

IBM Power Systems

Business Partner Guidebook

Your Roadmap
to Success with
IBM Power Systems



Edited by Jim Hoskins

IBM Power Systems Business Partner Guidebook

Titles of Interest

Other IBM Business Partner Guidebooks

- *[IBM PureSystems Business Partner Guidebook](#)*
- *[IBM System x & BladeCenter Business Partner Guidebook](#)*
- *[IBM Storage Business Partner Guidebook](#)*

For more information email us at info@maxpress.com.

IBM Power Systems Business Partner Guidebook

Fifth Edition

*Your Roadmap to Success with
IBM Power Systems*

Edited by Jim Hoskins

(version 5.1e)



Clear Horizon

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Gulf Breeze, FL 32561
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Acknowledgments

Many people gave assistance in preparation of this guidebook. Some provided information concerning their product area of expertise. Others reviewed the manuscript and provided helpful comments. To all of those who assisted...THANK YOU!!

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Your Eight-Step Quick Start

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

1. Check for Updated Editions of This eBook

This guidebook has the ability to check for more current editions, which are released periodically. Simply click on the “More on the Web” link provided here (or the link on the cover) and this guidebook will automatically check to see if you have the most current edition. If you don’t, you will be able to download the latest edition immediately.

MORE ON THE WEB

- [Check for updated editions of this guidebook](#)

2. Apply for Your IBM PartnerWorld Membership

The IBM PartnerWorld Web site is your source for information for all things related to being an IBM Business Partner (e.g., Business Partner relationships, guidelines, support, product info, etc.). You will need a user ID and a password to gain access to some areas of the

MORE ON THE WEB

- [Explore PartnerWorld](#)
- [PartnerWorld contact phone numbers by country](#)
- [Get your PartnerWorld user ID](#)

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.)

3. Plug in to IBM Product and Program Communications

Staying informed is one key to success. IBM has a special page on PartnerWorld that helps you do just that. Here you will find new product announcements, letters to Business Partners, customer success stories, educational opportunities, and more.

MORE ON THE WEB

- [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](#)

5. Learn to Quickly Find IBM Product Information

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),

the IBM Sales Manual (a comprehensive collection of detailed info on all IBM products), and much more. Give it a try so you will know how to find what you need when you need it.

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.

MORE ON THE WEB

- [Find competitive info](#)

7. Try Out “Know Your IBM”

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

MORE ON THE WEB

- [“Know Your IBM” training modules](#)

KYI is more general training that will give you a “high-level” view of IBM offerings. The roadmaps 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.

MORE ON THE WEB

- [Power Systems Business Partner certification info](#)
- [Additional Power Systems training opportunities](#)

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 Guidebook

This guidebook has been specially designed to be read on your computer screen using the free Adobe Acrobat Reader software or a supporting Web browser. Alternately, you can print this guidebook on almost any printer and read the material anywhere.

Reading on a computer screen at your desk isn't as cozy as reading a printed page while lying on a towel at the beach. If you give it a fair chance, however, you will find that navigating the bookmarks along the left side of the screen provides an effective way to get to the information you need—quickly. Further, the instant access to expanded information provided by the many embedded Web links, along with the “search” function, also makes using this guidebook “on screen” worthwhile. We recommend that you copy this PDF file to your desktop so it will always be only “one click away.” If you still want a hard copy, you can print it out on almost any printer.

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).

Reader Feedback

We welcome your feedback on any aspect of this guidebook, so please email your comments or suggestions to info@max-press.com.

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.

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 breakthroughs 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](#)

Smarter Planet

The planet is getting smaller, flatter, and smarter every day. Global market segments are connected like never before. Economic shock waves, both good and bad, travel the globe in nanoseconds. Newer, smarter technologies arrive daily. New business models are born, and old ones die, in the blink of an eye. Things we never thought of as computers—cars, clothing, appliances, electrical grids, traffic systems, and supply chains—are now instrumented for intelligence. These intelligent objects, systems, and processes are generating data that reveals just about anything, from large and systemic patterns to the location, temperature, security, and condition of practically every item in a global supply chain. With this knowledge, we are able to lower costs, reduce waste, and improve the efficiency, productivity, and quality of systems, companies, cities, and more.

But this radical change is placing enormous pressure on businesses of practically every size, in just about every industry. The barriers of entry for competitors are lower. Companies can be blindsided by competitors that appear seemingly out of nowhere and seize market share by the handful. The need to be proactive, which requires an agile, flexible human and IT infrastructure, is critical. New ways of working, such as social media and mobile technologies, must be em-

braced ahead of the curve. Even customers are changing. Newly empowered by information, their expectations and the number of influencers that must be marketed to are rising. External forces such as compliance, regulations, privacy and security threats have to be addressed to survive. Ubiquitous mobile devices and instrumented, intelligent objects are creating unimaginable amounts of data volumes every day—data that must be analyzed to reveal systemic patterns, trends and insights that in turn inform the decisions businesses must make to stay competitive. And to deal with these changes, IT architectures must move from heterogeneous silos to flexible, workload optimized infrastructures. All of these forces must be dealt with in an era of tighter budgets and the directive to do more with less.

IBM Power Systems for Next Generation Applications

A hallmark of the IBM Power Family has always been the ability to help businesses quickly adapt to changing business needs. Today, this need is greater than ever before as businesses and entire industries are being transformed by the growth of big data, social, mobile, and cloud technologies. With new levels of business insights, organizations are able to deliver personalized experiences and services to match the rising expectation levels of their end users. Customers now expect personalized shopping experiences, evidence based healthcare, and real time access to information and services.

In the retail industry, the need to deliver personalized offers to individuals based on their unique preferences and needs drives higher conversion rates and repeat business.

The banking industry is embracing multi-channel bank transformation to extend personalized and unique product bundles and services across all banking channels.

Each of these business and industry transformations are being driven by big data and analytics and require a new generation of applications that can drive specific business outcomes. These next generation applications leverage business and predictive analytics (analyzing large amounts of both structured and unstructured data) and cognitive (natural language learning) capabilities to provide real-time, data-driven business insights in unprecedented ways.

MORE ON THE WEB

- [Power identity and the marketing plan \(24:00\)](#)

IBM Power Systems provide an ideal platform for capturing and analyzing large amounts of data generated by traditional ERP and OLTP systems and emerging next generation applications to help businesses improve business performance and deliver an exceptional customer experience.

IBM Power Systems (with industry standard Linux, AIX, and IBM i) embody the ultimate open platform of choice for today's data intensive workloads. It has the compute intensive performance for real-time business analytics and cognitive applications—like IBM Watson which runs on Linux on Power and can process hundreds of millions of pages of unstructured and structured data within seconds.

IBM and the IBM Power Systems team are committed to continuous innovation in technology, products, and partnerships. IBM and the thriving Power Systems ecosystem in-

cludes thousands of independent software vendors and tens of thousands of applications available to address an extremely wide range of customer needs. These solutions range from traditional applications such as transaction processing and structured databases to next generation applications for big data and analytics, all within a highly available, scalable, and secure environment.

The Value of Power Systems to Business Partners

The IBM Power Systems family offers IBM Business Partners a large and growing opportunity to increase revenue by helping customers meet a wide range of traditional and emerging business needs.

Whether it's industry standard Linux, AIX, or IBM i, Power Systems provides your clients with the freedom and flexibility of choice to respond to their unique business needs quickly and efficiently. Power Systems' unique open platform for choice allows your clients to expand their options for faster technology development and IT integration with existing resources and ecosystem technologies. Today's rich multi-media, big data, and multi-device environment requires flexible options and industry compatibility so that your clients can integrate what they have today with what's coming tomorrow.

Power provides an open and flexible platform for choice allowing organizations to choose from industry standard Linux, AIX, or IBM i to run their mission critical workloads and next generation applications.

Businesses have consistently chosen Power over its competitors... making Power #1 in UNIX revenue share for nearly

a decade. Why? Because clients find their applications and databases run best on Power. And, as proven by IBM Watson and Sequoia (one of the top supercomputers in the world today), Power is the ultimate system for today's compute and data-intensive workloads that drive businesses' need to improve business performance, revenue, and customer loyalty. IBM Power Business Partners can take advantage of this market opportunity and conquer the competition with Power Systems, Software, and Solutions that address today's emerging business needs.

And IBM continues to invest in Power innovations today. These innovations and continued investments in R&D (more than \$4 billion for POWER7 and POWER7+) ensure that there will be continuing demand for Power Systems in the marketplace, which translates into continued revenue opportunity for IBM Business Partners.

"In short, (POWER7+) is a hot piece of technology that will keep existing IBM users happy and should help IBM maintain its impressive momentum in the UNIX systems segment."

—Rich Fichera, Forrester

"... these new offerings (POWER7+) clearly reflect IBM's Smarter Computing initiative, underlining the company's belief in the critical importance of its investments in cloud computing, analytics, and security for its enterprise customers."

—Charles King, PUND-IT, Inc.

IBM is committed to helping Business Partners do more, sell more, and cultivate more skills that extend your reach across more markets and into high-growth areas such as cloud, analytics, and expert integrated systems.

Today, IBM offers more support and resources than ever to help our Business Partners succeed. When you go to market with IBM, you can tap into the strengths that have made us a leader for more than 100 years.

If you are not an IBM Business Partner, sign up today. If you are already an IBM Business Partner, we thank you and look forward to working with you to grow your business for many years to come.

MORE ON THE WEB

- [Business Partner Programs and Benefits](#)
- [Join IBM PartnerWorld](#)

2

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.

There is an IBM Power Systems portal on PartnerWorld which serves as a central repository of much Power Systems information of interest to Business Partners.

Business Partners who invest the most in IBM receive higher-value benefits and resources.

MORE ON THE WEB

- [IBM PartnerWorld Web site home page](#)
- [Power Systems portal on PartnerWorld](#)
- [IBM PartnerWorld news and newsletters](#)
- [PartnerWorld membership levels](#)
- [Help with your user ID and password](#)

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 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 Master Sales Kit

The IBM Power Systems Master Sales Kit is a central repository for a wide variety of assets that can help you sell Power Systems. The Master Sales Kit includes benchmarks, brochures, competitive info, lead-passing guidelines, proposal inserts, sales plays, sales tools, white papers, and more.

MORE ON THE WEB

- [Power Systems Master Sales Kit](#)

Power Systems Asset Index

This downloadable spreadsheet contains direct links to key PartnerWorld assets. It is organized by asset type (sales kits, presentations, white papers, etc.).

Here are just a few examples of the many asset types available:

- Executive briefings
- Solution briefs
- Data sheets
- Analyst papers: (e.g., Value Proposition for IBM Power Systems Servers and IBM i: Minimizing Costs and Risks for Large Business)
- Management Solutions for Power
- Special offerings and incentives
- Freshly updated Power Systems Quick Proposals
- Client Webcasts (e.g., IBM Power Systems Announcement Overview)
- Client presentations (e.g., Power Systems Cloud Solutions)
- ROI tools
- Proof of Concept
- Competitive assets (e.g., Power Systems Competitive x86/VMware sales kit)

MORE ON THE WEB

- [Power Systems Asset Index](#)

Power Systems Quick Proposals

Americas Techline has designed “Quick Proposal” templates to assist you in preparing a high-quality, comprehensive proposal for your sales opportunities. Simply download the QP Content Document and customize it for your specific opportunity.

MORE ON THE WEB

- [Power Systems Quick Proposals](#)

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 Business 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.

MORE ON THE WEB

- [Power Systems certification requirements](#)
- [Power Systems recertification requirements](#)

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.

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.

MORE ON THE WEB

- [IBM Systems College](#)
- [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.

MORE ON THE WEB

- [Know Your IBM training modules](#)

Power Systems Specialty

The IBM Power Systems Specialty recognizes and rewards IBM Business Partners who make a significant investment in skills and certifications, have acquired and completed client references, and have achieved market differentiation by successfully selling and deploying solutions based on IBM Power Systems.

The Power Systems Specialty is for authorized Power Systems Business Partners who want to improve their success in selling IBM Power Systems solutions. Meeting the eligibility criteria gives you access to a comprehensive set of benefits that can be leveraged to help drive significant growth in your IBM Power Systems revenues.

MORE ON THE WEB

- [Power Systems Specialty](#)

Two achievement categories are offered in select geographies: Specialty and Specialty Elite. For those Business Partners who demonstrate more proficient skills, showcase more client references and meet higher revenue targets, the Power Systems Specialty Elite offering is available in North America.

These Business Partners will be offered greater levels of support and benefits.

You must apply for the specialty to participate. Your company must meet the specified criteria through eligible certifications and verified client references, and achieve the minimum annual IBM Power Systems revenue requirements.

The Power Systems Specialty enrollment is open and is currently available to Business Partners in Europe and North America.

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 or just getting interested, the “More on the Web” box provides some links that will be of interest to you. Join the Power Systems conversation!

MORE ON THE WEB

- [Follow on Twitter \(#powersystems, #aix, #ibmi, #powerlinux\)](#)
- [Follow on LinkedIn](#)
- [Subscribe on YouTube](#)
- [Access our Flickr photostream](#)
- [IBM Power Systems forums, wikis, communities](#)
- [Power Systems RSS feed](#)
- [IBM PartnerWorld communities](#)
- [LinkedIn social network \(has an IBM Business Partner Group\)](#)
- [Use Twitter to Grow Your Business \(IBM Software Business Partner Blog\)](#)

Performance Benchmarks

Trying to judge the performance of servers by comparing the individual component (processor, disk, memory, etc.) specifications can be misleading. A better way to compare the performance of servers 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 detailed information on benchmark testing and the latest benchmark testing results for Power Systems by following the link in the “More on the Web” box.

MORE ON THE WEB

- [Power Systems performance benchmarks](#)

Success Stories, References, Case Studies

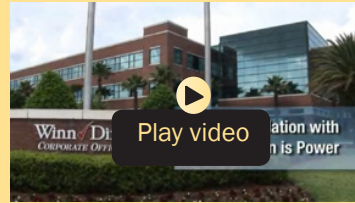
It is often helpful to make prospective customers aware of other businesses that have successfully implemented solutions based on Power Systems. For this reason, IBM maintains a database of existing customer success stories, complete with company profiles, identified needs, solutions, and resulting benefits. 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.

Competitive Marketing Information

This section will help you beat the competition when selling IBM Power Systems with information and links to more detail.

MORE ON THE WEB

- [Power Systems success stories](#)



Power Systems at Winn-Dixie (4:59)

First, some quick facts.

IBM Power Systems:

- Have a 44 percent lower total cost of ownership for IBM i servers vs. Windows
- Support 28 percent more users on PowerLinux servers using SAP SD 2-tier vs. x86
- Offer a 41 percent lower TCA for PowerLinux servers with PowerVM vs x86/VMware
- Used for analytics deliver insights 40 percent faster and predict outcomes 22 percent faster with POWER over Windows 2008 on x86
- Model 780 supports more than twice the number of users and 88 percent more users per-core than HP DL980 G7
- Clients reported 35 percent better SAP on Power performance versus SAP on x86 with better economics than SAP on x86
- One half the total cost and user complaints than users of legacy HP 9000 or HP Integrity servers

- 70 percent reduction in HP legacy server footprint
- 50 percent decrease in cost of ownership and downtime versus legacy Oracle or Sun Systems
- PowerVM clients can deploy up to twice as many virtual machines than VMware vSphere on x86 with up to 75 percent better resource utilization
- Up to 50 percent improvement in space and energy efficiency compared to previous generations of Power
- 58 percent savings in time to deploy new projects
- Four times more throughput and 75 percent less cost per report compared to Oracle Exadata on x86.

Power Advantages Over x86

IT complexity is growing. According to a recent IBM survey, 81 percent of CEOs are convinced their infrastructures will get more complex over the next five years. Only 42 percent say they're prepared for it. Why? One key reason is inefficient IT infrastructure leading to the proliferation of highly under-utilized servers and ever expanding requirements for more floor space, energy, and management.

IBM can help optimize your IT infrastructure's ability to drive business results by tuning systems to match specific workload characteristics. We call this smarter computing. A system designed for the distinct and unique requirements of your workloads from the physics of the processor up through the functioning of the application layer can deliver higher quality results, deliver them faster, and improve business

economics so you can meet your organization's demands and deliver on your full IT potential.

Over the years, many companies have installed deployed farms of hundreds of x86 servers, often acquiring a new set of servers for each new application. As x86 virtualization grew from the desktop to the server the promise of low cost infrastructure has driven an industry of management solutions to eliminate inefficiencies inherent in commodity architecture and design. But has anyone stopped to ask, "Why does IDC report that the growth of operations and maintenance now

comprise as much as 70

percent of IT budgets?" or

"Why do I need so many layers

of virtualization and server management just to obtain 20–40 percent efficiency of my infrastructure?" Maybe the solution is not more of the same, but rather better design for more efficiency.

On its current course, virtualized x86 solutions are on a path to reach unsustainable levels of complexity and cost. To make matters worse, even with popular x86 virtualization software, companies use little of the available capacity of these servers. While virtualization is a critical component of building an efficient, optimized IT infrastructure, recent research from Edison Group highlights the fact that the average number of virtual machines (VMs) per physical server is only six, with world-class organizations achieving only an 18-to-1 ratio.

MORE ON THE WEB

- [Power Systems Competitive x86/VMware Resource Kit](#)
- [Power Systems ISV Sales Kit](#)
- [Article: Selecting a Strategic Operating System](#)

Much higher densities of VMs per physical server are possible with more sophisticated efficient virtualization software combined with optimized hardware. What's more, companies can achieve higher densities while delivering greater virtualization security, without sacrificing performance. Imagine the business benefits of more rapid deployment and more secure virtualized infrastructure. Further, consider the improvement in IT economics from substantially higher utilization, reduced floor space, reduced power consumption, and reduced operational expense.

Challenges with virtualized commodity x86 solutions infrastructure include:

- Skyrocketing software and staffing costs
- Inefficient server virtualization leading to low utilization
- Lack of integrated security, limited automation, less flexibility, inadequate availability
- Increased system administration and management costs the more x86 virtualization technologies are used
- Excessive energy usage and cooling challenges, stressing an inadequate power and cooling data center infrastructure.

Power Virtualization Advantages

Security and compliance challenges and data center inefficiencies from x86 based technologies can leave your business with increased risk and less than ideal return on your IT investment. IBM Power Systems virtualized infrastructure

MORE ON THE WEB

- [White paper: IDC The Business Value of Large-scale Server Consolidation](#)
- [White paper: Migrating x86 Applications to Power](#)
- [Webcast: Virtualization and Cloud on Power](#)
- [Power workload simulator tool](#)

and industry workload solutions can help you drive greater efficiency and improved business benefits from IT infrastructures. Power Systems servers help your business deliver services faster, with higher quality and superior economics, making rapid progress on your journey to smarter computing.

Unlike commodity servers that utilize off-the-shelf virtualization software add-on piece parts from third parties, Power Systems servers are designed with embedded virtualization, called PowerVM. Designed together from the silicon up, Power servers and PowerVM have the DNA to deliver efficient virtualization that is as dynamic as your business. PowerVM enables you to deploy, add, remove, and redeploy resources to match your business needs without business interruption.

The Power Systems virtualization advantage over virtualized x86 includes:

- Up to 58 percent faster time-to-market for new IT initiatives
- Increased availability—up to 5.5 times better than x86
- Superior Security—No reported VM security breaches
- Up to 71.4 percent lower TCO
- Easier to manage—up to 210 percent less staff to operate

- Improved efficiency—up to 105 percent more efficient VM resource usage.

Migrate to Power with Help from IBM

IBM Power Systems support the applications your business depends on. Whether you need AIX (UNIX), Linux, or IBM i operating systems, you can gain significant advantages for your business with a Power Systems migration. However, you may be concerned about the challenge of migrating your applications from your current x86 infrastructure. The IBM Migration Factory can help you plan your migration to reduce risk and get the best return on your investment. Experienced IBM experts will help you develop a high-level technical and financial roadmap that identifies optimization opportunities within your server environment and the best targets for migration.

MORE ON THE WEB

- [IBM Migration Factory](#)

IBM COMP Web Site

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 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.

MORE ON THE WEB

- [IBM “Comp” Web site](#)
- [IBM Power Systems Competitive Sales Tool](#)

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 focuses on a set of common client pain points and recommends

specific solutions to ad-

MORE ON THE WEB

- [Full list of Power Systems Sales Plays and Kits on PartnerWorld](#)

dress them. They help you offer your clients more complete solutions, make your deals more profitable, and increase your win odds.

Follow the link in the “More on the Web” box to explore the most current sales plays.

Power Analytics Sales Play

The world is changing and IT plays an increasingly critical role in driving business growth and innovation. In addition to existing, core business applications, today’s businesses depend on business analytics to gain a competitive edge. In fact, 83 percent of CIOs have visionary plans that include business

analytics to increase competitiveness. Companies that used analytics were 2.2 times more likely to substantially outperform their industry peers and to experience 1.6 times increase in revenue growth.

Watson demonstrated Power's ability to analyze 200 million pages of structured and unstructured data in under 3 seconds. Putting this capability to work for your company can help you realize your business analytics objectives faster, with less risk and at a lower cost, enabling you to create a competitive advantage that will have a positive impact on their company's bottom line.

MORE ON THE WEB

- [Power Analytics Sales Play dashboard](#)

Power is the ultimate system for compute intensive analytic workloads. With the massive parallelism of the new enterprise class POWER7+ servers, engineered to support complex queries, combined with IBM analytics software and storage optimization, Power is the engine for faster insights.

This play includes financial incentives for discounted hardware, software and services to be used as a reason of call and to help simplify the deployment.

Power Solutions Sales Play

Power Solutions features a comprehensive list of smarter solutions for specific Industries, allowing clients of all sizes to leverage new capabilities that can help them deliver new services faster, with higher quality and superior economics. Power sellers can grow their revenue by driving new workloads

to Power with Power software, IBM middleware from IBM and ISV solutions across industries.

Customers rely on systems that deliver a large scale private cloud infrastructure dynamically supporting critical information and insight. This information is derived from financial data, customer data and enterprise resource data that is held across multiple lines of business.

This requires systems to make sure critical data is always available across the

MORE ON THE WEB

- [Power Solutions Sales Play dashboard](#)

organization, making it accessible in new ways so that actionable insights can be derived from business analytics. They also provide automated security capabilities, ensuring the integrity of critical data while mitigating risk and providing assured compliance. Power Solutions deliver the highest qualities of service, highest scale and superior efficiency for their most critical information and business processes. IBM's leadership in workload optimized systems spans more than four decades and presents a great opportunity for POWER sellers.

Focus on top Power industries for 2013:

- Retail
- Government
- Banking
- Telco
- Energy and Utility
- Healthcare

Power Migrate Sales Play

This play targets the following client scenarios with the objective to consolidate current workloads and redirect all relevant new workloads to be deployed to IBM Power Systems:

- Oracle (Sun) clients running Solaris UNIX on SPARC
- HP clients running HP-UX (UNIX) or other OS's on Itanium or PA-RISC systems
- Competitive x86 workloads and all relevant new workloads.

Capitalizing on today's challenges is a readiness statement as we are in the next era of IT—Smarter Computing. New opportunities and challenges lead companies to consider platform choices differently. On a Smarter Planet, information-centric processes are exploding in growth.

MORE ON THE WEB

- [Power Migrate Sales Play dashboard](#)

Today's businesses depend on big data, cloud, mobile, and social business applications in addition to their traditional core business applications. Many of these newer workloads are compute intensive. Compute intensive workloads are no longer contained to the high performance computing or technical computing segments. To handle this new mix of business critical applications, enterprise-class Power Systems provide solutions that are optimized to:

- Make IT a driver of business growth with dynamic resource allocation and self-tuning of consolidated, concurrent applications and workloads

- Unlock the value of data by providing business insight through faster processing and built-in availability for big data
- Deliver near zero vulnerability for clients' data by ensuring security and providing policy-based compliance.
- Run compute intensive workloads or any workload in any data center, large or small.

Power Base for the Large Enterprise Sales Play

This play is intended to drive the core audience of installed Power customers in all size companies toward new and enhanced Power systems. It targets the current Power Systems' customer install base in Large Enterprise, GB Enterprise and Midmarket customer sets to drive system upgrades and product refreshes. New and enhanced Power Systems with POWER7+ based technology is now featured in Power Enterprise, Express Servers and PowerLinux Servers with SSD Options for faster secure access to real time data, analytics and insights. New capabilities featured in Power Systems drive operational efficiencies, enable secure clouds, and deliver the highest levels of secure data and compliance for highly available data. This enables clients to innovate new client services and offerings, deploy projects faster, and rapidly respond to changing business requirements, spikes in processing and exploit new opportunities through the use of new analytics solutions.

MORE ON THE WEB

- [Power Base Sales Play dashboard](#)

The Power Base sales play will focus on the client value and benefit that Power Systems provide by delivering new capabilities—faster and more efficiently, real time actionable insights, and the ability to mitigate risk and improve compliance. This play focuses on upgrading and expanding Power’s presence in our installed accounts with a focus on new capabilities provided in Cloud, Data and Security.

Power Cloud Sales Play

The move to a cloud delivery model is not longer a question of ‘if’, but ‘when’. However, all clouds are not created equal and the cloud platform choice organizations make can impact the actual benefits received. This play is designed to enable your customers to leverage the unique performance, efficiency, scalability and RAS capabilities of IBM Power Systems to start moving mission-critical and compute intensive workloads to the cloud. 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, redistribute the IT budget and improve workload optimization so they can respond more rapidly to changing business demands. As a result, organizations are demanding an IT infrastructure that drives business growth rather than just supports it, and service delivery model that is dynamic, scalable, and fosters innovation. An efficient cloud computing environment built with Power Systems helps transform data centers to meet these challenges, leveraging the differ-

MORE ON THE WEB

- [Power Cloud Sales Play dashboard](#)

entiated virtualization and enterprise qualities of service and security needed to support mission critical workloads. Cloud computing on Power Systems deliver superior IT economics and reduce complexity through consolidations and automation, improved resource utilization and flexible service delivery, while minimizing and managing risk.

With option for customers of any size, Power Systems can effectively deliver maximum intelligent workload-based resource allocation in a secure, private cloud supporting vertical scalability for optimal asset utilization. This IT operational efficiency in turn frees up ongoing maintenance expense to be directed towards innovation for competitive advantage.

Power Expansion Sales Play

The 2012 General Business (GB) Marketplace is a \$461B opportunity with 5.4 percent CAGR '12-15' growth. Midmarket portion of that opportunity is \$225B with 6.0 percent CAGR '12-15' growth. Growth Markets show most robust growth rates. However the Major Markets will lead in dollar spending. IT services are expected to grow at 10.5 percent '12-15' CAGR in Growth Markets. Wholesale & CPG, Industrial Products, Banking, Healthcare & Life Science provide the largest revenue opportunity, while Healthcare, Life Science, Utilities, and Telecom show the highest growth rates. The global market continues to shift toward a solution buying orientation, rather than point products.

MORE ON THE WEB

- [Power Expansion Sales Play dashboard](#)

Power Expansion Sales Play is strategically designed to capitalize on these mentioned opportunities and expand the IBM Power Systems penetration into whitespace across Mid-market, GBE and GMU (growth markets). Power Expansion's key focus areas are:

- IBM i, AIX, and Linux Solution Editions
- PowerLinux 7R1/7R2 Servers, and SAP, Application Services
- Analytics, Mobility, Virtualization, Cloud Offerings, Low End Power Servers, and POWER7+ Technology
- MSPs and ISVs.

Power Expansion is a strategic play specifically designed for penetrating the whitespace. The Sales Play's primary focus being on the low end servers, POWER7+ Technology, Power Linux, Business Analytics, and ISVs & MSPs. Secondly, the Power Expansion sales play targets customers with workloads running on x86 and willing to move those workload over to POWER7 Servers/POWER7+ Technology. Thirdly, focusing on those customers who currently do not have Power installed and selling them on the advantages of Power over what they are currently using.

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 Power Software](#)

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 of storage devices falls under the System Storage brand and

MORE ON THE WEB

- [Storage products for Power Systems](#)

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 Proposals

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 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.

MORE ON THE WEB

- [Service offerings for Power Systems](#)

Attaching Training to Your Proposals

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 a client 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](#)

Power Systems Solutions

Whether you're looking for traditional solutions such as ERP and transaction processing or smarter computing solutions that are workload optimized, IBM and IBM Business Partner solutions help

MORE ON THE WEB

- [Power Systems solutions](#)

you keep an eye on tomorrow while making sure current operations don't miss a beat today.

Follow the link in the "More on the Web" box for more information.

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-

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.

MORE ON THE WEB

- [Web content syndication info on PartnerWorld](#)
- [Web content syndication registration](#)

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-

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

MORE ON THE WEB

- [Quick reference for IBM Power Systems mobile app](#)

Power Systems Solutions

Big data just keeps growing, and even your clients' cloud infrastructure may be struggling to keep up. Enter the software-defined environment (SDE), an exquisitely simple idea and a key feature of the future of computing.

IBM Power Systems introduces next generation applications and cognitive computing solutions to help organizations of all sizes drive better outcomes through data driven insights from big data and analytics. With these applications organizations are able to deliver personalized shopping experiences, evidence-based healthcare, and real time access to information and services.

Healthcare Solutions

Organizations are changing the way healthcare works and how we think about health. A more collaborative healthcare system that shares care, accountability for outcomes, and risk is emerging. Patient-centered care and health services are essential to redefining value and success for patients, organizations, and communities—enabled by the confluence of big data, cloud, social, eHealth, and mobility. Learn how healthcare solutions on IBM Power Systems can help.

MORE ON THE WEB

- [Healthcare Solutions info on IBM.com](#)

Retail Solutions

A major technology shift is taking place in the retail marketplace, driven by double-digit annual growth in mobile and social commerce. More than ever before, retailers need to integrate social and collaborative systems, share IT resources, and deliver a seamless shopping experience across multiple shopping channels. Learn how retail solutions on IBM Power Systems can help you successfully gather, analyze, interpret, and quickly react to growing volumes of customer data to navigate this new era of retailing.

MORE ON THE WEB

- [Retail Solutions info on IBM.com](#)

Cognitive Computing Solutions

Cognitive systems like IBM Watson transform how organizations think, act, and operate in the future with technologies which leverage natural language, hypothesis generation, and evidence-based learning.

Watson Engagement Advisor helps organizations know their customers better based on their past history, engage them wherever, whenever, and however they choose, and empower them at the point of

MORE ON THE WEB

- [Cognitive Computing Solutions on IBM.com](#)

action. As a result, organizations can drive better decisions and faster outcomes through personalized, contextual, and evidence-based interactions.

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

MORE ON THE WEB

- [Presentation: IBM Global Financing solutions for Power7 BPs](#)
- [IBM Global Financing info on IBM.com](#)

technology solutions offers many advantages in both robust and difficult economic climates because financing frees up 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).

MORE ON THE WEB

- [Contact Techline](#)
- [Technical Sales Library](#)
- [PartnerWorld technical resources & support](#)

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](http://www.ibm.com/power)
- [Customer brochure: Power Systems brochure for large enterprises \(pdf\)](#)
- [Customer brochure: Power Systems brochure for midmarket \(pdf\)](#)

PowerLinux

At IBM, we measure success in terms of the effect on our clients' business outcomes, including enabling and managing growth while delivering higher service levels and mitigating risk. With budgets under pressure, businesses must do all this with fewer resources.

PowerLinux servers, software, and solutions are built on our Power Systems platform and associated services, and should be the open standard platform of choice for deploying

MORE ON THE WEB

- [IBM PowerLinux at a Glance for Sellers](#)
- [IBM PowerLinux Offerings and Solutions Client Presentation](#)
- [PowerLinux vs Windows for your SAP Deployments](#)
- [IBM PowerLinux Offerings and Solutions Seller Presentation](#)
- [IBM PowerLinux 7R2 Server Datasheet](#)
- [IBM PowerVM for PowerLinux Datasheet](#)
- [Systems Management Solutions for IBM PowerLinux Datasheet](#)
- [IBM PowerLinux Open Source Infrastructure Services Solution Brief](#)
- [IBM PowerLinux Solution for SAP Business Applications Solution Brief](#)
- [IBM PowerLinux Solutions for Big Data Analytics Solution Brief](#)
- [IBM PowerLinux Solutions for Industry Applications Solution Brief](#)

new Linux technology-based applications, offering superior capabilities for big data analytics, industry application solutions, open source infrastructure services, and other emerging workloads.

Like most commodity Linux servers, PowerLinux servers run industry standard Linux from Red Hat and SUSE (among others). Unlike x86, PowerLinux technology offers a broad range of deployment options. Low-cost, two-socket PowerLinux servers and Flex System nodes, based on high-performance POWER7 processors and security-rich PowerVM virtualization technology, can be ideal for applications that favor a scale-out model—a distributed computing workload model with built-in redundancy and failover capabilities that is popular with Linux technology.

PowerLinux technology can also efficiently scale up by adding additional resources to an existing system. Power Systems servers, PowerLinux technology, and PowerVM server virtualization are highly scalable and offer massive consolidation with up to 1,000 virtual machines per server. This can provide greater return on investment through dramatically reduced costs for server-related footprints, energy, cooling, and staffing, in addition to efficiencies gained from the potential for much greater server utilization rates for virtualized Linux servers as compared to x86 servers.

Whether enterprises need to deploy with a scale-out or scale-up architecture model, PowerLinux technology can provide the foundation for the delivery of Linux services faster, with higher quality and superior economics.

7R1

The IBM PowerLinux 7R1 server ([Figure L.1](#)) is designed specifically as an economical foundation for emerging and traditional scale-out workloads. IBM PowerLinux workload optimized solutions, each tuned to a specific task, are affordable for businesses of all sizes. With solutions ranging from Virtualized Open Source Infrastructure services to IBM Watson-inspired big data analytics, companies that previously relied on x86-based servers can now enjoy the advantages the Power Architecture has brought to large enterprises including more throughput per server, superior reliability and security, and end-to-end system optimization.

A simpler PowerLinux-based IT environment with fewer servers to manage helps reduce infrastructure costs and frees



Specifications

Configuration options	Models 8246-L1D, 8246-L1T
POWER7 processor modules (one per processor card)	4-core 3.6 GHz or 6-core 4.2 GHz or 8-core 4.2 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	32 GB to 256 GB of RDIMM DDR3 Active Memory Sharing
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 5.4 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive* or removable disk
PCI adapter slots	5 PCI Express 8x Gen2 low profile
Energy management	EnergyScale energy management
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD with RAID 10 and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots	2 GX++ (not available with 4-core processor)

- [7R1 details on PartnerWorld](#)
- [7R1 details on IBM.com](#)
- [Power Competitive Sales Tool on COMP](#)
- [7R1 blog search](#)
- [7R1 Twitter search](#)

Figure L.1. IBM PowerLinux 7R1 server at a glance (and links to more detail).

IT staff to focus on bringing innovative products and services to market faster. Replacing aging x86-based Windows servers with PowerLinux systems and open source applications can further reduce costs by eliminating high proprietary software license fees and upgrade charges.

Here are some quick 7R1 facts:

- A high performance, energy efficient, reliable, and secure infrastructure and application solution in a compact 2U package; With POWER7+ workload-optimizing technologies, the IBM PowerLinux Solutions 7R1 delivers fast transactions.
- Optimized for emerging and traditional scale-out Linux workloads
- Economical foundation for optimized solutions
- Deploy more secure, highly available solutions and services faster.

7R2

The IBM PowerLinux server ([Figure L.2](#)) is designed specifically as an economical foundation for emerging and traditional scale-out workloads. IBM PowerLinux workload optimized solutions, each tuned to a specific task, are affordable for businesses of all sizes. With solutions ranging from Virtualized Open Source Infrastructure services to IBM Watson-inspired big data analytics, companies that previously relied on x86-based servers can now enjoy the advantages the Power Architecture has brought to large enterprises, including more throughput per server, superior reliability and security, and end-to-end system optimization.



Specifications

Models	Models 8246-L2D & 8246-L2T
POWER7+ processor cores (two processor modules per system)	8-core 4.3 GHz or 12-core 4.2 GHz or 16-core 3.6 GHz or 16-core 4.2 GHz
Sockets	2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	32 GB to 512 GB of RDIMM DDR3 Active Memory Sharing
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 5.4 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	5 PCI Express 8x Gen2 low profile
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD with RAID 10 and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots	2 GX++

- [7R2 info on PartnerWorld](#)
- [7R2 info on IBM.com](#)
- [Power Competitive Sales Tool on COMP](#)
- [7R2 blog search](#)
- [7R2 Twitter search](#)

Figure L.2. IBM PowerLinux 7R2 server at a glance (and links to more detail).

Here are some quick 7R2 facts:

- A high-performance, energy efficient, reliable, and secure infrastructure and application solution in a compact 2U package; With IBM POWER7+ workload-optimizing technologies, the IBM PowerLinux Solutions 7R2 delivers fast transactions.
- Optimized for emerging and traditional scale-out Linux workloads
- Economical foundation for optimized solutions
- Deploy more secure, highly available solutions and services faster.

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 mid-size businesses can rely on the higher quality of service needed for a cost and energy efficient IT infrastructure.

MORE ON THE WEB

- [Express systems](#)

In this section, we take a look at members of the POWER7 Express family.

New Comparable x86 Pricing

The new IBM Power express servers with POWER7+ provide affordability with improved performance, virtualization, energy efficiency, and reliability with the choice of IBM i, AIX, and

Linux applications. And now the Power 710 and 730 Express Servers are available at comparable x86 prices!

For example, both the Power 710 and 730 Express Servers are easy to purchase and deploy and include workload-optimizing capabilities which make them ideal for running multiple applications and infrastructure workloads in a virtualized environment.

Power 710 Express

Built on the leadership performance of the POWER7 processor, the Power 710 Express ([Figure S.1](#)) is a one-socket server that supports up to eight POWER7 cores in a dense, rack-optimized form factor. As a high-performance infrastructure 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 performance and optimize energy efficiency, resulting in one of the most cost-efficient solutions for UNIX, IBM i, and Linux deployments. And, with solutions from thousands of ISVs, you can make the choices that set your business apart from the competition.


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. In addition, a single system can now run more applications and reduce the number of required servers, lowering infrastructure costs. The latest model of the Power 710 Express adds increased memory capacity, higher performance POWER7+ processors, and high bandwidth Generation 2 PCI-



Specifications

POWER7 processor modules (one per system)	4-core 3.6 GHz or 6-core 4.2 GHz or 8-core 4.2 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	8 GB to 256 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 5.4 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	5 PCI Express Generation2 8x low profile
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD w/ RAID 10 and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
High-performance PCI adapters	8 Gigabit Fibre Channel; 2-port 16 Gbps Fibre Channel 2-port 10 GbE RoCE; Dual port 10 Gigabit Ethernet Dual port 10 Gigabit Fibre Channel over Ethernet Dual port QDR Infiniband; 6 Gbps SAS RAID controller
Other integrated ports	3 USB, 2 HMC, 2 system ports
GX slots	1 GX++ (not available with 4-core processor)
Operating systems	AIX, IBM i, Linux for POWER

- [New comparable x86 pricing](#)
- [Power 710 Express details on PartnerWorld](#)
- [Power 710 details on IBM.com](#)
- [Power Competitive Sales Tool 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).

Express slots to provide even greater performance capabilities. And with the 6-core and 8-core processors, it offers the capability to grow with your business through additional storage capacities via expansion units.

Here are some quick Power 710 Express facts:

- A high-performance, energy efficient, reliable, and secure infrastructure and application server in a compact 2U package. With POWER7 workload-optimizing technologies, the Power 710 Express server is designed to handle today's compute-intensive combination of business transactions along with social and mobile activity.
- An easy-to-buy, install, and manage server that can seamlessly fit into your existing infrastructure, resulting in faster deployment time and time to value for applications running on AIX, IBM i, and Linux operating systems.

Power 720 Express

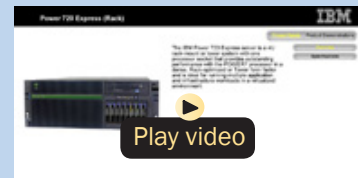
As a distributed application server, the IBM Power 720 Express ([Figure S.2](#)) is designed with capabilities to deliver leading-edge application availability and enable more work to be processed with less operational disruption for branch office and in-store applications. As a consolidation server, PowerVM Editions provide the flexibility to use leading-edge AIX, IBM i, and 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.



Specifications

POWER7 processor modules (one per processor card)	4-core 3.6 GHz or 6-core 3.6 GHz or 8-core 3.6 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	8 GB to 512 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to 8 SFF drives
Disk drives	Up to 8 SFF SAS drives
Disk capacity	Up to 7.2 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	5 PCI Express 8x Generation 2 plus optional 4 PCI Express Generation 2 low profile
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD with RAID 10, and DVD-RAM Optional protected 175 MB cache with RAID 5,6
High-performance PCI adapters (optional)	4-port 8 Gb Fibre Channel; 2-port 16 Gb Fibre Channel 2-port 10 GbE RoCE; 10 Gigabit Ethernet 10 Gigabit Fibre Channel over Ethernet; Dual Port Quad Data Rate IB 6 Gbps SAS RAID Controller
I/O expansion (available with 6-core or 8-core processors)	Up to 2 PCIe 12X I/O drawers – 20 PCIe slots Up to 4 PCI-X DDR 12X I/O drawers – 24 PCIx slots Up to 380 SFF disk slots
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots	1 GX++ (not available with 4-core processor)
Other PCI adapters supported	SAS, SCSI, WAN/Async, USB, Crypto, iSCS
Operating systems	AIX, IBM i, Linux for POWER

- [New reduced, competitive price](#)
- [Power 720 Express details on PartnerWorld](#)
- [Power 720 details on IBM.com](#)
- [Power Competitive Sales Tool on COMP](#)
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- [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).

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.

Here are some quick Power 720 Express facts:

- Reliable, secure distributed application server or consolidation server that is designed to handle today's compute-intensive combination of business transactions along with social and mobile activity for UNIX, IBM i, and Linux operating environments
- IBM i delivers a highly scalable and virus-resistant architecture with a stable database and middleware foundation for efficiently deploying business processing application.

Power 730 Express

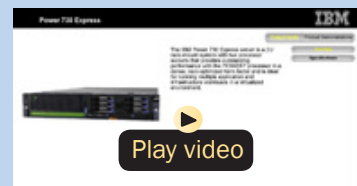
The IBM Power 730 Express server ([Figure S.3](#)) delivers the outstanding performance of the POWER7+ processor in a dense, rack-optimized form factor and is ideal for running multiple application and infrastructure workloads in a virtualized environment. Take advantage of the Power 730 Express



Specifications

POWER7 processor modules (two per system)	8-core 4.3 GHz or 12-core 4.2 GHz or 16-core 3.6 GHz or 16-core 4.2 GHz
Sockets	2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	8 GB to 512 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 5.4 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	5 PCI Express 8x Generation2 low profile
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD with RAID 10, and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
High performance PCI adapter	4-port 8 Gbps Fibre Channel; 2-port 16 Gbps Fibre Channel 2-port 10 GbE RoCE; Dual port 10 Gigabit Ethernet Dual port 10 Gigabit Fibre Channel over Ethernet Dual port QDR Infiniband; 6 Gbps SAS RAID controller
Expansion features (optional)	Storage expansion up to 378 total SFF bays; Up to 20 PCIe slots
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots	1 GX++
Operating systems	AIX, IBM i, Linux for POWER

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Power 730 Express virtual tour

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

server's scalability and capacity by leveraging the 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 operating 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—including today's compute-intensive combination of business transactions along with social and mobile activity for UNIX, IBM i, and Linux operating environments
- 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



Specifications

POWER7 processor modules (one or two per system)	6-core or 12-core 4.2 GHz or 8-core or 16-core 3.6 GHz or 8-core or 16-core 4.2 GHz
Sockets	1 or 2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	8 GB to 512 GB of RDIMM DDR3 - 1 processor 8 GB to 1024 GB of RDIMM DDR3 - 2 processors Active Memory Expansion available
Solid-state drives (SSD)	Up to 8 SFF drives
Disk drives	Up to 8 SFF SAS drives
Disk capacity	Up to 7.2 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive or removable disk
PCI adapter slots	5 PCI Express 8x Generation2 plus optional four PCI Express Generation2 low profile
Standard Ethernet	4 Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	1 controller for SAS DASD/SSD with RAID 10, and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
High-performance PC adapters (optional)	4-port 8 Gigabit Fibre Channel; 2-port 16 Gigabit Fibre Channel 2-port 10 GbE RoCE; 10 Gigabit Ethernet 10 Gigabit Fibre Channel over Ethernet; Dual Port Quad Data Rate IB 6 Gbps SAS RAID controller; 10 Gigabit Fibre Channel over Ethernet Dual Port Quad Data Rate IB
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots (12x)	1 GX++
Operating systems	AIX, IBM i, Linux for POWER

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Power 740 Express virtual tour

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

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 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
- Ideal for running today's compute-intensive combination of business transactions along with social and mobile activity for UNIX, IBM i, and Linux operating environments

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

Power 750 Express

The IBM Power 750 Express server ([Figure S.5](#)) has been completely redesigned to leverage the leadership performance of the POWER7+ processor. The resulting combination of secure, reliable computing and energy efficient virtualization makes it an ideal system for application consolidation or transaction processing.

As a consolidation server, the Power 750 Express offers tremendous configuration flexibility to meet demanding capacity and growth requirements. Utilize the full capability of the 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 with hardware assist 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 125 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.

Here are some quick Power 750 Express facts:

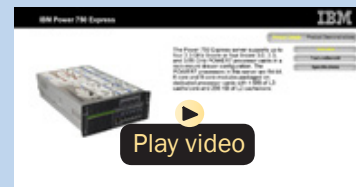
- Ideal for both application and database workloads
- Designed for secure application availability



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 8 SFF drives
Disk drives	Up to 8 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	2 PCI-X 2.0; Three PCI Express 8x
Integrated Virtual Ethernet	4 Ethernet 10/100/1000 Mbps ports (or) 2 10 Gigabit Ethernet ports
Integrated SAS controller	1 controller for SAS DASD/SSD and DVD-RAM, optional protected 175 MB cache
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots (12x)	2
Operating systems	AIX, IBM i, Linux for POWER

- [Power 750 Express details on PartnerWorld](#)
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Power 750 Express virtual tour

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

- Compact, economically efficient design
- Virtualized from within for better integration.

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.

MORE ON THE WEB

- [Enterprise servers on IBM.com](#)

Power 760

The IBM Power 760 server ([Figure E.1](#)) is completely new and designed to leverage the leadership performance of the POWER7+ processor. The resulting combination of secure, reliable computing and energy efficient virtualization make it an ideal system for virtualized application consolidation.

As a consolidation server, the Power 760 offers tremendous configuration flexibility to meet demanding capacity and growth requirements. Utilize the full capability of the 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 with hardware assist 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



Specifications

POWER7+ processor options	12 x 3.1 GHz POWER7+ processor cores or 12 x 3.4 GHz POWER7+ processor cores
Sockets	1 or 4
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	Up to 2 TB of 1066 MHz DDR3 plus Active Memory Expansion with hardware assist
Integrated SAS bays for Solid State Drives (SSD) or Hard Disk Drives	6 SFF SAS drive bays
Integrated media bays	1 slimline for SATA DVD-RAM
Integrated PCI adapter slots	6 PCIe (8x) Gen2 slots
Standard Ethernet ports	Dual 10 Gb plus a choice of 2 additional 10 Gb or 2 additional 1 Gb
Integrated SAS controller	2 SAS DASD/SSD controllers
Other integrated ports	3 USB, 2 HMC, 2 SPCN, 1 serial port
GX slots (12x)	2
Capacity on Demand features Processor CUoD (optional)	Processor CUoD (optional) Trial Processor CoD
Operating systems	AIX, IBM i, Linux for POWER

- [Power 760 details on PartnerWorld](#)
- [Power 760 details on IBM.com](#)
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Power 760 Express virtual tour

Figure E.1. IBM Power 760 Express server at a glance (and links to more detail).

can enable memory expansion up to 125 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. Capacity on Demand options include Processor CUoD and Trial Processor CoD.

Here are some quick Power 760 facts:

- Ideal for both application and database workloads
- Instant, on-demand growth capabilities
- Designed for secure application availability
- Compact, economically efficient design
- Virtualized from within for better integration.

Power 770

Designed for virtualized consolidation of business-critical workloads, the IBM Power 770 ([Figure E.2](#)) 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 to optimize performance and enable higher utilization levels while optimizing energy usage. Supported environments include AIX, IBM i, and Linux for Power applications, all on the same system.

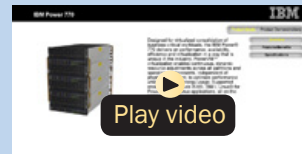
Ever increasing numbers of IBM Power clients are reporting enormous savings from faster provisioning using cloud enabled technologies. Of course this comes in addition to the more traditional savings of reduced software costs, energy, floor space, and administrative overhead. Additional benefits



Specifications

Configuration options	Per Building Block	System Maximum
Processors	16 x 3.8 GHz POWER7+ processor cores or 12 x 4.2 GHz POWER7+ processor cores	64 x 3.8 GHz POWER7 processor cores or 48 x 4.2 GHz POWER7 processor cores
Sockets	4	16
Level 2 (L2) cache	256 KB per core	256 KB per core
Level 3 (L3) cache	10 MB per core (eDRAM)	10 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 6 SFF SAS drive bays	Up to 24 SFF SAS drive bays
Integrated media bays	1 slimline for SATA DVD-RAM	4 slimline for SATA DVD-RAM
Integrated PCI adapter slots	6 PCIe Gen2 slots	24 PCIe Gen2 slots
Integrated multifunction card	1 per enclosure: Dual 10 Gb + Dual 1 Gb	Up to 4 per system: Dual 10 Gb + Dual 1 Gb
Integrated SAS controller	2 SAS DASD/SSD controllers 1 SATA media controller	8 SAS DASD/SSD controllers 4 SATA media controllers
Other integrated ports	3 USB; 2 HMC; 2 SPCN	9 USB; 4 HMC; 4 SPCN
GX slots (12x)	2	8
Operating systems	AIX, IBM i, Linux for POWER	AIX, IBM i, Linux for POWER

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Power 770 Express virtual tour

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

include increased application performance, operational availability, and security 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.

Here are some quick Power 770 Express facts:

- Cloud enabled for fast implementation of new workloads
- Designed for secure application availability
- Modular, economically efficient design
- Virtualized from within for better integration
- Supports your growth, without disrupting your business.

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, and Linux for Power applications, all on the same system.

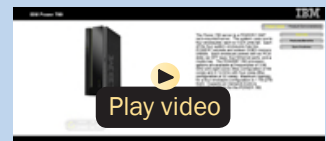
IBM Power clients continuously report savings from reduced hardware, software, energy, floor space, and administrative overhead. Additional benefits include faster provisioning, increased application performance, and an op-



Specifications

Configuration options	Per Building Block	System Maximum
Processors	4 3.72 GHz POWER7+ processor modules with 8 cores each or 4 4.42 GHz POWER7+ processor modules with 4 cores each	16 3.72 GHz POWER7+ processor modules with 8 cores each or 16 4.42 GHz POWER7+ processor modules with 4 cores each
Sockets	4	16
Level 2 (L2) cache	256 KB per core	256 KB per core
Level 3 (L3) cache	10 MB per core (eDRAM)	10 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: - Solid State Drives (SSD) - Hard Disk Drives (HDD)	Up to 6 SFF SAS drive bays	Up to 24 SFF SAS drive bays
Disk drives	Up to 6 SFF SAS drives	Up to 24 SFF SAS drives
Integrated media bays	1 slimline for SATA DVD-RAM	4 slimline for SATA DVD-RAMs
Integrated PCI adapter slots	6 PCIe Gen2 slots	24 PCIe Gen2 slots
Integrated multifunction card	1 per enclosure: Dual 10 Gb + Dual 1 Gb	Up to 4 per system: Dual 10 Gb + Dual 1 Gb
Integrated SAS controller	2 SAS DASD/SSD controllers 1 SATA media controller	8 SAS DASD/SSD controllers 4 SATA media controllers
Other integrated ports	3 USB; 2 HMC; 2 SPCN	9 USB; 4 HMC; 4 SPCN
GX slots (12x)	2	8
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).

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.

Here are some quick Power 780 Express facts:

- Delivers the utmost in infrastructure efficiency at enterprise scale, with flexible delivery models and dynamic resource management that can increase utilization while reducing operational costs
- Delivers trusted information across the enterprise, ensuring continuous transaction availability and enabling real-time business analytics
- Provides the highest levels of security, ensuring the integrity of critical information while mitigating risk and meeting regulatory compliance mandates
- Ideal platform for private cloud deployments.

Power 795

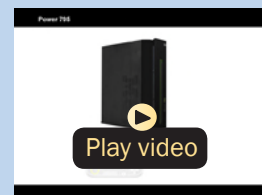
The IBM Power 795 server ([Figure E.4](#)) supports large-scale transaction processing and database applications within a highly virtualized system infrastructure, enabling new levels of workload consolidation, resource utilization, resiliency, and efficiency. As the most powerful member of the IBM Power Systems family, this server provides exceptional performance, massive scalability and bandwidth to efficiently and concurrently support a full range of complex, mission-critical applications.



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 8
Sockets	Up to 32
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 16 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 2,220 bays in 19" drawers
Adapter slots	20 PCIe in each 24" I/O drawer; 640 maximum per system
I/O ports	4 GX++ adapter ports per processor book, 32 per system
Hardware management console ports	2 pairs via redundant Ethernet hubs
POWER Hypervisor	LPAR, Dynamic LPAR, Virtual LAN
PowerVM Standard Edition (optional)	Micro-partitioning with up to 20 micro-partitions per processor (1,000 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).

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 (including a specific number of Elastic CoD processors and memory days, dependent on the configurations that come standard with all new Power 795s), the Power 795 helps enterprises increase their productivity and effectively consolidate multiple UNIX, IBM i, and Linux workloads onto a single system.

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 resiliency for their mission-critical applications
- For data centers supporting the largest UNIX and IBM i transaction processing and database applications.

High Performance Computing

Power Systems high performance computing solutions configured into highly scalable AIX and Linux clusters offer extreme performance for demanding workloads such as computational chemistry, petroleum reservoir modeling, weather forecasting, climate modeling, and financial services.

MORE ON THE WEB

- [High performance computing](#)

Power 755

The IBM Power 755 server ([Figure H.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 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 2,048 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.

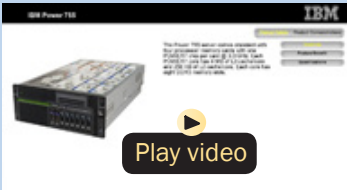
The Power 755 is an ENERGY STAR-qualified server designed with features to help clients become more energy efficient. The leadership performance of the IBM Power 755 translates into outstanding performance per watt and IBM



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 8 SFF drives
Disk drives	Up to 8 SFF SAS drives
Disk capacity	Up to 2.4 TB
Media bays	1 slimline for DVD-RAM
PCI adapter slots	2 PCI-X 2.0; 3 PCI Express 8x
Integrated Virtual Ethernet	4 Ethernet 10/100/1000 Mbps ports (or) 2 10 Gigabit Ethernet ports
Integrated SAS controller	1 controller for SAS DASD/SSD and DVD-RAM
Other integrated ports	3 USB, 2 HMC, 2 system ports, 2 SPCN
GX slots (12x)	1
Operating systems	AIX, Linux for POWER

- [Power 755 details on PartnerWorld](#)
- [Power 755 details on IBM.com](#)
- [Power Competitive Sales Tool on COMP](#)
- [Power 755 blog search](#)
- [Power 755 Twitter search](#)



Power 755 Express virtual tour

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

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 intensive workloads and algorithms such as weather and climate modeling, computational chemistry, physics, and petroleum reservoir modeling.

Power Blade Servers

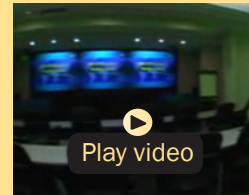
In this section, we explore the Power Systems component of the IBM BladeCenter family and guide you to resources that will help you succeed.

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.

MORE ON THE WEB

- [Overview of BladeCenter servers](#)



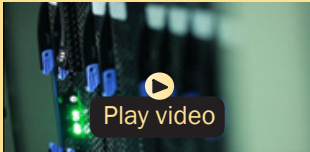
*IBM BladeCenter:
The right choice (6:55)*

for local or remote configurations consisting of hundreds of server blades. Collectively, these characteristics are making the BladeCenter concept very popular in the marketplace.

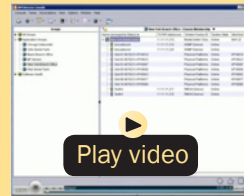
The blade servers offered by IBM fall under the IBM BladeCenter name. BladeCenter is a broad platform that allows users to integrate and centrally manage a collection of servers, storage devices, and networking functions that collectively provide more computing power at a lower cost and in a smaller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

MORE ON THE WEB



*IBM BladeCenter
Video Library*



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

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 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.



Specifications

Form factor	Rack/7U incorporates blade server bays and hot-swap storage high-availability midplane
Blade bays	Up to 6 1- or 2-processor, and up to three 4-processor
Disk bays	Up to 2 disk storage modules; each one can incorporate up to 6 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 Competitive Sales Tool 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).

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 ([Figure C.2](#)) 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.

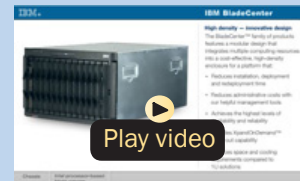
With its best-in-class energy-efficient design, BladeCenter E enables organizations to reduce power consumption without compromising processing performance. In fact, the system is up to 11 percent more efficient in power and cooling compared to the HP c-Class chassis to run the same configuration in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



Specifications

Form factor/height	Rack-mount chassis/7U
Blade bays	Up to 14
Switch modules	4 switch module bays
Power supply module	Up to 4 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 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).

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.

BladeCenter H Chassis

The BladeCenter H ([Figure C.3](#)) 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



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 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).

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
- 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



- [BladeCenter HT chassis details on PartnerWorld](#)
- [BladeCenter HT chassis details on IBM.com](#)
- [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).

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
- 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 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

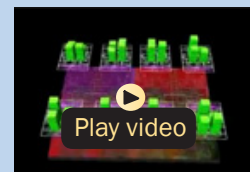


PS702 PS700 PS701

Specifications

Form factor	Single-wide blade server for BladeCenter E, BladeCenter T, BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	4 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	2 300 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	1 PCI-E CIOv Expansion Card & 1 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](#)
- [BladeCenter Competitive Sales Tool 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	8 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	1 300 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	1 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](#)
- [BladeCenter Competitive Sales Tool on COMP](#)
- [PS701 blog search](#)
- [PS701 Twitter search](#)

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	16 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	2 300 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	2 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](#)
- [BladeCenter Competitive Sales Tool on COMP](#)
- [PS702 blog search](#)
- [PS702 Twitter search](#)



POWER7 overview (German)

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

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 16-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 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
- 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 enhance 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 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 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.

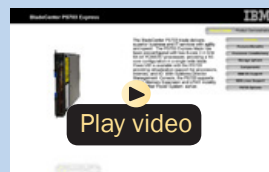
Delivering on the promise for a highly dynamic infrastructure, the BladeCenter PS blades help in delivering superior business and IT services with agility and speed—all in a simple to manage, highly efficient way. The PS703 and PS704 Express blades have been preconfigured and tested by IBM and are based 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.



Specifications

Form factor	Single-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	16 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	1 300 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	1 PCI-E CIOv Expansion Card and 1 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](#)
- [BladeCenter Competitive Sales Tool 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	32 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	2 300 or 600 GB GB 2.5" Serial Attached SCSI (SAS) 10K 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	2 PCI-E CIOv Expansion Cards and 2 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](#)
- [BladeCenter Competitive Sales Tool on COMP](#)
- [PS704 blog search](#)
- [PS704 Twitter search](#)

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

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.

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 chassis, BladeCenter Open Fabric supports open standards and industry interoperability across five I/O fabrics, including Fibre Channel, InfiniBand, Ethernet, iSCSI, and serial attached

MORE ON THE WEB

- [BladeCenter Open Fabric info on IBM.com](#)

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 software is designed to help you easily manage I/O and network interconnects by virtualizing network parameters such as the World Wide Name (WWN) and Media Access Control (MAC) addresses. When you replace a blade or failover from one blade in a chassis to another blade in a different chassis, the LAN and SAN configurations are not affected. Once installed, the utility is resident in the built-in Advanced Management Module (AMM) so you can pre-configure LAN and SAN connections—I/O connections are made automatically when you plug in a blade. No special tools or training are required; just manage with an easy-to-use Web-based user interface. And since this software can be deployed on both new and existing BladeCenter systems through firmware upgrades, you can protect your current BladeCenter investment and simplify I/O.

Here are some BladeCenter Open Fabric Manager highlights:

- Save time—pre-configure over 11,000 LAN and SAN connections once for each blade server
- Manage growth and complexity—up to 256 chassis and up to 3584 blade servers from a single Advanced Management Module

MORE ON THE WEB

- [BladeCenter Open Fabric Manager info on IBM.com](#)
- [BladeCenter Open Fabric Manager blog search](#)
- [BladeCenter Open Fabric Manager Twitter search](#)
- [BladeCenter Open Fabric Manager on YouTube \(multiple videos\)](#)



*BladeCenter Open
Fabric Manager demo*

- Remain open with infrastructure flexibility—works with all Ethernet, Fibre Channel, and SAS switch modules; across all chassis and most x86 and Power processor-based blade servers
- Connect with ease—with a simple Web-based user interface based on IBM Systems Director 6.2 for easy server and switch set-up, deployment, and management
- Manage risk to keep your business running—available automated I/O failover to standby blades.

Virtual Fabric

As server virtualization technology becomes more prevalent within data centers, more dynamic performance is needed for network bandwidth to satisfy these demands. With our Virtual Fabric solution for IBM BladeCenter, IBM can help you break the I/O bottleneck by allowing you to allocate bandwidth where it's needed, delivering maximum application agility. Offering a full range of virtualization and convergence capa-

bilities, the same network hardware can act as Ethernet, iSCSI, or Fibre Channel over Ethernet (FCoE) with bandwidths allocated in increments from 100 Mb to 1 Gb. The next-generation Virtual Fabric for IBM BladeCenter is the fast, flexible, easy, and reliable solution for I/O virtualization.

MORE ON THE WEB

- [Virtual Fabric info on IBM.com](#)

Here are some overall Virtual Fabric facts:

- Requires up to 50 percent fewer adapters and up to 75 percent fewer switch modules
- Up to 64 percent lower energy consumption
- Simplified cabling and management
- Easily integrates into clients' existing setup (virtual or non-virtual).

Now let's look at some specific virtual fabric offerings for IBM BladeCenter.

IBM BladeCenter Virtual Fabric 10 Gb Switch Module

The IBM 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 seamlessly integrat-

MORE ON THE WEB

- [IBM BladeCenter Virtual Fabric 10 Gb Switch Module Redbook info](#)
- [IBM BladeCenter Virtual Fabric 10 Gb Switch Module info on PartnerWorld](#)

ing in the existing 1 Gb infrastructure. This is the first 10 Gb switch for IBM BladeCenter that is convergence ready (that is, able to transmit Converged Enhanced Ethernet (CEE) to a Fibre Channel over Ethernet (FCoE) capable top-of-rack switch). This new feature is available with firmware release 6.1 and newer.

In addition, this switch is a key part of the IBM Virtual Fabric offering, which allows clients to form up to eight virtual network interface controllers (vNICs) from one physical adapter (14 vNICs with an adapter plus the onboard 10 GbE controller with the BladeCenter HS23) and to manage them in virtual groups. This switch can be managed via a command-line interface (CLI) or a graphical interface of the switch, providing all the benefits of I/O Virtualization at 10 Gb speeds.

Here are some quick IBM Virtual Fabric 10 Gb Switch Module facts:

- Single-wide high-speed switch module
- Fourteen internal auto-negotiating ports: 1 Gb or 10 Gb to the server blades
- Interchassis redundancy (Layer 2 and Layer 3)
- 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
- Stacking support up to 8 switches.

QLogic Virtual Fabric Extension Module

The QLogic Virtual Fabric Extension Module is another example of how IBM has been at the forefront of offering new technology to clients. 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 inside the chassis.

Clients using the IBM Virtual Fabric 10 Gb Switch Module for their LAN traffic can now combine it with this module and a Converged Network Adapter such as the QLogic

MORE ON THE WEB

- [QLogic Virtual Fabric Extension Module Redbook info](#)
- [QLogic Virtual Fabric Extension Module info on PartnerWorld](#)

2-port 10 Gb CNA to converge their LAN and SAN on a single network. The QLogic Virtual Fabric Extension Module offers six ports of 8 Gb Fibre Channel connectivity, without the need for separate Fibre Channel expansion cards in the BladeCenter servers.

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

MORE ON THE WEB

- [Emulex 10 GbE Virtual Fabric Adapter II Redbook info](#)
- [Emulex 10 GbE Virtual Fabric Adapter II info on PartnerWorld](#)

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 IBM Virtual Fabric 10 Gb Switch Module in IBM Virtual Fabric Mode. A firmware update is planned that will 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 II/Advanced II for HS23

The Emulex 10 GbE Virtual Fabric Adapter II (VFA II) and Emulex 10 GbE VFA Advanced II for IBM BladeCenter HS23 are the new options available to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters are supported on the new HS23 blade to enable up to four uplink/downlink ports for increased I/O bandwidth and maximum performance. The combination of HS23 and Emulex options enables clients to simplify their I/O infrastructure by reducing the number of switches

MORE ON THE WEB

- [Emulex 10 GbE Virtual Fabric Adapter II for HS23 Redbook info](#)
- [Emulex 10 GbE Virtual Fabric Adapter II for HS23 info on PartnerWorld](#)

needed inside the chassis while supporting Ethernet and virtual NICs (vNICs) using the same hardware components.

The virtual NICs are configured to meet the client's mix of network connectivity and throughput demands for today's complex server application environments. Both physical 10 Gbps ports on the adapter can be divided into four virtual ports with bandwidth allocation in 100 Mbps increments up to the maximum of 10 Gbps per physical port. The Emulex 10 GbE VFA Advanced II adds FCoE and iSCSI hardware initiator functionality to enable data center infrastructure convergence.

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

MORE ON THE WEB

- [Emulex 10 GbE Virtual Fabric Adapter Redbook info](#)
- [Emulex 10 GbE Virtual Fabric Adapter info on PartnerWorld](#)

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.

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.

With the base model Converged 10 GbE Switch Module, you can enable 16 of the 30 ports on the switch (eight 10 Gb CEE external ports, eight 8 Gb FC external ports, and 14x 10 Gb CEE internal ports). If you purchase the Port Upgrade Key,

MORE ON THE WEB

- [Brocade Converged 10 GbE Switch Module Redbook info](#)
- [Brocade Converged 10 GbE Switch Module info on PartnerWorld](#)



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

you can enable all 30 ports on the Switch Module for a fully realized Converged Ethernet solution.

Broadcom 2-port 10 Gb Virtual Fabric Adapter

The Broadcom 2-port 10 Gb Virtual Fabric Adapter for IBM BladeCenter is a 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 efficient use of computing resources, support more virtual machines per CPU, and reduce 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 needed inside the chassis.

The Broadcom 2-port 10 Gb Virtual Fabric Adapter can be configured to operate in virtual NIC mode, where up to eight virtual NIC devices can be enabled. 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.

MORE ON THE WEB

- [Broadcom 2-port 10 Gb Virtual Fabric Adapter Redbook info](#)
- [Broadcom 2-port 10 Gb Virtual Fabric Adapter info on PartnerWorld](#)

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

IBM is committed to offering both function and flexibility to our clients through our products. IBM BladeCenter was the

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](#)

first to offer end-to-end 10 Gb Ethernet in a blade server configuration, and these expansion cards are part of that offering. IBM offers two new versions of the card, 2-port and 4-port, both based on the new Broadcom 57711 controller. The existing cards, based on the proven Broadcom 57710 module, will continue to be available to support customers who want to maintain a consistent hardware configuration.

Ethernet Switch Modules

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

MORE ON THE WEB

- [Ethernet I/O info on IBM.com](#)

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

MORE ON THE WEB

- [10 Gb Ethernet Pass-Thru Module Redbook](#)
- [10 Gb Ethernet Pass-Thru Module info on PartnerWorld](#)

clients to connect a BladeCenter Chassis to an FCoE-capable top-of-rack switch.

The 14 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.

IBM iFlow Director

Reduce complexity and costs associated with appliance sprawl by consolidating on an IBM BladeCenter platform with a high-performance, low-latency statistical load balancer integrated into a 10 Gigabit Ethernet (GbE) blade switch: IBM iFlow Director. The IBM iFlow Director is designed to deliver high availability, scalability, and lower cost of ownership for wireless gateways, security gateways, traffic management, service differentiation, lawful interception, and network surveillance solutions.

Networks are changing. Voice, video, storage, and data are quickly converging onto a single backbone. Growth in cloud services and Web 2.0 multimedia content is pushing bandwidth demand to the network edge. The convergence of fixed and mobile networks to a common next-generation network Interface Protocol (IP) infrastructure is driving exponential growth in network traffic. Threats due to malicious attacks are increasing, and both businesses and consumers are demanding that their service providers incorporate more defenses into the network. As a result, there is a growing

MORE ON THE WEB

- [iFlow Director info on IBM.com](#)
- [iFlow Director info on PartnerWorld](#)

demand for network appliance vendors who provide traffic inspection, bandwidth optimization, security, and lawful interception services to offer gateway solutions at high-speed traffic choke points.

Here are some quick IBM iFlow Director facts:

- High performance, low latency stateless statistical load distribution system for IBM BladeCenter H and HT. Delivers high availability with extensive server health-check mechanisms for rapid failure detection and recovery
- Operates in transparent Layer 2 mode or full Layer 3 mode
- Supports IPv4 and IPv6
- Supports advanced routing and policy-based routing for traffic steering
- Supports flow persistency in order to maintain consistent data flows
- Is extremely cost-effective compared to external load balancers
- Is scalable from 1 to up to 84 servers across multiple BladeCenter chassis.

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

As business applications become more and more demanding, data centers have become more complex, cumbersome, and expensive to manage. IBM BladeCenter offers solutions to help lower costs while enhancing performance by accommodating many integration technologies.

MORE ON THE WEB

- [IBM BladeCenter Layer 2/3 Copper/Fiber Gigabit Ethernet Switch Module Redbook info](#)
- [IBM BladeCenter Layer 2/3 Copper/Fiber Gigabit Ethernet Switch Module info on PartnerWorld](#)

The IBM BladeCenter 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.

IBM BladeCenter Layer 2-7 Gigabit Ethernet Switch Module

IBM System Networking offers a Layer 2-7 Gigabit Ethernet Switch Module (L2-7 GbE SM) that lets you consolidate full Layer 2-7 LAN switching capabilities within an IBM BladeCenter chassis. Consolidation flattens the topology of the data center infrastructure and reduces the number of discrete devices, management consoles, and manufacturers with which you must work. The L2-7 GbE SM 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 and this translates into faster performance, higher availability, greater scalability, stronger security, simplified management, and lower TCO.

MORE ON THE WEB

- [IBM BladeCenter Layer 2-7 Gigabit Ethernet Switch Module info on PartnerWorld](#)

Here are some quick IBM Layer 2-7 facts:

- Improve application availability and boost application performance
- Increase application and server scalability
- Enhance application and server security
- Simplify server deployment and management
- Reduce data center total cost of ownership (TCO).

Cisco Catalyst Switch Module 3012

The Cisco Catalyst Switch Module 3012 represents the next-generation networking solution for blade server environ-

ments. Built on the market-leading Cisco hardware and

MORE ON THE WEB

- [Cisco Catalyst Switch Module 3012 info on PartnerWorld](#)
- [Cisco Catalyst Switch Module 3012 info on IBM.com](#)

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 infrastructure for the small and medium enterprise.

Here are some quick 3012 facts:

- Provides four external 1 Gb ports and 14 internal 1 Gb ports
- Operates in standard I/O module bay across all chassis types
- 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
- Supports Layer 2 and basic Layer 3 switching (static routing and RIP)
- Common management 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 Module 3110G and 3110X are Gigabit Ethernet Switch Modules in a standard switch-bay form-factor for use in all BladeCenter chassis. These stackable switches are full wire-rated, non-blocking switches for use with high performance servers. The 3110G offers four external RJ-45 Gigabit Ethernet connections and the 3110X offers one external 10 Gb Ethernet slot (for use with an X2 trans-

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](#)
- [Cisco Catalyst Switch Module 3110X Redbook](#)

ceiver module) for making 10 Gb uplinks to backbone switches or routers.

Intelligent Copper Pass-Thru Module

Pass-thru modules are I/O options that can be used for direct connections of blades ports to the external infrastructure devices such as network switches. The Intelligent Copper Pass-thru Module for IBM BladeCenter (ICPM) is similar to a traditional network patch-panel. The Intelligent Copper Pass-thru Module connects the blade servers in the BladeCenter unit to an existing network infrastructure. No configuration of the copper pass-thru module is required. The Intelligent Copper Pass-thru Module provides a single connection from each blade to one RJ-45 connection that can go directly to an external switch or patch panel.

MORE ON THE WEB

- [Copper Pass-Thru info on PartnerWorld](#)

IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module

To address evolving networks, IBM System Networking offers a leadership product for the IBM BladeCenter portfolio that helps meet the demand of networks in transition like no other switch in the blade market: the IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module.

The IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module offers a great price-performance ratio. Its six 1 GbE RJ45 links can be easily deployed in today's networks, while its three 10 GbE SFP+ ports provide an easy migration path to tomorrow's 10 GbE networks. Compared to other vendors' 10

MORE ON THE WEB

- [IBM BladeCenter 1/10 Gb Ethernet Switch info on PartnerWorld](#)
- [Ethernet I/O info on IBM.com](#)

GbE switches, the 1/10 Gb switch prepares you for the future and is only half the price of some alternative offerings in the market. Advanced Layer 3 routing protocols like Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP) are included in the switch price. Other blade Ethernet switch vendors require you to pay extra for these features.

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

- Improve application availability and boost application performance
- Future proof your data center with 1/10 Gigabit Ethernet (GbE) connectivity
- Enhance application security with network virtualization
- Simplify server deployment and management.

Server Connectivity Module for IBM BladeCenter

The IBM BladeCenter Server Connectivity Module (SCM) provides a simple Ethernet interface option for connecting the IBM BladeCenter system to the network infrastructure.

MORE ON THE WEB

- [Server Connectivity Module for IBM BladeCenter info on PartnerWorld](#)

Cisco Nexus 4001I Switch Module for IBM BladeCenter

The Cisco Nexus 4001I Switch Module is a blade switch solution for the BladeCenter H and HT chassis providing the server I/O solution required for high-performance, scale-out, virtualized, and non-virtualized x86 computing architectures. It is a line rate, extremely low-latency, non-blocking, Layer 2, 10 Gigabit Ethernet blade switch that is fully compliant with Fibre Channel over Ethernet (FCoE) and IEEE Data Center Bridging standards.

MORE ON THE WEB

- [Cisco Nexus 4001I info on PartnerWorld](#)
- [Cisco Nexus 4001I info on IBM.com](#)
- [Cisco Nexus 4001I Redbook](#)

Fibre Channel Switch Modules

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

MORE ON THE WEB

- [Fibre Channel Switch info on IBM.com](#)

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

The Brocade Enterprise 10-port and 20-port 8 Gb SAN Switch Modules for IBM BladeCenter deliver embedded Fibre Channel switching with the industry's fastest Fibre Channel throughput

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](#)

performance (8 Gbps). The 10-port and 20-port switches provide basic FC switch functionality while the Enterprise 20-Port model is a fully enabled switch with a complete set of advanced SAN fabric service licensed features.

Cisco 4 Gb 10- and 20-port Fibre Channel

The Cisco Systems 4 Gb 10-port and 20-port Fibre Channel Switch Modules for IBM BladeCenter provide high-performance end-to-end SAN solutions using 4 Gb Fibre Channel technology. These modules allow seamless integration of IBM BladeCenter into existing Cisco SANs, and have functions equivalent to the Cisco MDS 9124 switch. 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.

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](#)
- [Cisco 4 Gb 10 and 20-port Fibre Channel Switch Redbook](#)

MORE ON THE WEB

- [QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module info on PartnerWorld](#)
- [QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module Redbook](#)

QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules for IBM BladeCenter provide seamless integration of an IBM BladeCenter solution into existing Fibre Channel storage networks using N_Port ID Virtualization (NPIV) technology. Each module

concentrates multiple blade servers into

the external ports, which in turn connect to external Fibre Channel switches that support NPIV. The pass-thru module presents one or more blade servers per port to the fabric. The module expands the fabric, but unlike a full fabric switch, it does not count against the fabric domain.

MORE ON THE WEB

- [QLogic 20-port 8 Gb SAN Switch Module info on PartnerWorld](#)
- [QLogic 20-port 8 Gb SAN Switch Module Redbook](#)

QLogic 20-port 8 Gb SAN Switch Module

The QLogic 20-port 8 Gb and 4/8 Gb SAN Switch Modules for IBM BladeCenter are a high-speed addition to the BladeCenter switch portfolio. Each module helps enable scalability in storage area network (SAN) size and complexity while maintaining ease of management. These modules are full-fabric

Fibre Channel (FC) switches which enable high performance SAN connectivity of up to 8 Gbps.

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

Clients want to increase the use of their existing servers to reduce overall cost as well as the IT footprint within the organization. IBM BladeCenter offers several choices, including servers, chassis, and types of interconnect fabric. This solution offers end-to-end 40 Gb (4X QDR) InfiniBand connectivity. Clients can take advantage of the resiliency of BladeCenter as well as the performance of 4X QDR InfiniBand in a single package.

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 perfor-

MORE ON THE WEB

- [Voltaire 40 Gb InfiniBand Switch Redbook Technote](#)
- [Voltaire 40 Gb InfiniBand Switch info on PartnerWorld](#)

mance-optimized fabric designs utilizing a single BladeCenter chassis or stacking multiple BladeCenter chassis without requiring an external InfiniBand switch.

The InfiniBand 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.

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

The IBM BladeCenter S SAS RAID Controller Module enables a fully redundant storage area network (SAN) based on the high-performance, fully duplex 3 Gbps technology. With this innovative solution, small offices across the world can benefit from blades, SAN storage, networking, and management, all integrated into a neat BladeCenter S chassis.

Here are some quick SAS RAID Controller Module facts:

- Fully redundant SAN integrated into BladeCenter S chassis
- High-performance, fully duplex, 3 Gbps speeds

MORE ON THE WEB

- [BladeCenter S SAS RAID Controller Module info on PartnerWorld](#)
- [BladeCenter S SAS RAID Controller Module info on IBM.com](#)

- Support for RAID 0, 1, 5, 10
- Supports two disk storage modules (DSM) with up to 12 x 3.5 inch SAS or Nearline SAS drives.

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.

MORE ON THE WEB

- [SAS Connectivity Module info on PartnerWorld](#)
- [SAS Connectivity Module info on IBM.com](#)

Here are some quick SAS Connectivity Module facts:

- Enables up to 12 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 enable fully redundant capability in BladeCenter chassis
- High-performance, fully duplex, 3 Gbps speeds.

Power-based IBM PureFlex System

The IBM PureFlex System Express combines advanced IBM hardware and software along with patterns of expertise and integrates them into an optimized configura-

MORE ON THE WEB

- [IBM PureFlex System info on IBM.com](#)

tion that is simple to acquire and deploy so you get fast time to value for your solution.

p24L Compute Node (PowerLinux)

IBM Flex System p24L Compute Node ([Figure L.1](#)) is a POWER7-based server optimized for virtualization, performance, and extraordinary efficiency. The node supports Linux operating environments and is designed to run a wide variety of workloads in your PureFlex System.

The IBM Flex System p24L compute node delivers the outstanding performance of the IBM POWER7 processor in a dense, highly efficient form factor for Linux customers. It is ideal for running multiple Linux infrastructure and application workloads, virtualized with PowerVM, more economically than traditional Linux servers. Take advantage of the IBM Flex System p24L's scalability and capacity by leveraging IBM's feature rich PowerVM virtualization technology to fully utilize the server's capacity and deploy virtual partitions faster as well as move workloads as needed across IBM PowerLinux and Power Systems servers with Live Partition Mobility (LPM).

Here are some quick p24L facts:

- Integration by design: compute nodes are deeply integrated with storage, networking, and management resources so your solution deploys quickly and is easy to manage
- Built-in expertise: engineering expertise allows you to extract the full capability of the IBM POWER7 processor
- Simplified experience: systems management can automatically discover the node for simple configuration and quick deployment.



Specifications

Form factor	Flex System standard node
Processor cores	8 or 16 64-bit POWER7 cores with AltiVec SIMD and Hardware Decimal Floating-Point acceleration Configuration options: 6-core 3.7 GHz or 8-core 3.2 GHz or 8-core 3.5 GHz
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core
Memory (min/max)	8 GB up to 256 GB, 16 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz
Internal disk storage	Up to 2 2.5 in. hard disks or 2 1.8 in. SSDs
Networking/expansion	2 PCI-E expansion slots
Systems management	Integrated systems management processor, light path diagnostics, Predictive Failure Analysis (PFA), Cluster Systems Management (CSM), serial over local area network (LAN), Intelligent Platform Management Interface (IPMI) compliant
RAS features	Chassis redundant/hot plug power & cooling; front panel and field-replaceable unit (FRU)/customer replaceable unit (CRU) light emitting diodes (LEDs); concurrent code update; processor deallocation; ITE hot plug; dual AC; power supply; auto reboot on power loss; Internal and chassis-external temperature monitors; 64 byte (B) marking ECC code supporting eight times IS DDR3 DIMMs; system mgmt alerts; IBM Chipkill ECC detection and correction
Operating systems	Red Hat Enterprise Linux 5.7, 6.2 SUSE Linux Enterprise Server (SLES) 11 SP2
Energy management	EnergyScale energy management

- [p240L details on PartnerWorld](#)
- [p240L details on IBM.com](#)
- [p240L competitive info on COMP](#)
- [p240L blog search](#)
- [p240L Twitter search](#)

Figure L.1. IBM Flex System p240L Compute Node at a glance (and links to more detail).

p260-p460 Compute Nodes

IBM Flex System p260 and p460 Compute Nodes ([Figure L.2](#)) are POWER7 and POWER7+-based servers optimized for virtualization, performance, and extraordinary efficiency. The nodes support IBM AIX, IBM i, or Linux operating environments and are designed to run a wide variety of workloads in your PureFlex System or IBM Flex System solution.

Built in storage capabilities on the compute nodes include up to two 2.5-inch support small form factor hard drives or up to two 1.8-inch solid state drives. The nodes can also access storage attached through the network and managed with IBM Flex System Manager. Networking options include 1 Gb or 10 Gb Ethernet expansion, 8 Gb and 16 Gb Fibre Channel expansion, and FCOE for connection to external storage and networks. These features allow you to tailor your environment to match your specific capacity, performance, cost, and reliability needs and also supports virtualized storage for Cloud computing applications.

Here are some quick p260 and p460 facts:

- POWER7+ technology brings faster frequencies and larger L3 cache sizes, which helps improve performance by over 20 percent on most workloads and hardware assisted memory compression helps reduce memory requirements without penalizing performance.
- Simplified experience: systems management can automatically discover the node for simple configuration and quick deployment.



Specifications

Form factor	Flex System standard node
Processor cores	8 or 16 cores, POWER7 64-bit processors with Altivec SIMD and Hardware Decimal Floating-Point acceleration 8 or 16 cores, POWER7+, 64-bit processors with VSX, Memory Expansion acceleration and Encryption acceleration Configuration Options: 4-core 3.3 GHz or 4.0 GHz 8-core 3.2 GHz or 3.6 GHz 8-core 3.5 GHz or 4.1 GHz
Level 2 (L2) cache	256 KB per processor core
Level 3 (L3) cache	4 MB per processor core on 3.3, 3.2, and 3.5 GHz offerings 10 MB per processor core on 3.6, 4.0, and 4.1 GHz offerings
Memory (min/max)	8 GB up to 512 GB, 16 DIMM slots, ECC IBM Chipkill DDR3 SDRAM running at 1066 MHz
Internal disk storage	Up to 2 2.5" hard disks or 2 1.8" SSDs
Networking/expansion	2 PCI-E expansion slots
Systems management	Integrated systems management processor, light path diagnostics, Predictive Failure Analysis, Cluster Systems Management (CSM), Serial Over LAN, IPMI compliant
RAS features	Chassis redundant / hot plug Power & Cooling; Front Panel & FRU/CRU LEDs Concurrent code update; Processor deallocation; ITE hot plug; Dual AC Power Supply; Auto reboot on power loss; Internal and chassis-external temperature monitors; 64B Marking ECC code supporting x8 IS DDR3 DIMMs System mgmt alerts; IBM Chipkill ECC detection and correction
Operating systems	AIX 6.1, 7.1; IBM i 6.1 and 7.1; Red Hat Enterprise Linux 5.7, 6.2 SUSE Linux Enterprise Server 11 SP2
Energy management	EnergyScale energy management

- [p260 details on PartnerWorld](#)
- [p460 details on PartnerWorld](#)
- [p260 and p460 details on IBM.com](#)
- [p260 blog search](#)
- [p460 blog search](#)
- [p260 Twitter search](#)
- [p460 Twitter search](#)

Figure L.2. IBM Flex System p220 and p460 Compute Nodes at a glance (and links to more detail).

- IBM provides the integration and configuration expertise up front so you can get your system deployed faster and get faster time to value.

Power Systems Software

In this section, we will take a look at some of the system-level software for Power Systems that enables businesses to fully exploit Power Systems servers.

MORE ON THE WEB

- [Power Systems Software info on IBM.com](#)

PowerVM

PowerVM provides the industrial-strength virtualization solution for IBM Power Systems servers and blades. Based on more than a decade of evolution and innovation, PowerVM represents the state of the art in enterprise virtualization and is broadly deployed in production environments worldwide by most Power Systems owners.

The IBM Power Systems family of servers includes proven workload consolidation platforms that help clients control costs while improving overall performance, availability, and energy efficiency. With these servers and IBM PowerVM virtualization solutions, an organization can consolidate large numbers of applications and servers, fully virtualize its system resources, and provide a more flexible, dynamic IT infrastructure. In other words, IBM Power Systems with PowerVM deliver the benefits of virtualization without limits.

PowerVM provides industrial-strength virtualization for AIX, IBM i, and Linux environments on IBM POWER processor-based systems. IBM Power Systems servers integrated with

PowerVM technology are designed to allow clients to build a dynamic infrastructure that will help them to reduce costs, manage risk, and improve service levels.

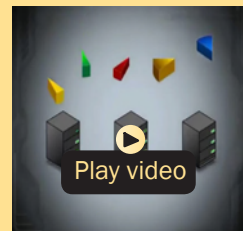
PowerVM also offers a secure and resilient virtualization environment, built on the advanced RAS (reliability, availability, and serviceability) features, extreme scalability, and leadership performance of the IBM Power Systems platform, based on the outstanding POWER7 processors.

Here are some quick PowerVM facts:

- Deliver services with superior economics by consolidating virtualized workloads
- Deliver services faster by automating deployment of virtual machines and storage
- Optimize utilization of server and storage resources to control cost and boost ROI
- Scale your virtualized deployments without paying underlying performance penalties

MORE ON THE WEB

- [PowerVM info on PartnerWorld](#)
- [PowerVM info on IBM.com](#)
- [Compare PowerVM to Sun and HP](#)
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PowerVM overview (1:50)

- Eliminate scheduled downtime by deploying live mobility between servers
- Deliver higher quality services by improving virtual resource management.

PowerHA

PowerHA SystemMirror V7 represents the next generation of solutions for high availability and disaster recovery. This offering integrates core clustering technology into the kernel and the OS, enabling our customers to be more productive and deliver higher quality IT services while enjoying a more robust and easier-to-manage clustering environment.

The IBM PowerHA SystemMirror for AIX Standard Edition features Cluster Aware AIX, which provides the strategic foundation for Power Systems Software. It enables PowerHA to do kernel level messaging, event management, and monitoring in coordination with AIX. PowerHA features a Director-based management interface, a set of Smart Assists, and a number of other enhancements that will make the solution more robust and self-managing.

PowerHA SystemMirror monitors numerous soft and hard errors within the cluster from various event sources, including problems that are severe enough to immobilize the system (such as a process failure or exhaustion of system resources). With PowerHA V7, monitoring and event management have been moved into the kernel of the operating system (OS),

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which provides a robust foundation not prone to job scheduling issues or other events related to OS operations. Cluster awareness enables operating system-based functions to operate harmoniously with PowerHA. PowerHA SystemMirror is integrated with cluster-aware AIX and exploits the operating system features by extending them across the cluster, enabling efficient centralized management.

Here are some fast PowerHA facts:

- IBM PowerHA SystemMirror Standard and Enterprise Edition for AIX
- Graphical Management—IBM Director Plug-in for both data center and disaster recovery deployments
- Multichannel cluster communications for data center configurations
- Linked clustering for disaster recovery configurations
- HyperSwap with the IBM DS8800 storage server provides continuous availability against storage errors
- Federated Security for cluster wide security management
- PowerHA SystemMirror SAP LiveCache Hot Standby solution
- Broad portfolio of High Availability agents (Smart Assists) for common middleware products.

PowerSC

PowerSC enables security compliance automation and includes reporting for compliance measurement and audit. Its

compliance automation features also help businesses reduce the cost of security compliance.

Automation capabilities include supplying prebuilt system profiles that enforce compliance to various industry standards, such as the Payment Card Industry Data Security Standard, the Health Insurance Portability and Accountability Act Privacy and Security Rules, the U.S. Department of Defense Security Technical Implementation Guide, and COBIT best practices. PowerSC also helps improve detection and visibility of security exposures by deploying trusted security extensions to highlight altered boot volumes and systems that are not at the site-specified patch levels. Trusted audit logs are used to centralize and protect logging integrity in virtualized environments.

Here are some quick PowerSC facts:

- Simplify security management and compliance measurement
- Reduce administration costs of meeting compliance regulations
- Ensure virtualized environments meet the same security levels as physical servers
- Improve the audit capabilities for virtualized systems
- Reduce time and skills required for preparation of security audits

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- Improve detection of security exposures in virtualized environments.

PureData System

IBM PureData System ([Figure D.1](#)) is optimized exclusively for delivering data services to today's demanding applications. Like each of the IBM PureSystems, it offers built-in expertise, integration by design, and a simplified experience throughout its life cycle.

Codified data management best practices are provided for each workload. PureData System delivers automated pattern-based deployment and management of highly reliable and scalable database services.

Hardware, storage, and software capabilities are designed and optimized for specific high performance data workloads such as patented data filtering using programmable hardware (FPGAs) for ultrafast execution of analytic queries without the need for indices.

The PureData System provides single part procurement with no assembly required (ready to load data in hours), open integration with third party software, integrated management console for the entire system, single line of support, integrated system upgrades, and maintenance.

The new PureData System comes in different models that have been designed, integrated, and optimized to deliver data services to today's demanding applications with simplicity, speed, and lower cost.

The IBM PureData System for Transactions is a highly reliable and scalable database platform designed to help reduce



- [PureData System info on PartnerWorld](#)
- [PureData System info on IBM.com](#)
- [PureData System blog search](#)
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Figure D.1. IBM PureData System (and links to more detail).

complexity, accelerate time to value, and lower ongoing data management costs. The system enables IT departments to easily deploy, optimize, and manage transactional database workloads. This expert integrated system sets a new standard in workload-optimized systems.

The PureData System for Analytics, powered by Netezza technology, is a simple data appliance for serious analytics. It simplifies and optimizes performance of data services for analytic applications, enabling very complex algorithms to run in minutes, not hours.

The PureData System for Operational Analytics is a data warehouse system for delivering insights to business operations for real-time decision-making. It is optimized to handle complex analytics and designed to handle 1000+ concurrent operational queries.

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

IBM Smart Analytics System 7700 is the industry's most complete business-ready analytics solution with cost-efficient,

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Smart Analytics demo

flexible design, and mission-critical reliability. It is an integrated, high-performance analytics solution that is built on POWER7 based servers and designed to accelerate delivery of insights for faster, smarter action.

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

- Control console that allows for coordinated updates and maintenance
- Operating systems supported: AIX.