The 'Purification' of IBM's System Portfolio: A Decision Framework Applied to PureFlex System

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IT leaders should use this decision process to go beyond the labels to determine when and why IBM PureFlex System should be among the options in an infrastructure modernization strategy.

Key Findings

- PureFlex System can help consolidate and unify heterogeneous ensembles of IBM systems (Power and/or x86), hypervisors and OSs.

- The overall success of PureSystems will partly depend on the willingness of independent software vendors (ISVs) to commit development resources to creating patterns of optimized solutions for PureSystems as part of an integrated, prepackaged and partner-supported system.

- PureSystems, with ISV and channel partner engagement, enables IBM to raise the bar for the level of automation in fabric-based infrastructures by bringing optimization to the middleware and application levels.

Recommendations

- Cumulatively assess the cost of components, software licenses, maintenance, packaging integration and test, and compare this with the benefits of savings in reduced head count, time to provision, energy and cabling.

- For simplicity and efficiency, aim for homogeneity with x86 blade servers, and minimize the heterogeneity of multiple OSs, hypervisors, CPUs, etc., and their complexity.

- Position PureFlex as a consolidation play, such as replacing competitive x86 and Unix servers, or replacing legacy and aging IBM servers.

- Consider maintenance, professional services, life cycle upgrades, channel expertise, ease of manageability, modularity, etc., as differentiating factors when comparing IBM PureSystems to other vendors (e.g., Cisco, Dell, HP, NetApp, Oracle and VCE).

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Strategic Planning Assumption

By year-end 2015, integrated systems will account for 35% of the market's total server shipment value.

Analysis

Introduction

On 11 April 2012, IBM introduced the first two solutions of the PureSystems family competing in the integrated system market (see Note 1), with a focus on decreasing the time to deploy infrastructure and applications. PureFlex System combines compute, storage, networking, virtualization and management, with up to four integrated chassis in one 42u rack. PureApplication System, based on PureFlex building blocks, embeds IBM deployment, management, middleware and data management to allow for application-aware platform patterns, or application patterns that enable users and ISVs to simplify application deployments and configuration management. (Additional research on PureApplication System expanding on patterns will be published shortly). This research will help IT leaders decide when PureFlex System should be considered among IBM's portfolio of system and architectures, how to position PureFlex within IT architectural designs and how to manage the procurement process.

This framework is divided into:

- When PureFlex makes good sense as a deployment option (see the Appropriate section)

- When other choices and further investigation are required (see the Investigate Further section)

Appropriate

PureSystems for large data center (DC) projects (see Note 2) is appropriate in these instances:

- Individual hardware components may have been designed by IBM for best-in-class performance, but early adopters should configure to use cases by testing an array of scenarios that will collectively require IBM and its channel partners to have active, hands-on engagement. Make sure the channel partners, ISVs and service providers have been trained in supporting fixes, technical and software management issues. Be cautious with scalability, since Flex System Manager (FSM) has a current limit of eight chassis (to be expanded later in 2012). Consider having IBM provide consulting on capacity planning, DC preparation, power and cooling prior to making a commitment.

  IBM FSM currently has these attributes:

  - Discovers, edits and maps resources

  - Monitors and detects problems by chassis location

  - Manages resource pools across chassis

  - Applies health monitoring checks

  - Provisions and deploys workloads by hypervisors and hypervisor groups

  - Connects to hypervisor control functions, such as live virtual machine (VM) migration

  - Sets up unified system pools, and manages load balancing by policies

  - Sets up an image repository for ISV application placements

  - Storage provisioning (storage area network [SAN], network-attached storage [NAS] and Internet Small Computer System Interface [iSCSI]) with optimizations for IBM storage

  - Concurrent firmware updates and compliance

  - Root cause problem detection, and data collection for trouble tickets

  - Virtual appliance pattern deployment

  - Topology pattern deployments with built-in default settings

  - Pattern policies on availability, scale, response time ranges, etc.

  - Associate resources to applications in configurations

  In the near future (six to 12 months), FSM will have these attributes:

  - Energy management and metrics for power and cooling optimization

  - Network controls (quality of service [QoS] and traffic control)

  - Bandwidth limits, and guarantees to generate tickets (not intelligent automation)

- Root cause intelligence

- Shared-resource isolated multitenancy

- If cumulatively costing the components, software licenses, maintenance, packaging integration and test with proven QoS compares favorably with anticipated values from reduced:

  - Head count (or reallocation and reassignment of staff to other projects), hours of manual configuration and time to deployment

  - Time to provision and reprovision virtual instances

  - Energy and power

  - Cabling costs, resulting in an ROI in one to three years, or less

- All DC competitors are promising benefits in the considerations above, but IT procurement leaders should recognize that nothing is free — in the package is embedded a higher value at higher costs than bare metal. We believe such margins could be 30% to 50% higher than for bare metal, which partly is the premium the vendors will extract for the years of R&D and packaging innovations that deliver the soft savings, more or less, enumerated above.

PureFlex System as a multipurpose integrated system, as opposed to single-function appliances is appropriate in these instances:

- PureFlex System can be applied to unify the heterogeneous ensemble of IBM System (Power and/or x86), third-party technologies (see Note 3), hypervisors (VMware, Hyper-V, KVM and PowerVM) and OSs (Windows, Linux, IBM i and AIX). The overall IT returns will depend on whether the manageability of IBM servers and third-party technologies can be consolidated and managed as an integrated, fabric-based infrastructure (which generally has not been the case, and is not IBM's primary stated goal with these systems).

- FSM possesses functionality similar to what Gartner terms a "fabric resource pool manager," which is essential for optimizing virtualized resources.

- FSM provides provisioning and configuration management and optimization across IBM servers (Power and x86), Storwize V7000 storage and network adapters.

- FSM in PureFlex is aimed at optimizing configuration and resources in an infrastructure as a service (IaaS) deployment model, and can be an on-ramp to IBM's SmartCloud.

- The management console in PureApplication System is designed to manage preintegrated IBM software and ISV software, in contrast to infrastructure resource management in PureFlex System.

- In PureApplication, management is broader and more functional, including IBM applications, middleware, a database management system (DBMS) and ISV applications that write to IBM APIs as a full, end-to-end solution. But ISVs must use the programmatic interfaces and apply them to their application patterns to achieve the higher performance, easier maintenance and better configurability that will allow IT application administrators and ISVs to closely monitor and

debug problems. ISVs closely aligned with IBM solutions will be earliest and most interested in working with PureSystems — a marker to track the popularity of IBM's framework.

The best and most comprehensive functional value for PureFlex System is when current IBM Power, System x and BladeCenter systems heterogeneously coexist under one or disparate management tools as legacies, and when the organization would benefit from consolidation and IaaS:

- IBM has had various tools as part of System Director and Tivoli to manage and monitor System x, Power and System z. These systems have often been deployed in silos as separately managed configurations, but can now be merged in a rack under a common management framework with one resource manager. Position PureFlex as a consolidation play, such as replacing competitive x86 and Unix servers, or replacing legacy and aging IBM servers. Take into consideration the time required for IT to plan and execute the disposal and replacement (or integration) of existing hardware and management tools, or the changeover from earlier generation IBM system management to the new FSM.

PureFlex System is a consideration if ISVs in your IaaS and cloud plans address and actively work to strategically support the IBM PureSystems architecture:

- The overall success of PureSystems will partly depend on the willingness of ISVs to commit development resources to creating patterns of optimized solutions for PureSystems as part of an integrated, prepackaged and partner-supported system, offloading the burden of integration and test from the IT departments. Consider DC modernization and optimization with PureSystems when IBM and ISVs show demonstrated application acceleration and deployment efficiency — otherwise, as a system with performance similar to other IBM Power and x86 servers.

PureFlex System is also a consideration for "greenfield" deployments (where there are no conversions, migrations or repurposing). For simplicity and efficiency, aim for homogeneity with x86 blade servers, and minimize the heterogeneity of multiple OSs, hypervisors, CPUs, etc., compared with heterogeneous integration complexity:

- The costs of this will directly relate to configuration complexity, so it is advisable when starting a new DC or new server farms that cost optimization begins at the ground level, even though IBM may tout the benefits of a mixed heterogeneous solution within a chassis through PureSystems. FSM will take time to seamlessly enable interoperability with third-party virtualization tools, such as from VMware, and other management products, such as from BMC Software or CA Technologies. IBM wants to create one management console that covers all resource management, including cloud-enabled deployments.

Consider the summary of primary considerations, per the above, as the qualifying round. How strong the assets are will require a good sense of IT's intent and purpose, as well as PureFlex System's fitness for purpose, and its tangible and intangible cost savings. To arrive at what constitutes fitness for purpose, we follow the above checklist, with other factors that would most likely position PureFlex System as an option to investigate further, as outlined below.

Investigate Further

PureFlex System should be investigated further for highly replicated, standardized DC build-outs and Internet DCs where low-cost, low-power components and self-integration are valued above premiums for integrated systems:

- The price points of PureFlex System will be valued by the integration and intelligence embedded from the software. IT leaders planning deployments with inexpensive hardware components and existing management software will face premiums for functionality and integration they likely won't require or need, except for special use cases.

PureFlex System should be investigated further when the SLAs and configurations of already-in-place, individually configured systems are the highest priority, and can be more closely managed individually than as part of a heterogeneous ecosystem:

- If you have IBM systems in the DC with stringent SLAs, clustering, high availability and disaster recovery, and have already tested, fine-tuned and configured the capacity under the care of system administrators, ripping and replacing the current environment with PureFlex System may require a comprehensive new build, test and management strategy. The migration is likely to eradicate the ROI gains of PureSystems in deployments, since the environment is already deployed.

zEnterprise BladeCenter Extension (zBX) and PureFlex together should be investigated further for long-term strategic needs, since IBM will need to address System z in PureFlex System consolidation, and its integration with zBX Unified Resource Manager:

- IBM has had other integration endeavors in which IBM System x, BladeCenter and Power systems were loosely coupled with a back-end System z. But IBM never fully integrated the management ecosystem as it has on PureFlex and PureApplication System. Gartner believes IBM will develop a PureSystems product that includes System z, and that PureSystems with System z will supersede zBX. Users are advised to await further developments of PureSystems applied to System z. New BladeCenter investments should be minimized to tactical capacity increases. PureFlex and IBM's build-to-order PureFlex System (the PureFlex hardware) should be considered the replacement for BladeCenter in the IBM portfolio.

PureFlex System should be investigated further when there is a major DC commitment to PureFlex System in isolation, without at least one other integrated system vendor comparison:

- There are now integrated system offerings from HP, Cisco, VCE, Dell and Oracle, with which PureFlex will compete. IT leaders should develop a custom checklist of factors for DC efficiency and cost reductions. Consider maintenance, professional services, life cycle upgrades, channel expertise, ease of manageability, modularity, etc., as some differentiating vendor and product variables.

PureFlex System should be investigated further when storage and network optimization of non-IBM products is required at deep levels of optimization (configuration, performance and monitoring; see Note 4):

- While it may be in the interest of vendors to cooperate to deliver smoother integration, this cooperation is voluntary. The devices of the respective vendors will have their own specific optimizations and software enhancements, which are less likely to be recognized and exposed to the primary vendor's server configuration.

Distinguishing Between PureFlex and PureApplication System

PureFlex System

PureFlex System is a preconfigured, preintegrated infrastructure system with compute, storage, networking, physical and virtual management, and entry cloud management. IBM PureFlex System will deliver and support IBM and non-IBM OSs, including Linux, Windows, AIX, IBM i and hypervisors. PureFlex System also will deliver and support an internal network designed from IBM's Blade Network Technology assets, integrated storage with IBM Storwize V7000 integrated in the chassis, an external heterogeneous system, network and storage interfaces, and a fabric resource pool manager, FSM.

IBM PureApplication System

IBM PureApplication System is a preconfigured, preintegrated platform system with middleware designed for transactional Web applications and enabled for the cloud. PureApplication System comes with preinstalled and pre-entitled (users have the right to use the components) WebSphere, DB2 and other middleware components. The application infrastructure components are preconfigured and preassembled into well-defined patterns created on the basis of IBM's field experience to support specific types of workloads (for example, Web applications, transactional databases, data marts, etc.).

Fabric Resource Pool Manager

- DC modernization and consolidation will increasingly evolve from isolated and siloed resources to resources situated on a network at some location and in some form factor available to applications or workloads for execution. The resources comprise a physical array of processor cores, memory, input/output (I/O) interfaces, graphic and numeric processing elements, encryption processing and storage. The resources will be shared across multiple nodes (for example, of cores and memory) defined by workload domains that reside in racks on a network. The logical aggregation of the resources is called a pool, and the manager of the resources across a fabric is what Gartner calls the fabric resource pool manager.

Bottom Line

PureSystems, with ISV and channel partner engagement, enables IBM to raise the bar on the level of automation in fabric-based infrastructures by bringing optimization to the middleware and application level that other fabric infrastructure vendors have not fully addressed. Not only is the configuration (server, network and storage) automated at the element level, but also automated at the workload, business process and workflow level through its pattern development kit and

workload deployer. PureSystems could thus gain traction in large IBM accounts in the banking, insurance and retail industries, where it already has a strong foothold.

IBM has called the PureSystems project a serious, worldwide endeavor, with investments in the billions of dollars. All major system vendors know they will be competing on a different playing field, and that the generic server is a continually weakening, long-term business model. IBM has had strong DC IT account relationships. PureSystems will be a strategic portfolio asset to expand its presence. As a best case, IBM will be able to modernize its current accounts, and spread its influence to white spaces where branded and white box competitors have had tenuous anchors. If IBM can associate PureSystems with its Smarter Planet strategy, it may be able to harvest new account and infrastructure opportunities.

On the other side, is the great challenge of rallying numerous team members in IBM and among its partners into a coherent and enthusiastic phalanx, completely committed, and convinced that through IBM all members stand to reap significant rewards. This is a continual issue for vendors with large portfolios of somewhat overlapping product portfolios. The tension between the market requirements, and the internal positioning of the individual products and the PureSystems integrated system (as well as other products, such as zBX), remain ongoing challenges. This is not new to IBM, and it is not exclusive to IBM. However, Gartner sees PureSystems as cutting across more IBM products than we have seen before, heightening the concern. These results will become more evident after assessing a year of trials, proofs of concept, use cases, cross-industry acceptance, and channel and ISV incentives. Of crucial importance will be IBM's ability to become a conflict-minimal, cross-divisional marketing powerhouse — a realization that will drive it further away from bare-metal and low-cost commodity suppliers, as it recognized when it sold its desktop and laptop business to Lenovo.

Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"IBM's PureSystems Seeks to Redefine Integrated System"

"Progress Report for IBM's zBX"

"Nine Best Practices for Evaluating Integrated System Product Offerings"

"How Ready Is Your DC to Be an Early Adopter of Integrated System?"

Note 1 Why PureSystems Was Developed

IBM says it developed PureSystems to solve IT customer problems, specifically time to value for deployments. It is doing this by preintegrating different IBM products (servers, storage, networks, software, etc.), and additional software capabilities with third-party options (e.g., hypervisors, applications, etc.). This is far more complex than a bladed environment or fabric-based infrastructure. IBM's design and factory integration are intended to speed deployment for customers.

Note 2 PureSystems for Large DC Projects

PureSystems, with a large investment from IBM, cuts across IBM product lines, and is setting high end-user expectations. Gartner recommends a cautious approach, with extensive and free loaners from IBM for testing until it has sufficient references in your area and industry.

Note 3 PureFlex System Certifications

ISVs already certified on AIX, IBM i, Windows and Linux are supported without modification on IBM PureFlex System. Software only possesses the benefits of patterns when ISVs develop their applications as patterns, which is beyond current certification requirements.

Note 4 Third-Party Storage and Networking

IBM has had heterogeneous storage virtualization for a while. Since PureSystems uses storage virtualization capabilities, integration and testing at the infrastructure level are done. Third-party storage and networking still require a third-party element management system.

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