10 GB Gen 2 2/4 port Ethernet Expansion Card Redbook info
> - Brocade 10 GB Gen 2 2/4 port Ethernet Expansion Card info on PartnerWorld

Ethernet Switch Modules

Here we look at the switch modules that allow BladeCenter to participate in an Ethernet network.

10 Gb Ethernet Pass-Thru Module

The 10 Gb Ethernet Pass-Thru Module for IBM BladeCenter is ideal for clients looking to enable end-to-end non-blocking 10 Gb setup within the chassis. This device supports both Ethernet and Converged Enhanced Ethernet (CEE) packets, which allows clients to connect a BladeCenter Chassis to an FCoE-capable top-of-rack switch.

The fourteen 10 Gb uplink ports are based on optical SFP+ technology to offer the highest performance while maintaining industry-standard connectivity. This offering will also work with BladeCenter Open Fabric Manager, providing all the benefits of I/O Virtualization at 10 Gb speeds.

> **MORE ON THE WEB**
>
> - 10 Gb Ethernet Pass-Thru Module Redbook
> - 10 Gb Ethernet Pass-Thru Module info on PartnerWorld
> - Ethernet I/O info on IBM.com

Here are some quick 10 Gb Ethernet Pass-Thru Module facts:

- Single-wide high-speed switch module

- Fourteen internal 10 Gb ports to the server blades (no auto-negotiation)

- Up to fourteen 10 Gb SFP+ uplink ports (SFP+ modules not included)

- Support for SR, LR, and DAC copper cables

- Direct one-to-one mappings of external and internal ports (no configuration required).

IBM BNT Layer 2/3 Copper and Fiber Gigabit Ethernet Switch Module

The IBM System Networking BNT Layer 2/3 Switch offers all the switching features in a BladeCenter chassis at a competitive price. This switch is offered in two versions: Copper and Fiber. These versions provide reliability and flexibility and meet all the stringent requirements of both enterprise and telecom environments.

Here are some quick BNT Layer 2/3 Copper and Fiber Gigabit Ethernet Switch Module facts:

- Fourteen internal full-duplex Gigabit ports

- Two internal full-duplex 10/100 Mbps ports

- Copper switch: Six 1000BASE-T copper RJ-45 connections

- Fiber switch: Six 1000BASE-SX SFP transceiver-based LC fiber connections

- Autosensing 10/1000/1000 Mbps external Ethernet ports for bandwidth optimization

- Non-blocking architecture with wire-speed forwarding of traffic.

MORE ON THE WEB

- BNT Layer 2/3 Copper/Fiber Gigabit Ethernet Switch Module Redbook info
- BNT Layer 2/3 Copper/Fiber Gigabit Ethernet Switch Module info on PartnerWorld
- Ethernet I/O info on IBM.com

IBM BNT Layer 2-7 Gigabit Ethernet Switch Module

IBM System Networking offers the BNT Layer 2-7 Gigabit Ethernet Switch Module, which enables you to consolidate full Layer 2-7 LAN switching capabilities into IBM BladeCenter. Consolidation flattens the topology of the data center infrastructure and reduces the number of discrete devices, management consoles, and manufacturers that you have to deal with. And the L2-7 Switch Module includes advanced security, high availability, and performance features, further reducing the need for discrete function-specific appliances. The result is dramatic simplification of the data center infrastructure, which translates into faster performance, higher availability, greater scalability, stronger security, simplified management, and lower TCO.

Here are some quick BNT Layer 2-7 facts:

- Improved application availability and boosted application performance

- Increased application and server scalability

- Enhanced application and server security

- Simplified server deployment and management

- Reduced data center total cost of ownership (TCO).

MORE ON THE WEB

- BNT Layer 2-7 Gigabit Ethernet Switch Module info on PartnerWorld
- Ethernet I/O info on IBM.com

Cisco Catalyst Switch Module 3012

The Cisco Catalyst Switch Module 3012 for IBM BladeCenter represents the next-generation networking solution for blade server en-vironments. Built on the market-leading Cisco hardware and Cisco IOS Software, the Cisco Catalyst Switch Module 3012 is engineered with unique technologies specifically designed to meet the rigors of blade server-based application infrastruc-ture for the small or mid-size enterprise.

> **MORE ON THE WEB**
>
> - Cisco Catalyst Switch Module 3012 info on PartnerWorld
> - Cisco Catalyst Switch Module 3012 info on IBM.com
> - Ethernet I/O info on IBM.com

Here are some quick 3012 facts:

- Cisco Catalyst Switch Module 3012 provides four external 1 Gb ports and 14 internal 1 Gb ports

- Operates in a standard I/O module bay across all chassis types

- Cisco Catalyst Switch Module 3012 is fully compatible with Open Fabric Manager—enabled for I/O virtualization with no changes required in switch module during installation or after blade replacement or failover

- Layer 2 and basic Layer 3 switching (static routing and RIP) is supported

- Cisco Catalyst Switch Module 3012 offers common manage-ment with external Cisco switches via IOS Command Line Interface and CiscoWorks LAN Management Solution.

Cisco Catalyst Switch Modules 3110G and 3110X

The Cisco Catalyst Switch Modules 3110G and 3110X represent the next-generation networking solution for blade server environments. Built on the market-leading Cisco hardware and Cisco IOS Software, the Cisco Catalyst Switch Module 3110 is engineered with unique technologies specifically designed to meet the rigors of blade server-based application infrastructure. Specifically, the switch is designed to deliver scaleable, high-performance, highly resilient connectivity while supporting ongoing IT initiatives to reduce server infrastructure complexity and total cost of ownership (TCO).

Here are some quick 3110G and 3110X facts:

- Cisco Catalyst Switch Module 3110G provides four external 1 Gb ports and 14 internal 1 Gb ports

- Cisco Catalyst Switch Module 3110X provides one external 10 Gb uplink port and 14 internal 1 Gb ports

- Both are perfect for large enterprises where Cisco's VBS technology enables rack-level link consolidation and switch management

MORE ON THE WEB

- Cisco Catalyst Switch Modules 3110G/3110X info on PartnerWorld
- Cisco Catalyst Switch Module 3110G info on IBM.com
- Cisco Catalyst Switch Module 3110X info on IBM.com
- Ethernet I/O info on IBM.com

- Both are fully compatible with Open Fabric Manager—enabled for I/O virtualization with no changes required in switch module during installation or after server blade replacement or failover

- The base switch supports Layer 2 and basic Layer 3 switching; IP Services S/W upgrade enables OSPF and BGP routing; Advanced I/P Services S/W upgrade enables IPv6n

- Cisco Catalyst Switch Module 3110G and Module 3110X operate in standard I/O module bay across BladeCenter E, H, T, and HT chassis types

- Separately available are two optional S/W keys for the Cisco Catalyst 3110 switch modules.

Intelligent Copper Pass-Thru Module

The Intelligent Copper Pass-Thru Module (ICPM) is designed for those IT organizations that wish to deploy their IBM BladeCenter servers directly into their existing networking infrastructure and that require line rate performance. The ICPM provides many additional functions not available on the older IBM Copper Pass-Thru Module (CPM) and is supported in all BladeCenter chassis

> **MORE ON THE WEB**
>
> - Copper Pass-Thru info on PartnerWorld
> - Ethernet I/O info on IBM.com

and the Multi-Switch Interconnect Module (MSIM). The ICPM is designed to exploit management capabilities of the management modules or advanced management modules (MM/AMM).

The moment a cable is plugged into the uplink ports of the ICPM and the upstream switch, the ICPM automatically negotiates the best connection to the upstream switch with no further action required. Unlike the older IBM CPM, which used

fan-out cables that were limited 3-meter lengths, the ICPM is designed to use standard Ethernet cables with lengths up to 100 meters to connect to upstream networking equipment. And instead of using three fan-out cables, the ICPM's uplink ports use 14 separate Ethernet cables, which reduces the impact of any single cable failure.

Here are some quick Intelligent Copper Pass-Thru Module facts:

- Ideal for clients whose applications require 100 percent line rate performance

- Easy to install and does not require any networking knowledge

- Compatible with Serial over LAN (SoL) and secure Concurrent KVM

- Fully compatible with BladeCenter Open Fabric Manager.

IBM BNT 1/10 Gb Uplink Ethernet Switch Module

The IBM System Networking's BNT 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter is an innovative switch designed to meet the growing bandwidth needs of our clients. Today, while our clients look to implement solutions to

> **MORE ON THE WEB**
>
> - Nortel BNT 1/10 Gb Ethernet Switch info on PartnerWorld
> - Ethernet I/O info on IBM.com

meet their current 1 Gb requirements, they also need a way to migrate easily to 10 Gb. This switch provides investment protection and future proofing since it supports both 1 Gb and 10 Gb ports concurrently. This is a major advantage versus

the Cisco offerings since you get both 1 Gb and 10 Gb uplinks in a single switch no need for rip and replace, plus a seamless transition from 1 Gb to 10 Gb with no downtime.

Here are some quick BNT 1/10 Gb Uplink Ethernet Switch Module facts:

- Includes six 1 Gb and three 10 Gb Ethernet uplinks for un-matched upstream bandwidth

- Supported in all five IBM BladeCenter chassis in addition to Multi-Switch Interconnect Module (MSIM) for IBM BladeCenter and IBM BladeCenter HT

- Designed for extreme lower-power consumption

- Full Ethernet Layer 2/3 functionality comes standard

- Support for VMready making the network VM aware and simplifying VM mobility

- Stacking support.

Server Connectivity Module for IBM BladeCenter

As small and mid-size businesses try to squeeze more value from their IT systems and on-site networking skills, the Server Connectivity Module for IBM BladeCenter delivers a range of capabilities in scalable, flexible configurations. An intuitive graphical user interface (GUI) and integrated manage-

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MORE ON THE WEB

- Server Connectivity Module for IBM BladeCenter info on PartnerWorld
- Ethernet I/O info on IBM.com

ment software make this module affordable and simple for IT administrators to deploy, manage, and maintain—delivering more value with fewer resources. And the networking features of the Server Connectivity Module have been designed to prevent an improperly configured device from disrupting the network infrastructure, helping enable critical system uptime and uninterrupted operation.

Here are some quick facts about this module:

- Serves the needs of small and mid-size business customers

- Easy to install, configure, and manage through an easy-to-use browser-based interface

- Ideal for environments where a separation between the server and networking domains is preferred.

Cisco Nexus 4001I Switch Module for IBM BladeCenter

The Cisco Nexus 4001I Switch Module for IBM BladeCenter is an end-to-end 10 Gb switch that offers a high-performance, low-latency solution that seamlessly integrates with other Cisco Nexus family products. An optional upgrade license key enables easy transition to FCoE. Clients considering Fibre Channel over Ethernet as a fabric-consolidation solution can implement a 10 Gb Ethernet infrastructure as the basis of the solution. The solution uses FCoE between the converged network adapter (CNA) in each server and a top-of-rack (TOR) switch such

MORE ON THE WEB

- Cisco Nexus 4001I info on PartnerWorld
- Cisco Nexus 4001I info on IBM.com
- Cisco Nexus 4001I Redbook

as the Cisco Nexus 5000 Series, with the Cisco Nexus 4001I blade switch at the access layer between them.

With this solution, clients gain most of the cost savings from the use of fewer adapters, cables, and switch ports. The FCoE connection between the CNA and the 4001I and 5000 Series switches will carry both Fibre Channel and Ethernet traffic on a single link. The Cisco Nexus 5000 Series switch will then separate LAN and Ethernet traffic to the Cisco Nexus 7000 Series switch upstream and SAN traffic to the Cisco MDS 9000 Family switch upstream.

Here are some quick facts about this module:

- Twenty ports of 10 Gb (14 internal and six external) bandwidth

- Supported on High Speed Chassis (H/HT), all multi-switch interconnect modules and compatible with BladeCenter Open Fabric Manager

- Common Nexus CLI and Web-based management tool.

Fibre Channel Switch Modules

This section covers switch modules that allow for the attachment of BladeCenter to Fibre storage area networks.

Cisco 4 Gb 10- and 20-port Fibre Channel

These latest Fibre Channel switching options integrate an enterprise fabric into the BladeCenter architecture, providing high-bandwidth connectivity. They offer high-performance, highly available storage area networks (SANs) at a competi-

MORE ON THE WEB

- Cisco 4 Gb 10 and 20-port Fibre Channel Switch info on PartnerWorld
- Cisco 4 Gb 10 and 20-port Fibre Channel Switch info on IBM.com

tive price, and are easy to set up and integrate into core or edge SAN configurations.

Here are some quick Cisco 4 Gb 10- and 20-port Fibre Channel Switch facts:

- Enables high-performance end-to-end 1, 2, and 4 Gigabits-per-second SAN solutions for the data center

- Affordable 10- port and 20-port offerings available for small, medium, and large enterprise business needs

- Exciting addition to the Cisco Ethernet and MDS family of products

- Includes Tivoli SAN manager enhancements to better manage MDS9000 with integrated IBM SAN Volume Controller

- Ten-port upgrade available for on-demand scaling to a 20-port switch

- Cisco SFPs are required:

    — Long-wave 41Y8600

    — Short-wave 41Y8598

    — Short-wave 4-pack 41Y8596.

Brocade 10- and 20-port 8 Gbps SAN Switch Modules

The Brocade Enterprise 10-port and 20-port 8 Gbps SAN Switch Modules for IBM BladeCenter deliver embedded Fibre Channel switching with the industry's fastest Fibre Channel throughput performance (8 Gb). These two switches have almost the same features and functions except for the number of activated ports: the 10-port switch has 10 activated ports, and the 20-port switch has 20 activated ports.

Here are some quick Brocade 8 Gbps SAN Switch facts:

- Six external auto-sensing Fibre Channel ports (2 Gbps, 4 Gbps, or 8 Gbps for 8 Gb SFP+ transceivers) operate at a maximum speed of 8 Gbps

- Fourteen internal Fibre Channel ports operate as F_ports (fabric ports) at 2 Gbps, 4 Gbps, or 8 Gbps, depending on FC expansion cards installed into blades

- Ten-port model with 10 Dynamic Ports-On-Demand (DPODs) can be activated in any combination of internal and external ports

- High-availability features include hot-pluggable design, non-disruptive software upgrades, automatic path failover, and power-on self-test diagnostics and status reporting

MORE ON THE WEB

- Brocade 10 and 20-port 8 Gbp SAN Switch info on PartnerWorld
- Brocade 10 and 20-port 8 Gbp SAN Switch info on IBM.com
- Brocade 10 and 20-port 8 Gbp SAN Switch Redbook

- Aggregate Fibre Channel I/O bandwidth: 48 Gbps (six external ports at 8 Gbps line rate)

- External ports can operate as F_ports (fabric ports), FL_ports (fabric loop ports), or E_ports (expansion ports) when in full FC switch mode; when in Brocade Access Gateway mode, the external ports operate as NPIV-enabled N_ports

- Fabric latency of 0.74 μsec ensures the fastest response and access time to data for critical applications and servers

- Full 8 Gbps operations are supported at distances up to 129 km and up to 1036 km at 1 Gbps.

QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module

The QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module for IBM BladeCenter provides double the throughput of the 4 Gb module described above. It provides an alternative to the traditional optical pass-thru module with six external 8 Gb ports. It is supported across all BladeCenter chassis and multi-switch interconnect modules.

MORE ON THE WEB

- QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module info on PartnerWorld
- Fibre Channel Switch info on IBM.com

QLogic 20-port 8 Gb SAN Switch Module

The QLogic 20-port 8 Gb SAN Switch Module for IBM BladeCenter offers double the throughput of the 4 Gb version described above. It enables high-performance 2, 4, and

8 gigabits-per-second SAN solutions and provides

MORE ON THE WEB
• QLogic 20-port 8 Gb SAN Switch Module info on PartnerWorld
• Fibre Channel Switch info on IBM.com

interoperability in open mode leveraging standards-compliant (FC-SW2 & FC-SW3) SANs. This 20-port switch module is supported on BladeCenter E, H, T, and HT chassis and multi-switch interconnect modules.

InfiniBand Switch Modules

InfiniBand is recognized as an industry-standard fabric for creating clusters that address high-performance computing (HPC) requirements such as those found in scientific, technical, and financial applications. The InfiniBand high-bandwidth fabric permits high-speed interconnection between cluster servers to enable fast performance. In this section, we cover a module that allows BladeCenter to participate with Infiniband.

Voltaire 40 Gb InfiniBand Switch Module

The Voltaire 40 Gb InfiniBand Switch Module for BladeCenter provides InfiniBand QDR connectivity between the server platform's high-performance blade servers and external InfiniBand fabrics in non-blocking designs, all on a single device. Voltaire's high-speed module also accommodates performance-optimized fabric designs utilizing a single BladeCenter chassis or stacking multiple BladeCenter chassis without requiring an external InfiniBand switch.

The Infini-Band Switch Module offers 14 Gb ports, one to each

server, and 16 ports out of the chassis per switch. This solution offers a no-compromise, congestion-free solution to meet even the most performance-hungry applications.

Here are some quick Voltaire 40 Gb InfiniBand Switch facts:

- Full QDR rate InfiniBand switching

- Based on the Infiniscale-IV device

- Up to 40 Gbps performance for clusters and grids (bidirectional)

- Hot-swap support, with soft start and current limiting

- Bay address and presence support.

SAS I/O

In this section, we look at the SAS (serial attached SCSI) I/O family of switches that enable BladeCenter to leverage storage that provides unprecedented performance and ease of use.

BladeCenter S SAS RAID Controller Module

IBM BladeCenter is the industry's premier server portfolio, and it has been helping clients simplify IT, making it easier to deploy, own, and manage servers, storage, and IO. IBM is extending that promise by making available the IBM BladeCen-

ter S SAS RAID Controller Module. Quite simply, the SAS RAID Controller Module can enable the benefits of a SAN right inside the BladeCenter S chassis.

The IBM BladeCenter S SAS RAID Controller Module is an innovative approach to efficient IT. Rather than manage RAID at several adapters, the SAS RAID Controller consolidates this function at the switch level, simplifying management and minimizing costs. Combine this with the ability to deliver RAID 0, 1, 0+1, and 5 while also allowing shared storage for up to six blade servers, the SAS RAID Controller Module is the only slide-in way to get your SAN up and running in no time.

Here are some quick SAS RAID Controller Module facts:

- Enhanced domain knowledge and function in Microsoft application monitors

- Improved problem determination by combining data from multiple Microsoft application monitors

- Automated Microsoft business practices

- Integration of data and events with other Tivoli Enterprise Portal (TEP)-based solutions from IBM Tivoli Composite Application Manager (ITCAM), ITM, and OMEGAMON, which allows comprehensive management of business applications.

SAS Connectivity Module

The IBM BladeCenter SAS Connectivity Module is a high-performance 3 Gbps SAS based pass-thru module that enables broad storage functionality for all BladeCenter chassis.

Here are some quick SAS Connectivity Module facts:

> **MORE ON THE WEB**
>
> - SAS Connectivity Module info on PartnerWorld
> - SAS Connectivity Module info on IBM.com

- Enables up to twelve 3.5-inch SAS or SATA disks in BladeCenter S using the Disk Storage Module (DSM)

- Enables use of entry storage products such as IBM System Storage DS3200 with BladeCenter chassis

- Two switches to enable fully redundant capability in BladeCenter chassis

- High-performance, fully duplex, 3 Gbps speeds.

POWER7 Enterprise

IBM POWER7 Enterprise systems deliver unprecedented performance for both transactional and throughput computing for UNIX, IBM i, and Linux applications. Now let's take a look at the most powerful members of the Power Systems family.
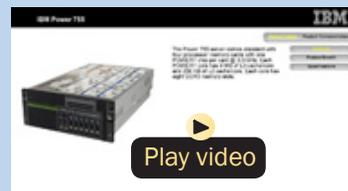
Power 755

The IBM Power 755 server (Figure E.1) is a four-socket, 4U rack-mounted server that offers 32 POWER7 processor cores running at a frequency of 3.6 GHz. A maximum of 64 GB of

Specifications

POWER7 processor modules	8-core 3.6 GHz POWER7 processors with AltiVec SIMD acceleration
Sockets	4
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	128 GB to 256 GB of 1066 MHz DDR3
Solid-state drives (SSD)	Up to eight SFF drives
Disk drives	Up to eight SFF SAS drives
Disk capacity	Up to 2.4 TB
Media bays	One slimline for DVD-RAM
PCI adapter slots	Two PCI-X 2.0; three PCI Express 8x
Integrated Virtual Ethernet	Four Ethernet 10/100/1000 Mbps ports (or) two 10 Gigabit Ethernet ports
Integrated SAS controller	One controller for SAS DASD/SSD and DVD-RAM
Other integrated ports	Three USB, two HMC, two system ports
GX slots (12x)	One
Operating systems	AIX, Linux for POWER

- Power 755 details on PartnerWorld
- Power 755 details on IBM.com
- Power 755 competitive info on COMP
- Power 755 blog search
- Power 755 Twitter search

Power 755 Express virtual tour

Figure E.1.   IBM Power 755 Express server at a glance (and links to more detail).

memory is allowed on each processor card, making for a system maximum of 256 GB of memory in the four-processor card system. The IBM Power 755 compute node is designed for organizations that require a scalable system with extreme parallel processing performance and dense packaging.

   Ideal workloads for Power 755 include high performance computing (HPC) applications such as weather and climate modeling, computational chemistry, physics, and petroleum reservoir modeling that require highly-intense computations where the workload is aligned with parallel processing methodologies. The Power 755 supports AltiVec instruction set and extended VSX SIMD acceleration, which can execute up to eight single-precision or double-precision floating point operations per clock cycle per core to improve fine-grained parallelism and accelerate data processing. Using 12X InfiniBand adapters up to 641 Power 755 nodes, each with 32 cores, can be clustered together providing up to 2048 POWER7 cores. The IBM High Performance Computing software stack provides the necessary development tools, libraries, and system management software necessary to manage a Power 755 server cluster running AIX 6.1.

   The Power 755 is an ENERGY STAR-qualified server designed with features to help clients become more energy efficient. The leadership performance of the IBM Power 755 translates into outstanding performance per watt and IBM Systems Director Active Energy Manager exploits EnergyScale technology enabling advanced energy management features to help clients achieve the most efficient computing environment for their systems.

Here are some quick Power 755 Express facts:

- Optimized for running highly parallel computationally inten-sive workloads and algorithms such as weather and climate modeling, computational chemistry, physics, and petroleum reservoir modeling.

Power 770

Designed for virtualized consolidation of business-critical workloads, the IBM Power 770 (Figure E.2) delivers on per-formance, availability, efficiency, and virtualization in a way that is unique in the industry. PowerVM virtualization enables continuous, dynamic resource adjustments across all parti-tions and operating environments, independent of physical placement, to optimize performance while minimizing energy usage. Supported environments include AIX, IBM i, Linux for Power, and x86 Linux applications, all on the same system.

IBM Power clients continuously report savings from re-duced hardware, software, energy, floor space, and ad-ministrative overhead. Additional benefits include faster provisioning, increased application performance, and an op-erational availability that can only come from IBM. All of this is delivered on the latest technology from a vendor you can trust. No wonder more and more companies are switching to IBM Power Systems.

For database serving, the Power 770 provides a system designed for demanding, critical, back-end workloads. Dem-onstrating outstanding performance across multiple database solutions and multiple operating systems, the 770 shows its

Specifications

Configuration options	Per Building Block	System Maximum
Processors	Two 3.1 GHz POWER7 processor modules with eight cores each or Two 3.5 GHz POWER7 processor modules with six cores each	Eight 3.3 GHz POWER7 processor modules with eight cores each or Eight 3.7 GHz POWER7 processor modules with six cores each
Sockets	Two	Eight
Level 2 (L2) cache	256 KB per core	256 KB per core
Level 3 (L3) cache	4 MB per core (eDRAM)	4 MB per core (eDRAM)
Enterprise Memory	Up to 1 TB of 1066 MHz DDR3 Active Memory Expansion	Up to 4 TB of 1066 MHz DDR3 Active Memory Expansion
Integrated SAS bays for SSDs or HDDs	Up to six SFF SAS drive bays	Up to 24 SFF SAS drive bays
Integrated media bays	One slimline for SATA DVD-RAM	Four slimline for SATA DVD-RAM
Integrated PCI adapter slots	Six PCIe Gen2 slots	24 PCIe Gen2 slots
Integrated multifunction card	One per enclosure: • Dual 10 Gb + Dual 1 Gb	Up to four per system: • Dual 10 Gb + Dual 1 Gb
Integrated SAS controller	Two SAS DASD/SSD controllers One SATA media controller	Eight SAS DASD/SSD controllers Four SATA media controllers
Other integrated ports	Three USB; two HMC; two SPCN	Nine USB; four HMC; four SPCN
GX slots (12x)	Two	Eight
Operating systems	AIX, IBM i, Linux for POWER	AIX, IBM i, Linux for POWER

- Power 770 details on PartnerWorld
- Power 770 details on IBM.com
- Power 770 competitive info on COMP
- Power 770 blog search
- Power 770 Twitter search

Power 770 Express virtual tour

Figure E.2. IBM Power 770 Express server at a glance (and links to more detail).

true heart and soul when entrusted with a company's most treasured IT asset, the database.

For transaction processing workloads, the IBM Power 770 server delivers outstanding performance, mainframe-inspired reliability, modular non-disruptive growth, and innovative virtualization technologies. These features are integrated to enable the simplified management of growth, complexity, and risk.

Here are some quick Power 770 Express facts:

- For server consolidation across UNIX, IBM i, and Linux workloads

- For mid-size to large database serving

- For mid-size to large transaction processing such as ERP and CRM applications

- For a complete business system combining all aspects of a company's IT infrastructure.

Power 780

Designed for virtualized consolidation of business-critical workloads, the IBM Power 780 (Figure E.3) delivers on performance, availability, efficiency, and virtualization in a way that is unique in the industry. PowerVM virtualization enables continuous, dynamic resource adjustments across all partitions and operating environments, independent of physical placement, to optimize performance while minimizing energy usage. Supported environments include AIX, IBM i, Linux for Power, and x86 Linux applications, all on the same system.

Specifications

Configuration options	Per Building Block	System Maximum
Processors	Two 3.92 GHz POWER7 processor modules with eight cores each or Four 3.44 GHz POWER7 processor modules with six cores each or Two 4.14 GHz POWER7 processor modules with four cores each	Eight 3.92 GHz POWER7 processor modules with eight cores each or Sixteen 3.44 GHz POWER7 processor modules with six cores each or Eight 4.14 GHz POWER7 processor modules with four cores each
Sockets	Two or four	Eight or sixteen
Level 2 (L2) cache	256 KB per core	256 KB per core
Level 3 (L3) cache	4 MB L3 cache per core (eDRAM) or 8 MB L3 cache per core (eDRAM)	4 MB L3 cache per core (eDRAM) or 8 MB L3 cache per core (eDRAM)
Enterprise Memory	Up to 1 TB of 1066 MHz DDR3 Active Memory Expansion	Up to 4 TB of 1066 MHz DDR3 Active Memory Expansion
Integrated SAS bays for: - Solid State Drives (SSD) - Hard Disk Drives (HDD)	Up to six SFF SAS drives	Up to 24 SFF SAS drives
Disk drives	Up to six SFF SAS drives	Up to 24 SFF SAS drives
Media bays	One slimline for SATA DVD-RAM	Four slimline for SATA DVD-RAMs
PCI adapter slots	Six PCIe Gen2 slots	24 PCIe Gen2 slots
Integrated multifunction card	One per enclosure: • Dual 10 Gb + Dual 1 Gb	Up to four per system: • Dual 10 Gb + Dual 1 Gb
Integrated SAS controller	Two SAS DASD/SSD controllers One SATA media controller	Eight SAS DASD/SSD controllers Four SATA media controllers
Other integrated ports	Three USB; two HMC; two SPCN	Nine USB; four HMC; four SPCN
GX slots (12x)	Two	Eight
Operating systems	AIX, IBM i, Linux for POWER	AIX, IBM i, Linux for POWER

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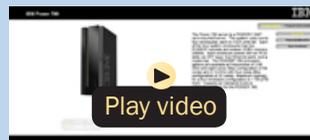
Power 780 virtual tour

Figure E.3. IBM Power 780 Express server at a glance (and links to more detail).

IBM Power clients continuously report savings from reduced hardware, software, energy, floor space, and administrative overhead. Additional benefits include faster provisioning, increased application performance, and an operational availability that can only come from IBM. All of this is delivered on the latest technology from a vendor you can trust. No wonder more and more companies are switching to IBM Power Systems.

For large database serving, the Power 780 provides a system designed for demanding, critical, back-end workloads. Demonstrating outstanding performance across multiple database solutions and multiple operating systems, the 780 shows its true heart and soul when entrusted with a company's most treasured IT asset, the database.

For transaction processing workloads, the IBM Power 780 server delivers outstanding performance, mainframe-inspired reliability, modular non-disruptive growth and innovative virtualization technologies.These features are integrated to enable the simplified management of growth, complexity, and risk.

Here are some quick Power 780 Express facts:

- For large-scale server consolidation across UNIX, IBM i, and Linux workloads

- For large database serving

- For large transaction processing such as ERP and CRM applications

- For a complete business system combining all aspects of a company's IT infrastructure.

Power 795

The IBM Power 795 server (<u>Figure E.4</u>) is designed for enterprises to support large-scale transaction processing and database applications within a highly virtualized system infrastructure, enabling new levels of work-load consolidation, resource utilization, and efficiency. As the most powerful member of the IBM Power Systems family, this server provides exceptional performance, massive scalability, and bandwidth to efficiently and concurrently support a full range of complex, mission-critical applications.

Equipped with up to 256 POWER7 processors the Power 795 server can scale rapidly and seamlessly to address the changing needs of today's business climate. Equipped with industry-leading PowerVM virtualization, EnergyScale technology and affordable Capacity on Demand (CoD) options, the Power 795 helps enterprises increase their productivity and effectively consolidate multiple UNIX, IBM i, and Linux workloads onto a single system.

Extensive mainframe-inspired reliability, availability, and serviceability (RAS) features in the Power 795 help ensure that mission-critical applications run reliably around the clock. IBM clients with installed Power 595 systems may leverage their current investment in Power technology by upgrading their POWER6 system to a Power 795 to increase capacity and improve performance.

With extensive scalability, a fundamentally reliable design, and expansive growth potential, the Power 795 server provides a solid foundation on which to deploy the most important applications in today's large enterprise data centers.

Specifications

Processor cores (maximum)	192 POWER7 3.72 GHz processors; 256 POWER7 4.00 GHz processors; 128 POWER7 4.25 GHz processors (TurboCore)
Processor books	Up to eight
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB L3 cache per core (eDRAM) or 8 MB L3 cache per core (eDRAM)
RAM (memory)	32 DIMMs per processor book; up to 8 TB of 1066 MHz DDR3
PCIe I/O drawers	24"; 1–32
Internal disk bays	26 SAS Small Form Factor bays in each 24" PCIe I/O drawer; up to 832 maximum per system in 24" drawers; up to 2220 bays in 19" drawers
Adapter slots	20 PCIe in each 24" I/O drawer; 640 maximum per system
I/O ports	Four GX++ adapter ports per processor book, 32 per system
Hardware management console ports	Two pairs via redundant Ethernet hubs
POWER Hypervisor	LPAR, Dynamic LPAR, Virtual LAN
PowerVM Standard Edition (optional)	Micro-Partitioning with up to 10 micro-partitions per processor (254 maximum); Multiple Shared Processor Pools; Virtual I/O Server; Shared Dedicated Capacity; PowerVM Lx86
PowerVM Enterprise Edition (optional)	PowerVM Standard Edition plus Live Partition Mobility and Active Memory Sharing
Operating systems	AIX, IBM i, and Linux for Power

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Power 795 virtual tour

Figure E.4. IBM Power 795 Express server at a glance (and links to more detail).

Here are some quick Power 795 Express facts:

- For large-scale server consolidation to increase flexibility and lower operational and energy costs

- For enterprises requiring the highest levels of RAS for their mission-critical applications

- For data centers supporting the largest UNIX and IBM i transaction processing and database applications.

Smart Analytics System 7700

Analytics can help organizations work smarter by putting the right information in the right hands at the right time. When decision makers at every level of business have access to up-to-the-minute information, they can identify potential revenue opportunities, minimize business risk, and take actions that create competitive advantage.

Smart analytics systems can give enterprises the edge they need, allowing business users to gather more data, analyze it across multiple dimensions, reach conclusions based on it, and recommend actions that take the business forward. But building a smart analytics system comes with its own set of challenges. Today's technology promises more capabilities, more choice—and more complexity—than ever before. How do you build the right system for your organization? How do you size it to meet your needs? How do you ensure rapid time to value? How do you efficiently manage and maintain all of the disparate components? How do you scale it to accommodate growing data stores, while still protecting your initial in-

vestment? How do you add functionality in the future to meet changing business needs?

The IBM Smart Analytics System 7700 is designed to address these questions, offering an advanced analytics solution in a single, ready-to-use appliance. It delivers server and storage hardware, networking, data warehousing, and advanced business analytics software in one powerful solution.

The Smart Analytics System 7700 is one of many ways IBM is providing smarter systems for a smarter planet. The solution is pre-configured, pre-tested, and ready to deploy, reducing time to value and lowering IT costs and complexity. Its modular architecture ensures linear scalability, while simplified management and maintenance processes help ensure continuous operation. With a design based on decades of best practices, the Smart Analytics System 7700 is optimized for real-time analytics, delivering a level of performance and breadth of functionality not typically found in appliance solutions.

Here are some quick Smart Analytics System 7700 facts:

- Built on a foundation of IBM data warehouse management software, storage, and the industry leading Power System platform

- Offers a breadth of business analytics capabilities including business intelligence reporting, analysis, dashboards, data mining, cubing services, and text analytics

- Pre-integrated hardware and software modules can be added anytime to existing installations—resulting in unmatched scalability and flexibility

- Engineered for the rapid deployment of a business-ready solution in days, not months

- Industry-leading performance and reliability—Ranked number one in TPC-H 10,000 GB benchmark (link resides outside of ibm.com)

- Control console that allows for coordinated updates and maintenance

- Operating systems supported: AIX.

MORE ON THE WEB

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Smart Analytics demo

About the Editor

Jim Hoskins is the founder of Maximum Press, a premier publisher of books, ebooks, and rich media that help businesses apply technology profitably. Jim has been involved with computer technology design, implementation, and education for over 30 years. He is the author of many articles and books covering a wide range of technology and Internet business topics. Jim spent a decade with IBM designing computer systems and directly helping businesses of all sizes design and implement real-world solutions. He is the author/editor of the popular *Exploring IBM* series, which has sold over 350,000 copies in 12 languages. Jim has a degree in electrical engineering from the University of Florida and resides in Gulf Breeze, Florida, with his wife and five children. You can reach Jim via email at jimh@maxpress.com.