

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*](#)
- [*SmartCloud Foundation Business Partner Guidebook*](#)
- [*IBM Systems Software Business Partner Guidebook*](#)
- [*IBM Collaboration Solutions Guidebook*](#)

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IBM Power Systems Business Partner Guidebook

Fourth Edition

*Your Roadmap to Success with IBM
Power Systems*

Edited by Jim Hoskins

(version 4.0e)



Clear Horizon

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Table of Contents

- Your Eight-Step Quick Start..... 12**
 - 1. Check for Updated Editions of This eBook.....12**
 - 2. Apply for Your IBM PartnerWorld Membership12**
 - 3. Plug in to IBM Product and Program Communications 13**
 - 4. Understand the Express Seller Program.....13**
 - 5. Learn to Quickly Find IBM Product Information.....13**
 - 6. Learn to Find Competitive Information14**
 - 7. Try Out “Know Your IBM”14**
 - 8. Make Your Training and Certification Plan15**
- Introduction 16**
 - About This Guidebook.....16**
 - Products May Vary from Country to Country.....16**
 - How to Use This Guidebook17**
 - Reader Feedback18**

Chapter 1: Welcome to the Team 19

- Why Team with IBM?19**
- Smarter Planet.....20**
- Smarter Computing and Power Systems21**
 - Cloud—Dynamic Efficiency..... 23**
 - Data—Business Analytics..... 24**
 - Security—Enhanced Compliance 24**
- Power is Performance Redefined25**
- The Value of Power Systems to Business Partners.....25**

Chapter 2: General Power Systems Resources 28

The IBM PartnerWorld Web Site	28
Power Systems Asset Index.....	29
Power Systems Quick Proposals	30
Power Systems Education	30
Required Certifications for Power Systems.....	31
IBM Systems College.....	31
Know Your IBM (KYI).....	32
Social Media Resources for IBM Business Partners	32
Performance Benchmarks	33
Success Stories, References, Case Studies.....	34
Competitive Marketing Information.....	35
Power Advantages Over x86.....	35
Power Virtualization Advantages.....	37
Migrate to Power with Help from IBM.....	38
IBM COMP Web Site	39
Sales Plays and Kits for Power Systems	40
Power Midmarket Expansion.....	40
Power Analytics	41
Power Stack	42
Power Cloud	42
Power Migrate for Large Enterprise.....	43
Power Advantage for Large Enterprise	44
STG Sales Navigator	44
Attaching Power Software to Your Proposals.....	44
Attaching Storage to Your Proposals.....	45
Attaching Services to Your Proposals.....	45
Attaching Training to Your Proposals.....	46
Power Systems Solutions	47
IBM Web Content Syndication (for Your Web Site).....	47
Quick Reference for IBM Power Systems Mobile App ...	48

IBM Global Financing	48
Technical Support for Business Partners	49
Solution Assurance	50

Chapter 3: Power Systems Quick Reference 52

PowerLinux	52
7R1.....	53
7R2.....	55
Express	57
Power 710 Express	57
Power 720 Express	59
Power 730 Express	61
Power 740 Express.....	64
Power 750 Express	66
Power Blade Servers	68
What Is a BladeCenter Server?	68
Chassis.....	71
<i>BladeCenter S Chassis</i>	71
<i>BladeCenter E Chassis</i>	73
<i>BladeCenter H Chassis</i>	75
<i>BladeCenter HT Chassis</i>	77
Power Blades	80
<i>PS700, PS701, and PS702 Express</i>	80
<i>PS703 and PS704 Express</i>	85
BladeCenter Open Fabric (I/O)	88
BladeCenter Open Fabric Manager	89
Virtual Fabric.....	90
<i>IBM BladeCenter Virtual Fabric 10 Gb Switch Module</i>	91
<i>QLogic Virtual Fabric Extension Module</i>	93
<i>Emulex 10 GbE Virtual Fabric Adapter II/Advanced II</i>	94
<i>Emulex 10 GbE Virtual Fabric Adapter II/Advanced II for HS23</i> .	95
<i>Emulex 10 GbE Virtual Fabric Adapter/Advanced</i>	95

<i>Brocade Converged 10 GbE Switch Module</i>	96
<i>Broadcom 2-port 10 Gb Virtual Fabric Adapter</i>	97
<i>Broadcom 10 Gb (Gen 2) 2-port and 4-port Ethernet Expansion Cards</i>	98
Ethernet Switch Modules	98
<i>10 Gb Ethernet Pass-Thru Module</i>	99
<i>IBM iFlow Director</i>	99
<i>IBM BladeCenter Layer 2/3 Copper and Fiber Gigabit Ethernet Switch Module</i>	101
<i>IBM BladeCenter Layer 2-7 Gigabit Ethernet Switch Module</i>	101
<i>Cisco Catalyst Switch Module 3012</i>	102
<i>Cisco Catalyst Switch Modules 3110G and 3110X</i>	103
<i>Intelligent Copper Pass-Thru Module</i>	104
<i>IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module</i> ..	104
<i>Server Connectivity Module for IBM BladeCenter</i>	106
<i>Cisco Nexus 4001I Switch Module for IBM BladeCenter</i>	106
Fibre Channel Switch Modules	106
<i>Cisco 4 Gb 10- and 20-port Fibre Channel</i>	107
<i>Brocade 10- and 20-port 8 Gbps SAN Switch Modules</i>	107
<i>QLogic Intelligent 8 Gb Pass-Thru Fibre Channel Module</i>	108
<i>QLogic 20-port 8 Gb SAN Switch Module</i>	108
InfiniBand Switch Modules	109
<i>Voltaire 40 Gb InfiniBand Switch Module</i>	109
SAS I/O	110
<i>BladeCenter S SAS RAID Controller Module</i>	110
<i>SAS Connectivity Module</i>	111
Enterprise	111
Power 770	112
Power 780	114
Power 795	116
High Performance Computing	118
Power 755	118
Power-based IBM PureFlex System	121
p24L Compute Node (PowerLinux)	121
p260-p460 Compute Nodes	123

Power Systems Software	125
PowerVM.....	125
PowerHA	127
PowerSC	129
PureData System	130
Smart Analytics System 7700.....	132

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.

Smarter Computing and Power Systems

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 big data, cloud, mobile, and social business. Leading businesses see this as a defining moment to transform the value they deliver. Today, to manage this new mix of business applications and information centric workloads, you need an enterprise system that is the ultimate system for compute intensive workloads. Power Systems provide these capabilities and are the engine for faster insights.

Smarter companies are thinking differently about computing and how to deal with data that is growing exponentially and can become stagnant and unexploited simply because of



its sheer volume. These smarter companies are breaking the vicious cycle of untrustworthy data, inflexibility, and sprawl. They are reversing the always-guessing, reactive, costly IT conundrum by embracing what we call smarter computing. What smarter computing entails is the creation of an IT infrastructure that is designed for data and that harnesses enterprise information to unlock insights and make better, more informed choices. Organizations embracing smarter computing are creating IT infrastructures that are tuned to the task of the business, helping reduce costs by driving greater efficiency and performance for virtually every workload. And smarter computing is managed with cloud technologies, speeding delivery of services and creating an IT environment that has practically no boundaries, enabling the reinvention of processes and driving innovation.

But to be clear, smarter computing isn't just a catch phrase or a lofty idea. It's not a metaphor, intro paragraph, or headline. It's what the IBM Power Systems platform enables our clients to do. And this is the basis for our new brand identity, "Power is performance redefined." It's about how we believe clients measure IT performance—focusing less on processor performance and more on business performance. It's about our clients' ability to react more quickly to change, to innovate faster, and to seize new opportunities as they arise. It's about their ability to handle rapid growth and combat emerging competitors while responding to demands to meet increasingly higher service levels. And it's about doing more with less and delivering services within constrained IT budgets. We believe that with a focus on business performance,



we will enable our clients to deliver services faster, with higher quality and superior economics. Our message to clients is that with Power Systems solutions, we can help them achieve these goals as they deploy smarter computing projects.

Cloud—Dynamic Efficiency

Power Systems allow IT to be a driver of business growth and deliver superior IT economics with dynamic, scalable resource allocation, and rapid response to changes in application and workload requirements.

- Power Systems Solution Edition for Cloud enables rapid deployment of a scalable cloud that is optimized for maximum asset utilization.
- PowerVM Virtualization Performance Advisor (VIOS performance advisor) proactively provides performance optimization recommendations enabling clients to provide higher qualities of service.
- Elastic Capacity on Demand for Power System Pools gives clients the flexibility and cost of a public cloud with the security and resilience of an enterprise Power Systems data center.
- PowerVM enhancements deliver improved flexibility by allowing VM granularity to 5 percent of a core and 20 VMs per core.
- Performance improvements for PowerVM Live Partition Mobility enable faster response to changing business needs by improving single VM movement by up 3X and can concur-



rently migrate partitions up to 4.7X faster than previous releases—doubling concurrent migrations on a single server from eight to 16.

Data—Business Analytics

Power Systems provide business insight and deliver services faster with servers optimized for big data, compute intensive applications, and built-in availability.

- AIX Solution Editions for Cognos and SPSS enable rapid deployment of business and predictive analytics.
- Elastic Capacity on Demand for Power System Pools enables sharing of resources across a pool of systems, improving availability and ensuring access to resources during planned and unplanned maintenance activities.
- PowerHA HyperSwap offers continuous data access in the event of storage outages, enabling storage maintenance and migration without downtime.
- POWER7+ processors and architecture improve on their industry-leading performance delivering 20–40 percent more performance, and are ideal for big data and business analytics workloads.

Security—Enhanced Compliance

Power Systems deliver services with higher quality on systems that have zero reported virtualization vulnerabilities with policy based compliance to ensure data security and a compliant environment.



- PowerSC along with Trusted Surveyor delivers policy-based security compliance reporting and provides real-time alerts for compliance violations. Real-time alerts can also be sent to advanced security analytics systems such as IBM Q1 Radar.
- Hardware assisted encryption delivers faster file encryption for AIX with POWER7+ reducing the performance overhead normally associated with encryption and decryption.

Power is Performance Redefined

In this new smarter computing era for business and IT, forward-thinking companies consider more than server performance, existing skills, and ease of management when choosing a platform for new application workloads. They also evaluate how well the platform will help them achieve three core business objectives: delivering services faster, with higher quality and superior economics.

By implementing smarter computing projects on an IBM Power Systems platform, businesses can outpace their competitors by delivering services faster. They can differentiate their offerings from the competition by delivering higher quality services. And they can turn operational cost into investment opportunity by delivering services with superior economics.

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 help-



ing customers meet a wide range of traditional and emerging business needs.

Power is the industry's best UNIX system. 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 (the #1 supercomputer in the world today), Power is the ultimate system for today's compute-intensive workloads that are in great demand in the marketplace. IBM Power Business Partners can take advantage of this market opportunity and conquer the competition with the proven Power Systems platform.

And IBM continues to invest in Power innovations today... even as our competitors neglect or abandon their own UNIX investments. We say Power is Performance Redefined because of the unique innovations we've made to make it the best platform for advanced analytics. These innovations and continued investments in R&D (more than \$3.2 billion over the last 3.5 years) ensure that there will be continuing demand for Power Systems in the marketplace, which translates into continued revenue opportunity for IBM Business Partners. In fact, it's already showing:

- 18 consecutive quarters UNIX share growth
- Nearly 3,000 competitive displacements since 1Q 2010
- Over 100 industry leading benchmarks.



"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

General Power Systems Resources

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

The IBM PartnerWorld Web Site

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

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

MORE ON THE WEB

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





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 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)

MORE ON THE WEB

- [Power Systems Asset Index](#)



- 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](#)

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



MORE ON THE WEB

- [IBM Power Systems forums, wikis, communities](#)
- [IBM Champions for Power Systems](#)
- [Follow Power Systems on Twitter](#)
- [Connect with Power Systems on LinkedIn](#)
- [Power Systems on YouTube](#)
- [Power Systems on Flickr photostream](#)
- [Power Systems RSS feed](#)
- [IBM PartnerWorld communities](#)
- [Twitter search results for IBM Power Systems](#)
- [Search Twitter for mentions of your business or competitors](#)
- [Google blog search results for IBM Power Systems](#)
- [Search blog for mentions of your business or competitors](#)
- [LinkedIn social network \(has an IBM Business Partner Group\)](#)
- [Use Twitter to Grow Your Business \(IBM Software Business Partner Blog\)](#)

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

Performance Benchmarks

Trying to judge the performance of servers by comparing the individual component (processor, disk, memory, etc.) 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

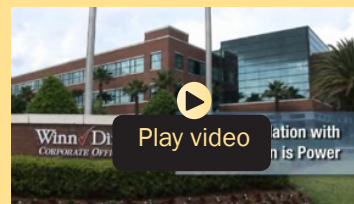
- [Power Systems performance benchmarks](#)

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.

MORE ON THE WEB

- [Power Systems success stories](#)



Power Systems at Winn-Dixie (4:59)



Competitive Marketing Information

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

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 work-

MORE ON THE WEB

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

loads 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.

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 and industry workload solutions can help you drive greater efficiency and improved business benefits from IT infrastruc-

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](#)



tures. 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.

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 world-wide 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.

MORE ON THE WEB

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

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



Sales Plays and Kits for Power Systems

IBM Sales Plays and Kits provide you with strategies and tools to help you generate new opportunities in your territory. Each play focuses on a set of common

MORE ON THE WEB

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

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

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

Power Midmarket Expansion

This play is strategically designed to expand the Power penetration into midmarket segments by:

- Accelerating current midmarket down level Power clients on AIX, IBM i, and LoP workloads to POWER7 based servers including NGP and Power Linux offerings
- Shifting the existing customer base using older i5/OS (version 5.4) to IBMi-v7.1, as v-5.4 is going to be EOS (end of support) by mid 2013, and shift the customers using AIX-5.3 to AIX-7.1 as AIX-5.3 is going to be EOS by April 2012
- Replacing workloads on new midmarket customers currently on competitive x86 servers with POWER7 based servers, NGP and Power Linux offerings



- Acquiring new midmarket customers
- Focusing on Power Analytics/Business Intelligence Offerings, DB2/Web Query, and Power Solutions Edition Offerings, with value propositions to the BPs and customers.

Power Midmarket Expansion is a strategic play specifically for the midmarket. The primary focus is on the current AIX, IBM i, and Linux on Power customer install base in order to drive product refreshes from older POWER4/5/6 system footprints to new POWER7-based servers. Secondly, the Power Midmarket Expansion Sales Play targets our install base with workloads running on x86 and moving those workloads over to POWER7 servers, including NGP and/or Power Linux systems utilizing the Power on Linux offerings. Thirdly, focusing on midmarket customers who currently do not have Power installed and selling them on the advantages of Power over what they are currently using.

MORE ON THE WEB

- [Power Midmarket Expansion dashboard](#)

Power Analytics

Our world is becoming instrumented, interconnected, and intelligent. With this change comes an explosion in information. Yet organizations are operating with blind spots. Firms that embrace analytics are gaining a competitive advantage and outperforming their peers by 220 percent. IBM Power Systems provide Smarter Analytics solutions built on systems that are

MORE ON THE WEB

- [Power Analytics dashboard](#)



scalable, optimized, and resilient. With the massively parallel POWER7 processors engineered to support complex queries, combined with IBM analytics software optimization, Power provides companies with a competitive advantage. Power Systems provide Smarter Analytics solutions at each entry point that are designed for data. Align: Align your business around information; Anticipate: Predict and drive business outcomes; Act: Take action with confidence in real-time.

Power Stack

IBM's leadership in workload optimized systems spans more than four decades and presents a great opportunity for Power sellers. Power Stack features a comprehensive list of smarter solutions that allows 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, SWG middleware, and Industry ISV solutions.

MORE ON THE WEB

- [Power Stack dashboard](#)
- [Advanced Retail Analytics on POWER7](#)
- [IBM mCommerce Appliance Solution](#)
- [IBM Content & Predictive Analytics for Healthcare](#)

Power Cloud

This play is designed to enable customers to start moving mission-critical workloads to the cloud, while leveraging the unique performance, scalability, and RAS capabilities of IBM



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

MORE ON THE WEB

- [Power Cloud dashboard](#)

Power Migrate for Large Enterprise

This play targets both Oracle and HP UNIX LE clients running Solaris on SPARC and HP-UX on Itanium/PA-RISC systems and looks to consolidate them on IBM POWER7 systems. The goal of this play is to motivate client migration to POWER7.

POWER7-based server solutions are fully deployed in the market, now is the time to continue to virtually sweep the data center floor and consolidate Oracle and HP-UX systems onto POWER7 systems—allowing clients to improve service and availability while dramatically reducing costs and reducing complexity.

MORE ON THE WEB

- [Power Migrate for Large Enterprise](#)



Power Advantage for Large Enterprise

This play targets the current Power Systems install base in Large Enterprises to drive system upgrades and refresh current POWER4/5/6 footprints in order to move them to POWER7. Power Advantage LE will deliver client benefits and increase Power share within IBM clients through consolidation of

MORE ON THE WEB

- [Power Advantage for Large Enterprise dashboard](#)

older and inefficient servers and by capturing x86 and competitive UNIX workloads. The play focuses on expanding Power's presence in our top enterprise accounts that drives the majority of Power's revenue today.

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 in-



crease 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 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.

MORE ON THE WEB

- [Storage products for Power Systems](#)

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 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.

MORE ON THE WEB

- [Power Systems solutions](#)

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. Syndicating 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 information, success stories, social networks, and Power experts.

MORE ON THE WEB

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

IBM Global Financing

IBM Global Financing (IGF) continues to focus on meeting customer needs by concentrating on key business areas:



leasing and lending, remarketing and refurbishing, and asset management. IGF conducts business in more than 40 countries, financing IBM and non-IBM hardware, software, and services, with a full range of flexible, low-rate offerings. IGF's customers find that financing their information technology solutions offers many advantages in both robust and difficult economic climates because financing frees up their capital for other investments. Many information technology installations, including those for customer relationship management, data mining, and e-business, require a substantial

MORE ON THE WEB

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

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:

MORE ON THE WEB

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

- Remote solution design assistance/review
- Technical marketing assistance
- Product and promotion information
- Configuration assistance
- Competitive product information
- Sales strategy information
- Solution assurance assistance.

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

Solution Assurance

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



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

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

MORE ON THE WEB

- [Solution Assurance Library](#)

3

Power Systems Quick Reference

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

MORE ON THE WEB

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

PowerLinux

IBM PowerLinux solutions are optimized to deliver high value Linux services for big data analytics, open source infrastructure services, and industry specific applications, and are specifically designed to bring the capabilities of POWER7 to competitive x86 customers. These capabilities redefine business performance, helping IT managers and CIOs offer impactful IT results tied directly to the bottom line by delivering services faster, with higher quality and superior economics.





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](#)

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 which previously relied on x86-based servers can now enjoy the advantages of the Power Architecture.

A simpler PowerLinux-based IT environment with fewer servers to manage helps reduce infrastructure costs and frees IT staff to focus on bringing innovative products and services to market faster. Replacing aging x86-based Windows servers

**Specifications**

POWER7 processor modules (one per processor card)	8-core 3.55 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	8 GB to 256 GB of RDIMM DDR3 Active Memory Sharing
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 3.6 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive* or removable disk
PCI adapter slots	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++

- [7R1 details on PartnerWorld](#)
- [7R1 details on IBM.com](#)
- [7R1 competitive info on COMP](#)
- [7R1 blog search](#)
- [7R1 Twitter search](#)

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



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:

- 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 LR2 server ([Figure L.2](#)) and IBM PowerVM for IBM PowerLinux are optimized for Linux, providing more efficient horizontal scaling at price points comparable to traditional Linux servers. The IBM PowerLinux 7R2 server delivers the outstanding performance and workload-optimizing capabilities of the POWER7 processor in a Linux only, dense, 2U rack form factor that is ideal for running multiple application and infrastructure workloads in a virtualized environment. The two-socket, high-performance, energy-efficient server supports 16 POWER7 cores and a choice of Linux operating systems.

Take advantage of the PowerLinux server's scalability and capacity by leveraging industrial strength virtualization. PowerVM for PowerLinux offers the capability to dynamically adjust system resources based on workload demands—across up to 160 virtual machines (VMs)—enabling a dynamic in-



Specifications

POWER7 processor modules (one per processor card)	8-core 3.55 GHz or 8-core 3.3 GHz
Sockets	2
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	4 MB per core
Memory	8 GB to 256 GB of RDIMM DDR3 Active Memory Expansion
Solid-state drives (SSD)	Up to 6 SFF drives
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 3.6 TB
Media bays	Slimline for DVD-RAM, Half height for tape drive* or removable disk
PCI adapter slots	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++

- [7R2 info on PartnerWorld](#)
- [7R2 info on IBM.com](#)
- [7R2 competitive info on COMP](#)
- [7R2 blog search](#)
- [7R2 Twitter search](#)

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



frastructure that can dramatically reduce server sprawl by driving higher utilization per core and more throughput per server, resulting in significantly reduced costs.

Here are some quick p24L facts:

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

MORE ON THE WEB

- [Express systems](#)

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

**Specifications**

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

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

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



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.

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

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 can deliver fast transactions with the AIX, IBM i and Linux operating systems.
- 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.

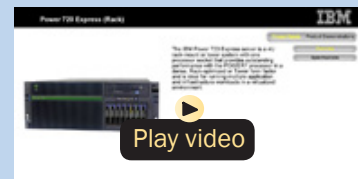
Power 720 Express

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

**Specifications**

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

- [Power 720 Express details on PartnerWorld](#)
- [Power 720 details on IBM.com](#)
- [Power 720 Express competitive info on COMP](#)
- [Power 720 Express blog search](#)
- [Power 720 Express Twitter search](#)

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



Editions provide the flexibility to use leading-edge AIX, IBM i, Linux for Power, and x86 Linux applications and offer comprehensive virtualization technologies designed to aggregate and manage resources while helping to simplify and optimize your IT infrastructure and deliver one of the most cost-efficient solutions for UNIX, IBM i, and Linux deployments.

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

Here are some quick Power 720 Express facts:

- Reliable, secure distributed application server or consolidation server for UNIX, IBM i, and Linux workloads
- IBM i delivers a highly scalable and virus-resistant architecture with a stable database and middleware foundation for efficiently deploying business processing application.

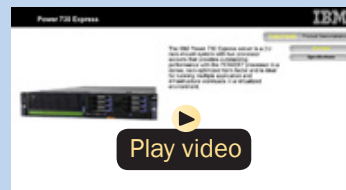
Power 730 Express

The IBM Power 730 Express server ([Figure S.3](#)) is designed with innovative workload-optimizing and energy management

**Specifications**

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

- [Power 730 Express details on PartnerWorld](#)
- [Power 730 details on IBM.com](#)
- [Power 730 Express competitive info on COMP](#)
- [Power 730 Express blog search](#)
- [Power 730 Express Twitter search](#)

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



technologies to help clients get the most out of their systems; that is, running applications fast and energy efficiently to conserve energy and reduce infrastructure costs.

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

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

The Power 730 Express server is a two-socket high-performance, reliable, and energy-efficient server supporting up to 16 POWER7 cores and a choice of AIX, IBM i, or Linux 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
- Consolidation of UNIX and x86 Linux workloads.



Power 740 Express

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

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



Specifications

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

- [Power 740 Express details on PartnerWorld](#)
- [Power 740 details on IBM.com](#)
- [Power 740 Express competitive info on COMP](#)
- [Power 740 Express blog search](#)
- [Power 740 Express Twitter search](#)



Power 740 Express virtual tour

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



Here are some quick Power 740 Express facts:

- For small to mid-size database servers
- For consolidation of UNIX, IBM i, and x86 Linux workloads and virtualized application server.

Power 750 Express

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

As a consolidation or highly virtualized multiapplication server, the Power 750 Express offers tremendous configuration flexibility to meet the most demanding capacity and growth requirements. Utilize the full capability of the system by leveraging industrial-strength PowerVM virtualization for AIX, IBM i, and Linux. PowerVM offers the capability to dynamically adjust system resources based on workload demands so that each partition gets the resources it needs. Active Memory Expansion is a new POWER7 technology that enables the effective maximum memory capacity to be much larger than the true physical memory. Innovative compression/decompression of memory content can enable memory expansion up to 100 percent. This can enable a partition to do significantly more work or enable a server to run more partitions with the same physical amount of memory.


For database servers, the leadership performance of the POWER7 processor makes it possible for applications to run



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



Power 750 Express virtual tour

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



faster with fewer processors, resulting in lower per core software licensing costs. The POWER7 processor contains innovative technologies that maximize performance based on client workloads and computing needs.

Here are some quick Power 750 Express facts:

- For consolidation of UNIX, IBM i, and x86 Linux workloads and virtualized application servers
- For medium-to-large database server.

Power Blade Servers

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

What Is a BladeCenter Server?

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



MORE ON THE WEB

- [Overview of BladeCenter servers](#)



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

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 environment, keep your business up and running, and attain high levels of business resiliency.



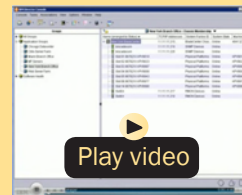
BladeCenter servers have four elements:

- **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.

MORE ON THE WEB



*IBM BladeCenter
Video Library*



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



- 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.

Here are some quick BladeCenter S chassis facts:

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

**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 S chassis competitive info on COMP](#)
- [BladeCenter S configuration details](#)
- [BladeCenter S options](#)
- [BladeCenter S blog search](#)
- [BladeCenter S Twitter search](#)

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



- 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

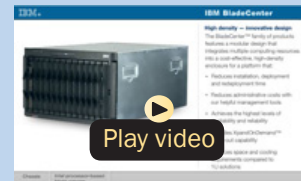
IBM BladeCenter E ([Figure C.2](#)) delivers a powerful platform to meet these requirements; it integrates servers, storage, networking, and applications so organizations can build robust IT infrastructures. The result is a data center packed with more operating horsepower that leaves a small carbon 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 can operate at full potential with lower energy costs—and can go green and save.

**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 chassis competitive info on COMP](#)
- [BladeCenter E configuration details](#)
- [BladeCenter E blog search](#)
- [BladeCenter E Twitter search](#)

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



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 a flexible, open, and connected infrastructure. IBM continues to build on its reputation for helping customers find innova-



Specifications

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

- [BladeCenter H chassis details on PartnerWorld](#)
- [BladeCenter H chassis details on IBM.com](#)
- [BladeCenter H chassis competitive info on COMP](#)
- [BladeCenter H configuration details](#)
- [BladeCenter H options](#)
- [BladeCenter H blog search](#)
- [BladeCenter H Twitter search](#)



BladeCenter H virtual tour

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



tive 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 for telecommunications equipment manufacturers and service providers.



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



BladeCenter HT virtual tour

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

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

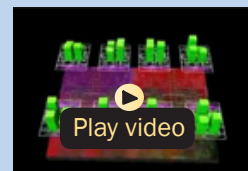
The IBM BladeCenter PS700 ([Figure J.1](#)), PS701 ([Figure J.2](#)), and PS702 ([Figure J.3](#)) Express blade servers are built on the proven foundation of the IBM BladeCenter family of products—easy-to-use, integrated platforms with a high degree of deployment flexibility, energy efficiency, scalability, 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

**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](#)
- [PS700 Express competitive info on COMP](#)
- [PS700 blog search](#)
- [PS700 Twitter search](#)

*POWER7 Chip animation***Figure J.1.** IBM BladeCenter PS700 Express at a glance (and links to more detail).

**Specifications**

Form factor	Single-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	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](#)
- [PS701 Express competitive info 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](#)
- [PS702 Express competitive info 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).



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

Delivering on the promise for a highly dynamic infrastructure, the BladeCenter PS blades help in delivering superior business and IT services with agility and speed—all in a simple to manage highly efficient way. The PS700, PS701, and PS702 Express blades have been preconfigured and tested by IBM and are based on proven technology. Utilizing a 3.0 GHz 64-bit POWER7 processor and available in a four-core, eight-core, or 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

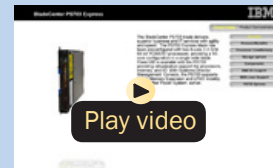
The IBM BladeCenter PS703 ([Figure J.4](#)) and PS704 ([Figure J.5](#)) Express are the premier blades for 64-bit applications. Minimize complexity, improve efficiency, automate processes, reduce energy consumption, and scale easily: these are the benchmarks that matter on a smarter planet. The new POWER7 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 per-

**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](#)
- [PS703 Express competitive info on COMP](#)
- [PS703 blog search](#)
- [PS703 Twitter search](#)

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



Specifications

Form factor	Double-wide blade server for BladeCenter S, BladeCenter H, or BladeCenter HT chassis
Processor cores	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](#)
- [PS704 Express competitive info on COMP](#)
- [PS704 blog search](#)
- [PS704 Twitter search](#)

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



formance for both the system and its virtual machines. Couple that performance with PowerVM and you are now enabled for massive workload consolidation to drive maximum system utilization, predictable performance, and cost efficiency.

Here are some quick PS703/704 facts:

- Consolidate on IBM BladeCenter PowerBlades and virtualize applications to better utilize resources and amplify the already-significant advantages of BladeCenter efficiencies
- Simplifies your deployment with flexible configurations that make it easy to implement the right system and the ability to run AIX, IBM i, and Linux operating systems simultaneously
- Realize innovation with a flexible, scalable architecture that lets you choose the right solution for your dynamic business and delivers the utmost in investment protection, performance growth, and time to value
- A secure, resilient infrastructure solution that helps drive down costs, reduce risk, improve energy efficiency, and enhance flexibility.

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 SCSI (SAS), helping to simplify blade I/O management and deployment so you can concentrate on realizing innovation in your business.

MORE ON THE WEB

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

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

MORE ON THE WEB

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



BladeCenter Open Fabric Manager demo



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
- 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 capabilities, 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 BladeCenter Virtual Fabric 10 Gb Switch Module 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 integrating in the existing 1 Gb infrastructure. This is the first 10 Gb switch for IBM BladeCenter that is convergence ready—able to transmit



Converged Enhanced Ethernet (CEE) to a Fibre Channel over Ethernet (FCoE) capable top-of-rack switch. This feature is available with software 6.3 and above at no additional cost.

Not only is this the most attractively priced 10 Gb switch when you factor in the switch, cables/transceivers, and software licenses, it also works with BladeCenter Open Fabric Manager, 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
- Extremely low latency and unmatched throughput for IBM BladeCenter
- Fourteen internal auto-negotiating ports: 1 Gb or 10 Gb to the server blades
- Layer 2 and Layer 3 features standard
- 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

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](#)



- Supports Advanced IBM Virtual Fabric functionality
- Support as an FCoE Transit switch
- VMready brings VM awareness to the network for improved VM mobility
- Stacking support.

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 2-port 10 Gb CNA to converge their LAN and SAN on a single

MORE ON THE WEB

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

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

MORE ON THE WEB

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

is a dual-port 10 Gb Ethernet card that supports 1 Gbps or 10 Gbps traffic, or up to eight virtual NIC (vNIC) devices.

The virtual NICs are configured to meet the client's mix of network connectivity and throughput demands for today's complex server application environments. Each physical 10 Gbps port can be divided into four virtual ports with bandwidth allocation in 100 Mbps increments to the maximum 10 Gbps per physical port. The Emulex 10 GbE Virtual Fabric Adapter II Advanced adds FCoE and iSCSI hardware initiator functionality.

The Emulex 10 GbE Virtual Fabric Adapter II supports the 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.



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](#)

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

MORE ON THE WEB

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

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

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)



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, 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.

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](#)



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](#)

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.

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 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 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.

MORE ON THE WEB

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

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.

MORE ON THE WEB

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



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 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



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](#)

- 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.

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 de-



MORE ON THE WEB

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

vices, 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.

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

MORE ON THE WEB

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



next-generation networking solution for blade server environments. Built on the market-leading Cisco hardware and Cisco IOS Software, the Cisco Catalyst Switch Module 3012 is engineered with unique technologies specifically designed to meet the rigors of blade server-based application infrastructure for the small and medium enterprise.

Here are some quick 3012 facts:

- Provides four external 1 Gb ports and 14 internal 1Gb 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 blade 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



MORE ON THE WEB

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

switch in the blade market: the IBM BladeCenter 1/10G Uplink Ethernet Switch Module.

The IBM BladeCenter 1/10G 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 GbE switches, the 1/10GE 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.



MORE ON THE WEB

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

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.

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](#)



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](#)

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.

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 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.

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](#)



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.

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

MORE ON THE WEB

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

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 performance-optimized fabric designs utilizing a single BladeCenter chassis or stack-

MORE ON THE WEB

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



ing 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.

Enterprise

IBM POWER7 Enterprise systems deliver unprecedented performance for both transactional and throughput computing for UNIX, IBM i, and Linux applica-

MORE ON THE WEB

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



tions. Now let's take a look at the most powerful members of the Power Systems family.

Power 770

Designed for virtualized consolidation of business-critical workloads, the IBM Power 770 ([Figure E.1](#)) 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 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:

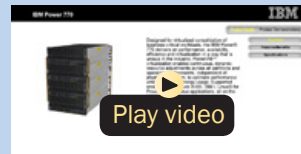
- Cloud enabled for fast implementation of new workloads
- Designed for secure application availability
- Modular, economically efficient design



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

- [Power 770 details on PartnerWorld](#)
- [Power 770 details on IBM.com](#)
- [Power 770 competitive info on COMP](#)
- [Power 770 blog search](#)
- [Power 770 Twitter search](#)



Power 770 Express virtual tour

Figure E.1. IBM Power 770 Express server at a glance (and links to more detail).



- 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.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, 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 operational availability that can only come from IBM. All of this is delivered on the latest technology from a vendor you can trust. No wonder more and more companies are switching to IBM Power Systems.

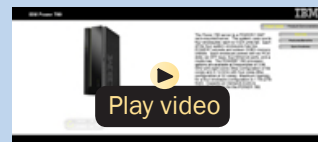
Here are some quick Power 780 Express facts:

- 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

**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
Media bays	1 slimline for SATA DVD-RAM	4 slimline for SATA DVD-RAMs
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

- [Power 780 details on PartnerWorld](#)
- [Power 780 details on IBM.com](#)
- [Power 780 Express competitive info on COMP](#)
- [Power 780 blog search](#)
- [Power 780 Twitter search](#)

*Power 780 virtual tour***Figure E.2.** IBM Power 780 Express server at a glance (and links to more detail).



- 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.3](#)) 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.

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.



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
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

- [Power 795 details on PartnerWorld](#)
- [Power 795 details on IBM.com](#)
- [Power 795 Express competitive info on COMP](#)
- [Power 795 blog search](#)
- [Power 795 Twitter search](#)



Power 795 virtual tour

Figure E.3. IBM Power 795 Express server at a glance (and links to more detail).



Here are some quick Power 795 Express facts:

- For large-scale server consolidation to increase flexibility and lower operational and energy costs
- For enterprises requiring the highest levels of 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](#)

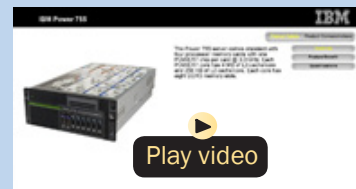
Power 755

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.

**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) two 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
GX slots (12x)	1
Operating systems	AIX, Linux for POWER

- [Power 755 details on PartnerWorld](#)
- [Power 755 details on IBM.com](#)
- [Power 755 competitive info on COMP](#)
- [Power 755 blog search](#)
- [Power 755 Twitter search](#)

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



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

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

Here are some quick Power 755 Express facts:

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



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

MORE ON THE WEB

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

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

**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 Eight-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).



- 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.

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

**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 competitive info on COMP](#)
- [p460 competitive info on COMP](#)
- [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).



compression helps reduce memory requirements without penalizing performance.

- Simplified experience: systems management can automatically discover the node for simple configuration and quick deployment.
- 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

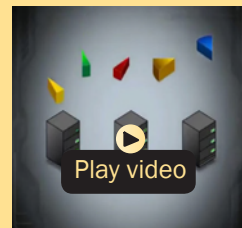
- [Power Systems Software info on IBM.com](#)

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

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)



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
- 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.

MORE ON THE WEB

- [PowerHA info on PartnerWorld](#)
- [PowerHA info on IBM.com](#)
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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), 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

MORE ON THE WEB

- [PowerSC info on PartnerWorld](#)
- [PowerSC info on IBM.com](#)
- [PowerSC blog search](#)
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- Improve the audit capabilities for virtualized systems
- Reduce time and skills required for preparation of security audits
- 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

MORE ON THE WEB

- [PureData System info on PartnerWorld](#)
- [PureData System info on IBM.com](#)
- [PureData System blog search](#)
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- [PureData System info on IBM.com](#)
- [PureData System blog search](#)
- [PureData System Twitter search](#)

Figure D.1. IBM PureData System (and links to more detail).

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 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



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Smart Analytics demo

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, 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.