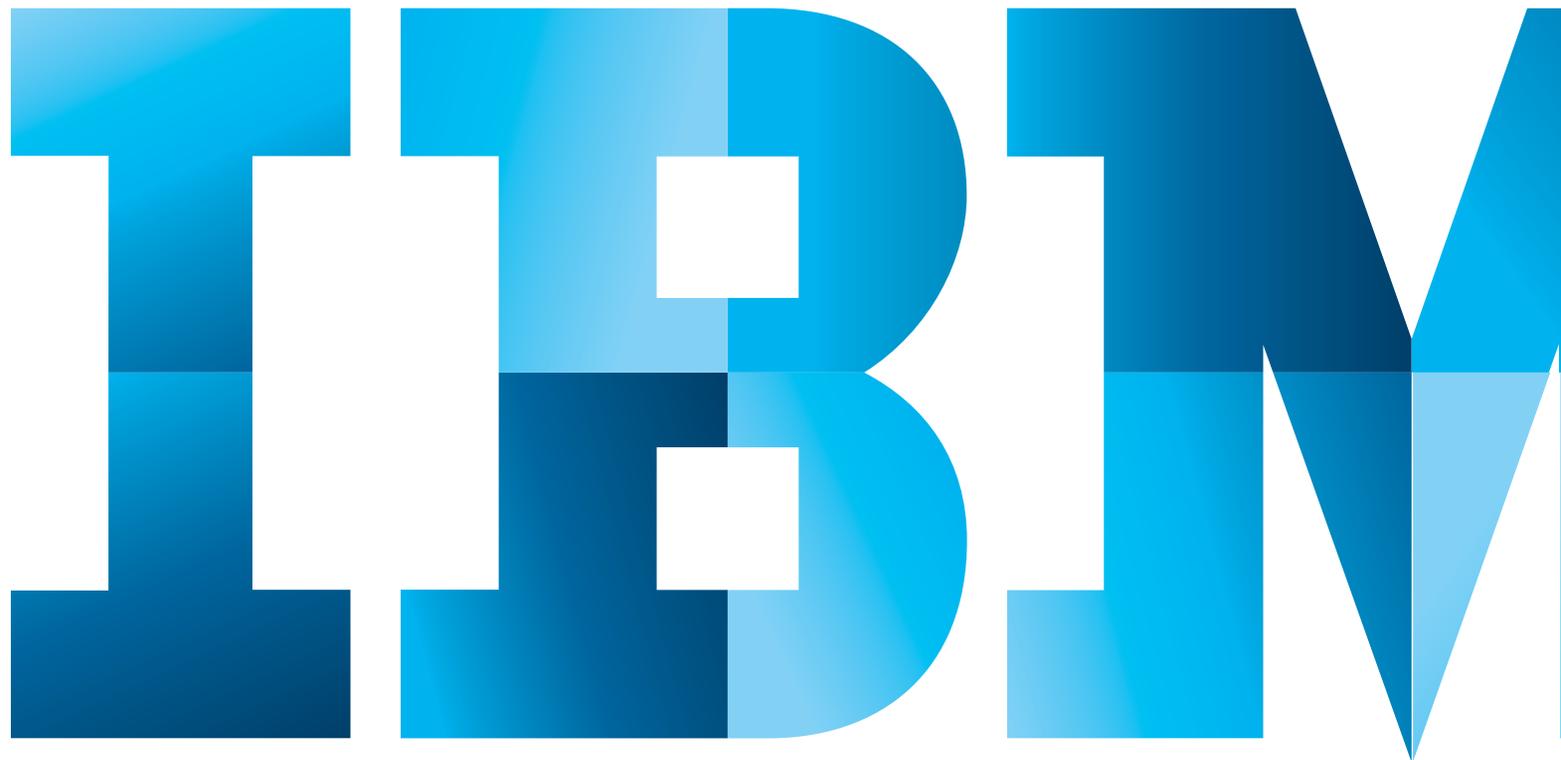


Shifting IT focus from maintenance to innovation

*Using the IBM PureApplication System and patterns of expertise
for consolidation, optimization, innovation and cloud acceleration*



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Introduction

At many companies today, 70 percent of IT budgets—or more—go into maintenance and operations.¹ A large chunk of the remainder typically goes toward deploying applications and configuring hardware for them. But what if you could manage the entire solution stack as a single entity, automate most maintenance tasks and deploy new applications in a matter of hours?

You'd most likely be able to dedicate far more of your IT budget to innovation and new capabilities. Your company could spend more time focused on increasing

competitiveness. IBM has found early adopters of new technology are the organizations that assign more than half their IT budgets to adding new applications and capabilities.²

IT professionals know the focus of IT should be shifted from carrying maintenance burdens to cost-effectively accelerating essential projects and responding to business needs and market opportunities. But IT tasks such as application development, management and maintenance aren't going away. That's why IBM has developed the IBM® PureApplication™ System.



“IT departments can save time and eliminate risk while gaining an efficient, repeatable deployment option.”

IBM PureApplication System provides built-in, ready-to-use expertise

Many critical tasks related to application development, configuration and deployment are time-consuming and expensive, while also requiring high skill levels and carrying the risk of human error. But what if these activities were contained within a modular pattern that automatically executed and performed most of the required steps in these tasks?

That is exactly what the IBM PureApplication System is designed to do. IBM PureApplication System environments employ embedded patterns that deliver all of the expertise needed to deploy, manage

and maintain an application. IT departments can save time and eliminate risk while gaining an efficient, repeatable deployment option that ensures configuration consistency.

Today, patterns are available for deploying web applications, databases and data marts, and other middleware environments. More than 100 other patterns are available from independent software providers. They include patterns for business process management, portals, web content management, business intelligence and more.

IBM PureSystems™ —including the IBM PureApplication System, the IBM PureFlex™ System and the IBM PureData™ System—



are the first family of expert-integrated systems that automate most of the operations work needed for applications, hardware and data center infrastructure, as well as steps in the application development and deployment process and cloud adoption. Unlike other integrated systems and appliances, the PureSystems family comes with the intelligence needed to handle most configuration, upgrade and maintenance tasks.

With the IBM PureApplication System, applications can be dropped into a preconfigured middleware engine that includes the IBM DB2® database and IBM WebSphere® application server. The IBM PureApplication System also integrates multiple hardware and software components, including a rack-based server system. These components dynamically adjust to demand spikes and reallocate system resources automatically. Organizations can easily manage workloads through a single management console.

Combining each of these components results in a fully integrated platform designed

to free IT staff to spend less time on rote tasks and more time on activities that boost competitiveness. For example, IT departments often schedule four to seven months to install, configure and roll out a new application environment. With the IBM PureApplication System, this time frame can be compressed into as little as four hours—or less.

Nearly every part of the lifecycle for applications and systems becomes faster and more efficient. The platform can self-optimize for a variety of workloads and even automate complex integration tasks such as those required in data center consolidation initiatives.

Simplified IT with superior economics in four key areas

Using traditional product descriptions to categorize the IBM PureApplication System is difficult, because the solution combines so many critical functions. Features like built-in intelligence, complete hardware and middleware integration, repeatable patterns and a simplified user experience transform the experience and economics of IT. However, it's not at all difficult to describe the benefits of the IBM PureApplication System. The system delivers simplified IT with superior economics in four key areas: consolidation, optimization, innovation and cloud acceleration.

Consolidate

Complexity arising from mergers, acquisitions and organic business growth is frequently the root cause of high IT spending. Many organizations today have a diverse array of middleware and multiple development, test and production environments, which leads to inefficiencies. Simplifying these environments is necessary for shifting IT from maintenance organizations to engines of innovation.

With the IBM PureApplication System, a single system can replace dozens, concurrently supporting hundreds of



applications and allowing IT to manage them all from a single console that includes over 140 different elements for firmware updates. The IBM PureApplication System reduces the physical space consumed by

the IT infrastructure, but its small footprint doesn't sacrifice performance. Hardware and software components are optimized for a variety of application workloads to deliver maximum performance and efficiency.

The IBM PureApplication System also features an automation framework to:

- On-board and intelligently place existing applications, reducing the risk and cost of the consolidation
- Automatically scale applications and their underlying required resources as demands change, eliminating the time and cost of provisioning resources for peak demands

IT tasks are further simplified by IBM PureApplication System features such as an automated migration console (AMC)

and a single management console for all applications, which lets the administrator quickly set scaling and routing policies and service-level agreement (SLA) priorities.

For example, these capabilities could help an organization consolidate hundreds of Java applications by letting the IBM PureApplication System take charge of automatic provisioning and scaling. As a result, this organization could accurately predict performance for each application, as well as elastically scale to fulfill fluctuating workload demands.

At another organization, a data center manager needed to consolidate critical applications onto a dense, highly redundant infrastructure to help reduce operating costs—often a multiyear process. But by using the IBM PureApplication System, that manager can rely on a system that uses IBM’s collective knowledge about integrating and tuning servers, storage, networking, virtualization and management to significantly optimize the environment in weeks.

Optimize

In an ideal world, systems would dynamically adjust to spikes in demand, and the right resources for an application would be allocated immediately and automatically. However, this ideal can be difficult to achieve. Updates and upgrades can trigger planned and unplanned downtime, and are among the primary reasons why optimizing applications for an underlying infrastructure requires a great deal of time and specialized skills.

With the IBM PureApplication System, system updates are automated, and most upgrades involve zero downtime.

And because the entire solution stack—hardware, storage, middleware, application resources—is automatically optimized, applications are automatically allocated to an appropriate resource within the overall limitations of the infrastructure.

IBM PureApplication System patterns can significantly simplify complex optimization tasks. Patterns are pre-optimized for a wide range of application types, as well as fixed infrastructure and platform configurations. Once a pattern is deployed, the IBM PureApplication System is automatically optimized to run that pattern’s workloads.



“With the IBM PureApplication System, system updates are automated, and most upgrades involve zero downtime.”

Top-to-bottom optimization of the entire solution stack accelerates the time-to-value of new applications and functionality, while also significantly increasing IT infrastructure utilization. A single management console provides visibility from the infrastructure up through the application layer to help eliminate errors.

IT organizations can select which business policies to apply to IBM PureApplication System optimizations. For example, one company might choose to lower data center energy use as a priority. Another might need to ensure a maximum two-second response for its website application.

Or an organization might choose dynamic scaling across all its applications and virtual machine resources.

Elasticity is critical in ensuring that performance meets SLA requirements when workloads grow or spike. Delivering scalability on demand is a key feature of the IBM PureApplication System, and application-specific metrics guide the automated, dynamic reallocation of resources for each particular application. When this occurs, IT managers can see real-time monitoring visualizations of the system and components such as applications and virtual machines.

The IBM PureApplication System also optimizes data placement across hard-disk drives (HDDs) and solid-state drives (SSDs) based on real-time application data usage. To provide optimal storage economics, the solution moves frequently accessed data from HDDs to faster SSDs. The results can be significant: at the application level, IBM System Storage® Easy Tier® technology can deliver up to 341 percent more web server input/output (I/O) per second,³ and the IBM PureApplication System has been able to increase critical application performance by as much as 300 percent.⁴

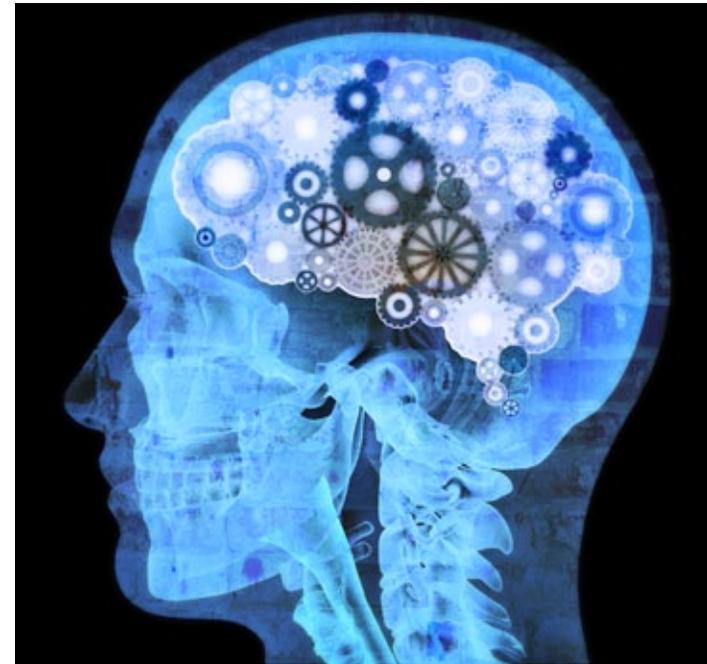
Innovate

Using the IBM PureApplication System, developers can test new ideas quickly with ready-designed application environments, and speed time-to-market with features that compress lead times.

Innovation can be baked into existing test and production environments. About one-third of IT projects are delivered late, according to IBM and Forrester research. Thirty percent of application errors result from inconsistencies between development, test and production environments. According to a recent IBM survey, inefficient troubleshooting and tuning production environments contributed to 45 percent of delayed projects. Another 45 percent of projects were delayed by integration, testing and configuration of infrastructure.⁵

The IBM PureApplication System eliminates many of these issues to speed development while reducing IT costs. By utilizing consistent patterns across development, test and production environments, the system helps reduce inconsistencies between environments and speeds up development iterations. IBM PureApplication System patterns enable 30 times faster deployment of environments and more rapid time-to-value.

Companies can deploy and optimally configure virtual application patterns on the IBM PureApplication System in only a few clicks and use the best-practices deployment topology codified in the patterns. These capabilities not only speed time-to-market, but also enable repeatable deployments across an organization's multiple locations worldwide.



As new applications roll out into production, built-in workload management, integrated system monitoring and maintenance can reduce operational costs by up to 55 percent, enabling IT organizations to shift staff to more strategic projects. Patterns of expertise shaped by IT best practices and industry standards can automatically manage solution elements from the underlying hardware resources up through the middleware and software.

Accelerate cloud

Transitioning applications from traditional management environments to the public cloud—and establishing new cloud-based capabilities—enables organizations to deliver IT as a service to employees and sometimes even customers worldwide. But companies considering platform-as-a-service (PaaS) delivery often have concerns about:

- Time-consuming and error-prone software license compliance
- The need to quickly reconfigure applications in the cloud
- Resource contention among users across hundreds of applications

Organizations can use the IBM PureApplication System to rapidly deliver

an application-aware cloud with expert application patterns to users to achieve quick time-to-value and reduce cost and risk. Expert application patterns offered by IBM and IBM Business Partners are the basis for PaaS, dramatically reducing the effort and expense required for deploying and maintaining a private cloud.

For example, organizations can use the IBM Business Intelligence Pattern on the IBM PureApplication System to deploy business intelligence (BI) applications in an optimized, fault-tolerant environment in minutes. Created for deployment of IBM Cognos® BI software, the pattern reduces the time, effort and cost of building and deploying an enterprise-grade, proven BI solution.



Integrated support for resource contention is automated to help ensure the performance of the most critical applications. A company can port hundreds of applications to the cloud, and rely on the IBM PureApplication System to track and manage all of the shared resources. Automated data governance policies help reduce compliance risk.

Changing the economics of IT

The IBM PureApplication System is an innovative new approach that greatly reduces the time required to develop, configure, test and integrate applications. The system allows impressive efficiency gains and cost savings, including:

- Up and running in less than four hours⁶
- Deploy a three-tier web application in under 15 minutes⁷
- Concurrent management of more than 1,000 VMs on a single W1500-608 system⁸
- Up to 60 percent better price/performance running typical web and database applications (over a competitor's configuration)⁹

With the IBM PureApplication System, organizations can greatly accelerate the shifting of IT resources—people and budgets—from management and maintenance burdens to strategic value-adding activities. This platform can reduce provisioning times from 45 days to minutes, require 47 percent fewer labor hours for application deployments, and 73 percent fewer total IT management labor hours.¹⁰

By providing patterns of expertise for consolidation, optimization, innovation and cloud acceleration, the IBM PureApplication System changes both the experience and the economics of IT for the better.



“The IBM PureApplication System allows impressive efficiency gains and cost savings.”

For more information

To learn more about the IBM PureApplication System, see your IBM representative or please visit:

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¹ IDC, Analyst Matthew Eastwood, IDC Directions Presentation, 2011.

² 2012 IBM Data Center Study: ibm.com/data-center/study

^{3,4} Based on IBM internal measurements and Enterprise Strategy Group, *IBM Storwize® V7000: Real-world Mixed Workload Performance in VMware Environments*, Brian Garrett, February 7, 2011.

⁵ Based on 119 respondents whose projects deployed behind schedule. Forrester, *A New View of IBM’s Opportunity for Integrated Optimized Systems Address*, a commissioned study conducted by Forrester Consulting on behalf of IBM, February 2011.

⁶ Based upon testing of the IBM PureApplication System W1500-96 with time measured from powering on the system to when it is ready to support application deployments.

⁷ Based upon testing of the IBM PureApplication System W1500-192 deploying a single Virtual Application Pattern consisting of two WAS VMs, a DB2 VM and updating the Elastic Load Balancer (ELB). The WAS VMs were allocated four vCPUs, 4 GB of memory and 12 GB of disk; the DB2 VM was allocated 8 vCPUs, 6 GB of memory and two virtual disks of 12 GB and 4 GB.

⁸ Based upon testing, under various workload conditions, of the IBM PureApplication System W1500-192 automatically scaling a Virtual Application Pattern consisting of WAS VMs by adding an extra WAS VM.

⁹ Based on IBM internal tests of the IBM PureApplication System W1500-96 compared to results of testing a competitor’s configuration (previous version; no longer available) executing an online JEE trading application workload in a controlled laboratory environment and a three-year total cost of acquisition (based on US list prices). The cost calculation compares the average cost per request. Three-year total cost of acquisition includes expected hardware, software, service and support. IBM’s internal workload studies are not benchmark applications, nor are they based on any benchmark standard. As such, customer applications, differences in the stack deployed, and other systems variations or testing conditions may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment. Users of this document should verify the applicable data for their specific environment.

¹⁰ PureApplication System Life Cycle Labor Savings Case Study.