

WHITE PAPER

IBM PureSystems Cut Costs and Increase Agility by Simplifying the IT Life Cycle

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IDC OPINION

Converged systems, such as IBM PureSystems, offer application development and IT operations teams a new level of pattern-based infrastructure design, middleware engineering, and operations management automation that is likely to transform the way many organizations procure, design, develop, deploy, manage, and support mission-critical applications and infrastructure across the IT life cycle.

Historically, both application development teams and IT operations teams have relied on manual, fragmented management processes and tools that often slow time to market, result in lost revenue and unexpected downtime, and create employee productivity problems. The experiences of IBM's early PureSystems customers indicate that converged systems can radically simplify the end-to-end application and IT operations life cycle by taking time, cost, and complexity out of many activities. Benefits include:

- ☒ Cutting months off of the typical system design and procurement cycle time because PureSystems are predesigned to support the unique memory, I/O, networking, storage, and related performance requirements of specific applications and middleware workloads. Every day saved waiting for a system to be ready for development, test, QA, or production deployments results in faster time to value and direct improvement to the corporate bottom line.
- ☒ Completing complex n-tier application deployment activities in minutes on PureApplication System using predefined application patterns in conjunction with built-in automated resource pooling, image management, and workload provisioning capabilities. Application performance can improve 2x or more with IBM PureSystems due to the integrated and optimized design of each offering.
- ☒ Streamlining day-to-day management processes/tooling and significantly reducing downtime due to built-in analytics and the ability to dynamically shift workloads and automatically reassign resources based on changing requirements and predictive failure analysis.
- ☒ Reducing the time and cost associated with support and upgrades by providing single system-level fixes/patches/upgrades through one vendor and one phone number.

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IN THIS WHITE PAPER

This white paper discusses why converged systems, such as IBM PureSystems platforms, have the potential to radically simplify many aspects of the IT life cycle and how these changes can deliver business value by accelerating time to market, improving application performance, and reducing the staff time needed for many routine ongoing management and support activities. This paper also provides several examples of how IBM customers are reinventing their IT life-cycle strategies using IBM PureSystems platforms.

SITUATION OVERVIEW

Converged Systems Emerge as New Development/Operations Platform Option to Address IT Complexity

IDC's research shows that enterprise datacenters continue to increase in scale and complexity every day. The rapid growth of virtualized infrastructure is dramatic. Specifically, IDC is forecasting a tenfold increase in the number of virtual machines (VMs) used in datacenters from 2005 to 2015, while the installed base of physical servers is estimated to remain largely flat. Additionally, the placement and the management of individual workloads are becoming more and more dynamic, and application development teams are being pushed to make production releases available faster than ever.

In parallel, application development and deployment environments are rapidly transitioning. IDC estimates that in 1990, 66% of application development and deployment spending was for development tools. Today, roughly 75% of spending is for deployment-oriented products. The use of platform-based development is increasing due to the improvements in efficiency, configurability, manageability, and agility that these platforms represent when it comes to developing and deploying applications.

Converged systems are arriving in the market at a time when both development teams and operations teams are searching for ways to streamline, simplify, and integrate every aspect of the IT life cycle. They are also finding that, out of necessity, they must work together more closely in what many organizations are now characterizing as a combined IT life cycle, spanning the full range of application, test, release, deployment, and operations activities.

From platform procurement and design through application development, deployment, and ongoing operations, including support and upgrade activities, businesses benefit when development and operations teams can deliver production applications to end users and customers more quickly and more reliably while cutting the end-to-end cost of ongoing management and support.

Converged Systems Defined

In *IDC's Worldwide Converged Systems Taxonomy, 2012* (IDC #235293, June 2012), IDC defines converged systems as preintegrated vendor-certified systems containing, at a minimum, server hardware, bare metal resource-level automation and management software, and network infrastructure and management software optimized for highly efficient operations and rapid deployment. Storage resources and storage management software, operating systems, hypervisors, advanced virtualization software, cloud management and distributed server/workload automation software, security software, middleware, and application software can be included at the vendor's option. Typically, these solutions can be financed and resold as a unit rather than as the sum of individual components. Subcategories include the following:

- ☒ **Converged infrastructure systems** comprise devices with systems and network-level resource control and automation software and some combination of server, storage, and network hardware sold as special SKUs and designed for general-purpose, distributed workloads. The IBM PureFlex System is an example.
- ☒ **Converged platform systems** comprise converged infrastructure systems, as defined previously, but include additional preintegrated packaged software and customized system engineering optimized to enable application development software, databases, and testing and integration tools (e.g., business intelligence [BI], content management, database, and application server middleware). The IBM PureApplication System is an example.
- ☒ **Converged certified systems** are similar to converged infrastructure and converged platform systems, as defined previously, but the actual preintegration, delivery, and customer support activities are provided by a third party other than the original equipment manufacturer (OEM).

By enabling customers to procure, design, deploy, manage, and support complex systems and applications using a single integrated set of infrastructure, middleware, workflows, management consoles, and support processes, converged systems have the potential to reinvent the IT life cycle.

IT Teams Feeling Pressure to Streamline and Simplify

IDC's research indicates that, typically, IT operations teams spend over 75% of their time on day-to-day IT management operations such as monitoring, troubleshooting, patching, updating, and configuring resources. Similarly, development organizations spend as much as 80% of their time on application maintenance, which includes significant time devoted to procuring, provisioning, and supporting development resources and platforms. Overall, this leaves little time for development and operations teams to add value to the business or support new innovation.

Across the IT life cycle, staff are being asked to reduce costs, consolidate resources, and produce and deliver higher-quality applications and services more quickly than ever. IDC's research shows that more than half of IT decision makers (56%) are looking for ways to shrink the number of platform vendors they use in an effort to

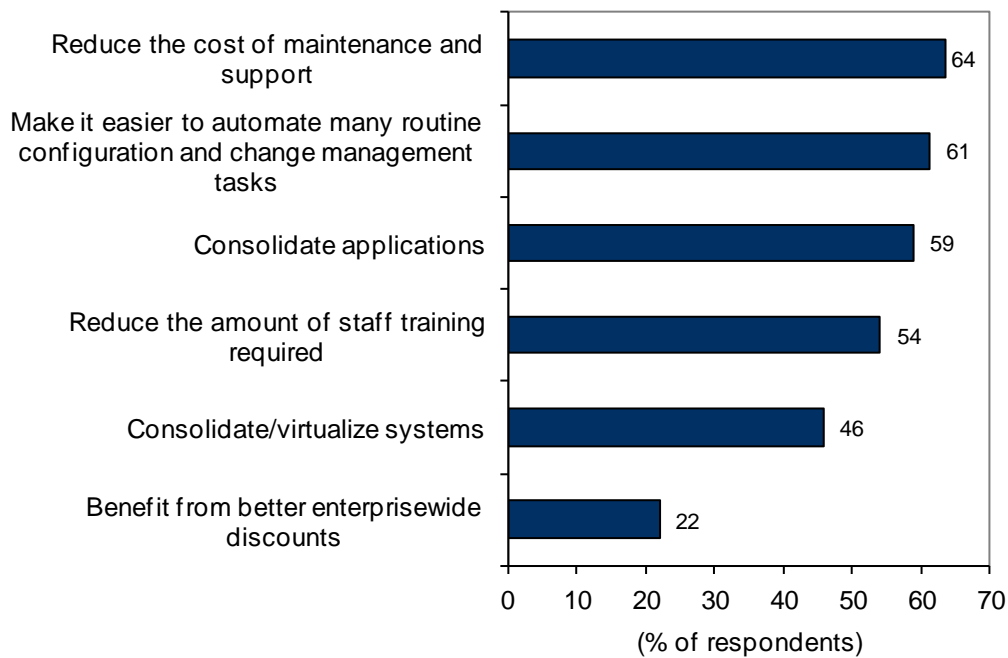
simplify and reduce the cost and complexity of many aspects of the IT life cycle. As Figure 1 illustrates, their motivations for vendor consolidation focus on:

- ☒ Reducing the cost of maintenance and support
- ☒ Automating and streamlining many routine configuration and change management tasks
- ☒ Consolidating applications and virtualizing systems
- ☒ Reducing the amount of staff training required
- ☒ Reducing overall platform costs and obtaining better vendor discounts

FIGURE 1

Goals for Reducing the Number of Platform Vendors

Q. *How important is each of the following factors in the decision to consolidate vendors (among organizations considering consolidation)?*



n = 168

Note: The figure shows the percentage of respondents who rated the factor 8 or higher on a scale from 0 to 10, where 0 = not important and 10 = extremely important.

Source: IDC, 2012

Priorities related to reducing the cost of maintenance and support, automating routine tasks, and trimming the level of required IT staff training reflect the amount of pressure IT organizations are feeling to do more with less while creating more stable and agile application environments and improving time to value across the IT environment.

Opportunities for Converged Systems to Transform the IT Life Cycle

For most organizations, existing IT processes and management tools align with individual technology silos. Expert staff and tools are deployed to support development, test, release, compute, network, storage, middleware, and application platforms on a fragmented and often manual basis. Complex workflows and approval cycles slow handoffs between groups. New platform purchases, application releases, or major patches can require weeks of planning and hours of downtime to coordinate and implement complex network-, system-, database-, and application-level migrations and updates.

As a result, even a task as straightforward as provisioning a new multitier CRM solution can take months from initial planning and platform sizing to obtaining purchasing approval; waiting for network, server, and storage equipment deliveries; completing initial hardware, application server, database, and other middleware deployments and configurations; validating application performance; completing end-to-end integrations; and implementing actual application release and testing. Once the CRM system is operational, separate people, processes, and tools are often used to manage updates, patching, troubleshooting, and remediation for each technology domain. By simplifying the IT life cycle, converged systems reduce the time and cost involved in procuring, deploying, managing, and supporting the new CRM system while accelerating time to value for the investment.

Similarly, excessive amounts of time and skill are often needed to maintain the performance and availability of complex dynamic applications such as data warehouse and high-performance analytics applications. The rise of big data is driving many organizations to expand the use of advanced analytics applications across more and more business groups and users. Converged systems that optimize the I/O, memory, storage, and internal networking needed to speed advanced analytic computations will help customers reduce calculation times by orders of magnitude while increasing end-user productivity and driving faster time to revenue.

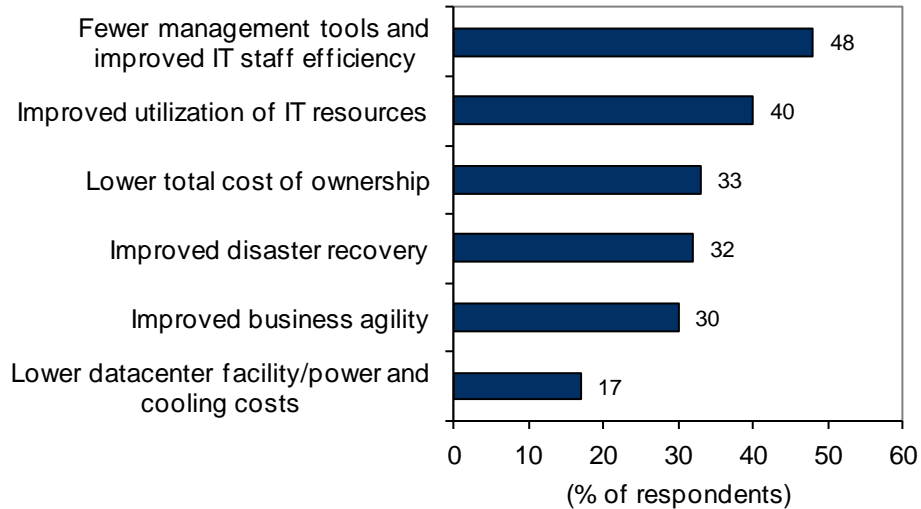
Converged systems are an increasingly important option for organizations that want to simplify their IT infrastructure and platform environments while simultaneously streamlining and taking cost out of a wide range of development and operations activities. A recent IDC survey of existing converged systems users (see Figure 2) indicates that the ability to reduce the number of management tools and improve IT staff efficiency is one of the biggest benefits of using converged systems. These converged system users also note that improved utilization of IT resources, lower total cost of ownership, improved disaster recovery, and improved business agility are important tangible benefits.

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FIGURE 2

Top Benefits of Converged Systems Rated by Current Users

Q. *What do you see as the top two major benefits to converged systems?*



n = 60 current users of converged systems

Source: IDC, 2012

The specific ways in which converged systems can streamline and simplify the IT life cycle will depend in large part on the existing level of system and process integration, optimization, automation, and analytics across the environment and on the business value of the specific applications that are being supported by the platform.

FUTURE OUTLOOK

Converged Systems Raise the Bar on Systems Evaluation Criteria

IDC expects that workload-specific optimizations along with built-in systems expertise, monitoring, analytics, and automation software will become increasingly important differentiators as buyers become more familiar with the range of converged systems available in the market. Development and operations teams that are evaluating these types of platforms should consider the full range of ways that converged systems can streamline IT operations and simplify application development and day-to-day IT operations while simultaneously adding direct business value and reducing the amount of time that staff spend on maintenance and low value-add activities.

Specifically, decision makers and influencers should look for solutions that can:

- ☒ Streamline procurement and design via a highly simplified system design and ordering process centered on the use of predefined configurations. The availability of well-defined, pretested, and preintegrated platforms optimized for the specific needs of the application can shrink the time needed for platform, middleware, and application procurement and design from months to weeks while minimizing the number of staff hours needed to make a myriad of small, yet interconnected design decisions.
- ☒ Accelerate application development and deployment using predefined application patterns and templates to automate deployment of physical and virtualized resources using self-service provisioning portals and best practice workflows. Customers should look for automated application deployment and provisioning capabilities that can support complex, n-tier environments and include deployment of monitoring, analytics, and management software elements as well as the full application stack across physical and virtual infrastructure assets. Customers can expect to reduce application deployment times from days or weeks to minutes depending on the complexity of the application environment.
- ☒ Optimize resource pooling, capacity analytics, dependency analysis, and image management using built-in software to streamline n-tier application deployment and optimizing resource utilization. These capabilities also help maintain day-to-day application SLAs and reduce overcapacity by dynamically shifting workloads as needed. Downtime can be almost completely avoided if workloads are migrated to stable resources while staff make use of built-in diagnostics and dependency analysis to quickly diagnose and remediate problems. Use of standard images and provisioning templates eliminates a significant amount of downtime caused by human error.
- ☒ Simplify and unify ongoing monitoring, security administration, and IT management activities via a single integrated management interface. Role-based views of hardware, middleware, and application health, as well as the ability to monitor and analyze alerts, set policy thresholds, and execute automated responses from a single control environment, are needed.
- ☒ Provide integrated visualization and navigation through physical and virtual system and software dependencies as well as the ability to analyze performance impacts, identify potential component failures, conduct rapid root cause analysis, and activate automated responses.
- ☒ Automate patching and updates using preintegrated and pretested downloads to avoid service disruptions and to simplify day-to-day management activities. These should span hypervisor, operating system, and firmware updates as well as middleware (as applicable) and management software updates and patches.
- ☒ Make available APIs to connect to broader enterprise-level business service dashboards, service desks, asset management systems, and related management tools to ensure seamless integration with the broader IT management environment and workflows.

- ☒ Streamline support processes by providing a single support number along with integrated monitoring to identify problematic components and conduct root cause analysis of system errors.

Collectively, these capabilities will enable IT teams to work together more efficiently to maintain higher and more cost-effective service levels.

IBM PureSystems Are Built to Simplify the IT Life Cycle

IBM has made simplification of the IT life cycle a top priority in the design of its PureSystems family of expert integrated systems. Specifically, IBM has engineered platforms using thousands of client engagements to define and implement optimal platform configurations, deployment workflows, and ongoing management, including analytics and automation that enable rapid time to value and ongoing high-quality performance.

An example is the BI pattern for the IBM PureApplication System, which leverages IBM's understanding of the best practices for infrastructure and middleware configurations to optimize Cognos performance. The Cognos pattern automates best practice deployment of the full Cognos environment, including application servers, system services, and databases across distributed hardware in a high-availability configuration. At runtime, embedded policy-based analytics and automation can shift underlying system resources across different business intelligence domains when certain reports are in higher demand, such as accounting records at the close of a quarter.

IBM and its partners have made over 190 optimized solutions and patterns available to enable optimal platform engineering and process performance across all elements of the IT life cycle. Along with defining optimal platform resource configurations, each pattern provides best practice management, automation, and analytics to simplify all phases of the IT life cycle — procure and design, develop and deploy, ongoing management, and support and upgrade.

PureSystems Procure and Design

The procure and design phase of the IT life cycle includes many time-consuming tasks related to:

- ☒ Gathering application requirements
- ☒ Making decisions about system capacity and configuration
- ☒ Navigating internal approval processes
- ☒ Placing orders
- ☒ Waiting for component deliveries
- ☒ Completing final system integration and test

PureSystems simplify and reduce the time required for almost every aspect of procure and design activities because decisions about system capacity and architecture have been made in advance by IBM, based upon years of experience and client engagements. Customers no longer need to deal directly with complex decision making about component-level capacity, I/O, storage, and related parameters. By definition, converged system vendors predefine system specifications and do all final component assembly, configuration, and testing before shipping the integrated system to the customer.

As a result, IT decision makers can focus on assessing the needs of their applications, matching them to a well-defined menu of system configuration choices, and getting a single approval signed off quickly. No longer are customers waiting for each of the components to arrive to then be integrated and tested; instead, they receive a fully integrated and tested system. Generally, just a few hours after an IBM PureSystems offering arrives on the datacenter floor, it has been powered up and is ready for workload deployment. As a result, the procure and design stage of the IT life cycle can be reduced by months.

PureSystems Develop and Deploy

The develop and deploy stage of the IT life cycle includes the following activities related to the development and deployment of workloads and applications:

- Operating system and virtual machine setup and provisioning
- Integration of servers and VMs with required network and storage resources
- Implementation of high-availability and failover capabilities
- Development and implementation of workload and VM templates for use with automated self-service portals
- Providing development, test, and QA teams with environments that accurately replicate the production environment so that they can complete their work

The delay between the time that development or test groups request resources and the time that the resources become available can slow a software product's time to market, which results in lower revenues or negative impacts on end-user productivity. IBM patterns allow IT teams to fully automate infrastructure, middleware, and application deployments and reduce many complex application migration and deployment times from days to hours, or even minutes in some cases.

IBM PureSystems provide customers with built in high-availability and failover capabilities as well as automation to support self-service, policy-based provisioning. Out-of-the-box application patterns, containing the collective best practices of IBM and its partners, further speed up the develop and deploy phase of the IT life cycle while reducing costly errors and downtime. For many customers, the savings from more streamlined develop and deploy activities represent the single biggest element of the PureSystems ROI.

PureSystems Ongoing Management

The ongoing management phase of the IT life cycle includes a wide range of tasks, such as:

- ☒ Performance tuning and problem recovery
- ☒ Root cause analysis, dependency mapping, and predictive failure analysis
- ☒ Day-to-day workload and SLA optimization
- ☒ Troubleshooting and remediation

Built-in PureSystems intelligent health monitoring tools identify emerging infrastructure, middleware, and application performance problems.

Built-in, automated workload migration and resource provisioning capabilities ensure that services keep running while IT teams troubleshoot and remediate the root cause of problems. These tools can also be used to automatically scale resources as needed based on policies and performance thresholds.

Standardization of tasks across an integrated IT environment allows for more extensive automation and less staff training while almost eliminating unplanned downtime. The fact that PureSystems unify access to monitoring, analytics, and workflow management information via a single integrated management interface greatly simplifies ongoing management activities across the IT life cycle.

PureSystems Support and Upgrade

The support and upgrade phase of the IT life cycles covers many repetitive activities, including:

- ☒ Software and firmware upgrades and patches
- ☒ Root cause problem determination and break-fix support of system components and system-level outages
- ☒ Interactions and coordination across numerous vendors based on their individual support policies
- ☒ License management and compliance

In traditional IT environments, patching and updates are managed autonomously within individual development and operations technology silos. For example, when a typical ERP application experiences a problem, the IT team will contact the ERP vendor. Analysis may show that the real problem lies with the database, security configurations, or a system-level component. As a result, the IT team needs to conduct additional root cause analysis and coordinate with support teams at multiple vendors.

IBM PureSystems customers avoid this type of finger pointing because IBM offers a single support contact center and phone number for all PureSystems components. Even more important, the single management and monitoring facility accelerates the identification of an issue's root cause, saving costly time in remediating mission-critical errors and outages.

IBM provides and validates firmware, operating system, and middleware patches and makes them available to its customers' teams to apply as desired. This frees IT staff from having to monitor and validate a wide range of patches and upgrades from multiple vendors. They will also be able to avoid complex planning and coordination of software patching across components since these will have already been validated and packaged for unified deployment — saving the IT team hours of time for each individual patching effort.

The support and upgrade phase of the IT life cycle can be particularly time consuming and costly and often creates unexpected problems for production applications. By streamlining this set of activities, IBM PureSystems can reduce complexity, improve application and system performance, and reduce the cost of IT life-cycle support.

Examples of IT Life-Cycle Improvements Powered by IBM PureSystems

In developing PureSystems offerings and application patterns, IBM takes advantage of enabling technologies and best practice insights developed across the full breadth and depth of IBM's core hardware, software, and services businesses. PureSystems are architected to optimize the full IT life cycle from speeding and standardizing the building of application and test resources to optimizing runtime application performance and day-to-day operations.

The extent to which IBM PureSystems can simplify a customer's IT environment depends on the state of the customer's existing processes and tools and the degree to which the customer is willing to rely on IBM's best practice patterns and make use of built-in PureSystems monitoring, automation, and predictive analytics capabilities.

IBM's Business Value Assessment teams have been working with a number of early customers to evaluate how PureSystems might reduce outages, speed up resource deployment, or otherwise improve IT and business productivity and time to value. IBM typically calculates IT benefits using such metrics as reductions in the number of staff hours needed to support a specific task. For benefits related to faster time to market, IBM will calculate the value of revenue generated per hour or per day by the application. IBM may also consider the value of downtime avoided. For end-user productivity, the benefit is typically estimated in terms of end-user time savings and efficiencies.

Although these Business Value Assessment studies are predictive in nature, because PureSystems have just recently become generally available, IDC's review of the initial data indicates some of the ways that PureSystems deliver value are:

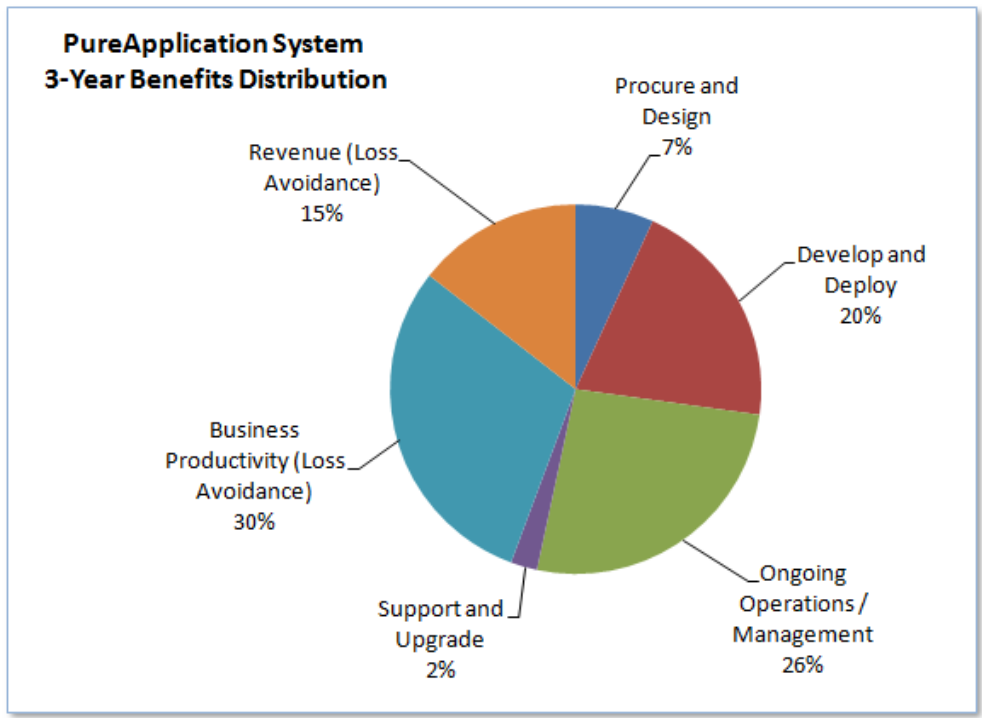
- ☒ Faster time to market for new applications and mission-critical services resulting in faster time to new revenues and improved employee productivity levels
- ☒ Faster, more consistent application, middleware, and infrastructure provisioning and ongoing resource optimization to match platform resource utilization to changing development and business requirements. This results in lowered IT staff costs because less time is required to accomplish these tasks.

- ☒ Streamlined change and patch management processes reducing the IT staff hours needed to support these activities and minimizing the rollbacks and downtime associated with patching and update incompatibilities and human error. This translates to outage avoidance and time to value by allowing development, test, QA, and production teams to more quickly deploy applications.
- ☒ Problem and incident management improvements due to better, more integrated dependency awareness, predictive failure analysis, real-time monitoring, and deep dive root cause determination capabilities
- ☒ Lower support costs and faster problem resolution due to IBM taking end-to-end responsibility for support calls and remote patching verification and implementation.

Figure 3 provides IBM's view of the major sources of business value for a PureApplication System customer that hopes to avoid outages and incidents and thereby improve business productivity and increase revenue. Using an ROI calculation that assumes standard U.S. labor rates, IBM found that this sample customer can expect the net value of its PureApplication System investment to be approximately \$12.4 million over three years.

FIGURE 3

Sample IBM Business Value Impact Focused on Reduced Outages and Incidents from Use of the IBM PureApplication System



IT Labor Rate: \$ 82.00
 Business User Labor Rate: \$ 50.00
 Total 3-Year Benefits: \$ 12.4M (NPV at 6.5% discount rate)

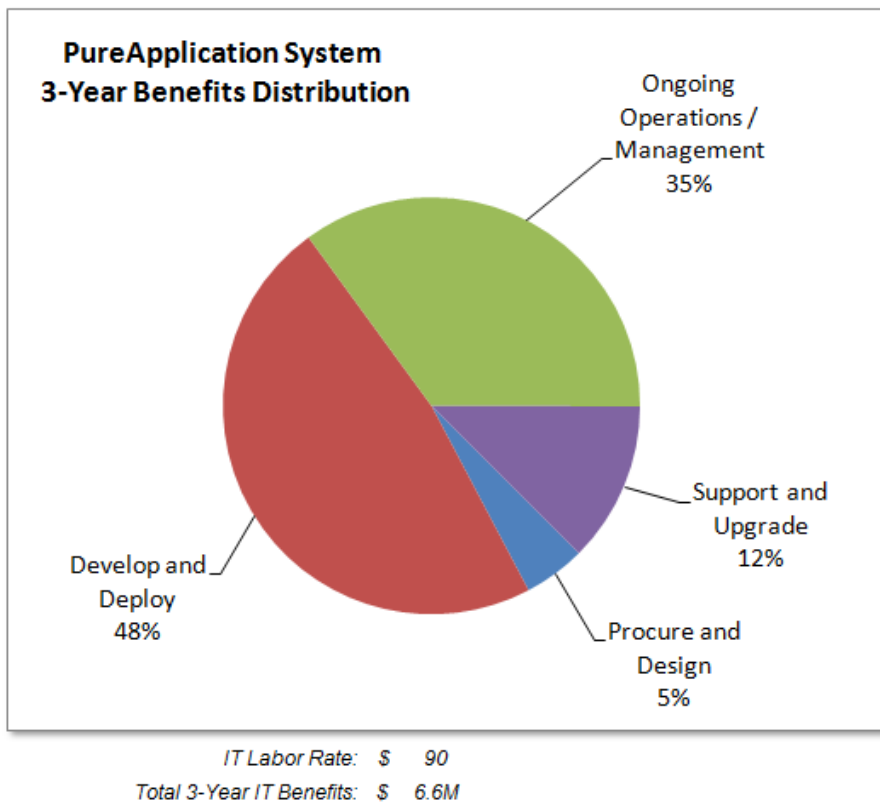
Source: IBM, 2012

Figure 4 provides an example of an IBM PureApplication System customer that is focused on the potential benefits from speeding up infrastructure and middleware deployment and provisioning for application development teams. The key expected benefits for this customer include improved developer productivity and faster time to market as well as more efficient day-to-day management and support.

Using standard European labor rate assumptions, IBM found that this customer can expect to see a net business value of about \$6.6 million over three years.

FIGURE 4

Sample IBM Business Value Assessment for IBM PureApplication System Impact on Application Development Efficiency



Source: IBM, 2012

CHALLENGES

As with any new technology paradigm, converged systems are disruptive to many aspects of the IT life cycle. This is particularly true for organizations that believe their application development and IT operations processes and policies are unique, when often they are similar to those used by many other organizations. IT decision makers frequently overlook the potential benefits of implementing best practices that have been tested and refined across the industry.

The idea of shifting away from customized, often manual, workflows and silos of experts using disparate management tools forces many IT organizations to rethink the way they will add value to their business going forward. Rather than being experts at component-level configuration and support, IT organizations will increasingly focus on how to use IT to add value to the business while relying on highly engineered platforms to standardize and automate many routine aspects of the IT life cycle.

Converged systems vendors such as IBM will be successful to the extent they are able to educate their customers about the full breadth and depth of the IT life-cycle benefits and the value of predefined patterns and automated workflows. By helping customers look at the total business value of converged systems, IBM may be able to assist customers through this transition more quickly.

CONCLUSION

Customers that are evaluating converged systems need to challenge their vendors to demonstrate how they will add value across the entire IT life cycle. Customers should examine how their systems vendors will help simplify the organization's procurement, design, deployment, management, support, and upgrade experiences across the IT life cycle. While many converged systems are likely to speed up procurement and deployment, the long-term value of converged systems will be tied to IT and end-user productivity, time to market, and ongoing application performance and availability improvements.

Converged systems provide an important option for IT organizations that want to improve IT productivity and performance while directly adding value to their business. When developing RFPs and proofs of concept for pilot projects, IT decision makers need to consider the long-term management implications across the full IT life cycle, as well as the one-time datacenter consolidation benefits that these systems can deliver.

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