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White Paper

**IBM Power Systems Upgrade Success
Stories for JD Edwards Customers
Running IBM i**

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Executive Summary

The objective of this white paper is to demonstrate the business, financial, and technology advantages of upgrading older IT environments to IBM Power® Systems and IBM PureSystems™ servers, running the IBM i operating system in support of Oracle's JD Edwards applications.

The information and data in this report is based on research conducted by Edison Group and includes comprehensive interviews with IT executives who recently upgraded their IBM Power Systems environments, reviews of publicly available information, and information provided by IBM.

Each IT executive Edison interviewed expressed great satisfaction with their upgrade experience, and with the resulting benefits. In two cases, lease payments were reduced by 67 percent. In a third case, lease payments were completely eliminated via an outright purchase. And in another case, lease payments came in four points under budget. In addition to these savings, consolidations of datacenters, existing systems, and instances of JD Edwards applications resulted in reductions of total cost of ownership and software licensing fees. These bottom-line financial benefits were attributed to the affordability of IBM Power Systems™ and by leveraging specific packages such as the IBM i Solution Edition for JD Edwards.

Additionally, the following significant improvements in performance were achieved: online response and batch processing times were reduced up to 50 percent; database administration and hardware maintenance costs were eliminated; Initial Program Loading (IPL) schedules were reduced; and virtualization and workload management capabilities were vastly improved. In all cases, business operations were standardized, streamlined, and improved. Significantly, no down-time was experienced during any of the upgrades.

Among the most crucial questions Edison asked was: "Are the C-level executives in your company pleased with the results?" In all cases the answer was emphatically, "Yes, they are highly satisfied with all aspects of the upgrade."

This white paper summarizes the upgrade scenarios and findings, while highlighting the general benefits of upgrading to IBM Power Systems and IBM PureSystems running IBM i.

Edison Group interviewed IT executives in four companies that had upgraded their IBM platform, and in some cases, their JD Edwards software. Table 1: "Summary of IBM Customer Experiences and Benefit Assessment," highlights the information gleaned from the interviews. For a detailed description of each upgrade, refer to the section: "IBM and JD Edwards Customer Experiences."



Summary of IBM Customer Experiences and Benefit Assessment		
Company	Description of Upgrades	Benefits of Upgrades
Aerospace Consumables Distributor	<ul style="list-style-type: none"> Upgraded from IBM POWER5™ to an IBM POWER7 Model 750. Included IBM Storwize® V7000 Storage with solid state disk drives. Stayed on JD Edwards EnterpriseOne 9.0. 	<ul style="list-style-type: none"> Hardware upgrades implemented in four weeks. Batch processing jobs take 50 percent less time. 50 percent performance improvement for online processing. 67 percent reduction in combined lease payments. Upgrade achieved with no down-time on existing production systems. 500,000 unique SKUs stored in one DB2® database. No DB2 database administration costs. High availability set up by IBM. Free sizing estimate.
Appvion	<ul style="list-style-type: none"> Upgraded from two IBM POWER5 Systems to two IBM POWER7 Model 740 systems (Solution Edition). Went from JD Edwards OneWorld Xe to JD Edwards EnterpriseOne 9.1. 	<ul style="list-style-type: none"> Lease rate is 67 percent less than the combined lease rates of previous POWER5 systems. Enhanced virtualization capabilities. Eliminated hardware maintenance costs. Now use an isolated partition for the Sterling B2B Integrator. Reduced IPL schedule from every 28 days to 14 days. Free sizing estimate. No DB2 database administration costs.
Energy Infrastructure	<ul style="list-style-type: none"> Upgraded from IBM System i 570 to IBM POWER7 Model 770; included IBM System Storage® DS8700 (80TB). Utilized IBM JD Edwards consulting services to manage entire project, including software upgrade from JD Edwards World A7.3 to JD Edwards EnterpriseOne. 	<ul style="list-style-type: none"> Purchased outright due to low price. Free sizing analysis. New IBM Power 770 will be used at least up to 2018. Hardware was up and ready in three weeks. IBM DS8700 houses all corporate information. Implemented tiered storage, improved storage management capabilities. IBM JD Edwards Consulting Practice managed a smooth and risk-free transition.
Trek Bicycle Corporation	<ul style="list-style-type: none"> Upgraded from IBM POWER5 Model 550s to IBM POWER7+ Model 740, Solution Edition. Included solid state disk drives. Consolidated two instances of JD Edwards EnterpriseOne to one 	<ul style="list-style-type: none"> 50 percent performance improvement in batch processing. 20 percent improvement in interactive applications. Testing at IBM ICC-supported acquisition. Reduced systems administration costs. No DB2 database administration costs. Lease came in under budget.

Summary of IBM Customer Experiences and Benefit Assessment		
	global instance.	

Table 1: Summary of IBM Customer Experiences and Benefit Assessment

Introduction

Historical Perspective

IBM has a long history of working with its business partners to promote and deliver synergistic products and integrated solutions to market. Since 1977, IBM customers have enjoyed the longstanding and strong relationship between IBM and JD Edwards (now Oracle).

For many years, JD Edwards software ran exclusively on the IBM AS/400®. Since then IBM has changed the name of its hardware from AS/400 to iSeries®, then to System i®, and now to IBM Power Systems. The operating system has evolved from OS/400® to i5/OS™ to the current IBM i. Each new generation of the hardware and operating system brought significant improvements to IBM and JD Edwards applications customers.

IBM i integrates a trusted combination of a relational database, security, Web services, networking and storage management capabilities, and a middleware foundation for deploying business processing applications. The combination of IBM i running on IBM Power Systems servers provides a highly scalable and virus-resistant architecture and a proven reputation for exceptional business resiliency. Together, these factors enable organizations running JD Edwards applications on IBM i to focus on business value and innovation, not on managing data center operations.

In April, 2008, IBM introduced its IBM Power Systems product line. Built as an open platform for choice (industry standard IBM i, AIX® and Linux), IBM Power Systems provide flexibility for organizations of all sizes. A single and unified line of IBM Power Systems servers has simplified pricing, increased application choice, improved virtualization capabilities, and reduced energy and administration costs. Accordingly, IBM Power Systems running the IBM i operating system have become the preeminent platform for running JD Edwards World and JD Edwards EnterpriseOne software.

In 2011, IBM underscored its strategic intent to support JD Edwards applications by announcing the IBM i Solution Edition for JD Edwards. In this iteration, IBM Power Systems were optimized to run JD Edwards World and EnterpriseOne software. IBM has maintained its commitment to its JD Edwards applications customers with a full spectrum of technology and pricing improvements to the IBM i Solution Edition for JD



Edwards and the IBM Power Systems product line, including the POWER 7+™ processor architecture, introduced in late 2012 and early 2013.

During this period, a myriad of improvements were made to JD Edwards software. The JD Edwards flagship solution, EnterpriseOne, is an integrated applications suite that delivers over 80 application modules supporting a diverse set of business processes and applications. These include finance, payroll, project management, asset lifecycle management, order management, manufacturing, mobile solutions, reporting, among other processes. IBM and JD Edwards World and EnterpriseOne Enterprise Resource Planning (ERP) products are now in use by thousands of companies worldwide.

IBM support for its JD Edwards applications customers has also evolved. IBM maintains an on-site presence at the former JD Edwards company headquarters location in Denver, CO (now part of Oracle). Additionally, the IBM Oracle International Competency Centers (ICCs), located in Denver, CO and Pleasanton and Redwood Shores, CA, are staffed by IBM technical and pre-sales resources. These resources work closely with Oracle performance and product engineers to test and optimize Oracle solutions on a variety of IBM hardware platforms. The Denver ICC is devoted exclusively to working with JD Edwards applications.

The past two years have been extraordinarily active for the JD Edwards product community. Oracle announced two major new releases of JD Edwards World and EnterpriseOne, as well as the end of support, as of December 2013, for several popular but older releases of the same software. These actions have opened up opportunities to realize unprecedented business and technology advantages, driving a surge in hardware and software upgrades to JD Edwards application environments.

IBM Power Systems Upgrades: Challenges and Opportunities

IT executives responsible for JD Edwards applications running on older IBM computing platforms are facing a number of challenges. For example, the IBM customers interviewed by Edison Group mentioned the following as their reasons for upgrading to newer IBM Power Systems hardware:

Critical Business Challenges

- The current system(s) no longer met the needs and expectations of internal users, customers, suppliers, and C-level executives.
- Mergers and acquisitions necessitated consolidation to reduce costs and provide standardization throughout the enterprise.
- Customer service and management of critical applications was suffering.
- Lease payments for older (existing) systems exceeded the standard rates for upgrades to IBM Power Systems servers with POWER7®/POWER 7+ architecture.
- The total cost of ownership exceeded that of IBM Power Systems servers with POWER7/POWER 7+ architecture.
- More streamlined workflows, business processes, reporting, and business intelligence systems were required.

Technology Considerations

- The current and projected number of users and workloads were driving the older systems beyond their intended capacity and capabilities.
- The older systems could not scale to meet the needs of the organization.
- Response and processing times were at unacceptable rates.
- New technologies that streamline or automate applications processing, system and database administration, backup and recovery, storage management, network and storage virtualization, and workload management capabilities were not being utilized properly, if at all.

With the full support of their company's management, these customers turned all of the above challenges into opportunities by investing in IBM Power Systems upgrades. In all

cases, lease payments were either reduced dramatically or completely eliminated through outright purchases.

Summary of IBM Customer Upgrades

IBM and JD Edwards Customer Experiences

An Aerospace Consumables Distributor

Upgraded from an IBM POWER5 Server to an IBM Power 750 running IBM i

A major distributor of aerospace parts upgraded their IBM POWER5 server to an IBM Power 750 running IBM i, including an IBM Storwize V7000 storage virtualization solution using solid state disk drives. As a result, batch and online processing times were reduced by 50 percent. And, largely because they had held on to the IBM POWER5 system for almost five years, their capital expenditures costs have decreased by 50 percent. With their current three-year lease they are now paying one-third of what they had been paying monthly. The Director of Strategic Services at this company expressed extraordinary satisfaction with the upgrade and told us that all C-level executives are extremely pleased with the business, financial, and technology benefits the upgrade yielded.

The company serves approximately 7,200 customers worldwide and is an authorized distributor for nearly every leading aerospace hardware manufacturer. Its services range from traditional distribution, to managing supplier relationships, quality assurance, kitting, just-in-time delivery and point-of-use inventory management. Their customers include major aerospace original equipment manufacturers, subcontractors, and Maintenance Repair Operators.

The recently deployed IBM Power 750 serves 930 internal users spread over 40 countries who utilize one centralized instance of JD Edwards EnterpriseOne for accounts payable, accounts receivable, general ledger, order entry, purchasing, and inventory control. As part of a strategic initiative, the company integrated an e-commerce solution with JD Edwards EnterpriseOne to reach an additional market of Maintenance Repair Operators worldwide who go online to check inventory and order parts. An inventory of approximately 500,000 Stock Keeping Units (SKUs) are stored in a DB2 for i database. These include tools, hardware, bearings, electromechanical and interconnect

components, fluid fitting systems, seals, and machined and fabricated parts. The Director of Strategic Services expressed a high degree of satisfaction with the reliability and self-maintenance capabilities of DB2 for i, which operates with no database administration costs.

The company evaluated two competitive solutions prior to the upgrade. Their choice of vendor was based on equipment, operations, maintenance and support costs, and lease rates. The company determined that the cost of moving to another platform (e.g. Oracle servers, Oracle Exadata, and Solaris) would cost twice as much as an upgrade to the IBM Power 750. This was due to the low price of the IBM Power 750, coupled with significantly lower lease rates, and the integration of IBM i with DB2 on the IBM Power 750. Additionally, the IT organization had no experience with Oracle Exadata and would have had to hire one or more database administrators.

The entire upgrade only took four weeks, from time of delivery to deployment. Most of the upgrade was handled by Key Information Systems – a systems integrator and IBM Partner that setup the new equipment, helped verify the replication of data, and configured IBM Enhanced Technical Support. An IBM specialist assisted in implementing IBM PowerHA for high availability and disaster recovery. IBM also trained the company's systems administrators. This was all achieved with no down-time on existing production systems. The director of strategic services summed up his experience by saying, "It's all about ease of use, minimal cost, and zero risk. Our IBM Power 750 deal included all of these."

Appvion, Inc.

Upgraded from two IBM POWER5 Servers to two IBM Power 740s running IBM i

Edison interviewed the IT Operations Manager at a \$1billion paper company with more than 1,600 employees and a diverse product line; this company upgraded their IT environment from two IBM POWER5 systems to two IBM Power 740 models.

Promotional programs and excellent rates from IBM Global Financing allowed the IT organization to maximize the memory configurations on both systems; optimize the use of virtualization to run multiple workloads; and provide an isolated partition for Sterling B2B Integrator, which now runs in a virtual machine. The additional capacity has also enabled them to run multiple development environments in a single partition.

The upgrade lease rate was 33 percent less than the combined lease rates of the IBM POWER5 systems. The three-year lease included a prepaid hardware maintenance



contract. Appvion eliminated previous costs associated with maintenance and software support. The deal was expensed, and not a capitalized lease.

The upgrades also enabled Appvion's IT organization to change their IPL schedule from every 14 days to once every 28 days, which gained them several more person-hours per month. The low price of the IBM Power 740 servers also afforded Appvion the opportunity to size high availability servers to support critical applications and eliminate production disruptions. Due to the increased performance and capacity of the new systems, the IT organization is now able to use the MIMIX role swap process. (MIMIX is a product from Vision Solutions that replicates data from one server to another. It is generally used to support planned or unplanned system outages.)

Two IBM POWER5 systems were previously in use: one for development and backup, the other for production. Both systems were at end-of-lease. Appvion upgraded both environments to IBM Power 740 models as business needs were demanding additional capacity. A main objective of this upgrade project was to ensure high availability. While the cost of their old system was approximately \$1 million, the new environment, which now fits into one rack, was \$300,000. And, because they were already a DB2 user, there was no change in their database administration needs or costs. Appvion does not need a DB2 administrator.

The company decided to stay with IBM and upgrade to newer IBM Power Systems running IBM i for three main reasons: (1) stability; (2) total cost of ownership; and (3) the JD Edwards OneWorld Xe application, Sterling B2B Integrator, and job scheduling system had been running efficiently on the IBM POWER5 servers. The goal of this project was to perform the upgrade with minimal impact on JD Edwards applications users and IT staff. Moreover, a review of what it would take to switch to another alternative (e.g. Oracle's Red Stack) showed that a dramatic increase in annual operating costs, primarily due to software maintenance, would be required. In addition, a change to a non-Power Systems platform would have required a switch to a completely new job scheduling system, and Appvion did not want to change out their hardware to move to another platform. The company's upgrade choice has allowed them to keep data center costs extremely low.

Additionally, Appvion wanted to set up a path to use the improved offerings of the JD Edwards applications suite. Initially, Sirius Computer Solutions (an IBM Business Partner) worked with the IBM Oracle International Competency Center to develop sizing requirements and recommended the IBM Power 740 configurations. This was done at no charge. Under the guidance of Sirius Computer Solutions, the hardware upgrade took only one week.

Concurrent with the hardware upgrade, Appvion upgraded JD Edwards OneWorld Xe to JD Edwards EnterpriseOne 9.1 as Xe was going off Premier Support December, 2013. The IBM Power 740s were deployed early in the project. They were configured with JD Edwards EnterpriseOne 9.1 and provided a full-time environment for conversion testing and development. Collaborating with CSS, a JD Edwards software consulting firm, the software upgrade took nine months. Approximately 1,500 objects were converted and turned over to the company. The IT Operations Manager told us the C-level executives and JD Edwards applications users at this company are extremely pleased with the results.

An Energy Infrastructure Consulting Firm

Upgraded from an IBM Power 570 to an IBM Power 770 running IBM i

Edison interviewed the IT Director of Business Systems Operations at this company. With sales of approximately \$11 billion and more than 50,000 employees, this company delivers a wide range of services to the global energy market, including design, engineering, procurement and construction, fabrication, maintenance, project management, and consulting. The company focuses on upstream and downstream delivery of oil and gas, liquid natural gas, and power, and has constructed some of the world's largest energy infrastructure projects.

The firm initially upgraded an IBM System i 570 to an IBM Power 740 running IBM i. The IBM System i 570 had been in place for six years. Due to an acquisition, they then purchased an IBM Power 770, which was positioned as the platform to support JD Edwards EnterpriseOne until 2018. At that time, the IT organization will evaluate their next 10-year strategy. The IBM Power 740 system is now being used for disaster recovery. The company also purchased IBM System Storage DS8700, which now houses all corporate data. The IT Director remarked that "with all its improved capabilities, the price of the IBM Power 770 was at least 50 percent less than what we had paid for the IBM System i 570 and a storage area network six years ago." The new IBM equipment was purchased outright. The IT Director noted that IBM structured an excellent deal. Prior to the purchase, this company worked with IBM JD Edwards sizing experts to develop a sizing analysis (at no charge); and with IBM lab services to conduct performance testing. The IBM Power 770 was up and ready in less than three weeks. It arrived (in-the box) racked, wired, and completely connected. This company was

immediately able to install all the software components necessary to manage the JD Edwards EnterpriseOne upgrade.

This company also utilized IBM JD Edwards consulting services. They evaluated two other consulting firms and concluded the IBM JD Edwards consulting practice offered the best approach because of the methodologies incorporated, their experience with IBM Power Systems, and the JD Edwards expertise and resources they provided. Custom software development was performed at the IBM JD Edwards development center in Mumbai, India. On a consistent basis, this company received JD Edwards EnterpriseOne customizations which consistently installed and deployed smoothly.

JD Edwards EnterpriseOne is now being used for tax processing, accounts receivable, accounts payable, timekeeping, payroll, human resource and benefits administration, general ledger, internal auditing, capital asset management, manufacturing, job costing, billing, and expense management. The IT Director summed up his experience with the IBM JD Edwards consulting practice by saying, “They had seasoned people and were a wealth of help. They worked well with the IT organization to manage the transition and resolve whatever problems came up.” He also indicated that this company’s C-level executives and IT organization were, and continue to be, extremely satisfied with the results.

Trek Bicycle Corporation

Upgraded from an IBM POWER5 550 to an IBM POWER7+ 740 running IBM i

Edison interviewed Bryan Turner, IT global ERP director at Trek Bicycle Corporation, which markets its bicycles through 1,700 dealers across North America— with subsidiaries in Europe and Asia, and distributors in 90 countries. Trek has legal operating entities in over 25 countries and is averaging 35 percent growth annually. This growth trend is expected to continue.

The Trek upgrade project encompassed a hardware upgrade and consolidation of two instances of JD Edwards EnterpriseOne into one global instance. As an existing IBM and JD Edwards software customer, Trek decided it was in their best interest to remain on the IBM Power platform running IBM i. Working with Sirius Computer Solutions, Trek upgraded from an IBM Power 550 to an IBM Power System 740 with IBM solid state disk drives (SSDs) and deployed JD Edwards EnterpriseOne on the new system. Trek acquired the IBM Power System 740 with an operating lease. Based on the capabilities of the new system they had anticipated a 27 percent increase in their lease rates and were pleased when the entire deal came in four points under budget. The IBM Power System

740 now serves 400 users concurrently who utilize the order to cash, procure to pay, finance management, manufacturing, and advanced warehousing modules of JD Edwards EnterpriseOne. Sirius Computer Solutions, a systems integrator and IBM Partner, assisted with the upgrade.

Scalability and speed were major factors. Bryan Turner said: “At Trek Bicycle Corporation *speed* is always on our mind. Like the demands we have to build the fastest bikes in the world, we also have the same internal expectations of our ERP system and IBM hardware. So when we needed *speed* we looked to IBM and the answer was solid state disk in the IBM Power System Model 740. The result was an extreme performance improvement that scales globally at a super-effective cost.”

“We chose the solution because the new system will scale out at least three years and potentially over the next five years,” Turner adds. “And if the business grows faster than we expect, we know it can scale with that as well. That was an important consideration because we didn’t want to lock ourselves in.”

As result of the upgrade, Trek has realized a 50 percent performance improvement in batch processing and a 20 percent improvement in interactive applications. Trek had developed performance expectations for batch and interactive workloads and utilized the IBM Oracle ICC in Denver, CO to validate their projections. The performance assessment indicated only a 1 percent variance from their internal projections. Bryan Turner said, “The testing proved Trek could buy and rapidly deploy the new system, and begin realizing the benefits immediately after implementation.”

“Other platforms separate the database,” he continued, “and some companies don’t realize how much they spend on the database and operating systems sides.” This was part of their justification to stay with the IBM platform. Systems administration costs were reduced and because they were already using DB2 on IBM i, there were and are still no database administration costs. The IT organization, users, and executives at Trek are completely satisfied with all aspects of the upgrade.

JD Edwards on IBM Power Systems and IBM PureSystems

This section provides an overview of the IBM Power Systems and PureSystems product lines, including the key features, pricing, and special IBM offerings relevant to IBM and JD Edwards applications customers, which include the following:

- A description of the IBM i Solution Edition and PureFlex™ i Edition offerings.
- Descriptions and benefits of the key technologies, including IBM POWER 7+, solid state disk, tiered storage, DB2, and WebSphere®.
- Leasing and financing options.

The IBM i Solution Edition for JD Edwards

The IBM i Solution Edition for JD Edwards is a discounted package of IBM Power Systems hardware and the IBM i operating system that can be purchased by customers in combination with new and/or upgraded JD Edwards software licenses, software maintenance, services, or training.

The IBM i Solution Edition for JD Edwards can accommodate thousands of concurrent users. Built on the latest IBM POWER7+ processor technology, and available for IBM Power System models 720 and 740, the IBM i Solution Edition for JD Edwards is a comprehensive and scalable infrastructure solution. It has been designed, configured and priced to reduce acquisition cost, lower total cost of ownership, and reduce the complexity and risk of deploying and operating JD Edwards on IBM i. The solution includes a server, infrastructure software, and no-charge service vouchers that support a customer running JD Edwards World or EnterpriseOne.

- **Scalability:** The base IBM Power 720 configuration contains four processor cores and one core licensed for IBM i 7.1. The Power 720 can scale to eight cores. The base Power 740 configuration contains six processor cores and four cores licensed for IBM i 7.1. The IBM Power 740 can grow to 16 cores if needed. Licenses to utilize additional processor cores can be added to both systems to satisfy growth requirements. Table 2: “Sample IBM i Solution Edition Configurations for JD Edwards EnterpriseOne” shows sample IBM i Solution Edition servers for 50, 150, and 500 users.

Sample IBM i Solution Edition Configurations for JD Edwards EnterpriseOne		
50 Users	150 Users	500+ Users
IBM Power System 720	IBM Power System 720	IBM Power System 740
1 POWER7+ socket, 4 cores @ 3.60 GHz	1 POWER7+ socket, 6 cores @ 3.60 GHz	1 POWER7+ socket, 6 cores @ 4.2 GHz
16 GB memory	32 GB memory	64 GB memory
1.1 TB of integrated storage (8 x 139 GB disk arms (15K RPM))	1.7TB of integrated storage (12 x 139 GB disk arms (15K RPM))	4.4TB of integrated storage (32 x 139 GB disk arms (15K RPM))
Tape drive	Tape drive	External fibre card for tape attachment
IBM i 7.1 (1 core, 50 users)	IBM i 7.1 (2 cores, 150 users)	IBM i 7.1 (4 cores, 500+ users)
PowerVM™	PowerVM	PowerVM

Table 2: Sample IBM i Solution Edition Configurations for JD Edwards EnterpriseOne

- Service Vouchers and Joint Support Teams:** The IBM i Solution Edition for JD Edwards includes no-charge services voucher(s) that can be used for JD Edwards installation, configuration, and performance tuning, DB2 for IBM i database optimization, migration and upgrade assistance, or for a security assessment of an IT environment. Support teams with expertise in both IBM Power Systems and JD Edwards software coordinate support.
- Free Sizing Estimate:** IBM has developed a capacity estimation capability to aid in designing an optimal configuration specifically for JD Edwards World or EnterpriseOne environments. The IBM Techline Solution Sizing Team, accessible through IBM or an IBM Business Partner, provides detailed sizing estimates. To begin the sizing process, a customer downloads and completes a sizing questionnaire. A detailed sizing estimate is delivered to the customer within a few days. Sizing questionnaires can be reviewed at: www.ibm.com/erp/sizing
- Solid State Disk Drives:** IBM Power Systems servers can include solid state disks (SSD), which operate at speeds that rival system memory. Generally, SSDs provide from 33 to 250 times more I/O operations per second than hard disk drives. SSDs also reduce footprint and energy consumption, while improving performance, throughput, and overall system responsiveness. All JD Edwards software activity, particularly Universal Batch Engine (UBE) jobs, can realize greatly improved performance as a result.



Two examples of performance improvements were provided to Edison Group: (1) a Pre-Payroll application encompassing 20,000 employees, and (2) a Master Resource Planning (MRP) application with 40,000 inventory items.

Figure 1: “UBE Processing Times,” shows the time differences for these UBEs with and without using SSDs. Test results show the following:

- Overall UBE processing time improved by 57 percent.
- The pre-payroll application ran in 66 minutes, compared to 156 minutes without SSD.
- The MRP Schedule ran in 70 minutes, as opposed to 76 minutes without SSD.
- Disk wait time dropped by 71 percent; from 6,381 seconds to 1,859 seconds.



Figure 1: UBE Processing Times

- **Built-in DB2 for IBM i eliminates the need for database administration:** DB2 for IBM i is a built-in 64-bit relational database management system designed to leverage the features of IBM Power Systems servers and IBM i. DB2 for IBM i runs more efficiently than a separate database application running on top of an operating system. Moreover, DB2 for IBM i is autonomic, self-managing and self-tuning. Most customers running DB2 for IBM i do not require a database administrator. This unique aspect of DB2 for IBM i, when compared with other database management systems, eliminates nearly all costs associated with database administration.

Key features such as a single level storage architecture and cost-based query optimizer are built into DB2 for IBM i. Single level storage architecture eliminates the complexities of managing storage, memory, SSDs, and spinning disks. For example, when creating database objects such as tables and indexes, the user need only specify object names and not physical locations. Data spaces are then created automatically. Additionally, the IBM i storage management capability automatically spreads database objects across all available disk units. As database objects change, IBM i reallocates whatever space is required. Therefore, developers need not be concerned with the actual locations and physical attributes of the table. This unique data storage paradigm also makes the IBM i platform highly virus resistant.

DB2 for i also leverages the virtualization and scaling capabilities of the IBM Power System platform, including dynamic logical partitioning, capacity upgrades on demand, and PowerVM virtualization. The combination of DB2's cost-based query optimizer, unique single-level storage architecture, SMP parallelism and encoded vector indexing allows DB2 for i to scale within single server configurations. DB2 for i also leverages the large memory configurations of Power Systems servers with in-memory database technologies that optimize SQL processing speeds. And the single-level storage architecture coupled with DB2 media preference functions allows for easy implementations of SSDs and hierarchical storage devices, such as IBM Storwize virtualized storage systems.

The IBM Power Systems Hardware Family

The entire IBM Power Systems hardware family is available in multiple form factors and configuration options to meet individual customer needs. These systems can also include IBM BladeCenter® Power System blades.

IBM Power Express servers can be deployed as secure distributed application servers, consolidation servers, or standalone servers for IBM i, AIX, and Linux workloads. They are available as rack or tower packages with four to 32 POWER7+ cores and are designed to reduce infrastructure and energy costs. Available models include the Power 710, 720, 730, 740 and 750. As mentioned above, the Power 720 and Power 740 are available as a reduced price bundle in the IBM i Solution Edition for JD Edwards offering.

The more advanced IBM Power Enterprise servers provide more options for business resiliency, performance and scalability. They are capable of running AIX, IBM i and Linux; provide up to 256 POWER7 processor cores with up to eight TBs of memory; and offer the flexibility to turn processors and memory on and off as workloads dictate. Models include the IBM Power 760, 770, 780 and 795.

Table 3: "IBM Power Systems: Features and Benefits" highlights the common features and benefits of IBM Power Systems servers.

IBM PureSystems/PureFlex for IBM i

In April 2012, IBM introduced a new line of systems called expert integrated systems under the branding IBM PureSystems. IBM PureSystems combine the flexibility of a general purpose system, the elasticity of a cloud and the simplicity of an appliance. These systems are integrated by design and come with built-in expertise gained from decades of experience to deliver a simplified IT experience.

The IBM PureFlex System combines compute, storage, networking and virtualization capabilities and the extensive features of IBM Flex System Manager™. POWER®

compute nodes that support the IBM i operating system are available and include: the IBM Flex System p260 (up to 16 cores), the IBM Flex System p270 (up to 24 cores), and the IBM Flex System p460 (up to 32 cores).

Similar in concept to the IBM i Solution Edition, IBM offers the IBM PureFlex Solution for IBM i “discounted offering.” This single-footprint solution can combine a mix of server technologies and workloads with both POWER and x86 compute nodes. This is a good fit for JD Edwards World and EnterpriseOne customers running on IBM i that also require x86 servers. All of the customers mentioned in this white paper upgraded to IBM Power Systems servers, but other JD Edwards customers have upgraded to IBM PureFlex servers.

IBM Power Systems: Features and Benefits	
Features	Benefits
POWER7+ Performance	<ul style="list-style-type: none"> • Dramatic improvement over POWER7 performance, including data access and response times. • More workloads with fewer servers. • Enables savings based on reductions in number of servers and software licenses.
Reliability/Availability/Serviceability ECC memory with Chipkill Processor Instruction Retry Alternate Processor Recovery Service processor with fault monitoring Hot-plug disk bays Hot-plug and redundant power supplies and cooling fans Dynamic component de-allocation	<ul style="list-style-type: none"> • High availability. • Ensure that business-critical applications are always up and running.
Light Path Diagnostics	<ul style="list-style-type: none"> • Easily and quickly diagnose hardware problems. Reduces service time.
PowerVM Virtualization Supports workloads running IBM i, AIX, and Linux operating systems. Up to 20 partitions per core can be supported.	<ul style="list-style-type: none"> • Easily add and manage workloads. • Utilize full capability of IBM Power Systems servers to reduce infrastructure costs by consolidating. • Handle unexpected workload peaks by sharing resources.
Intelligent Threads	<ul style="list-style-type: none"> • Optimize performance by selecting the suitable threading mode for your application.
IBM Systems Director Active Energy Manager™ with EnergyScale™ Technology	<ul style="list-style-type: none"> • Improves energy efficiency and costs. • Energy management capabilities. • Enables business continuity when energy is limited.

Table 3: IBM Power Systems: Features and Benefits



Conclusions and Recommendations

IT organizations running JD Edwards applications on older systems running IBM i can realize significant financial, technology, and business benefits by upgrading their existing hardware to an IBM Power Systems platform running IBM i. The following recommendations should be considered:

- IT organizations should closely evaluate the benefits that can be realized by leveraging the advanced technologies of IBM Power Systems servers.
- IT organizations should review the discounts and special packages now being offered in connection with IBM Power Systems servers (e.g. the IBM i Solution Edition for JD Edwards and relevant peripherals such as IBM Storwize Unified Disk Systems.)
- IT organizations running JD Edwards applications should take full advantage of the expertise offered by IBM and its business partners who specialize in deploying IBM Power Systems servers to operate in conjunction with JD Edwards software. This would include utilization of IBM ICCs to project performance improvements, free sizing estimates offered by IBM, assistance with configuration and deployment.
- In comparing IBM Power Systems servers to competitive platforms for running JD Edwards software, IT organizations should evaluate the total cost of transitioning to a new, different, and more complex platform, including any potential interruptions in business operations, data center and energy requirements, server pricing, database acquisition and licensing fees, and ongoing database administration costs.
- IT organizations should consider the inherent benefits of DB2 for IBM i on IBM Power Systems servers an important aspect of any upgrade or transitional decision, as DB2 database management is autonomic and requires no database administrator.
- The *IBM JD Edwards ROI Upgrade Tool* (see Appendix) can be used to estimate the potential return on investment. It includes options for various configurations of the IBM i Solution Edition for JD Edwards and JD Edwards software.
- Customers requiring complex software upgrades, consolidations, and business process transformations should closely review the services offered by the IBM JD Edwards Consulting Practice.

Appendix

This section contains references to publicly available information that supports the analysis, conclusions and recommendations contained in this report.

- IBM i: <http://www.ibm.com/systems/power/software/i>
- IBM Power Systems: <http://www.ibm.com/systems/power>
- IBM i Solution Editions: <http://www-03.ibm.com/systems/power/hardware/solutioneditions/ibmi/index.html>
- IBM i Solution Edition for JD Edwards Solution Data Sheet: <http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS4143>
- JD Edwards EnterpriseOne Solutions from Oracle on IBM i: <http://ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/i%20ERP1/page/EnterpriseOne>
- IBM Hardware Sizing Questionnaires for JD Edwards applications: <http://ibm.com/erp/sizing>
- IBM Power Systems with IBM i using Solid State Drives to boost your Oracle's JD Edwards EnterpriseOne Performance: <http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP102061>
- Oracle's JD Edwards EnterpriseOne IBM POWER7 performance characterization: <http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP102069>
- IBM i Solution Edition for Oracle's JD Edwards EnterpriseOne performance benchmark results: <http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101731>
- Oracle's JD Edwards EnterpriseOne Scaling with IBM POWER6, POWER7, and IBM i <http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/WP101555>
- IBM DB2 for i: <http://www-03.ibm.com/systems/i/software/db2/index.html>
- IBM PureSystems: <http://www.ibm.com/puresystems>
- IBM PureFlex Systems POWER Processor-based Compute Nodes: : <http://www-03.ibm.com/systems/flex/compute-nodes/power/index.html>

- IBM PureFlex Solution for IBM i: <http://www-03.ibm.com/systems/flex/i/bto>
- Justifying an upgrade to Oracle's JD Edwards EnterpriseOne or JD Edwards World application environments: <https://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS5097>
- IBM JD Edwards ROI Upgrade Tool: <http://k.kmaone.com/IdeRoi>
- IBM and Oracle: <http://ibm.com/solutions/oracle>
- <http://ibmandoracle.com>
- JD Edwards World: <http://www.oracle.com/us/products/applications/jd-edwards-world/overview>
- JD Edwards EnterpriseOne: <http://www.oracle.com/us/products/applications/jd-edwards-enterpriseone>