



IBM i

An executive guide to IBM's strategy and roadmap for its integrated operating environment for Power Systems

An IBM® White Paper



Introduction

IBM i is the integrated operating environment for IBM Power Systems™, which has been used by hundreds of thousands of businesses around the world for over twenty years since the introduction of the AS/400® and its successor System i® server. The integrated database architecture of IBM i provides unique value for running a wide variety of business applications and continues to differentiate it from other operating environments in terms of simplicity of deployment and low cost of operations.

In 2008, IBM brought together System i and System p® into a unified POWER6™ processor-based platform: IBM Power Systems. Since then, we have successfully transitioned our IBM i business, so that today 100% of our IBM i sales are on the new POWER6 platform. Today, our IBM i clients not only run on the industry's fastest processors, but can also look forward with confidence as we prepare to deliver POWER7™ processor-based systems in 2010.

We recently previewed our next major IBM i release planned for delivery in the first half of 2010. As always, this new release contains new features and capabilities that are based on customer requirements articulated and prioritized in collaboration with our advisory councils, representing COMMON, COMMON Europe, ISVs and our Large User Group.

This white paper is designed to help IT executives gain a better understanding of our strategy and roadmap for the IBM i operating environment.

You will find that our commitment to our IBM i clients, ISVs and business partners is solid and unchanged. With our clearly defined processor and software roadmap, we are making substantial investments in the future of IBM i as an important, strategic element in the IBM systems portfolio.



Ross Mauri
General Manager,
IBM Power Svstems

A handwritten signature in black ink that reads "Ross". The signature is fluid and cursive.

Ross Mauri
General Manager, IBM Power Systems

Power Systems

For many years, IBM offered two major server platforms for its IBM i and UNIX customers: the System i (formerly AS/400) and System p (formerly RS/6000®). In the early 1990s, IBM decided to invest in hardware and software technologies that could be exploited by both platforms. So for example, in 1997, they shared the first common Power processors. In 2000, they further shared the same remote I/O (RIO) bus architecture. And, in 2004, they finally shared the same system designs, as well as the first common Power hypervisor that supported IBM i, AIX®, and Linux operating environments. But despite sharing many common components, they continued to be sold as two distinct platform offerings, with different terms and conditions.

In April 2008, the System i and System p were unified into the new Power Systems platform: one product that runs IBM i, AIX or Linux applications, with one price, one set of options and common terms and conditions. The result has been that the new Power Systems platform is simpler for customers to buy, and simpler for ISVs and business partners to support. It also has ensured that IBM i customers are positioned in the mainstream of IBM's technology investments, both for servers and storage.

Key to enabling customers and ISVs to move to the new Power Systems platform was supporting the then current release of IBM i 5.4, as well as the most recent release IBM i 6.1. This preserved the decades long application investment protection for IBM i clients, who can still run applications on today's Power Systems that were first written on the System/38 in 1979, without change or recompilation.

In addition to common hardware technologies, Power Systems offers common platform software technologies, such as PowerVM™ for virtualization, PowerHA™ for availability, and IBM Systems Director for platform and energy management. Using common platform software technologies with AIX, and Linux, again better positions IBM i in the mainstream of IBM's systems software.



The Power Systems platform offers businesses a highly flexible deployment platform for new applications. With a wide variety of IBM i, AIX and Linux applications to choose from, it is easier than ever before to optimize workloads deployment across multiple operating systems on the Power Systems platform.

The Value of IBM i

IBM i running on an IBM Power Systems server offers a highly scalable and virus resistant architecture with a proven reputation for exceptional business resiliency. Running applications based on IBM i has helped companies over many years to focus on innovation and delivering new value to their business, not on managing their data center operations.

IBM i provides a fully integrated and trusted combination of relational database, security, Web services, networking and storage management capabilities required to run business applications. For example, IBM installs and integrates the SQL standards-based DB2[®] database for i with advanced database management utilities, plus additional middleware components such as multiple file system options, directory capability, an HTTP Web-server powered by Apache, a Web application server and a Web-services environment.

IBM develops, fully tests and pre-loads these core middleware components of IBM i together up front, whereas on other platforms, operating system, database and middleware are typically integrated and tested in the data center. The pre-integration and testing of IBM i is a key factor in enabling companies to realize lower operations costs by deploying applications faster and maintaining them with fewer staff. Virtualization and workload management are also built into IBM i to enable businesses to consolidate and run multiple applications and components together on the same system, driving up system utilization and delivering a better return on IT investments.

This broad and highly stable database and middleware foundation is ideal for efficiently deploying business processing applications, with support for over 5,000 solutions from over 2,500 ISVs. IBM i solutions are offered through an extensive, highly skilled worldwide network of certified IBM Business Partners that is backed by IBM's trusted services and support infrastructure.

IBM i Market

The IBM Power Systems family offers POWER processor-based servers supporting small, mid-sized, and enterprise clients, on everything from a two-core blade, to some of the largest and fastest 64-core servers in the industry.

IBM i is used by 100,000s of companies in over 115 countries around the world to run their business applications. It is almost always used for transaction processing workloads that exploit its integrated database; it is never used for high performance computing workloads like weather forecasting or oil exploration analysis, which would not exploit its integrated database. IBM i is typically used in industries like wholesale distribution, retail, banking, financial services, insurance, travel & transportation, and automotive.

The IBM i market has a dual nature: an extensive, small and mid-sized customer community and a strong but select group of IBM i users in large enterprises.

IBM i Strategy and Roadmap

Approximately seventy percent of IBM i users are small and mid-sized enterprises and thirty percent large enterprises with over 1000 employees.

IBM i has a strong install base in major markets, like North America, Western Europe and Japan, which accounted for approximately 80% of IBM i sales in 2009. IBM i is also successful in emerging growth markets such as Latin America, Eastern Europe, and the ASEAN region. While China is a growth market strongly dominated by UNIX, IBM i also has a strong presence there in the banking and financial services segments.

In 2009, approximately 90% of IBM i shipments were on the IBM Power[®] 520, a 1 to 4-core server that is ideal for small and mid-sized enterprises. In large companies, IBM i is generally run in the data center on highly virtualized, enterprise class systems. These companies highly value the exceptional system resiliency and capacity on demand features of the Power 570 and 595.

The IBM i community is represented through the Large User Group (LUG), COMMON, COMMON Europe, iSUC in Japan, Interaction in Australia, and numerous local user groups. IBM meets regularly with the LUG, COMMON Americas Advisory Council, and COMMON Europe Advisory Council to understand and prioritize requirements for future releases of IBM i.

Through the IBM Academic Initiative for Power Systems, IBM has built strong local relationships between universities, colleges, clients, partners, Independent Software Vendors, and user groups to help ensure IT professionals have the skills needed to meet the needs of the IBM i ecosystem. Currently there are over 500 colleges and universities in over 40 countries participating in the program.

Small and Mid-sized Enterprises and IBM i

Hundreds of thousands of small and mid-sized enterprises (SMEs) around the world rely on IBM i because they want a better alternative to Windows-based servers for their most important business applications.

SMEs need both to maximize their IT investments *and* exploit them as they grow. Unlike Windows-based servers, the IBM i operating environment is almost always used to run multiple business applications on the same system, accessing the same database. That helps a company better utilize its IT assets today, while avoiding the costs of deploying and managing a new server every time the business needs another application.

Since their focus is on growing their business, SMEs need proven solutions, and experts that know their industry. The thousands of solutions that run on IBM i are sold through an extensive network of experienced solutions providers who have successfully demonstrated their ability to help small and midsized companies solve business issues. Experienced IBM i solutions providers deliver business value beyond the installation and patch management that is typical for Windows-based servers.

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Of course, SMEs are also focused on improve productivity and keeping running costs low. Deploying IBM i solutions can help businesses improve employee productivity and customer service by securely integrating information from across the company into its built-in database. Unlike Windows-based servers, IBM i has an all-in-one system design that helps integrate the wide range of information and processes that lie behind a successful business.

A top priority for all growing companies is to keep the business up and running, and it is especially important for those companies delivering information and services to their customers on the Web. Over many years and in many businesses, IBM i has developed a well earned reputation as the business system that just keeps running. It helps companies avoid down time and keep their business secure.

For companies running Windows-based servers, security and virus management are major challenges in terms of time and money. Compare that with the simple-to-deploy security of the IBM i platform. Its virus resistant design helps companies keep their business more secure, safeguarding data against hackers with built-in intrusion detection.

[Svendsen](#), a specialist distributor in Germany, migrated their business applications from x86 systems to a Power 520 with IBM i. "For the same price as the proposed Intel architecture, we purchased a single, more powerful and scalable Power Systems server, with all the characteristic advantages of IBM i: legendary reliability, high resilience against viruses, and the built-in IBM DB2 database." - Lutz Ilgner, CEO

Large Enterprises and IBM i

Originally, the AS/400 was often deployed in large enterprises as part of a 'distributed computing' model for local business applications outside the main datacenter environment. The distributed system model offered large companies the flexibility and cost effectiveness of deploying local applications, which then sent consolidated data back to a central site datacenter.

Patterns of use of IBM i in large enterprises, however, have dramatically changed over the past ten years. With significant changes in networking costs and dramatic advances in virtualization technology, large enterprises have taken advantage of significant costs savings by consolidating their distributed servers back to the datacenter. Now large enterprises typically run IBM i for high volume transaction processing on fewer, highly virtualized systems.

The trends for large enterprise users of IBM i have also changed for storage deployment. For many years, IBM i users typically used internal storage, optimized for transaction processing with high performance internal storage adapters. Today, the trend for large users is balanced with a growing use of fibre channel and storage area networks, such as IBM DS8000. This trend has brought IBM i users into the mainstream of datacenter storage strategies.

[FedEx Ground](#) deployed an IBM i solution as the foundation of its operations. With industry-leading flexibility and resiliency, the IBM i solution has been a key enabler of the company's ongoing transformation efforts affecting all of its package delivery processes. "We operate in an environment where customer expectations continue to escalate. The IBM i infrastructure helps us not only meet—but exceed—them by enabling us to speed up our network and develop new solutions for our customers." - Ken Spangler, VP of IT

Business Partners and ISVs

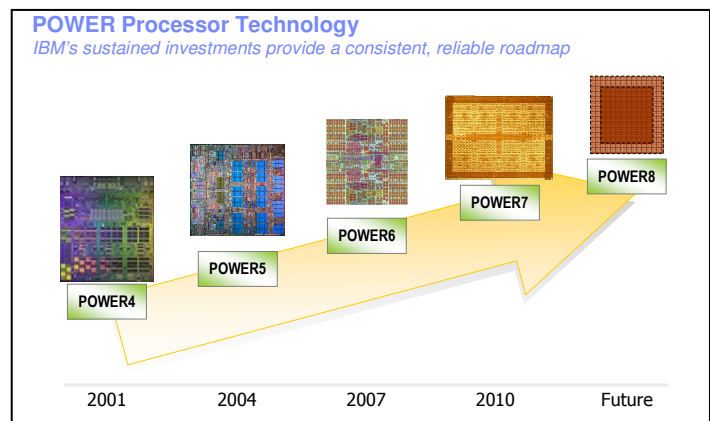
IBM i is offered through a strong network of local, regional, and national business partners. Since the introduction of the AS/400 in 1988, business partners have played a vital role in the sales, installation, and support of IBM i-based systems. Business Partners have consistently been responsible for over 80% of the systems sold. Not only are these partners trained and certified on Power Systems servers and IBM i, but they also add value through specific industry expertise, as well as offering a wide range of IT services.

The AS/400 was launched as an “Application System”, delivering thousands of application solutions to small and mid-sized business. This solution focus remains true today, with the majority of i customers running a solution from an Independent Solution Vendor (ISV). These solutions are offered by a wide range of partners from global ISVs such as Oracle, SAP, Lawson, and Infor, to key solution providers such as Misys, Fiserv, and Silverlake, to a strong network of tool providers including Vision Solutions and Help/Systems. Today, more than 2,300 applications from over 850 independent software vendors are supported on the latest release, IBM i 6.1.

Power Systems Roadmap

IBM has a consistent track record of delivering on its POWER processor roadmap for IBM i, AIX, and Linux operating environments. Since, 2001, IBM has delivered new generations of systems on a three year cycle based on new POWER processor technology. The current POWER6 processor-based servers with up to 5 GHz processors offer the fastest processors in the industry. From one to sixty-four core servers, POWER6 processor-based systems offer the performance and scalability to meet the varied requirements of IBM i clients.

In 2010, IBM plans to introduce a POWER7 family of systems that will extend from high end systems to Blades supporting IBM i, AIX, and Linux. Regardless of the computing demands that a client may have, whether it is for a small customer wanting to run an ERP



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solution, to a mid-sized business intelligence solution, to a large banking solution for an enterprise client, there will be a POWER7 system solution able to meet the needs and requirements of IBM i customers.

The next generation of Power Systems will continue to deliver more performance with more performance per core and up to 8 cores per processor, expanded consolidation capability with up to 1000 virtual machines per system, and improved energy efficiency with 2X-3X performance in the same energy envelope.

Upgrades will be available to POWER7 systems from selected POWER6 processor-based systems including the Power 570 and Power 595.

IBM i 6.1.1 and later versions will be supported on POWER7 processor-based servers. With binary compatibility, clients will be able to easily deploy new systems based on POWER7 processors without changing, recompiling or re-optimizing their applications.

IBM i Software Roadmap

IBM has consistently delivered a major IBM i software release approximately every two years. Enhancements via updates to the operating system have also routinely been delivered between major releases, for example to support new technologies such as Solid State Drives or other storage technologies.

The current release of IBM i 6.1 was delivered in March 2008 and the next major release is planned for 2010. The IBM Rochester Development team is now working with representatives from IBM i community advisory councils to prioritize requirements for the release that is planned for 2012.

IBM i Roadmap



IBM i 6.1

IBM i 6.1 is the latest version of the integrated operating system for Power Systems servers, and has been available since March 2008. The enhancements provided with IBM i 6.1 delivered on top priority customer requirements as well integrating IBM i with IBM's broader strategies for blades, storage and platform management. Highlights of IBM i 6.1 include:

- New support for running IBM i on a POWER6 processor-based blade, enabling the consolidation of i and x86 workloads within a single IBM BladeCenter®.

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- Significant investments for SANs that expanded options for IBM i clients to exploit IBM System Storage servers, via direct fibre channel and PowerVM virtual I/O server.
- A new disk clustering solution, PowerHA, that provides a simple-to-operate high availability and disaster recovery solution supported by IBM.
- A Java Virtual Machine that is shared with AIX and Linux provided significant increases in application performance, especially for web-based applications.
- Expanded virtual I/O options, including PowerVM virtual storage for i partitions and new support for PowerVM Virtual I/O Server that is commonly used by AIX.
- Support for IBM Systems Director providing a rich platform and energy management environment for IBM i as well as for multiple, heterogeneous servers.

In October 2009 IBM announced enhancements to the IBM i 6.1 release including IBM i 6.1.1 supporting new IBM System Storage solutions for mid-sized and enterprise customers, enhancing our PowerVM I/O virtualization support, introducing a new BladeCenter offering, enhancing support for Solid State Drives, and offering new I/O options for mid-sized clients.

Next Release of IBM i

The next release of IBM i is planned for delivery in 2010. Highlights include:

- Enhanced DB2 with native support for XML, enabling clients to store and search XML documents, and encryption of a column in a database table to further protect sensitive information
- PowerHA support for asynchronous replication, providing a disk clustering-based disaster recovery solution
- Further exploitation of solid state drive (SSD) technology to automatically move the most frequently accessed data to SSDs for higher application performance
- IBM Rational[®] product enhancements to RPG enable programs to integrate with a broad range of client applications, including web services, mobile devices and XML
- Additional IBM Systems Director Navigator web-based management tasks, such as performance and system monitors
- Integration of IBM i with IBM BladeCenter and IBM System x[®] via iSCSI technology to support faster, software-based connections between IBM i and x86-based systems at lower cost
- Support for transformation of saved spool files to PDF files.

Enhanced IBM WebSphere[®], Lotus[®], and Rational offerings are also planned to be available with the new release.

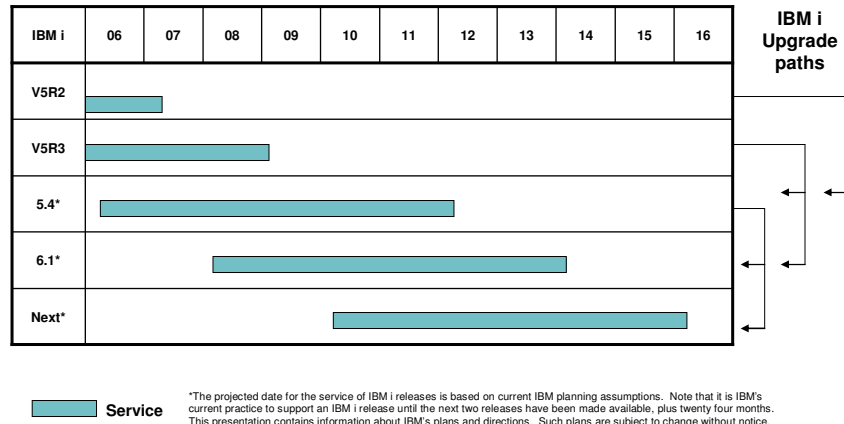
Planning for IBM i Release Life Cycles and Support

The support and life cycle strategies for IBM i reflect the fact that companies run their most critical business applications on the platform. These strategies include the practice to support an IBM i release until the next two releases have been made available, plus twenty four months – which translates to approximately six years support, given the

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delivery of a new release approximately every two years. Automated operating system upgrades are available to easily move up to the next two releases providing for an ongoing supported IBM i environment. For example, customers running IBM i 5.3 or 5.4 and easily upgrade to IBM i 6.1.

IBM i Life Cycle



IBM i 5.4 and 6.1 are currently supported releases. With the introduction of the next release in 2010, support for i 5.4 is planned to extend until at least 2012.

IBM Strategies

IBM has a wide range of initiatives to help businesses implement a dynamic infrastructure to reduce costs, improve service, and manage risk.

Lower Costs

Enable IBM clients with previous generation AS/400, iSeries and System i servers, to replace these servers with new Power Systems servers and reduce their monthly system costs while delivering significantly more performance to run additional applications. For example, a customer can replace an iSeries 810 with a Power 520 i Edition and save up to \$500 in operations costs. The lease price on the new solution is covered by these savings. The new system also offers over 5X more performance providing the ability to easily run the latest ISV, business intelligence, Web, and resiliency solutions. The [Power Systems Savings Calculator](#) can be used to estimate the monthly savings and performance benefit provided by a new Power System. For larger enterprises, IBM offers system upgrades enabling clients to easily and cost effectively move up to new technologies.

Storage

Enable customers to move up to the latest integrated I/O technologies with SAS, PCIe, large cache adapters, and 12X drawer offerings as well as consolidate their storage for IBM i and other servers on IBM System Storage solutions. IBM i support for IBM System Storage solutions has significantly improved over the past two years. To support an increasing number of enterprise and mid-sized clients looking to SAN based storage, IBM i now supports the DS3000, DS4000[®], DS5000, DS6000[™], DS8000[®], XIV, and SVC storage solutions. IBM i offers direct support for selected SAN solutions and leverages PowerVM VIOS to support a broad scope of other SAN solutions.

In addition, the introduction of Solid State Drives with their breakthrough I/O performance can enable customers to reduce the run-times of their daily, weekly, and monthly batch jobs. IBM i with its advanced data placement support makes it easy to get the most frequently accessed data onto the SSDs, setting up a hierarchy of storage under the control of IBM i storage management.

[Associated Bank-Corp](#) was able to reduce the run time of their month end batch job by 40% by moving eight DB2 objects onto four SSDs. The time to run this critical job was cut from over four hours to less than three hours.

Virtualization

Enable customers to consolidate their servers to better utilize their IT assets with PowerVM. PowerVM, which shipped on 65% of Power System servers in 2008, provides industrial strength virtualization for AIX, IBM i, and Linux environments. It can reduce hardware, software, and energy footprints with micro-partitioning supporting up to 10 partitions per core, can respond to changes in workload demands with automatic movement of processor and memory resources, and can enhance IT infrastructure flexibility with I/O virtualization. Logical partitioning is extensively used by IBM i clients especially in large datacenter environments.

[Co-Operative Bulk Handling Group Ltd.](#) stores, markets and exports grain on behalf of its 5,500 grower-shareholders in Western Australia, and has 820 full-time employees. GBH Group consolidated multiple System p and System i servers onto a new Power server running IBM i and AIX. “With the more compact and efficient virtualized servers from IBM, the same capital investment gave us a much better and more robust infrastructure, with plenty of data center capacity for future expansion.” – Brad Harvey, Infrastructure Manager

High Availability

Enable customers to deploy a high availability or disaster recovery solution from IBM with PowerHA or iCluster or from partners such as Vision Solutions. The PowerHA disk clustering solution offers an easy to manage solution for environments with integrated storage as well as IBM System Storage solutions. As more IBM i customers transition to SANs, PowerHA offers an integrated IBM i and System Storage solution for a wide spectrum of availability requirements.

[CATCO Parts and Service](#) is a 312-person company with 18 retail locations that provides parts and service to the U.S. heavy-duty trucking industry. CATCO implemented a high-availability solution with PowerHA using geographic mirroring to enable easy switching between a primary Power 520 and a secondary system. “With PowerHA for IBM i, we have the flexibility to assess the nature of the outage and the ability to protect productivity by quickly resuming service.”– David Gerdes, Chief Operating Officer

Business Intelligence

Enable customers to better analyze their data to reduce costs and improve service across their business with DB2 Web Query. IBM in cooperation with Information Builders, offer a full suite of query, reporting, OLAP, and dashboard technologies to meet a wide variety of business intelligence solutions. With DB2 Web Query, customers have fast access to current data, while avoiding the complications of offloading data to another system. To date, there have been over 30,000 shipments of DB2 Web Query.

[South Carolina Student Loan](#) is a 200- person, non-profit organization that originates and services postsecondary educational loans for students, parents and higher education institutions in South Carolina. SCSL is implementing IBM DB2 Web Query for i to enable more robust, efficient reporting and significant performance improvements. “Within seconds, users are getting information that they previously had to wait up to 30 days for.” - Tom Dunnigan, CIO

Application Modernization

Enable customers to extend and modernize their applications improving productivity and providing better service to customers, partners, and suppliers with Rational Developer for i and Rational Team Concert for i. IBM Rational offers modern tools based on Eclipse that can speed development with specialized editors and code generation wizards, rapidly build modern Web 2.0 interfaces and mashups, and quickly create web services from existing RPG, COBOL, EGL, and Java applications.

IBM has also worked with Zend to deliver PHP, the popular open source scripting language, for IBM i. The Zend product that provides the PHP runtime and a toolkit to provide easy access to IBM i applications and data are preloaded with IBM i. With PHP, customers can easily develop web applications that tie into IBM i DB2 data and applications. With the support of MySQL and Apache, customers can also easily deploy thousands of open source applications built to the popular open source stack. To date, over 15,000 people have registered to download the Zend products for IBM i.

Additional application development tools for IBM i are available from tool providers such as LANSA, BCD, looksoftware, Arcad, and Databorough.

[Arkansas Data Services](#) is an IBM Business Partner providing medical office software and custom development services using IBM technologies. “Rational tools are helping us retain clients, because we can show them that their IBM System i 520 platform is capable of running their Web and application servers. We can modernize their business applications piece-by-piece, deploy Web services, and keep them on a reliable, secure platform. That provides real value to our customers, and it is a big selling point for us.” - Rusty Gadberry Co-founder

BladeCenter

Enable customers to consolidate their IBM i and x86 servers into a new IT infrastructure based on IBM BladeCenter. IBM i 6.1 is supported on POWER6 processor-based blades ranging from two to 8 cores providing the performance to run most IBM i applications while leveraging the financial, physical, and management benefits of a BladeCenter solution.

[Dancerace](#), a UK company with 16 employees, recently consolidated its infrastructure with a BladeCenter H, JS12 blades for IBM i, HS blades for Windows and a DS4800 SAN. “We feel that for this level of performance, the solution is very cost-effective – at around £7,000 per partition for the hardware, storage and operating system, it’s certainly no more expensive than a comparable Intel-based infrastructure.” --Anthony Avison, Chairman.

Systems Management

Enable customers to centrally manage their IBM i as well as AIX, Linux, and x86 systems with a single management environment provided by IBM Systems Director. IBM Systems Director Navigator for i offers an out of the box, web-based management solution for a single IBM i environment. To manage multiple IBM i systems as well as heterogeneous environments, IBM System Director provides the same 300 tasks for managing i, plus rich function for monitoring, health check, and virtualization management. Active Energy Manager is an extension that provides for the reporting, monitoring, and control of energy use in the data center.

Additional systems management tools for IBM i are available from tool providers such as Help/Systems, Halcyon, Centerfield Technology, and Midrange Performance Group.

[United States Bowling Congress](#) is the national governing body for the sport of bowling, serving more than 2.5 million adult and youth members. “USBC used IBM Systems Director Active Energy Manger and intelligent sensor technology to manage power utilization to reduce cooling and electricity costs in its data center. ...resulting in a nearly 50 percent reduction in cooling cost and eliminates more than five tons of carbon emissions annually.” Jim Oberholtzer, Vice President Technology

IBM i Strategy and Roadmap

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