

Services Blueprint

Utilizing IBM's knowledge base to architect the greatest return on your IT investment



A **New** Category of **Computing**

IBM PureSystems family
offers built-in expertise
to accelerate deployment
and decrease costs

PureFlex System changes the economics of IT · **Unified Resource Manager**
revolutionizes the modern data center · 2012 IBM Systems Global Technical Events



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Printed in the U.S.A.

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IBM System x Technical University and Symposium Events

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PureFlex System Alters the IT Solutions and Services Industry

A letter from Michael Kuhn, vice president, IBM Systems Lab Services

Earlier this year, IBM launched a new category of expert integrated systems that significantly speed deployment of IT processes and services while reducing many of the inefficiencies inherent in today's IT solutions. With built-in expertise, integration by design and a wholly simplified experience, IBM PureSystems* technologies deliver immediate client benefits and make it easier to deploy cloud and Smart Analytics solutions.

IBM is delivering the latest technologies—and in a manner that changes the traditional IT equation—using the new PureApplication System platform. In the last issue of Services Blueprint we explored IBM SmartCloud* Entry, which comes pre-optimized on the IBM PureFlex* System. In this issue, we focus on how the PureFlex System infrastructure offers a solution to the age-old problem of reducing overall IT costs of ownership. By combining the flexibility of a general purpose system, the elasticity of cloud and the simplicity of an optimized workload, the PureFlex System will help change how clients examine the economics of IT solutions and service delivery. This, in turn, is the cornerstone of IT optimization.

Also featured in this issue is the fully integrated IBM Flex System* Chassis, a radical departure from current models. It sets the standard for a new level of innovation in the integration of hardware and software. This simple infrastructure platform supports a mix of compute, storage and networking resources. Unlike traditional systems—where system management occurs at the hardware layer—the Flex System Chassis manages all system components at a virtualization level. With its common, generic, virtualized platform and three configurations, it's designed (and destined) to be the IT infrastructure foundation now and into the future.

According to an IBM commissioned report, complexity combined with a lack of resources has created a situation in corporate IT where 70 percent of the global IT budget is spent

on operations and maintenance. Be sure to read how IBM Systems Lab Services—Data Center Services can add real value by enabling the installation of PureSystems in a client's data center and addressing power, thermal and operational improvements to help clients succeed with the PureFlex System.

The role of IBM Systems Lab Services in IBM's PureSystems strategy is an integrated and comprehensive one. Turn to this issue's cover story, written in Q&A format, about our involvement in PureSystems. We provide clients and IBM Business Partners immediate access to experts with hundreds of deployment and proof-of-concept engagements. Our PureFlex Expert Integrated Systems Deployment Services (included as a part of express, standard and enterprise configurations) accelerates adoption and observed client value of PureSystems to drive successful engagements.

I encourage you to join colleagues, clients and IBM Business Partners at IBM Systems Technical University or Symposium events in the U.S. and worldwide featuring sessions on PureSystems. Find us at IBM System Storage* Technical University, Oct. 15-19 in Budapest, Hungary, and IBM Power Systems* Technical University, Oct. 29-Nov. 2 in Las Vegas. IBM Training also offers courses for the PureFlex System. Classes are available in traditional classroom, instructor-led online (ILO) and self-paced virtual class (SPVC) formats. Learn more, peruse available classes and improve the skills needed to change the way businesses are run. ■





PureFlex System
targets labor and
operational efficiency
to reduce TCO

Changing the Economics of IT

BY JOHN RYAN AND DARRELL HAWKINS

Over a decade, IT has transformed from an isolated, mysterious, big iron data center to the strategic center of business. But this transformation has come at a high price: IT systems have grown complex, inefficient and difficult to manage. Businesses are caught in the inflexible grip of IT sprawl with each new investment, leading to more complexity and inefficiency, and thereby driving up infrastructure and management costs. As a result, IT has become a barrier to business innovation rather than an enabler of it.

IBM's experience and expertise in designing optimized and integrated workload-tuned systems has led to the creation and development of the IBM PureFlex* System. The PureFlex System meets IT challenges by combining the flexibility of a general-purpose

system, the elasticity of a cloud and the simplicity of an optimized workload to fundamentally change the economics of IT.

What is the PureFlex System?

The PureFlex infrastructure represents a new breed of systems for the smarter computing era. It offers:

- Built-in expertise—capturing and automating what experts do from the infrastructure to the application
- Integration by design—deeply integrating and tuning hardware and software in a single, ready-to-go system
- Simplified experience—making every part of the IT lifecycle easier with integrated management of the entire system

The following major components are

IBM PureFlex System Benefits:

- Intelligent automation:** Greater productivity
- Resource pooling:** Shared vs. dedicated
- Capacity flex:** Less overprovisioning
- Management integration:** Standardization
- Physical consolidation:** Reduced IT costs
- Agility:** Faster time-to-value
- Efficiency:** Reduced IT waste
- Simplicity:** Simpler skills requirements
- Control:** Lowered risk and errors
- Optimized:** Tuned to the task

Relative Cost of Ownership

included in the PureFlex System at the functional level:

- A complement of integrated, virtualized POWER7* and x86 compute nodes supporting the AIX*, Windows*, Linux* and IBM i operating systems
- An integrated, virtualized storage node providing more than 14 PB of support for Easy Tier*, performance management and optimization
- A set of integrated, virtualized network switches supporting 40 Gb switching technology with pay-as-you-grow scalability
- A 10U chassis/42U rack designed for optimal packaging, integration, and flexible operation of the Expert Integrated Systems (EIS) nodal components
- A management node providing single point of control and heterogeneous services management at both the component and integrated system level

IBM has leveraged years of experience to create this integrated and simplified IT solution designed to address the major cost and complexity concerns plaguing its clients.

Lower TCO

The IBM PureFlex System offers a solution to the age-old problem of how to reduce IT total cost of ownership (TCO). The major cost elements typically seen in an IT TCO breakdown are hardware, software, labor and facilities (e.g., electrical power, space, cooling, etc.).

Each year, hardware and software

costs continue to shrink relative to labor costs. This change is partially due to industry demand for competitive cost decreases in hardware and software technologies. But it also reflects that IT systems and their integration have become more complex—and therefore labor-intensive—in terms of procurement, deployment and ongoing operational lifecycles. In effect, escalating labor costs offset the savings in hardware and software, resulting in unrelenting growth in IT expenses.

While the PureFlex System is designed to provide low-cost hardware and software alternatives to “roll-your-own” IT solutions, the largest potential for significant cost reduction is targeted squarely at labor and operational efficiency.

The IBM Flex System* Manager

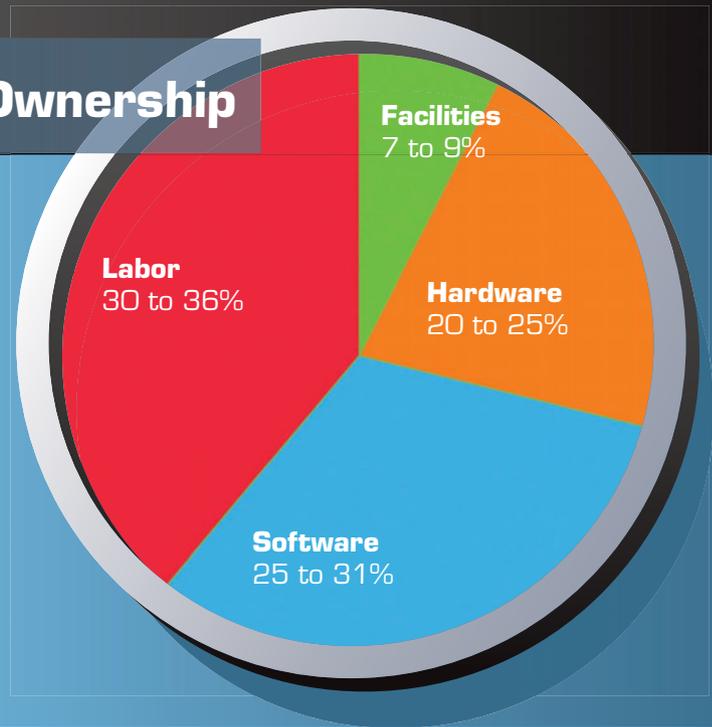
(FSM) appliance node, which is optional with each PureFlex System, has the potential to provide major savings in labor. Specifically, the FSM management appliance node:

- Provides single point of control built into the system, helping reduce IT management cost and complexity
- Provides the building block for virtualization and integrated services management, thereby enhancing the virtualization lifecycle
- Improves IT efficiency for better service and time to market
- Provides easy-to-use, feature-on-demand, multichassis management
- Integrates x86 and Power Systems* storage and network management
- Reduces operational costs via smarter energy monitoring/management
- Enables faster, more flexible management of new workload deployments

The IBM PureFlex System is designed to change how clients examine the economics of IT solutions and service delivery, making it a potential cornerstone for IT optimization.

Enabling IT Optimization

In its most basic form, IT optimization is about simplifying IT environments to align with clients' business goals. It



More Information

IBM's IT Optimization Methodology

www.nxtbook.com/nxtbooks/ibmsystemsmag/blueprint_201204/index.php

www.ibm.com/systems/resources/scorpiong3azsw03062usen.pdf

Systems Lab Services—IT Optimization Consulting

www.ibm.com/systems/services/labservices/solutions/labservices_consulting.html

includes making the IT environment interoperable, integrated, and automated for greater efficiency, productivity and IT service quality. In addition, a separate but equal focus exists for reducing ongoing operational costs. Two imperatives are crucial to IT optimization:

1 Lower infrastructure costs

- Improve operating efficiencies and staff effectiveness
- Automate and integrate IT processes
- Raise utilization of existing assets
- Accelerate the time-to-value with fewer errors
- Reduce IT complexity
- Align the resources with business objectives

2 Sense and respond to business changes

- Respond to changing business demand with workload management and resource allocation
- Enable IT to rapidly respond to changing business priorities
- Enable a scalable infrastructure to handle peak demands
- Handle changing business with variable IT capacity
- Lower total costs by increasing capacity only when needed

You can meet these optimization challenges with the PureFlex System, which provides a low-cost, simplified and quickly deployable set of easily managed server, storage, network, and software resources in a single, integrated solution geared toward quickly addressing the smarter computing and cost containment needs of your business.

ITOC Services

IBM Systems Lab Services—IT Optimization Consulting (ITOC) has the technical and financial know-how to make the most of your IT infrastructure, with expertise in designing solutions—and determining total cost of computing for those solutions—in a variety of industries and across a range of areas, including server consolidation, virtualization and cloud computing among others. Whether you choose to invest in the PureFlex System or other IBM solutions, ITOC can help you make significant strides in infrastructure optimization. Our experience brings a range of industry-leading technologies to light, helping streamline your environment to align rapidly with changing business goals. ■

Sharon Kent contributed to this article.

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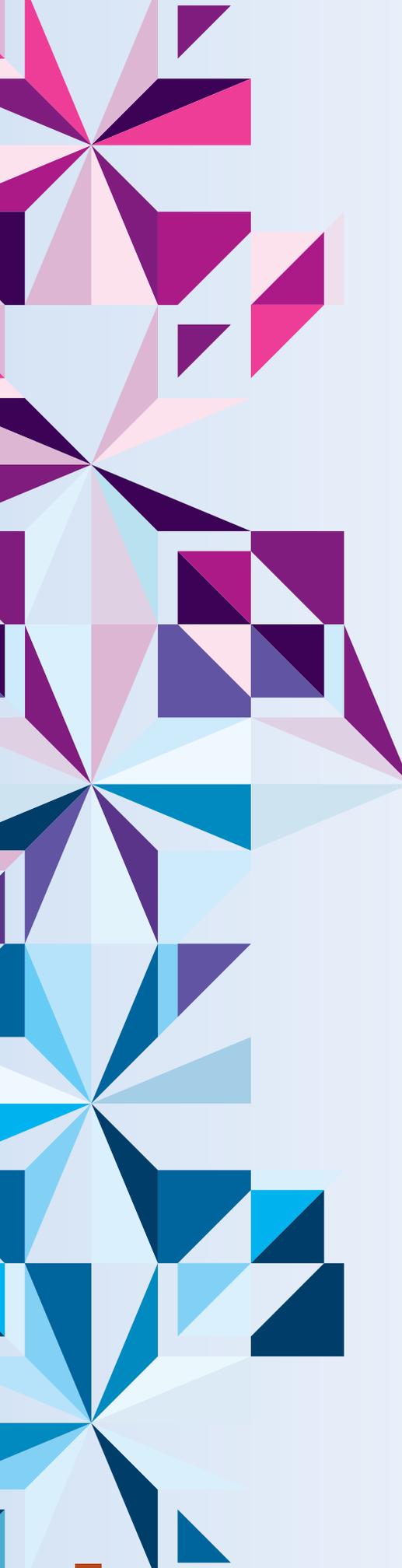
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**IBM PureSystems family
offers built-in expertise to accelerate
deployment and decrease costs**

A New Category of Computing

BY JODIE KASHUBA

In April, IBM unveiled the IBM PureSystems* family. With built-in expertise, integration by design and simplified experience, these expert integrated systems are designed to deliver immediate client benefits with accelerated deployment and lower operational costs. The products make it easier to deploy cloud and Smart Analytics solutions; IBM SmartCloud* Entry comes pre-optimized on IBM PureFlex* Systems, serving as the building block to create private clouds in virtualized IBM System x* and IBM Power Systems* environments.

Alan Thomason, Business Unit Executive for Systems Lab Services PureSystems and System x, offers insight to better understand these technologies and how IBM Systems Lab Services is actively helping client accounts exploit the game-changing benefits of business analytics, cloud computing and virtualization.

Q: There's been a lot of buzz and press surrounding the PureSystems family. What defines it?

A: This new category of computing combines all of the components and pieces

needed to run an application and strips out inefficient processes. PureSystems products blend multiple server architectures, networking, chassis and storage and system management capabilities into a single system that's easy to deploy and manage. IBM has used its collective knowledge of integrating and tuning servers, storage, networking, virtualization and management to develop a system that is integrated by design. In the IBM PureApplication* System, middleware, development and deployment capabilities are also integrated and optimized.

These systems fundamentally change the economics of IT, offering maximum flexibility, choice of OS and architecture

Learn More

To learn more about PureSystems courses, events and enrollment opportunities, visit:

<http://www.ibm.com/training/us/pureflex>

(Power* and Intel* technology-based). The PureFlex System provides a simplified experience across the entire lifecycle of the system. The design is taken care of. With a single entity to order and receive, and a system ready to plug in out of the box, the experience from purchase to installation to operation couldn't be easier.

Management is integrated across the entire hardware and software solution stack. With a single management console, a single point of contact for support and a single set of linked patches, we've streamlined administration and maintenance. The system structure allows upgrades to happen with zero downtime for uninterrupted service. And the open standards foundation enables a broad ecosystem of solutions to optimize the system.

Q: What is IBM's strategy?

A: Delivering new capabilities faster, controlling complexity and spending less time, effort and money maintaining the status quo are among the tasks IT is charged with. Expert integrated systems are more than a static stack of self-tuned components. These systems have three truly unique attributes.

The first is built-in expertise. Think of these systems as representing the collective knowledge of thousands of deployments, established best practices, innovative thinking, IT industry leadership and infused experiences of IBM Business Partners and solution providers.

Second, systems that are integrated by design; hardware and software components are merged and tuned in the lab then packaged in a factory into a single, ready-to-go system.

And last the entire experience is simpler. From design to purchase, setting up the system to operation, maintenance and upgrades over time, all are done in an open manner that enables participation by a large community of partners.

Q: What is the role of IBM Systems Lab Services in the company's strategy?

A: Our role is a more integrated and comprehensive one. We provide clients and IBM Business Partners immediate access to experts with hundreds of hours in product development, proof-of-concepts and early ships. The PureFlex Expert Integrated Systems Deployment Services (included as a part of express, standard and enterprise configurations) accelerates adoption and observed client value of PureSystems to drive successful engagements. Depending on a client's wants and needs, corresponding services are also available from IBM Global Technology Services* to augment deployment further.

Q: How does the PureFlex System fit into the worldwide IBM Systems Lab Services strategy?

A: The central mission is to assist the adoption of new IBM technologies. Our role in supporting the PureFlex System is at the heart of that strategy and builds in Lab Services expertise with other patterns of expertise.

Q: What does the term "patterns of expertise" mean?

A: These are proven best practices and proficiency for complex tasks gleaned from decades of client and partner engagements that are captured, lab tested and optimized, then built into the system.



Q: Why is that important?

A: Four solid reasons:

Agility—We remove the manual steps and automate delivery, leading to quicker client time-to-value;

Efficiency—By cutting the cost of and need for internal resources, a client's list of "to do's" are done. They can engage their in-house staff elsewhere;

Simplicity—More than a blueprint or set of instructions, expertise is built-in and executable;

Control—Optimized implementation significantly lowers the risk of human error.

Q: Lab Services can assist in implementation but new technology can be daunting. What are the benefits of skills training?

A: Faster adoption of this PureSystems technology can help our clients capture value and accelerate their ROI. We provide early access to consultants with experience in installation and development to speed this process. And once services are completed, clients are ready for cloud computing should they decide to embrace it.

Q: Have classes been developed to help educate clients about what this computing model can do for their business?

A: IBM Training offers a series of courses to help clients get the most out of their system. Classes include traditional classroom, instructor-led online (ILO) and self-paced virtual class (SPVC) formats. Introductory and high-level overview courses are available with more advanced courses with hands-on

labs coming later. Courses are modular and may be customized for private delivery. We also offer deep dives into areas including the new PureFlex Storage and Networking, Power compute nodes, systems management, System x compute nodes and more.

We're also featuring a session on PureSystems during 2012 Systems Technical training events in the U.S. and worldwide. For example, we'll be at the upcoming System Storage Technical University held Oct. 15-19 in Budapest, Hungary, and

Power Systems Technical University that's slated for Oct. 29-Nov. 2 in Las Vegas.

Q: How about IBM Business Partners? What enablement opportunities does IBM Lab Services and Training have for them?

A: We'll provide early training to IBM Business Partners who can shadow our services deployments and eventually deliver them on their own once certified and authorized. They can also attend any of our events and courses. ■

Next Step

Explore PureSystems technology at a Technical Training event or take a course:

<http://www.ibm.com/training/us/pureflex>

Contact IBM Lab Services at stgls@us.ibm.com

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Orchestrating IT

Unified Resource Manager revolutionizes the modern data center

BY THOMAS COSENZA AND RAJESH P. RAMACHANDRAN

In today's ever-expansive IT environment, infrastructures have become a complex mix of multiple platforms within IT silos. Further complicating the issue are IT managers who lack a single view of data resources across organizations with the silo model. In contrast, data centers are under intense pressure to control their

server footprint, energy usage and administration costs—a dynamic that demands greater sharing of resources across a hybrid layer of servers throughout an enterprise. The old silo approach of IT governance doesn't sufficiently support an intermixed environment.

These pressures are driving new business trends and requirements for IT managers

to fully understand the impact of workflow from a transaction's inception to its completion and how it affects the bottom line.

In addition to supporting the transactional and workload aspects of these complex environments, the ability to adhere to public and private IT data regulations such as HIPPA, Sarbanes-Oxley and the Payment

Card Industry Data Security Standard have been an albatross in the old silo environment paradigm. The multiple layers of server management mixed into the layers of the enterprise environment make coherent security policies onerous to deploy across an organization's infrastructure.

The Conductor

The IBM zEnterprise* System gives the IT enterprise-level data center the ability to address fundamental needs facing IT directors in this decade and beyond. The one-of-a-kind zEnterprise environment combines the raw processing power of z196/z114 servers with scalable BladeCenter* servers that contain AIX*, Linux* or Windows* virtual servers and a powerful service oriented architecture/XML messaging appliance all within its own private, secure network. To fully manage this orchestra of computing power, the Unified Resource Manager conducts this symphony of hybrid computing power into an IT masterpiece.

Unified Resource Manager allows an IT organization to centralize its responsibilities in managing energy costs, virtual server lifecycle maintenance and transactional performance awareness across multiple server platforms. Unified Resource Manager also allows an organization to define virtual environments, automatically discover I/O devices, define and manage workload policies, and concentrate server maintenance. This approach can ease the burden of regulatory and corporate security compliance since a centralized approach lends itself to easier deployment of policies mandated by the business.

IT managers need to be able to dynamically tailor their environments to fit the requirements put forth by their business. Through the Unified Resource Manager, an administrator can directly communicate with the hypervisors on different blades within zEnterprise to update running hypervisors, manage virtual networks within the zEnterprise structure, manage resources such as storage and memory, and manage virtual servers and assign resources to those servers as needed. This level of flexibility allows the modern IT enterprise resource manager the ability to tailor resources to his businesses need.

The main focus of any IT organization is the performance of their servers and ser-

vices. IBM Workload Manager (WLM) is used to meet service-level agreements (SLA) on z/OS* which is key to the business's top line performance. WLM provides a way to classify and group applications according to their importance, however, this is restricted to System z*. WLM doesn't have the ability to affect the entire performance of a workload that spans multiple platforms and

The one-of-a-kind zEnterprise environment combines the raw processing power of z196/z114 servers with scalable BladeCenter servers that contain AIX, Linux or Windows virtual servers and a powerful service oriented architecture/XML messaging appliance all within its own private, secure network.



operating systems. Through the Platform Performance Manager (PPM), the Unified Resource Manager is workload-aware; it can apply WLM-style metrics to virtual servers that are part of the zEnterprise. This allows an administrator to view the performance of virtual servers running under the hypervisor and add more memory or CPU to a system as needed. Unified Resource Manager balances the resources within zEnterprise to

allow for workload goals for different transactions since not all applications are equal in an organization.

Unified Resource Manager can also monitor power consumption of the virtual servers within zEnterprise. Through static power capping and savings, an IT department can get a handle on the true energy costs for their virtual servers. The zEnterprise System can also track server trends, including ambient temperature and average power usage for a given time period; thus allowing the organization to manage bottom-line expenses.

To support virtual server lifecycles, the Unified Resource Manager has been extended from its past System z support function to assist with the management of virtual appliances within the zEnterprise BladeCenter Extension (zBX). This support allows IT administrators to update firmware, fabricate new servers on the AIX and x86 blades within the zBX in minutes, restore critical data that may have been lost, and manage their virtual server networks. Another feature is key automatic logging and first-failure data-capture information, which previously was only available on System z servers. This allows enterprises to more quickly meet business needs as new issues occur.

Getting the Needed Support

When an enterprise is considering expanding to zEnterprise and Unified Resource Manager, it's important that it utilizes more than the System z resources. The zEnterprise System is a highly evolved environment requiring expertise to take full advantage of its robust environment. The Unified Resource Manager roles should be divided up among various personnel within the IT organization. For the zEnterprise, a virtual server administrator and performance engineer will be needed to allow the organization to act decisively toward business requirements.

The zEnterprise System and Unified Resource Manager will change the way IT governance is executed within any enterprise that wishes to adopt hybrid-computing workloads. If used properly, Unified Resource Manager allows organizations to drive down bottom-line costs and maximize the performance of its platforms. ■



Adding Value

Data Center Services provides support for PureSystems installations

BY ROGER SCHMIDT, GREG HARWICK, ALAN CLAASSEN, DAVID LEW, KEN SCHNEEBELI, MATTHEW ARCHIBALD AND ZULMA WESTNEY

The IBM PureSystems* offerings are the first in a new class of expert integrated systems. Extreme levels of system efficiency and built-in expertise that makes IT easy to deploy are the hallmarks of PureSystems. Its integration capabilities make the hardware and software into a ready-to-go and workload-optimized system. Further, the PureSystems family can provide a simplified experience for users.

IBM Systems Lab Services—Data Center Services (DCS) can help organizations succeed with the IBM PureFlex* System addressing power, thermal and operational improvements in the center.

Data Center Services

DCS can help you succeed with the PureFlex System. Installation can be enabled through DCS solutions in the following three steps:

1. An IBM PureFlex Power Configurator estimates the power requirements for your new PureSystems solution.

2. Selection of the cooling technology is made. If a water source is available, the Rear Door Heat eXchanger (RDHX) can be installed on the rack to remove most, if not all, of the heat load. However, if an air-cooled rack is preferred, a simple analysis of the ventilation required within the data center may provide an optimized, energy-efficient solution.

3. Real-time monitoring of thermal and air quality environments is provided for PureSystems in the data center.

IBM PureFlex Power Configurator

Two options are offered for configuring the IBM PureFlex infrastructure.

- Option 1: The IBM Power Configurator—a software tool that allows users to

configure nodes and chassis to their exact specifications and reports input power, current, and heat—returns three different information points: idle, maximum and a user-changeable load factor. Idle represents the minimum amount of power the configuration will draw, while maximum refers to the maximum estimated amount of power the configuration could potentially draw. The load factor allows users to adjust the system load to represent the power consumed while running their workload. These data points narrow the thermal and electrical operating range, minimizing the over-provisioning of facility resources.

- Option 2: For supporting the PureFlex System in a user-defined configuration, DCS offers the IBM PureApplication* System, which allows planners to estimate the electrical and thermal operating range of their PureFlex System. For users of the IBM

PureApplication System, DCS can narrow the upper limits of the electrical and thermal operating range based on how various applications and workloads affect system power consumption. DCS installation and planning helps clients extend the integrated expertise of the PureApplication System in regard to power and cooling for smarter management of their data center resources. The integrated expertise and service of these offerings significantly reduce the work involved with integrating PureSystems technology into the data center management environment.

Essentially, DCS makes the program available for users to perform their own generic measurements and estimates. DCS' knowledge base enables them to correctly size the PureApplication System based on workload, performance and power. Add that to the other services DCS offers, and it makes integrating, managing, and optimizing new systems into the existing environment significantly less challenging and involved than before.

Cooling Technology Selection

Determining the optimal level of cooling technology can extend the life of a data center. The PureSystems offerings not only deliver extreme levels of system efficiency, but also create high power density. To support this, IBM developed a new generation of the RDHX to attach to the new, narrow PureSystems rack. Compared to the previous generation, the PureSystems RDHX feature removes nearly two times the heat for a standard-width frame.

DCS can model the amount of heat removal, rack inlet and exit air temperatures, power usage, and airflow required in the data center. Using RDHX Services can help reduce or eliminate the need to purchase additional computer room air conditioning (CRAC) units. It can also postpone or eliminate the need for major data center renovations or new builds.

If air is selected as the cooling technology, an analysis of the data center can be conducted that can provide an optimized, energy-efficient layout with the new PureSystems rack. This analysis, using computational fluid dynamics (CFD), is

available through DCS and requires a power estimate of the new rack and details about the data center where it will be installed. These details address information about the data center facility, such as the geometry of the data center, the performance specifications of the air conditioning units, the types of perforated tiles and other features that affect airflow, such as under-floor obstructions and cable cutouts in floor tiles.

Information about the existing IT equipment in the data center is also needed, including estimates of power for individual racks and where the existing equipment is located. Input regarding possible locations of the PureSystems rack would also be needed. A CFD analysis can be conducted with this data to identify the best location in the data center for the new rack, the kind of perforated tiles that will be needed and whether other features, such as recirculation barriers, would be needed to help ensure the proper environment.

Real-Time Monitoring

To provide real-time monitoring of the data center supporting the PureSystems offerings, DCS uses IBM Measurement and Management Technologies (MMT) for continued optimization of ventilation requirements.



Learn More

For more information on IBM Systems Lab Services–Data Center Services, visit www.ibm.com/systems/services/labservices/solutions.

PureSystems hardware is designed to operate within the ASHRAE 2011 data center class A3 equipment inlet, allowing an operating temperature range of 5 C to 40 C up to 3,000 feet, and up to 28 C from 3,000 to 10,000 feet. The PureSystems hardware includes advanced features to detect the operating environment, including hot air recirculation, and applies zone-based cooling controls to appropriately adjust the internal cooling of the hardware, accounting for component temperature dependencies. It does so in a way to maximize the temperature rise across the hardware for more efficient data center level integration and operation.

To monitor the overall health of the data center, including rack inlet temperatures, it is useful to deploy a real-time monitoring system independent of the various hardware platforms. This is particularly helpful when a data center is operated closer to the upper end of the ASHRAE recommended equipment inlet operating range of 18 C to 27 C. The MMT system is available for deployment through DCS. MMT incorporates rack inlet temperature sensors, CRAC/CRAH (computer room air handler) return and supply temperature and flow-status sensors, humidity sensors and under floor pressure sensors.

It also offers advanced corrosion rate detection sensors to avoid gaseous contamination issues that are more of a concern in facilities deploying air-side economizing, which brings large quantities of outside air into the data center. The MMT system includes advanced analytics software developed by IBM Research to interpret and present the data, including CRAC/CRAH energy-efficiency metrics and heat maps. CRAC/CRAH control is available as an option to significantly improve data center energy efficiency. All features are available in both wired and wireless systems.

Enabling Installation

DCS can help enable the installation of the IBM PureSystems family in a client's data center by addressing power, thermal and operational improvements. It will help you develop a flexible plan to optimize and automate the data center. ■



Integration Innovation

IBM Flex System Chassis represents a new era in smarter computing

BY FREDERIK AOUIZERATS

The April announcement of the IBM PureSystems* family heralded an innovation in the era of Smarter Computing. For the first time, IBM hardware, software and services are fully integrated into a system. The cornerstone of the system is the IBM Flex System* Chassis. This chassis is more than just new

hardware. As a fully integrated hardware and software system, it's a radical departure from current models, setting the standard for a new level of innovation.

The industry has known that in order to advance, it needed to have a chassis that was common across all of the components. The PureSystems offerings from IBM are the

first steps in that direction. IBM is leading the way in this completely new design that breaks the threshold of technical and strategic innovation.

Technical Innovation

The Flex System Chassis is a simple, integrated infrastructure platform that

This chassis integrates both hardware system management and virtualization system management. None of IBM's competitors offers this level of integrated system management.

supports a mix of compute, storage and networking resources to meet the demands of your applications. Unlike traditional systems where system management occurs at the hardware layer, the Flex System Chassis manages all system components at a virtualization level. The solution is easily scalable with the addition of another chassis with the required nodes. Multiple chassis can be monitored from a single screen.

System Management

IBM Flex System Manager (FSM) offers flexible integrated systems management across compute, storage, and networking resources in the IBM Flex System infrastructure. The FSM is designed to provide all of the key management functions for your integrated IT resources from a single, easy-to-use interface.

This chassis integrates both hardware system management and virtualization system management. In previous generations, management modules had been integrated to manage all components in the chassis at the hardware layer. None of IBM's competitors offers this level of integrated system management.

Reliability Design

As with all IBM products, the Flex System Chassis is extremely reliable. Its new form factors and its modular components allow for superior cooling capabilities that demand less air conditioning, thereby saving utility costs and increasing energy efficiencies. The increased cooling capabilities extend the life of the hardware and thus improve its reliability.

Strategic Innovation

The IBM PureSystems family is the first common platform that incorporates reliability, manageability and flexibility. The system is adapted for virtualization and cloud workloads. This generic platform is critical because IBM is now able to build scalable solutions for a variety of industries and applications on top of it.

Generic/Flexible/Modular

The IBM Flex System Chassis is an all-in-one solution designed for growth from a single chassis to many. Adding compute, storage or networking capability is as simple as adding additional nodes, modules or chassis. This versatility makes it easy to build customized systems to meet various business needs without procuring multiple platforms and employing many specialists. Setup can be done by any IT professional, saving you the labor cost of using a highly skilled specialist. Plus the chassis can be deployed in as little as one week, offering additional labor savings. The chassis is:

- **Generic:** The PureFlex System provides the building blocks to design a scalable system to meet varying industry requirements
- **Flexible:** All components are modular and can be arranged to suit each customer's needs
- **Generic/Flexible:** The PureFlex System can be used for any kind of virtualization or cloud management pack
- **Modular:** The chassis is modular, so you can build the solution that suits your business needs and environment. You now have everything in the chassis. For example, storage is embedded in the chassis, which can be configured in a modular fashion to the needs of the end users. Modularity of the power means if you need less power, you can use fewer power modules thereby saving energy. In fact, you can control your power by controlling the number of power modules that are active at the system management level depending on actual usage load.

FSM makes it easier to manage a virtual environment on PowerVM*, KVM, VMware vSphere and HyperV from a single management point. The Flex System Chassis is available in three configurations:

- **Express**—The Express configuration is designed for small and mid-sized businesses, and is the most affordable entry point into a PureFlex System.

- **Standard**—The Standard configuration is optimized for application servers with supporting storage and networking and is designed to support your key ISV solutions.

- **Enterprise**—The Enterprise configuration is optimized for scalable cloud deployments and has built-in redundancy for highly reliable and resilient operation to support your critical applications and cloud services.

Solid Foundation

With its common, virtualized platform and three configurations, the IBM Flex System Chassis is designed to be the foundation of your IT infrastructure now and into the future. ■

Sharon Kent contributed to this article.



Next Step

To explore how the IBM PureFlex System can work in your environment, contact IBM Systems Lab Services at www.ibm.com/systems/services/labservices or stgls@us.ibm.com.

The worldwide team of systems engineers, programmers, IT architects and skills-development professionals has decades of experience helping clients implement solutions that optimize their IT infrastructures.



2012 IBM Systems Global Technical Events

Cloud Computing

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Power Systems Technical University
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Power Systems Technical University,
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Oct. 29-Nov. 2, Las Vegas

IBM System Storage

System Storage Technical University
Oct. 15-19, Budapest, Hungary

IBM System x

System x Technical University, featuring
IBM PureSystems
Oct. 15-19, Budapest, Hungary

IBM System z

System z Technical University
Oct. 1-5, Las Vegas

Multiplatform Events:

Power Systems and System Storage
Technical Symposium
Oct. 10-12, Bangalore, India

Systems Technical Symposium

Aug. 14-17, Sydney, Australia

System z and Storage Systems Technical Symposium

Sept. 11-14, Chennai, India

Technical World for Smarter Computing, featuring Power Systems, System Storage and PureSystems

Oct. 3-5, Bangkok, Thailand

Systems Technical Conference

Oct. 23-25, São Paulo, Brazil

Systems Technical Symposium

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Regroup, Refresh and Revitalize

IBM Systems events provide education,
access to IBM developers and more

BY DEBORAH AKINDELE

Working in IT can be a 24-7 adventure—exciting, challenging and, sometimes, exhausting. You can get so caught up in the day-to-day demands of your job, that you have no time or energy to focus on you. IBM Systems Technical Universities and Symposia are a perfect opportunity to regroup, refresh and revitalize.

Attendee George Ollie put it this way: “When you’re a systems integrator, you’re busy listening to your clients. And you say, ‘When do I refresh me?’ Well, this is my time to refresh me.”

Each year thousands of IT and business professionals attend these global events. More than half are alumni, returning every year or two. Their loyalty is a testament to the value of the programs. Attendees consistently cite five major benefits of returning every year. They go to:

- Upgrade IT skills or develop new ones. Choose from multiple training tracks, all featuring sessions for every skill level, from novice to expert.
- Test-drive the latest technologies through hands-on labs. Roll up your sleeves

and get involved with the latest systems and software.

- Hear breaking news from the original source. Get up to speed on the latest product releases, trends, tips and techniques—direct from IBM labs.

- Network with experts and colleagues. Meet IT pros from a variety of industries and build a wealth of professional contacts.

- Load up on great information. Get the details you need to make intelligent technical and business decisions.

One-of-a-Kind Technical Education

IBM Systems events are a vast melting pot of technical know-how. IBM product developers host technical training sessions where you can benefit from insider expertise. Roland Hagan, vice president, IBM Systems and Technology Group, System x* Servers, says conference education is a unique opportunity to “spend time with developers and key IBM technical people who will tell you exactly what they’re doing.” These IBMers welcome your feedback to help guide their development efforts.



Value of Training

Training represents one concrete step IT managers can take to assure project teams possess the skills necessary to reduce failure risk, decrease costs, and increase project effectiveness.

- June 2011 IDC survey report, "Impact of Training on Project Success," Doc #229054

Business partners are also on hand to share their knowledge. They, too, are eager to discuss your "pain points" so that they can better partner with IBM in designing products that meet your needs.

You can also learn from your peers in "birds-of-a-feather" roundtables. Pick up tips and techniques, share war stories and walk away with insight gained from each others' first-hand experiences plus peace of mind knowing that your challenges have proven solutions.

Play in Our Sandbox—Shovel Optional

Walk down the hallways of any IBM Systems Technical University or Sympo-

sium and you're bound to hear the buzz of excitement about our product-rich Solution Center. Stroll the roomful of exhibit booths and test drive the latest technologies from IBM and our business partners. Our Solution Center is open during lunch breaks and in the evening, so you can stop by when you're not attending a session or hands-on lab.

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ers of our magazine partners (*IBM Systems Magazine*, *Mainframe Zone Inc.* and *Penton Media* publications). Plus the popular IBM Education Pack, a prepaid training discount program, and IBM PartnerRewards Education vouchers can also cover tuition.

Get Smarter Now

IBM Technical Universities and Symposia offer superior technical and business education. You can explore innovative technologies and IT strategies, gaining valuable insights to help your company and your career. These events are also a priceless opportunity to network with the best in the industry and build a lifetime of new contacts critical to your professional success. So why wait? Visit IBM's calendar at www.ibm.com/systems/services/conferenceseries and enroll today. ■

Sharon Kent contributed to this article.

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Deborah Akindede is a senior marketing manager for IBM Training and is responsible for worldwide marketing of IBM Systems Technical Universities and Symposia. She has more than 35 years of sales and marketing experience, with expertise in integrated marketing campaigns and demand-generation programs. Deborah has an MBA from Texas Southern University in Houston.

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Greg S. Harwick is an executive consultant and practice leader for the IBM Systems Lab Services—Data Center Services (DCS) team. His expertise includes data center optimization services for IBM clients and Business Partners focused on power, cooling, operational and cost improvements. Greg earned an MBA in finance from Pennsylvania State University and a BSBA in finance from Kutztown University.

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David Lew is a senior managing consultant with almost 30 years in the IT industry and more than 25 years at IBM. His expertise includes thermal development for storage, server and telecommunications products, and data center thermal assessments, best practices and simulations. David is also a member of the IBM Measurement and Management Technologies delivery team.

Ken Schneebeli is a data center managing consultant who focuses on client issues and opportunities associated with data center power, cooling, energy efficiency and utility incentives. He is active with IBM's development and services organizations, and also industry groups such as The Green Grid, Critical Facilities Round Table, and Silicon Valley Leadership Group. Ken has more than 16 patents or patents pending.

Matthew Archibald is a data center engineer in the IBM Lab Services Data Center. He is responsible for the development, maintenance and support of the IBM System x Power Configurator program and holds 15 patents for various data center and hypervisor technologies. He has four degrees from Clarkson University—computer engineering, electrical engineering, software engineering and computer science—and a Bachelor of Engineering degree in electronics engineering from the Auckland University of Technology.

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