



IBM eServerJ iSeriesJ

# GP03 Technical Overview - Part 1

## The Next Generation iSeries...

### Simplicity in an On Demand World

January 2003 Announcements

ITSO iSeries Technical Forum

# Notes: iSeries 2003 Announcements - Technical Overview

This presentation is based upon the IBM marketing Overview and Product Positioning presentations developed by:

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This presentation replaces the April, 2002 ITSO Technical Overview with the January 2003 announcement.

# Agenda

- Announcement Highlights
  - e-business on demand™
  - The Customer Challenge: Solving the Cost Equation
  - Hardware Capabilities

# iSeries 2003 Announcement Highlights

<b>iSeries</b>	<ul style="list-style-type: none"> <li>■ An on demand operation environment for an e-business</li> </ul>
<b>New servers</b>	<ul style="list-style-type: none"> <li>■ New iSeries server deliver up to 80% price performance               <ul style="list-style-type: none"> <li>- New Small to Medium Enterprise servers: iSeries 800 and i810</li> </ul> </li> <li>■ New POWER4-based servers for medium to large enterprises               <ul style="list-style-type: none"> <li>- i825, i870, i890 feature capacity on demand</li> </ul> </li> <li>■ New high performance PCI-X I/O</li> </ul>
<b>New packaging</b>	<ul style="list-style-type: none"> <li>■ Dramatically simplify product choice with Standard and Enterprise Editions</li> <li>■ Unrestricted interactive capacity (5250 CPW) with Enterprise Edition</li> <li>■ Designed for the exploitation and management of e-business services</li> <li>■ Enhanced integration with WebSphere®, Lotus®, Linux™ &amp; Windows™</li> <li>■ Simplified software pricing tiers</li> </ul>
<b>New capabilities</b>	<ul style="list-style-type: none"> <li>■ Capacity on demand (permanent and/or temporary))</li> <li>■ WebSphere Application Server - Express for iSeries</li> <li>■ WebFaced applications run without 5250 CPW</li> </ul>
<b>Key dates</b>	<ul style="list-style-type: none"> <li>■ Announcement January 20, 2003, General Availability February 21, 2003; March 10, 2003, for IBM eServer On/Off Capacity on Demand (temporary capacity on demand)</li> </ul>

# Notes: iSeries 2003 Announcement Highlights

The major theme of this announcement stresses the capability of the servers to handle the demands of core business applications and e-business in a very cost efficient way. From the new, aggressively priced Model 800, to the superior performance of the Model 890, iSeries can give your business the tools for success.

Each of the items listed on this foil will be detailed more in the next presentation.

## For your information:

iSeries Models 800, 810, 825, 870, and 890 require OS/400 V5R2, plus February software updates. Refer to **Information APAR II 13365** for details at: [HTTP://WWW.IBM.COM/ESERVER/ISERIES/SUPPORT](http://www.ibm.com/eserver/iseries/support)

New features require OS/400 V5R2, plus February software updates. Refer to **Informational APAR II 13440** at: [HTTP://WWW.IBM.COM/ESERVER/ISERIES/SUPPORT](http://www.ibm.com/eserver/iseries/support).

The following is an excerpt from APAR II13440:

This informational APAR addresses the software requirements needed to support the following iSeries I/O features.

- Feature # 2757, PCI-X Ultra RAID Disk Controller
- Feature # 2782, PCI-X RAID Disk Unit Controller
- Feature # 2844, PCI IOP
- Feature # 5702, PCI-X Ultra Tape Controller
- Feature # 5705, PCI-X Tape/DASD Controller
- Feature # 4531/4631, DVD-ROM
- Feature # 4326/4327 15K RPM disk drives
- Feature # 5094 PCI-X Expansion Tower
- Feature # 5294 1.8M I/O Tower
- Feature # 5088 PCI-X Expansion Unit
- Feature # 0588 PCI-X Expansion Unit in Rack
- Feature # 5095 PCI-X Expansion Tower
- Feature # 0595 PCI-X Tower Unit in Rack
- Feature # 8094 Opt Base 1.8M I/O Rack

Microcode CD label: RSB  
5722SS1 Feature Code 2691

## Notes: iSeries 2003 Announcement Highlights - cont.

*APAR II13440 continued:*

If you are planning to upgrade your existing server with any of these new features, you must have the following on your system:

- OS/400 V5R2
- **PTF cumulative package C3021520 or later for V5R2**

If your server is partitioned, this level of code must be on each partition using the new feature(s).

To verify that PTF cum package C3021520 or later is installed, enter the following command from a V5R2 command line:

```
DSPPTF LICPGM(5722SS1) SELECT(TC03021)
```

If PTF TC03021 is found, cum package C3021520 is on this OS/400 partition.

In addition, you need installation media for the Licensed internal code labeled with a RSx where x is B or greater (label: LICENSED INTERNAL CODE - RSx). This does not need to be reinstalled, but is needed for potential system recovery purposes. If you need to get this media, order 5722SS1 feature code 2691.

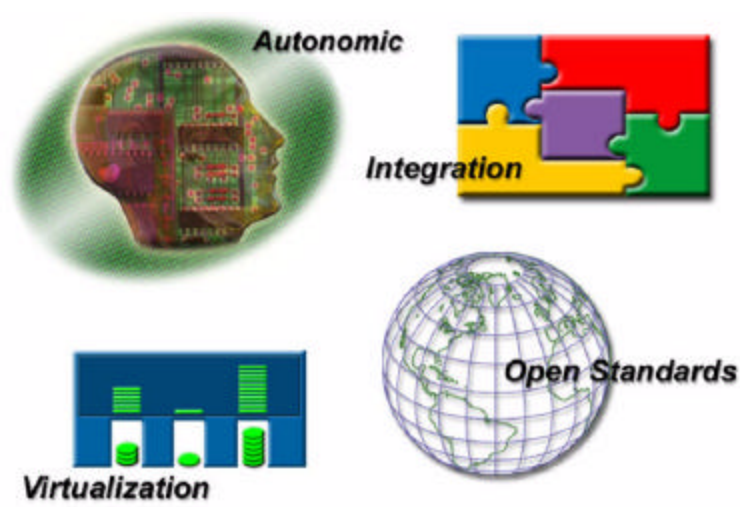
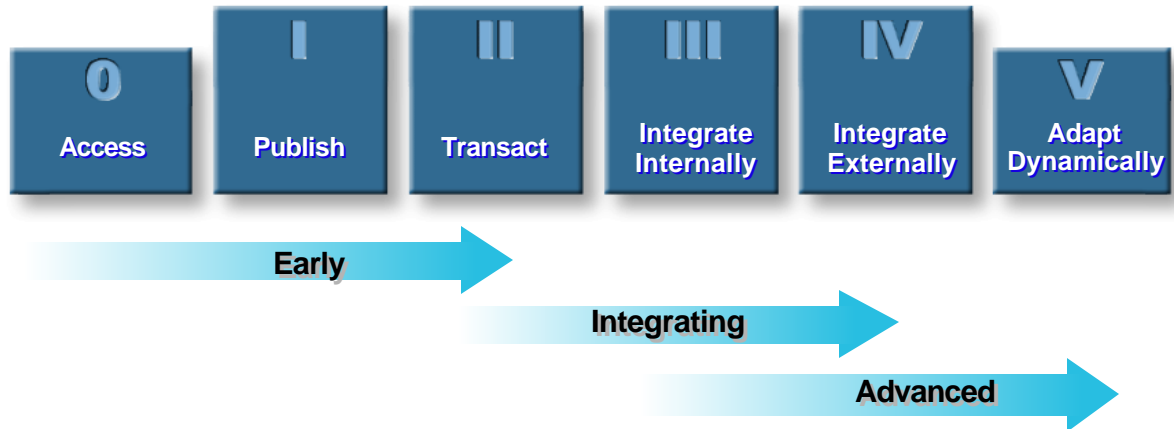
Remember also that On/Off Capacity on Demand (temporary) will require an additional set of PTFs to be available during March, 2003 .

# Agenda

- Announcement Highlights
- e-business on demand
- The Customer Challenge: Solving the Cost Equation
- Hardware Capabilities

# The next generation iSeries ... *simplicity in an on demand world*

- e-business adoption
  - ▶ Access
  - ▶ Enterprise integration
  - ▶ On demand
  
- on demand businesses
  - ▶ Real-time Responsiveness
  - ▶ Require variable cost structures
  - ▶ Focused on core competencies
  - ▶ Resilient to challenges





# Notes: The next generation iSeries ...

When the concept of e-business emerged in the mid-1990s, it was clear that the global economy was on the verge of an enduring, technology-led business revolution. Companies progress in adopting e-business can be categorized into three phases: early e-business adoption, integrating e-business and e-business on demand.

## Phases of e-business Adoption

The 'Access' phase of e-business adoption is characterized by simple strategies such as publishing product information to the Internet and the first steps toward Web-based transactions. The second, 'Enterprise Integration' phase of e-business adoption is marked by strategies to link internal processes end-to-end and by companies connecting across the Web to their external value nets. Companies at this stage focus on integrated their core business and e-business applications. In the 'e-business of demand' phase of e-business adoption, companies are driven by the need to optimize their e-business operations, so they can dynamically respond to the needs of customers, partners and employees. Companies that were used to predictable IT upgrade growth strategies now require more flexible server options with new capacity available immediately to enable them to respond to unpredictable demand.

In studies of e-business adoption rates in 33,000 customers worldwide, IBM estimates that 65% of companies are still in the early phases of e-business deployment, 28% have made significant progress in the integration phase and many of those companies are moving towards e-business on demand.

## On Demand Businesses

An on demand business can be defined as an enterprise whose business processes – integrated end-to-end across the company and with key partners, suppliers and customers – can respond with flexibility and speed to any customer demand, market opportunity or external threat. Responsive: able to sense and respond to dynamic, unpredictable changes in demand, supply and the needs of customers, partners and employees. Variable: use variable costs structures to adapt to processes flexibly, enabling risk reduction while doing business at high levels of productivity, cost control and financial predictability. Focused: on its core competencies and assets while tightly integrated strategic partners manage selected tasks, from HR to manufacturing and logistics. Resilient: manage changes and threats – from computer viruses to earthquakes - with consistent availability and security.

## iSeries and the on demand operating environment

Four technology strategies define how companies will optimize their infrastructure in the on demand era: integration; virtualization; open standards and autonomic computing, together these define the an demand operating environment. Based on these strategies, iSeries is uniquely positioned to play a leadership role in the development of technology solutions for the on demand era. Through its on demand operating environment implementation, the next generation iSeries delivers simplicity in an on demand world.

# Integration

- Core business applications linked with new Web based applications and transactions
- High requirements from service delivery
- iSeries personality delivers:
  - ▶ Integration of base and advanced components
  - ▶ Support for multiple Operating Systems and their applications



# Notes: Integration

Integration goes far beyond connecting disparate computing assets so they can share information. The on demand computing environment must enable the integration of core business processes and systems so that business itself can flow inside and across enterprises.

It requires the integration of vast amounts of data and of existing core business applications spread throughout a company with new web applications and transactions. For larger companies it requires transaction and database processing of the highest order and even for small companies it requires a complex choreography of customer order and financial data, supplier information and engineering designs. The very nature of these transactions demand data integrity and security, end to end – whether one end is in the hands of a supplier, a distributor or on a PDA and the other in the hands of a consumer.

Integration on this scale calls for nothing less than a new software infrastructure, emerging today in the form of web services and new development tools. Applications have to integrate horizontally with other applications via middleware that spans multiple servers and operating environments.

WebSphere Application Server plays a key role in this new software infrastructure with more than 9,000 software companies and 1.5 million programmers using it to deliver a wide variety of tasks from creating dynamic workplaces for employees, as a base for e-commerce transactions and for webfacing valued core business applications.

## iSeries and Integration

With OS/400, IBM pioneered integration design concepts, combining and pre-testing database, workload management, storage and security technologies into a highly robust, easy-to-use operating environment for business applications. The integration challenge of the on demand era, however, is how to manage complex technology 'seams' between heterogeneous operating systems, middleware and application components. iSeries incorporation of Windows and Linux (as well as AIX in the future) has enabled it to extend the concepts and boundaries of integration beyond a single server and operating system to multiple operating environments, on demand.

# Virtualization

- Promote legacy applications into new infrastructure
- Enhanced resource sharing for multiple platforms
- Transparently adapt to capacity and throughput requirements



# Notes: Virtualization

'Virtualization' has been around since the earliest days of business computing. Mainframes saw the development of virtual memory, virtual storage and virtual processors. This enabled the computer to do many processing jobs simultaneously. With mainframe class computing, businesses were able to get more use out of an expensive and powerful asset. Then IBM designed a system designed for small to medium sized businesses based on 'virtualization': the System/38 the predecessor to the AS/400 and iSeries. At their core, these servers share the same virtualization architecture – with virtual storage, virtual memory and virtual processors - that separates users and their applications from underlying technology.

Virtualization has promoted two key advantages for today's on demand businesses. First, virtualization has promoted the ability to bring forward existing (sometimes called legacy) applications without constantly rewriting and compiling applications that is the all too common fate for applications written for systems without a virtual architecture. It is common on iSeries, however, for customers to still be running applications they value on today's 64 bit technology without recompilation that they might have originally deployed on the 48 bit System/38.

Second, virtualization promotes resource sharing and, thereby, raising asset utilization rates. It is not unusual to see iSeries servers running at over 60% utilization, while Unix servers are actually 'serving' something less than 10% of the time. And most PCs are doing nothing for 95% of a typical day. (Source: IBM Scorpion Study White Paper: Simplifying the Corporate IT Infrastructure, Dec 2002). Virtualization helps drive up utilization rates by promoting utility centric resource management, or the ability to dynamically provision server, storage and application resources according to users' changing demand and priorities. Under this paradigm, a server has to be flexible, both to changing performance and capacity needs of applications within a single operating system image, but also between multiple images of a variety of operating systems.

## Taking iSeries' Virtualization into the On Demand Era

iSeries' integrated virtualization of system resources and its dynamic workload subsystem management is the first essential building block towards the goal of utility centric services. Next, OS/400's support for fully dynamic logical partitioning has given customers the ability to divide a single processor into multiple partitions, making possible multiple 'virtual blades' or images of Linux or OS/400. With the option to place Intel-based blades inside iSeries or attach scalable xSeries servers, iSeries utility management services also extends to Windows-based workloads.

For many companies, however, enablement of reserve capacity 'on demand' is the gold standard for dynamic provisioning. With capacity on demand (permanent and/or temporary) a standard feature on the i825, i870 and i890, iSeries has a key role in IBM's leadership in utility centric services.

# Open Standards

- Cornerstone for Integration of applications and business processes
- iSeries leads in many areas of implementing Open Standards



# Notes: Open Standards

There are really two choices: Either everyone uses the same technology, or all technologies can connect and integrate. When IT was confined to its own silo or did not extend beyond the walls of the enterprise, a technology architecture provided and controlled by one company could prevail. But this is no longer realistic. Customers have made enormous investments in existing data, applications and transactions systems, and their businesses depend on the infrastructure that they already have in place. Rip and replace is not a viable option.

Without open standards, internal integration would remain a gargantuan task, but even more daunting is the task of integration with other enterprises, other business processes and applications. Open technical interfaces and agreed upon standards are the only realistic way all this can connect. The good news is that ever since the world embraced Internet protocols, open standards have been gaining widespread adoption – from Java and XML to Web services and the emerging Open Grid Services Architecture. There's no better example of an open source success story than Linux, which is rapidly moving into mainstream business throughout the world.

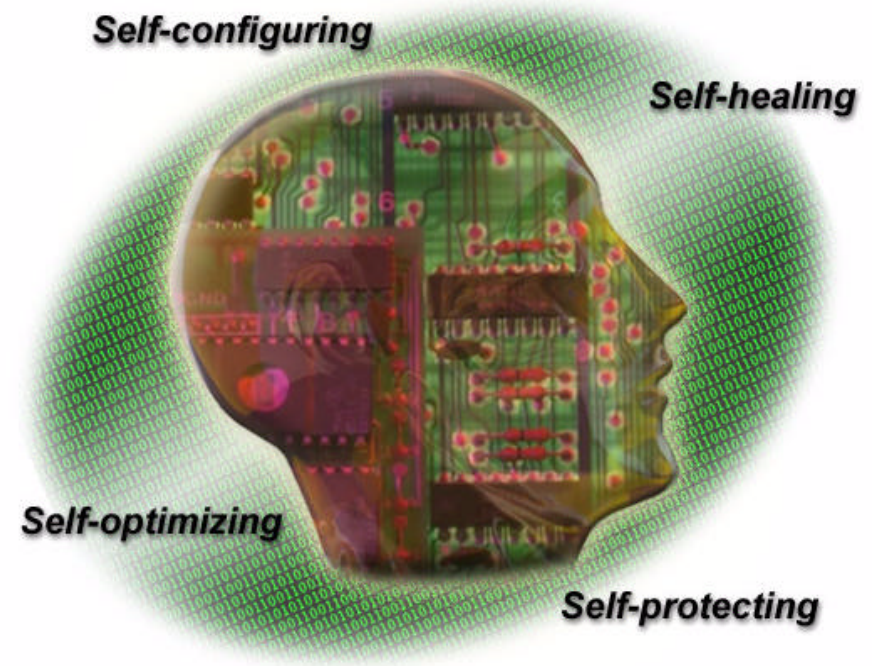
Many of the emerging standards define Web Services or self-contained business functions that operate over the Internet and are written to specifications to work together. Web Services Architecture is a standardized approach to dynamic component connectivity and interoperability that relies on self-describing components and open connectivity standards including IP (Internet Protocol), SOAP (Simple Object Access Protocol) and WSDL (Web Services Description Language). The Universal Description, Discovery and Integration (UDDI) specification defines a process for locating service providers and retrieving service description documents, and is a key component of the overall Web services model.

## iSeries and Open Standards

Built on an architecture that has proven its versatility in successive generations of computing, iSeries has successfully incorporated e-business technologies from a wide variety of open technology sources and operating environments. In short, the iSeries has transformed from its proprietary heritage to be a leader in commitment and implementation of open standards such as Java, SQL, XML and Linux. iSeries commitment to open source standards is exemplified by its Linux implementation winning Best of Show at LinuxWorld in August 2001. Open source initiatives such as JTOpen, a collection of Java classes, enable iSeries commitment to open standards to extend to a wide range of ISV solutions. iSeries was the first server in the industry to adopt the Apache HTTP server Version 2 and today is a leader in scalable Apache-powered Web-serving. iSeries commitment to Web services standards and Java is underlined by its integration of WebSphere Application Server for deployment of e-business solutions.

# Autonomic Computing

- Reduction of complexity
- Increased availability for service delivery





# Notes: Autonomic Computing

Complexity is the number one headache of CIOs. And that's just the complexity of conventional systems within the enterprise. Now think about the on demand era, with its ubiquitous integration of business processes, entities, applications and billions of devices. Complex systems rapidly have become too complex for humans to manage effectively – or to configure, secure, optimize or repair. The solution? Technology that manages itself – similar to the human nervous system. Self managed systems have four defining characteristics: self configuring, self-healing, self optimizing and self protecting.

## **Self-configuring**

The seamless integration of new hardware resources and the cooperative yielding of resources by the operating system is an important element of self-configuring systems. Hardware subsystems and resources can configure and re-configure autonomously both at boot time and during run time. This action may be initiated by the need to adjust the allocation of resources based on the current optimization criteria or in response to hardware or firmware faults. Self-configuring also includes the ability to concurrently add or remove hardware resources in response to commands from administrators, service personnel, or hardware resource management software.

## **Self-healing**

With self-healing capabilities, platforms can detect hardware and firmware faults instantly and then contain the effects of the faults within defined boundaries. This allows platforms to recover from the negative effects of such faults with minimal or no impact on the execution of operating system and user-level workloads.

## **Self-optimizing**

Self-optimizing capabilities allow computing systems to autonomously measure the performance or usage of resources and then tune the configuration of hardware resources to deliver improved performance.

## **Self-protecting**

This allows computing systems to help protect against internal and external threats to the integrity and privacy of applications and data.

## **iSeries and Autonomic Computing**

Many of the foundation technologies encompassed by autonomic computing manifest themselves in iSeries. In fact, OS/400 is built on architectural foundations that encompass autonomic concepts such as its self-optimizing disk management. OS/400 pioneered revolutionary self-healing autonomic technologies, such as the ability to automatically dial-up for service in anticipation of a failure.

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## Notes: Autonomic Computing - 2


V5R2 continues to build on many of the autonomic computing initiative elements that were available with V5R1 such as, such as self-optimizing dynamic LPAR and workload management, self-configuring graphical wizards, self-healing performance and message monitors (enabling automated actions), and self-protecting digital certificates. Extensive additional graphical wizards have been added with V5R2 to the iSeries Navigator to automate several complex configuration tasks along with increased flexibility to monitor and manage storage, jobs, and database tasks.

Some of the highlights for V5R2 include:

- Self-protecting Enterprise Identity Mapping (EIM) for easing user identity management. EIM is an IBM autonomic computing security initiative, introduced first on iSeries and is set to address the challenge of managing user identities and passwords in heterogeneous enterprise networks.
- Self-protecting Digital certificate APIs for ISV applications to assist with unauthorized application modifications
- Self-optimizing dynamic LPAR to allow resource movement for virtual processing units between Linux and OS/400 partitions
- Self-optimizing index advisor and statistic collections for DB2 UDB for OS/400, allowing users to avoid manual tasks associated with SQL optimization
- Self-healing Independent disk pools for switched disk clustering
- Self-healing Agent Building Learning Environment (ABLE) enablement through building intelligent agents on the iSeries to assist with problem determination and diagnosis processes. The ABLE research project is made available by the IBM T. J. Watson Research Center. For additional information, [see: http://www.alphaworks.ibm.com/tech/able](http://www.alphaworks.ibm.com/tech/able)
- Extensive self-configuring graphical wizards to simplify network, performance, security, storage, work management and LPAR configuration tasks.

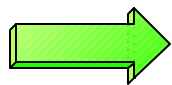
Note: Autonomic Computing reflects a vision to develop and deploy intelligent systems that self manage and regulate themselves, much the way the human autonomic nervous system manages the human body. This vision is motivated by the tremendous complexity in today's computing environments and the resultant difficulties, and expense, of managing them. The biological metaphor suggest a systemic approach, coordinating activity across the many components of computing systems, achieving a much higher level of automation. For a complete discussion of the autonomic computing direction see the Autonomic Computing Manifesto (<http://www.research.ibm.com/autonomic/manifesto/>)

# Agenda

- Announcement Highlights
- e-business on demand
-  The Customer Challenge: Solving the Cost<sup>3</sup> Equation
- Hardware Capabilities

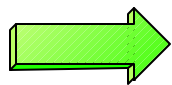
# Cost Elements

- Acquisition of:
  - ▶ Hardware
  - ▶ OS, middleware and application
  - ▶ Component testing and integration



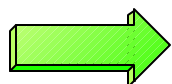
*One-time Initial Cost*

- Operations:
  - ▶ Service delivery - Systems and Service Management - Staffing - Skills
  - ▶ Costs for maintenance and operational licenses



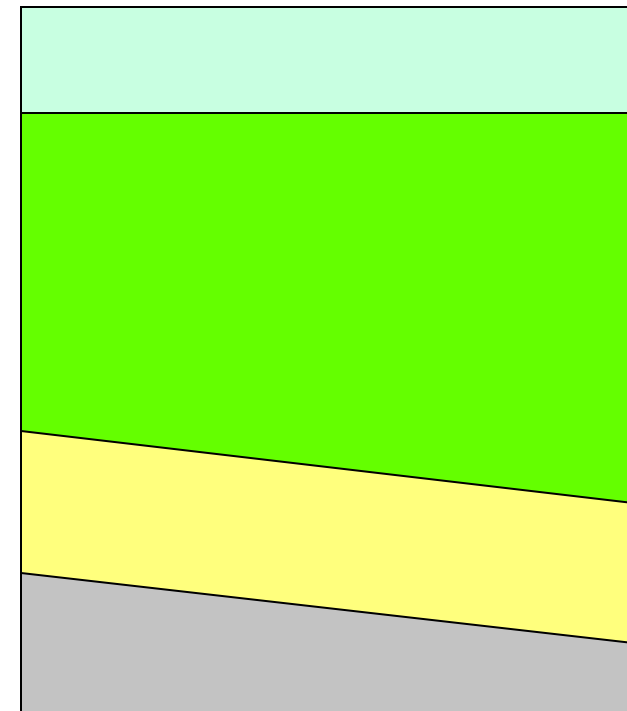
*Recurring Cost*

- Migrations and Transitions:
  - ▶ Adoption of emerging or new Technology



*Investment Cost*

## IT Budget Trend



■ Network ■ People ■ SW ■ HW

# Notes: Cost Elements

IT spending can typically be divided into different categories which will together provide the total budget for sustaining service delivery for any enterprise business. This foil gives an idea on how one could divide the cost elements into different categories, and tries to make a division between:

- Initial cost elements, which are typically spent on acquisition of hardware, software or application components. Key in this acquisition is the additional cost for testing the cooperation and coexistence of these components, specifically the software or hardware dependencies between the various releases of all components; the choice that is made for a specific platform will determine how much integration testing will be required before the solution can be implemented.
- Recurring cost elements, which are typically linked to the process of service delivery. These are comprised of service rendering enablers (physical location, power consumption, cooling, network bandwidth, etc.), service management functions (change, configuration, operations, performance and problem management) and of costs for licenses and maintenance of hardware and software (system and application components).  
The costs in this area will be highly influenced by the headcount that is required for managing service delivery.
- Investment cost elements, which are spend for adoption of or migration to new technology.

This foil also shows the current trend of the IT budget:

- Hardware costs are becoming lower and lower. Note however that the storage cost becomes the dominant part in this element.
- Software costs are becoming static or slightly rising, due to the adoption of a high number of standards; this however provokes a rising cost for integration testing and validation.
- Network costs are static or rising, due to the integration of business processes in the solution.
- Headcount cost becomes the dominating factor. Not only are salaries constantly rising, the IT complexity and platform diversity requires a constant skills update despite consolidation efforts.

Several tactics can be used to achieve IT cost reduction and to enhance business efficiencies;

- Reduce support costs associated with duplicate, unused or obsolete technology by architecting technology transitions.
- Reduce aggregate systems integration costs by architecting efficient, flexible, reusable enterprise solutions, thus reducing the risk and generating sustained improvement during service delivery time.
- Optimize productivity of valuable IT staff and resources by using enterprise program management and enterprise architecture to focus resources on the most business-effective project portfolio mix.
- Reduce vendor costs by allowing for preselection and pre-negotiation of technologies and resources.
- Prevent project cost overruns, consolidate or eliminate redundant and overlapping projects, and ensure the organization is working on the right initiatives at the right time through the use of effective program and project management techniques.

# The Customer Challenge: Solving the Cost<sup>3</sup> Equation

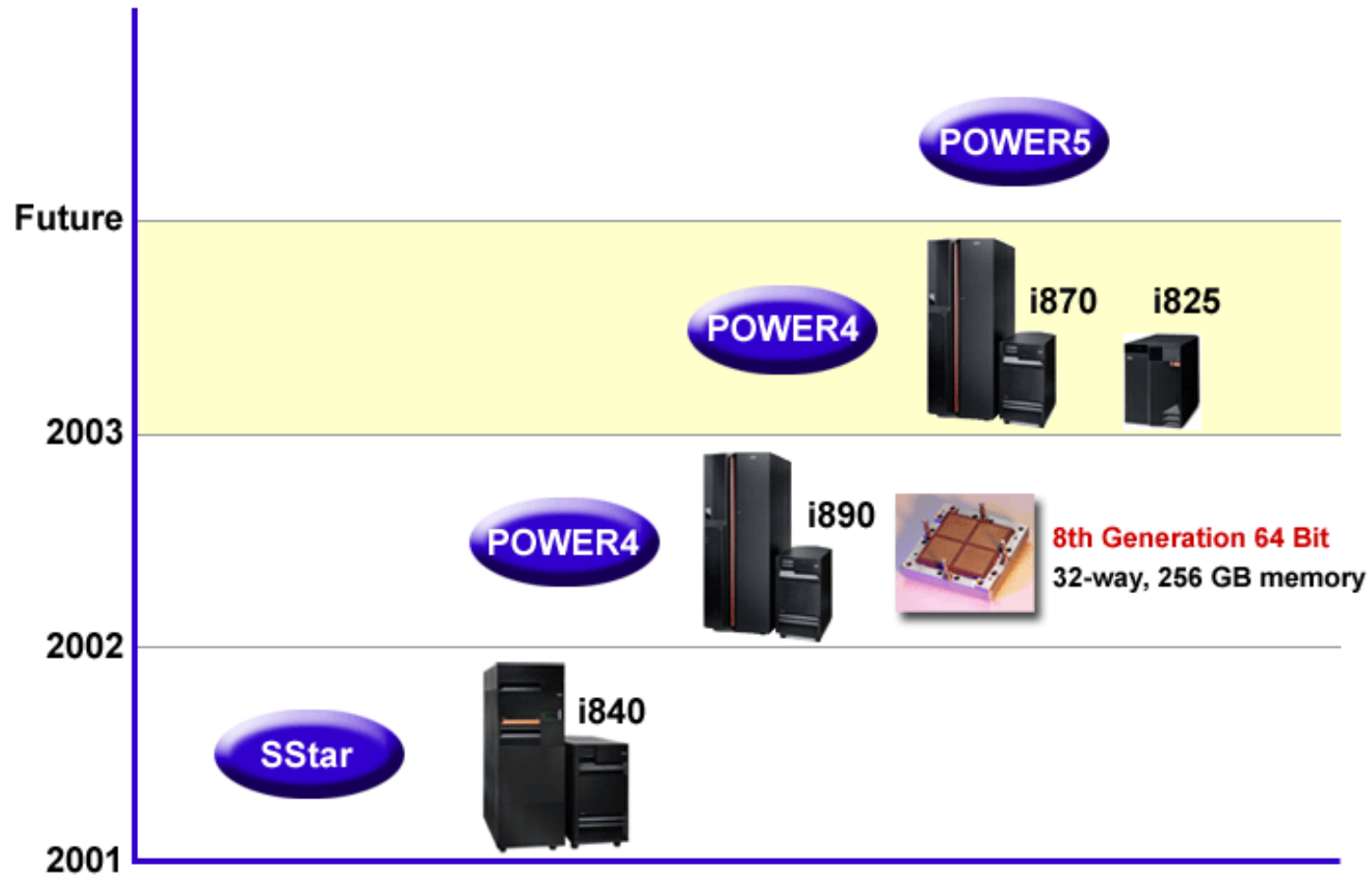
## 1. Cost of Acquisition ...

Upfront server, operating system and middleware price



*... New Servers,  
New Packaging  
New Capabilities*

# eServer POWER Processor Roadmap



## Notes: IBM

# POWER Processor Roadmap

Before discussing the new iSeries capabilities available with the January 2003 announcements, let us reflect on where we are on IBM's single roadmap for the **POWER4J** processor for deployment in both iSeries and pSeries products lines.

Using the POWER4 processor family, iSeries has consistently delivered highly scalable 64-bit processors with exceptional performance to support the growth of our largest customers.

In fact, the POWER4 is the 8th generation of 64-bit processors brought to market by IBM on the AS/400 and iSeries since 1995.

The AS/400e and iSeries processors used in the 250 (Northstar), 270 (IStar and SStar), 820 (IStar and SStar), 830 (IStar) and 840 (IStar and SStar) continue to be available for specific price performance requirement such as would be satisfied by the 250 and specific Interactive Feature (5250 applications) requirements available in the 270, 820, 830, and 840 servers. They also support both OS/400 V5R2 and V5R1.

This foil also clearly illustrates that our Processor Roadmap is heavily capitalizing on the continuous investment in new technologies that will be delivered in new servers in the years to come. The technology that will be used in there is based on proven implementations and leverages the substantial investment done in new technologies.

The next set of foils discuss the January 2003 announcements.



# IBM eServer iSeries - At a Glance

- Over 90% of customers see significant price / performance improvements!
- Significantly simplified packaging
- Simplified software tiers
- Capacity on demand capabilities

**Servers for Medium to Large Businesses**

The diagram shows three server models arranged from left to right and bottom to top. The i825 is the smallest, i870 is medium-sized, and i890 is the largest. Each model is accompanied by a yellow starburst callout: 'New!' for i825 and i870, and 'Enhanced' for i890.

**Servers for Small to Medium Businesses**

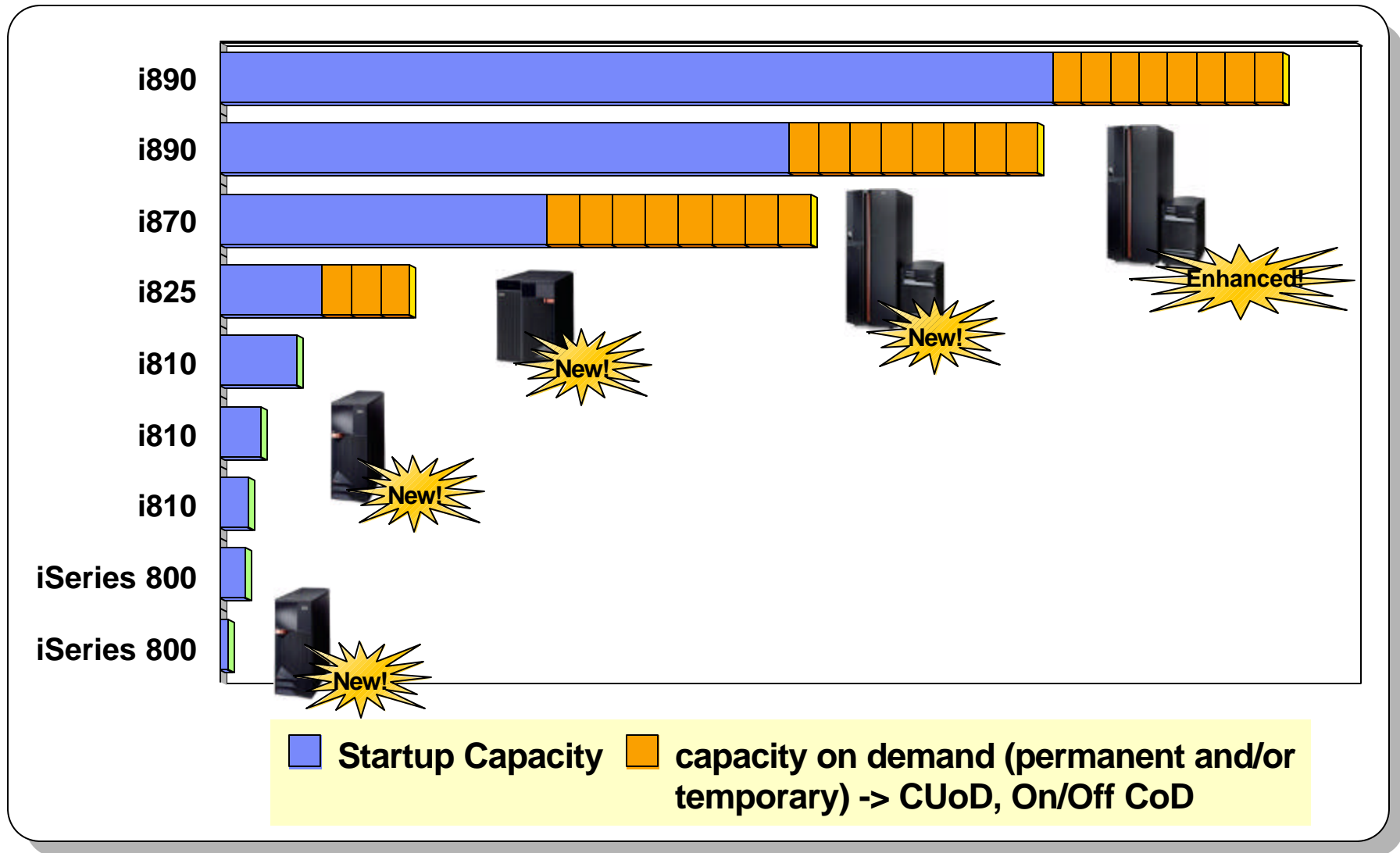
The diagram shows two server models side-by-side. The iSeries 800 is on the left and the i810 is on the right. Both models are accompanied by a yellow starburst callout that says 'New!'.

## Notes: IBM eServer iSeries - At a Glance

The i825, i870 and i890 meet the demands of medium to large sized businesses. They offer mainframe-class performance, advanced manageability, industry-leading logical partitioning, capacity on demand (permanent and/or temporary), and outstanding performance all the features necessary to meet the challenges of an on demand world. Two editions are available (Standard or Enterprise). In addition to upgradeability within a model upgrades are also available between the i825, i870 and i890.

The iSeries 800 and i810 are ideal for small to medium sized enterprises looking for the flexibility of a variety of operating environments, without the complexity of managing a server farm of multiple servers. The iSeries 800 and i810 can simultaneously support multiple operating environments such as OS/400, Linux, Lotus Domino, ported UNIX® applications along with Windows integration through Integrated xSeries Server and Integrated xSeries Adapter. The servers include a highly optimized 5250 OLTP environment, along with integrating multiple open middleware environments such as WebSphere, Java, TCP/IP and IBM HTTP Server (powered by Apache).

# New, Simplified Product Line



Note: Processor Commercial Processor Workload (CPW) values are used. CPW is a relative measure of performance of iSeries processors. Performance in customer environments may vary. The value is measured on maximum configurations.

# Notes: New, Simplified Product Line

This foil shows the complete and dramatically simplified iSeries product line. The chart compares the relative performance of the iSeries servers measured in units of Commercial Processing Workload (CPW).

The i825, i870 and i890 all offer capacity on demand (permanent and/or temporary), formally termed as:

- **IBM eServer On/Off Capacity on Demand (temporary)**. The shorted terms for this capability may be either "**On/Off Capacity on Demand**" or "**On/Off CoD**."
- **IBM eServer Capacity Upgrade on Demand (permanent)**. The shorted terms for this capability is "**Capacity Upgrade on Demand**" or "**CUoD**."

## Notes:

- The temporary activation of all available stand-by processors available on 830, 840 and 890 models #2487/#2488 (pre January 2003 features) for up to 14 days remains unchanged and is different from temporary activation on the new 825, 870, and 890 #2497/#2498 number of processors/processor days algorithm.
- The term "capacity on demand (permanent and/or temporary)" or simply "capacity on demand" is used to refer to both permanent and temporary activation capabilities.
- Permanent processor activation capabilities are also available on the pSeries and zSeries

For an extensive guide to iSeries model and feature performance, see the iSeries Performance Capabilities Reference found at <http://www-1.ibm.com/servers/eserver/iseries/perfmgmt/resource.htm> .

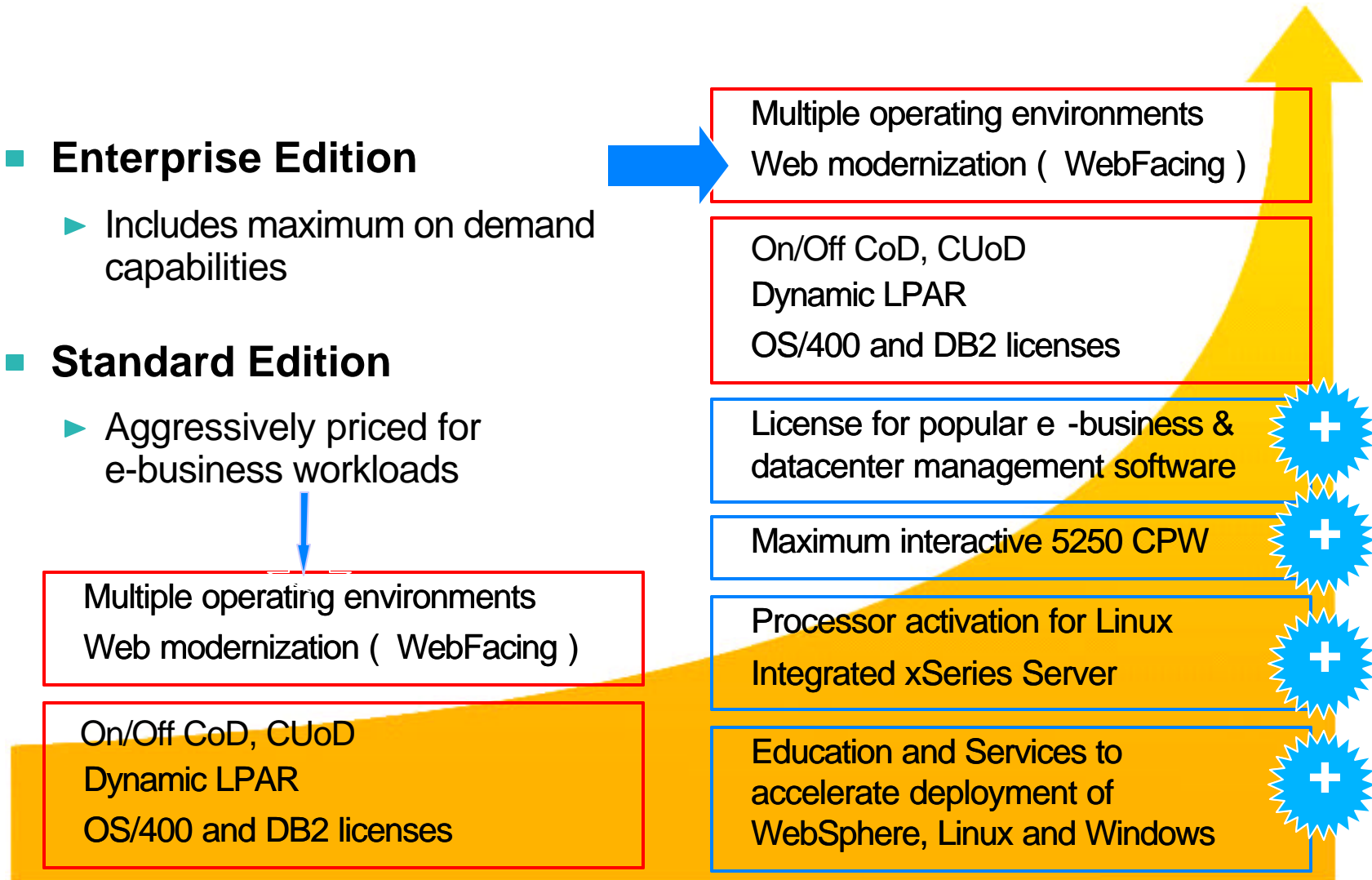
# On demand - the Right Level for Your Business\*

## ■ Enterprise Edition

- ▶ Includes maximum on demand capabilities

## ■ Standard Edition

- ▶ Aggressively priced for e-business workloads



\* Package contents vary by model. Example shown here is for i870 or i890

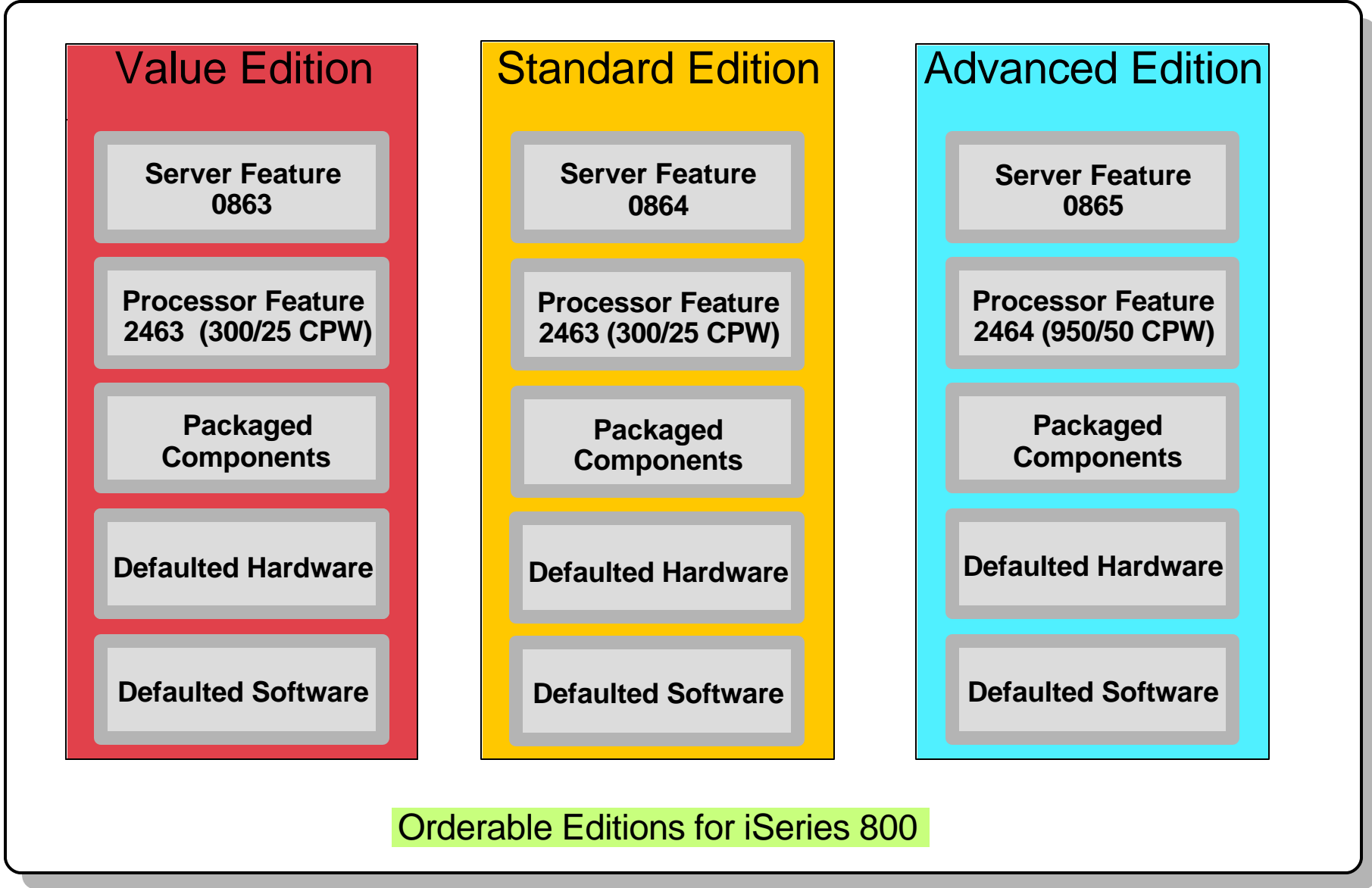
# Notes: On demand - the Right Level for Your Business

Two new and highly versatile iSeries server editions make it easier than ever to select the features you need, regardless of the size of your business. Both packages feature a wide variety of e-business and client server solutions based on integrated middleware, along with software solutions enable your IT infrastructure to dynamically adjust to changing business priorities.

The **Standard Edition** features a wide variety of e-business and client server solutions based on integrated middleware such as DB2, WebSphere Application Server and IBM HTTP Server (Powered by Apache). The Standard Edition is capable to run multiple operating environments, such as OS/400 and Linux and supports dynamic LPAR. Capacity on demand (temporary and/or permanent) is also supported on i825, i870 and i890 servers.

The **Enterprise Edition** builds on the functions available for the Standard Edition, and features a range of e-business, client server and 5250 OLTP solutions. In addition, it includes maximum interactive capacity along and a broad range of enterprise class tools for optimizing and managing e-business, client server, and 5250 OLTP workloads. It incorporates an Integrated xSeries Server with the i825, i870 and i890 servers. A standby processor is also activated for Linux workload on the i870 and i890 server, enabling consolidation of up to 10 standalone PC servers into an iSeries. IBM education and services vouchers are also included with the Enterprise Edition to accelerate deployment of new workloads such as WebSphere, Linux and Windows Integration.

# iSeries 800 Editions



## Notes: iSeries 800 Editions

The iSeries 800 offers three editions tailored specifically for small enterprises, with a growth path within the model so you can start small and grow as your needs change. It incorporates a uni-processor processor with either 300 CPW or 950 CPW (25 or 50 CPW available for 5250 OLTP), up to 8 GB of memory and up to 4 TB of disk. iSeries 800 is ideal for growing small enterprises that need an affordable, easy-to-use server with the flexibility to grow quickly to new demands. The iSeries 800 allows you simple management of core business applications and your Intel-based servers all from the same system. The iSeries 800 Value Edition is the iSeries' entry-level server for customers who run core business applications (5250 OLTP) and want a base configuration with the flexibility to add features as necessary. The iSeries 800 Standard Edition offers a more robust configuration for customers who want run their core business applications, manage their Windows server workloads from the iSeries, and begin the move to e-business through optionally adding WebSphere Application Server – Express for iSeries. The iSeries 800 Advanced Edition, with its 950 CPW, is ideal for the customer seeking a multi-platform operating system with room to expand as they take on the increasing demands of e-business.



# iSeries 800 - Value Edition

Server Feature	0863
Processor Feature	2463 - 300 CPW
Package/Edition Feature	7400

## Function:

- ▶ Support for Multiple Operating Systems (OS/400 and LinuxJ)
- ▶ Support for Web Modernization (enhanced WebFacing support - 5250 CPW not required)
- ▶ Support for Dynamic Logical Partitioning (up to 4 OS/400 partitions)
- ▶ Support for 5250 OLTP (25 CPW)

## Software

- ▶ Licensing for OS/400 (one processor license)

## Included Hardware (defaulted in eConfig)

- ▶ Tape / Disk controller (FC 5705, non RAID)
- ▶ 1 Disk Drive (FC 4318, 18GB)
- ▶ 256MB Memory (FC 3092)
- ▶ 1 DVD-ROM (FC 4531)
- ▶ 1 Ethernet LAN adapter (FC 9749)
- ▶ 1 Communications adapter (FC 9771)

Refer to <http://www.ibm.com/servers/eserver/series/hardware/packages> for more information

# Notes: iSeries 800 - Value Edition

iSeries 800 Value Edition is the iSeries' entry-level server for customers who run core business applications (5250 OLTP) and want a base configuration with the flexibility to add features as necessary.

## iSeries 800 - Standard Edition

Server Feature	0864
Processor Feature	2463 - 300 CPW
Package/Edition Feature	7400

### Function:

- ▶ Support for Multiple Operating Systems (OS/400 and LinuxJ)
- ▶ Support for Web Modernization (enhanced WebFacing support - 5250 CPW not required)
- ▶ Support for Dynamic Logical Partitioning (up to 4 OS/400 partitions)
- ▶ Support for 5250 OLTP (25 CPW)

### Software

- ▶ Licensing for OS/400 (one processor license)
- ▶ Licensing for WebSphere Application Server -Express V5 for iSeries (one processor license for 5722-IWE)

### Included Hardware (defaulted in eConfig)

- ▶ Tape / Disk controller (FC 5705, non RAID)
- ▶ 2 Disk Drives (FC 4318, 18GB)
- ▶ 512MB Memory (FC 3093)
- ▶ 1 DVD-ROM (FC 4531)
- ▶ 1 Ethernet LAN adapter (FC 9749)
- ▶ 1 Communications adapter (FC 9771)
- ▶ 1 Twinax adapter (FC 9746)
- ▶ 1 30GB QIC Tape Drive (FC 4584)

Refer to <http://www.ibm.com/servers/eserver/series/hardware/packages> for more information

# Notes: iSeries 800 - Standard Edition

The Standard Edition offers a more robust configuration for customers who want run their core business applications, manage their Windows server workloads from the iSeries, and begin the move to e-business through optionally adding WebSphere Application Server – Express for iSeries.

# iSeries 800 - Advanced Edition

Server Feature	0865
Processor Feature	2464 - 950 CPW
Package/Edition Feature	7408

## Function:

- ▶ Support for Multiple Operating Systems (OS/400 and LinuxJ)
- ▶ Support for Web Modernization (enhanced WebFacing support - 5250 CPW not required)
- ▶ Support for Dynamic Logical Partitioning (up to 4 OS/400 partitions)
- ▶ Support for 5250 OLTP (50 CPW)

## Software

- ▶ Licensing for OS/400 (one processor license)
- ▶ Licensing for WebSphere Application Server -Express V5 for iSeries (one processor license for 5722-IWE)

## Included Hardware (defaulted in eConfig)

- ▶ Tape / Disk controller (FC 5705, non RAID)
- ▶ 2 Disk Drives (FC 4318, 18GB)
- ▶ 512MB Memory (FC 3093)
- ▶ 1 DVD-ROM (FC 4531)
- ▶ 1 Ethernet LAN adapter (FC 9749)
- ▶ 1 Communications adapter (FC 9771)
- ▶ 1 Twinax adapter (FC 9746)
- ▶ 1 30GB QIC Tape Drive (FC 4584)

Refer to <http://www.ibm.com/servers/eserver/series/hardware/packages> for more information

# Notes: iSeries 800 - Advanced Edition

The Advanced Edition, with its 950 CPW, is ideal for the customer seeking a multi-platform operating system with room to expand as they take on the increasing demands of e-business.

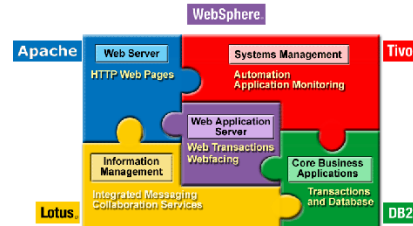
# i810 Editions

A choice of Standard or Enterprise Edition is ordered to complete an i810 configuration

## Standard Edition

- Support for Multiple Operating Environments
- Support for Web Modernization
- Support for Dynamic Logical Partitioning
- Licensing for OS/400 (multiple)

## Enterprise Edition



- Support for Multiple Operating Environments
- Support for Web Modernization
- Support for Dynamic Logical Partitioning
- **Support for 5250 OLTP (maximum CPW)**
- Licensing for OS/400 (multiple)
- **Licensing for e-business Solution Tools**
- **Licensing for DataCenter Management Tools**

e-business on demand requirements

# Notes: Editions for i810

The Standard edition for the i810 contains the following components:

- Function:
  - Support for Multiple Operating Systems (OS/400 and Linux)
  - Support for Web Modernization (enhanced Webfacing support)
  - Support for dynamic logical partitioning (up to four OS/400 partitions per processor)
  - Server administration interactive (5250) capacity support only - zero 5250 OLTP CPW
- Software:
  - Licensing for OS/400 (one processor license for each processor)

The Enterprise edition for the i810 contains the following components:

- Function:
  - Support for Multiple Operating Systems (OS/400 and Linux)
  - Support for Web Modernization (enhanced Webfacing support)
  - Support for dynamic logical partitioning (up to four OS/400 partitions per processor)
  - Support for 5250 OLTP (maximum 5250 capacity)
- Software:
  - Licensing for OS/400 (one processor license for each processor)
  - Licensing for WebSphere-Express V5 for iSeries (one processor license for each processor)
  - Licensing for DB2 Query Mgr and SQL Developers Tool Kit (one server license of 5722-ST1)
  - Licensing for Performance Tools, including Manager option (one server license of 5722-PT1)



## Standard Edition for i825, i870, i890

- Function:
  - ▶ Support for Multiple Operating Systems (OS/400 and Linux)
  - ▶ Support for Web Modernization (enhanced Webfacing support)
  - ▶ Support for dynamic logical partitioning (up to ten OS/400 partitions per processor)
  - ▶ Support for capacity on demand (permanent and/or temporary)
  - ▶ Server administration interactive (5250) capacity support only - zero 5250 OLTP CPW
  
- Software:
  - ▶ Licensing for OS/400 (one processor license for each start-up processor)

# Enterprise Edition for i825, i870, i890 - Base Components

- Function:
  - ▶ Support for Multiple Operating Systems (OS/400 and Linux)
  - ▶ Support for Web Modernization (enhanced Webfacing support)
  - ▶ Support for dynamic logical partitioning (up to ten OS/400 partitions per processor)
  - ▶ Support for 5250 OLTP (maximum 5250 capacity)
  - ▶ Support for capacity upgrade on demand (permanent and/or temporary capacity)
  
- Software:
  - ▶ Licensing for OS/400 (one processor license for each start-up processor)
  
- Hardware:
  - ▶ Processor Activation included for Linux (one **i870/i890** stand-by processor will be activated for Linux). If this processor is to be used by OS/400, one OS/400 processor license is required.
  - ▶ Integrated xSeries Support (one 1.6 GHz IXS with 1GB server memory is included)
  
- Education and Services:
  - ▶ Education Voucher (one for i825, three for i870, five for i890)
  - ▶ Service voucher to accelerate deployment of Windows, Linux, or WebSphere

# Enterprise Edition for i825, i870, i890 - Integration

*Integrate your business with e-business*

- Licensing (one processor license for each start-up processor) for a choice of:
  - ▶ WebSphere Application Server 4.0 Single Server
  - ▶ WebSphere Application Server 5.0 for iSeries
  - ▶ WebSphere Application Server - Express for iSeries V5
- Licensing for Lotus Sametime 3.0.a (100 seats)
- Licensing for Lotus QuickPlace 3.0 (100 seats)
- Licensing for DB2 Query Mgr and SQL Developers Toolkit (one server license)
- Licensing for DB2 SMP (one server license)
- Licensing for DataPropagator (one server license)
- Licensing for DB2 Extenders (one server license)

# Enterprise Edition for i825, i870, i890 - Integration

## *Comprehensive Management of an on demand environment*

- Licensing for Performance Tools, including Manager option (one server license)
- Licensing for HA Switchable Resources (one server license)
- Licensing for Media and Storage Extensions (one server license)
- Licensing for BRMS (one server license), includes Network Feature
- Licensing for Tivoli Monitoring -- PAC for Web (one processor license for each start-up processor)
- Licensing for Tivoli Storage Manager Extended Edition (one per start-up processor and five client licenses)

# Standard and Enterprise Editions for i810, i825, i870, i890

	Enterprise 825/870/890	Standard 825/870/890	Enterprise 810	Standard 810
<b>Function</b>				
Multiple operating system support (OS/400 and LinuxJ)	X	X	X	X
Web modernization ( WebFaced applications do not use 5250 CPW)	X	X	X	X
Partitioning (up to "n" OS/400, Linux partitions: processor/ system)	10,10 / 32, 31	10, 10 / 32, 31	4, 9/10* / 8*, 19*	4, 9/10* / 8*, 19*
5250 OLTP (maximum 5250 capacity) support	X	--	X	--
Capacity on demand (permanent and/or temporary capacity)	X	X	--	--
<b>Software</b>				
▸ OS/400 (one processor license per startup processor)	X	X	X	X
▸ e-business Solution Tools				
- WebSphere (one processor license per startup processor)				
- Choice of WAS or WebSphere - Express	X	--	--	--
- WebSphere - Express	--	--	X	--
- Lotus Sametime 3.0.a (100 seats) and limited Domino 5.0.10	X	--	--	--
- QuickPlace 3.0 (100 seats) and limited Domino 5.0.10	X	--	--	--
- DB2 Query Mgr. & SQL Dev. Kit (one server license)	X	--	X	--
- DB2 SMP (one server license)	X	--	--	--
- Data Propagator (one server license)	X	--	--	--
- DB2 Extenders -- XML and Text (one server license)	X	--	--	--
▸ Datacenter Management Tools				
- Performance Tools (one server license)	X	--	X	--
- HA Switched Resources (one server license)	X	--	--	--
- Media Storage Extensions (one server license)	X	--	--	--
- BRMS (one server license), includes Network Feature	X	--	--	--
- Tivoli Monitoring -- PAC for WebSphere (one per startup)	X	--	--	--
- Tivoli Storage Manager (one server license + 5 clients)	X	--	--	--
<b>Hardware</b>				
Processor activation for LinuxJ (one standby processor activated)	X	--	--	--
Integrated xSeries Support (one 1.6 GHz IXS included)	(870/890 only) X	--	--	--
<b>Education</b>				
IBM Learning Services education vouchers (825 (1), 870 (3), 890 (5))	X	--	--	--
IBM Global Services voucher (Choose from 3 options)	X	--	--	--

\* 810 2-Way value. Refer to <http://www.ibm.com/servers/eserver/series/hardware/packages> for more information

# Notes: Standard, Enterprise Editions: i810, i825, i870/i890

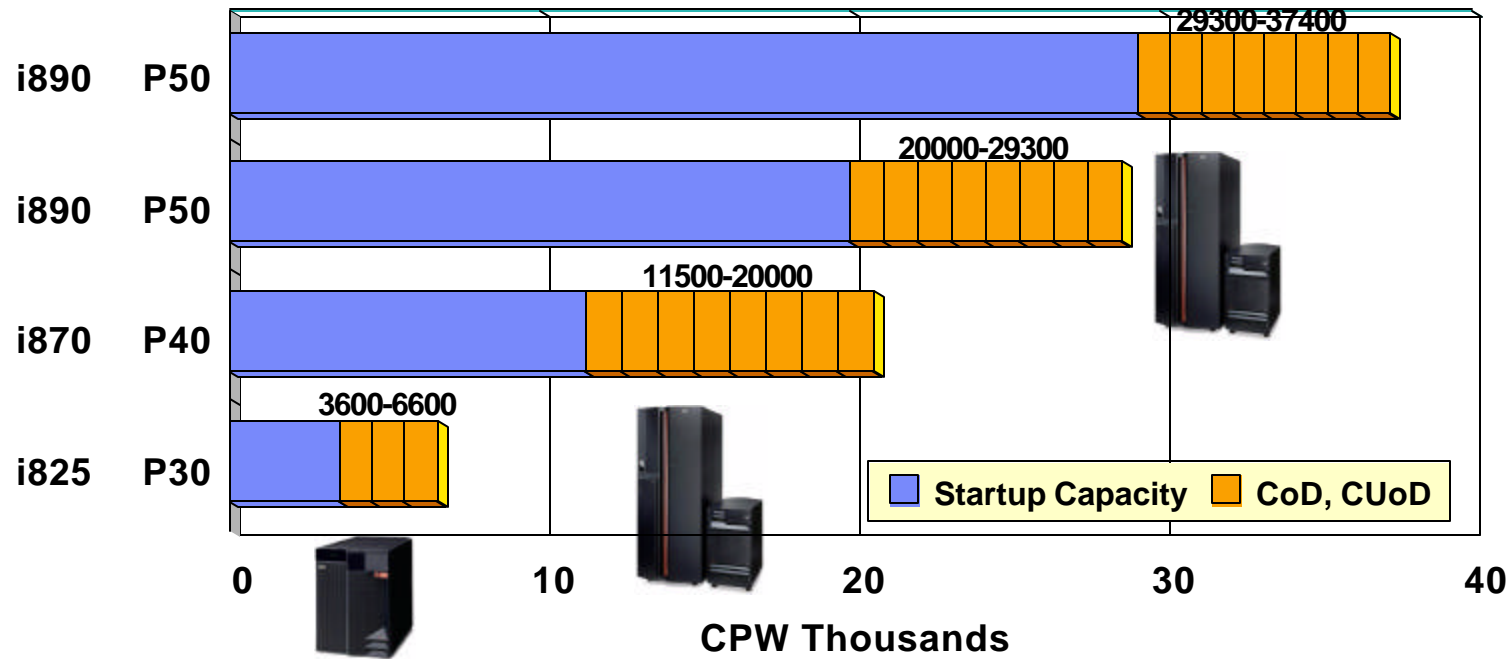
## Notes:

- The Enterprise Edition includes entitlement for 100 licenses/seats of both Sametime and QuickPlace. Included in the CDs (media pack) shipped with the Enterprise Edition, will be Sametime 3.0.a for iSeries and QuickPlace 3.0 for iSeries.
- Sametime 3.0.a and QuickPlace 3.0 are not formally supported as of February 2003 with Domino 6. Included in the iSeries Enterprise Edition CDs is Domino 5.0.10 - licensed to be used only with Sametime and QuickPlace.
- Sametime 3.0.a - only for iSeries (released in February 2003) does work with Domino 6.0.1 and later 6.0.x releases. This Sametime - Domino R6 release levels supported are unique to iSeries. All Domino 6 platforms will formally support Sametime 3.1, targeted for June 2003.

# Agenda

- Announcement Highlights
- e-business on demand™
- The Customer Challenge: Solving the Cost Equation
- **Hardware Capabilities**
  - ❖ ▶ **Specifications**
  - ▶ Capacity Upgrade on Demand
  - ▶ Additional Hardware
  - ▶ Upgrades

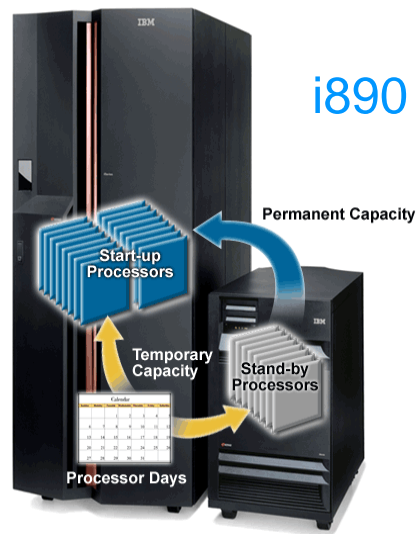
# iSeries Servers for Medium to Large Businesses



- On / Off Capacity Demand (CoD - temporary) & Capacity Upgrade on Demand (CUoD - permanent)
- Standard and Enterprise Editions
- OS/400 priced per processor, flexibility to activate processors for Linux
- Single software tier, regardless of package or processor activation

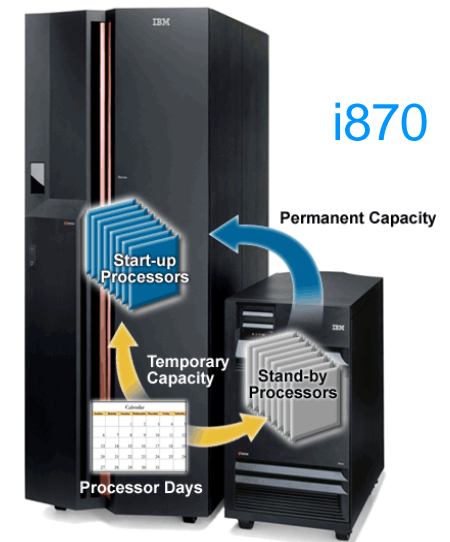


# i890 and i870



i890

- Deliver mainframe-class performance with unmatched iSeries growth for large enterprises
- Standard & Enterprise Editions
- i890
  - ▶ 24/32 way POWER4 up to 37,400 CPW
  - ▶ 16/24 way POWER4 up to 29,300 CPW
- i870
  - ▶ 8/16 way POWER4 up to 20,000 CPW
- CUoD (permanent), On/Off CoD (temporary)
- Up to 32 dynamic logical partitions



i870

870/890	Edition: Package Feature	Server Feature	Processor Feature	CPW Range	Software Tier
870	Enterprise: 7421 Standard: 7419	0886	2486	11500-20000	P40
890	Enterprise: 7427 Standard: 7425	0898	2498	29300-37400	P50
890	Enterprise: 7424 Standard: 7422	0897	2497	20000-29300	P50

# Mainframe-class Performance with the i890

<i>Maximums</i>	<b>#2497 Proc Feat.</b>	<b>#2498 Proc Feat.</b>
<i>Processor CPW</i>	<b>20000-29300</b>	<b>29300-37400</b>
<i>Number of 1.3 GHz processors</i>	<b>16 / 24</b>	<b>24 / 32</b>
<i>Storage (GB)</i>	<b>8 - 192</b>	<b>16 - 256</b>
<i>DASD (TB)</i>	<b>144</b>	<b>144</b>
<i>DASD arms</i>	<b>2047</b>	<b>2047</b>
<i>DASD LUNs</i>	<b>2046</b>	<b>2046</b>
<i>IXS / IXA</i>	<b>48 / 60</b>	<b>48 / 60</b>
<i>Internal Tape/DVD</i>	<b>26</b>	<b>26</b>
<i>External Tapes/CD/DVD</i>	<b>26</b>	<b>26</b>
<i>Crypto. Accelerator</i>	<b>4</b>	<b>4</b>
<i>Crypto. Processor</i>	<b>8</b>	<b>8</b>
<i>LAN Ports</i>	<b>128</b>	<b>128</b>
<i>WAN Lines</i>	<b>480</b>	<b>480</b>
<i>Twinax Controllers / Devices</i>	<b>180 / 7200</b>	<b>180 / 7200</b>
<i>Max I/O Towers / HSL Loops</i>	<b>47 (plus base) / 12</b>	<b>47 (plus base) / 14</b>
<i>Linux LPAR</i>	<b>31 partitions/10 per processor</b>	<b>31 partitions/10 per processor</b>
<i>OS/400 LPAR</i>	<b>32 partitions/10 per processor</b>	<b>32 partitions/10 per processor</b>
<i>Software Group</i>	<b>P50</b>	<b>P50</b>

# Notes: Mainframe-class Performance with the i890

16/24 Way 20000-29300 CPW #2497  
24/32 Way 29300-37400 CPW #2498  
CUoD permanent & temporary capacity  
1.3 GHz POWER4 Processor with 33.44 MB L2/L3 cache  
8 GB-192 GB and 16GB-256GB Memory

- Common memory features with Model 870
- 6 and 8 memory slots plugged in pairs
- 4GB, 8GB, 16GB, 32GB memory features

17.5 GB - 144446 GB Disk

1 - 2047 disk arms

V5R2 or later (all OS/400 partitions)

P50 SW Tier

Max 48 I/O towers (47 plus base)

Max 14 HSL Loops: Up to 28 HSL-2 copper cabling ports. If using OptiConnect, do not to use the first loop (accesses load source disk)

Max 48 IXS

Max 480 comm. lines

- One 2-line ECS comm. adapter at no-charge

Max 128 LAN

Max 672 PCI-X slots

Minimum 1 DVD-ROM or DVD-RAM

No SPD I/O towers, devices, cards supported

Same physical characteristics as Model i870: 2 meters tall (79.72 in), 800 Kgs (1760 lbs), 240/480 volt, 3-phase power, etc.

Redundant Power, Cooling (Dual pwr, redundant distribution panel, switch; (Dual pwr, redundant distribution panel; Dual circuit, single distribution panel

Hot Plug disk slots and hot plug PCI-X slots

HSL-2 cabling ports

IBM CE setup

No physical change to the Model 890 announced in 2002. However, there are significant enhancements:

- 2x max disk capacity ... up to 144TB
- P50 software tier exclusively used
- 2x max IXS ... 32 to 60
- OS/400 licensing by processor
- New ordering feature codes to align with 810 / 825 / 870 Options Packages
- Easy conversion of existing 890 features to new features Note: **Special option available for reduced height when shipped (#0126) for i870 and i890 CEC.**

# Mainframe-class Performance with the i870

<i>Maximums</i>	<b>#2486 Proc Feat.</b>
<i>Processor CPW</i>	<b>11500-20000</b>
<i>Number of 1.3 GHz processors</i>	<b>8 / 16</b>
<i>Main Storage - Min/Max cards, storage</i>	<b>2/4, 8 GB - 128 GB</b>
<i>DASD (TB)</i>	<b>144</b>
<i>DASD arms</i>	<b>2047</b>
<i>DASD LUNs</i>	<b>2046</b>
<i>IXS / IXA</i>	<b>48 / 60</b>
<i>Internal Tape/DVD</i>	<b>26</b>
<i>External Tapes/CD/DVD</i>	<b>26</b>
<i>Crypto. Accelerator</i>	<b>4</b>
<i>Crypto. Processor</i>	<b>8</b>
<i>LAN Ports</i>	<b>128</b>
<i>WAN Lines</i>	<b>480</b>
<i>Twinax Controllers/Devices</i>	<b>180 / 7200</b>
<i>Max I/O Towers / HSL Loops</i>	<b>47 (plus base) / 8</b>
<i>Linux LPAR</i>	<b>31 partitions/10 per processor</b>
<i>OS/400 LPAR</i>	<b>32 partitions/10 per processor</b>
<i>Software Group</i>	<b>P40</b>

# Notes: Mainframe-class Performance with the i870

8/16 way 11500-20000 CPW #2486

CUoD permanent and temporary capacity

1.3 GHz POWER4 Processor with 33.44 MB L2/L3 cache

8 GB - 128 GB Memory

- Common memory features with Model 890
- 4 memory slots plugged in pairs
- 4GB, 8GB, 16GB, 32GB memory features
- 17.5 GB - 144446 GB Disk

1 - 2047 disk arms

V5R2 or later (all OS/400 partitions)

P40 SW Tier

Max 48 I/O towers (47 plus base) on Max 8 HSL Loops

Max 8 HSL Loops (If using OptiConnect, do not to use the first loop (accesses load source disk))

- Up to 16 HSL-2 copper cabling ports.

Max 60 IXA

Max 48 IXS

max 480 comm. lines

- One 2-line ECS comm. adapter at no-charge  
max 128 LAN

max 672 PCI-X slots

minimum 1 DVD-ROM or DVD-RAM

no SPD I/O towers, devices, cards supported

Same physical characteristics as Model i890: 2 meters tall (79.72 in), 800 Kgs (1760 lbs), 240/480 volt, 3-phase power, etc.

Redundant Power, Cooling (Dual pwr, redundant distribution panel, switch; (Dual pwr, redundant distribution panel; Dual circuit, single distribution panel

Hot Plug disk slots

Hot plug PCI-X slots

IBM CE setup

Note: **Special option available for reduced height when shipped (#0126) for i870 and i890 CEC**

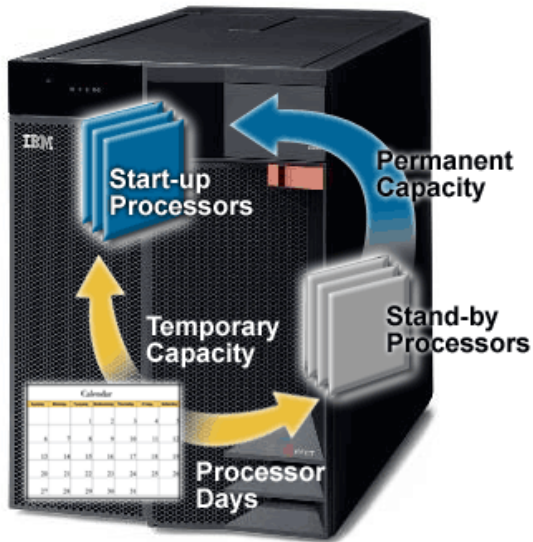
# Comparing i870 and i890 to Model 830 and 840

	<b>830</b>	<b>i870</b>	<b>840</b>	<b>i890</b>
n way	4/8 way	8/16 way	8/12, 12/18, 18/24 way	16/24, 24/32 way
Processor CPW	4200 to 7350	11500 to 20000	9000 to 20200	20000 to 37400
5250 CPW	70 to 4550	0 or Maximum	120 to 20200	0 or Maximum
Memory (maximum)	32GB	128GB	128GB	256GB
Disk Capacity (maximum)	22TB	144TB	37TB	144TB
Disk Arms (maximum)	630	2047	1080	2047
I/O Towers	13	47	23	47
HSL Loops	4	8	8	14
IXA	16	60	32	60
IXS	28	48	32	48
Software tier	P30, P40	P40	P40, P50	P50
Logical Partitioning	Yes	Yes	Yes	Yes
LinuxJ Ready	Yes	Yes	Yes	Yes
CUoD, On/Off CoD Available	Yes*	Yes	Yes*	Yes



\* Temporary 14 day activation of all stand-by processors, not processors by processor days

# i825



- Delivers exceptional flexibility and growth for mid-sized enterprises
- Standard & Enterprise Editions
- CUoD (permanent), On/Off CoD (temporary)
- Up to 32 dynamic logical partitions

<b>Edition: Package Feature</b>	<b>Server Feature</b>	<b>Processor Feature</b>	<b>CPW</b>	<b>Software Tier</b>
Enterprise: 7418 Standard: 7416	0873	2464	3600 - 6600	P30

# i825 Specifications

<i>Maximums</i>	<b>##2473 Proc Feat.</b>
<i>Processor CPW</i>	<b>3600-6600</b>
<i>Number of 1.1 GHz processors</i>	<b>3 / 6</b>
<i>Main Storage - Min/Max cards, storage</i>	<b>4/24, 2 GB - 48 GB</b>
<i>DASD (TB)</i>	<b>58</b>
<i>DASD arms</i>	<b>825</b>
<i>DASD LUNs</i>	<b>824</b>
<i>IXS / IXA</i>	<b>36 / 18</b>
<i>Internal Tape/DVD</i>	<b>18</b>
<i>External Tapes/CD/DVD</i>	<b>18</b>
<i>Crypto. Accelerator</i>	<b>4</b>
<i>Crypto. Processor</i>	<b>8</b>
<i>LAN Ports</i>	<b>96</b>
<i>WAN Lines</i>	<b>320</b>
<i>Twinax Controllers/Devices</i>	<b>135 / 5400</b>
<i>Max I/O Towers / HSL Loops</i>	<b>18 / 3</b>
<i>Linux LPAR</i>	<b>31 partitions/10 per processor</b>
<i>OS/400 LPAR</i>	<b>32 partitions/10 per processor</b>
<i>Software Group</i>	<b>P30</b>



# Notes: i825 specifications

3/6 way 3600-6600 CPW #2473

CUoD permanent and temporary capacity

1.1 GHz POWER4 Processors with L2/L3 cache

3GB - 48GB memory

- 24 memory slots plugged in quads
- 256MB, 512MB, 1GB, 2GB memory features

17.5 GB - 58216 GB disk capacity

- 1 - 825 disk drives
- Up to 5 disk (15 with expansion ) without I/O towers

V5R2 or later for all OS/400 partitions

P30 software tier

Max 18 I/O towers

Max 3 HSL Loops (If using OptiConnect, do not to use the first loop (accesses load source disk))

- Up to 6 HSL-2 copper cabling ports
- Up to 4 optical HSL ports

Windows Integration

- Max 12 Integrated xSeries Adapters
- Max 36 Integrated xSeries Servers

Max 320 communication lines

- One 2-line ECS comm. adapter at no-charge

Max 96 LAN

- One integrated 10/100 Ethernet LAN

Max 263 PCI-X slots

Minimum 1 DVD-ROM or DVD-RAM

No SPD I/O towers, devices or cards supported

220-240V single phase

Rackable - max 2 per 1.8m rack

Hot Plug disk slots

Hot Plug PCI-X slots

Redundant power and cooling

Customer Set Up (CSU)

## Comparing i825 with Model 820 and 830

- Replaces 820 4 way, some 820 2 way and most 830 proposals
- Offers On / Off CUoD (temporary) and CUoD (permanent)
- Upgradeable to Model 870 and 890

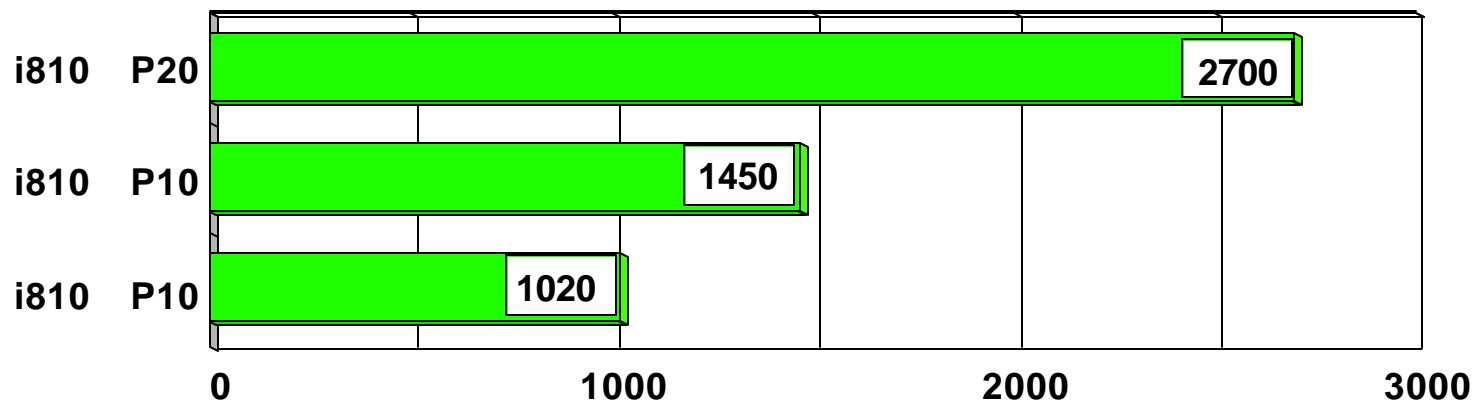


	<b>820</b>	<b>i825</b>	<b>830</b>
n-Way	1, 2, 4 way	3/6 way	2, 4/8 way
Processor CPW	1100 to 3700	3600 to 6600	1850 to 7350
5250 CPW	0 to 2000	0 or Maximum	0 to 4550
Memory (maximum)	32 GB	48 GB	32 GB
Disk Capacity (maximum)	8 TB	58 TB	22 TB
Disk Arms (maximum)	237	825	630
I/O towers	5	18	13
HSL Loops	1	3	4
IXA	8	18	16
IXS	12	36	28
Software tier	P20, P30, P40	P30	P20, P30, P40, P50
Logical Partitioning	Yes	Yes	Yes
LinuxJ Ready	Yes	Yes	Yes
CUoD, On/Off CoD Available	No	Yes	some*

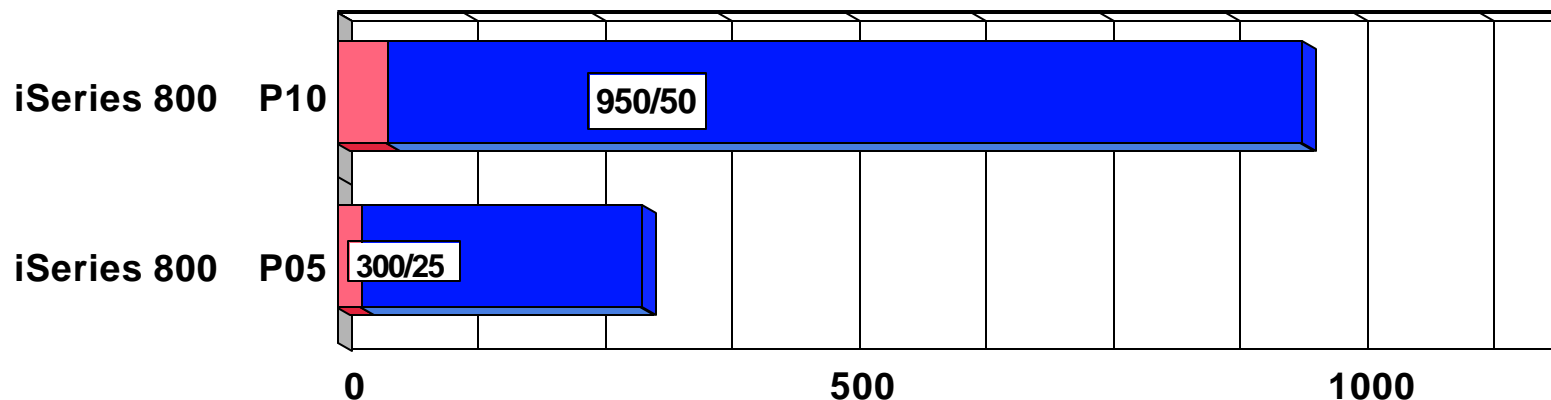
\* Temporary activation of all stand-by processors, not processors by processor days

# iSeries - Servers for Small to Medium Businesses

## i810 Offers Standard and Enterprise Editions



## iSeries 800 Editions with fixed amounts of 5250 CPW



# i810



- Built for small to medium businesses running a full range of e-business - including 5250 OLTP solutions
- Deliver up to 80% price performance improvements
- Exceptional I/O expandability with up to 14 TB disk
- Ideal for Windows, Linux consolidation

<b>Edition: Package Feature</b>	<b>Server Feature</b>	<b>Processor Feature</b>	<b>CPW</b>	<b>Software Tier</b>
Enterprise: 7430	0869	2469	2700	P20
Standard: 7428	0869	2469	2700	P20
Enterprise: 7412	0867	2467	1470	P10
Standard:7410	0867	2467	1470	P10
Enterprise: 7409	0866	2466	1020	P10
Standard: 7407	0866	2466	1020	P10

## Notes: i810

The i810 is geared for the small to medium-size businesses that not only need the power and capacity to run traditional multiple core business applications, but also need the freedom and scalability to add new e-business technologies. It is ideal for helping to reduce the complexity and costs that often come with managing server farms and with growth paths within the model, you can start small, and grow as your needs grow.

The i810 has three performance points (1020, 1470 with 1-way and 2700 CPW with a 2-way), specially tailored for small to medium enterprises. It is capable to run e-business workloads along with multiple operating environments such as Linux, OS/400 and Windows Integrated through the Integrated xSeries Server or the Integrated xSeries Adapter offerings. Maximum I/O configuration limits (such as IXA/IXS, disk storage and memory) are also considerably higher for the i810 when compared to its equivalent configurations with i270 and i820.

## i810 specifications

<i>Maximums</i>	<b>#2466 Proc Feat.</b>	<b>#2467 Proc Feat.</b>	<b>#2469 Proc Feat.</b>
<i>Processor CPW</i>	<b>1020</b>	<b>1470</b>	<b>2700</b>
<i>Number of SStar processors</i>	<b>1</b>	<b>1</b>	<b>2</b>
<i>Main Storage - Min/Max cards, storage</i>	<b>1/8, .5 GB -16 GB</b>	<b>1/8, .5 GB -16 GB</b>	<b>2/16, .5 GB -16 GB</b>
<i>DASD - Min/Max (GB)</i>	<b>17.5-13971</b>	<b>117.5-13971</b>	<b>17.5-13971</b>
<i>DASD arms</i>	<b>198</b>	<b>198</b>	<b>198</b>
<i>DASD LUNs</i>	<b>197</b>	<b>197</b>	<b>197</b>
<i>IXS / IXA</i>	<b>13 / 7</b>	<b>13 / 7</b>	<b>13 / 7</b>
<i>Internal Tape/DVD</i>	<b>10</b>	<b>10</b>	<b>10</b>
<i>External Tapes/CD/DVD</i>	<b>18</b>	<b>18</b>	<b>18</b>
<i>Crypto. Accelerator</i>	<b>2</b>	<b>2</b>	<b>2</b>
<i>Crypto. Processor</i>	<b>8</b>	<b>8</b>	<b>8</b>
<i>LAN Ports</i>	<b>36</b>	<b>36</b>	<b>36</b>
<i>WAN Lines</i>	<b>192</b>	<b>192</b>	<b>192</b>
<i>Twinax Controllers/Devices</i>	<b>48 / 1920</b>	<b>48 / 1920</b>	<b>48 / 1920</b>
<i>Max I/O Towers / HSL Loops</i>	<b>4 / 1</b>	<b>4 / 1</b>	<b>4 / 1</b>
<i>Linux LPAR</i>	<b>9</b>	<b>9</b>	<b>19 partitons/10 per processor</b>
<i>OS/400 LPAR</i>	<b>4 per processor</b>	<b>4 per processor</b>	<b>8 partitons/4 per processor</b>
<i>Software Group</i>	<b>P10</b>	<b>P10</b>	<b>P20</b>

# Notes: i810 specifications

1 way 1020 CPW - #2466

1 way 1470 CPW - #2467

2 way 2700 CPW - #2469

New 750 MHz PowerAS Processors (#2467 & #2469) with L2 cache

540 MHz PowerAS Processor (#2466) with L2 cache

512 MB - 16GB memory

8 slots plugged in pairs (1-Way) 16 slots plugged in quads (2-Way)

256MB, 512MB, 1GB, 2GB memory features (1-Way differ from 2-Way)

17.5 GB - 13971 GB disk capacity

- 1 - 198 disk drives
- Up to 6 disk (18 with expansion unit) without I/O towers  
V5R2 or later (all OS/400 partitions)

P10 software tier (1-Way) - P20 software tier (2-Way)

Max 4 I/O towers

Max 1 HSL Loop

2 HSL copper cabling ports

Windows Integration

- Max 7 Integrated xSeries Adapters
- Max 13 Integrated xSeries Servers
- Max 192 communication lines
  - One 2-line ECS comm. adapter at no-charge

Max 36 LAN

- One #9749 no-charge 10/100 Ethernet LAN with new server shipment

Max 63 PCI slots (PCI-X slots in I/O towers)

Minimum 1 DVD-ROM or DVD-RAM

No SPD I/O towers, devices or cards supported

120-240V single phase

Rackable - max 2 per 1.8m rack

Hot Plug disk slots

Hot Plug PCI slots (2469 only)

Customer Set Up (CSU)

## Comparing i810 with Model 270 and 820

- Replaces Model 820 in most proposals
- Builds on "GreenStreak" pricing
- Upgradeable within Model 810



	270	i810	820
n way	1, 2 way	1, 1, 2 way	1, 1, 1, 2 way
Processor CPW	1070, 2350	1020, 1470, 2700	370, 600, 1100, 2350
5250 CPW	0, 50, 70	0 or Maximum	0 to 1050
Memory (maximum)	16 GB	16 GB	32 GB
Disk Capacity (maximum)	0.8 TB	14 TB	8 TB
Disk Arms (maximum)	24	198	237
I/O towers	1	4	5
HSL loops	1	1	1
IXA	2	7	8
IXS	3	13	12
Software tier	P10, P20	P10, P10, P20	P10, P20, P30
Logical partitioning	Yes	Yes	Yes
LinuxJ ready	Yes	Yes	some
CUoD Available	No	No	No



# iSeries 800



- Built for the needs of small to medium enterprises with e-business - including 5250 OLTP applications
- Advanced Edition
  - ▶ Robust server configuration & WebSphere - Express
- Standard Edition
  - ▶ Robust server configuration & WebSphere - Express
- Value Edition
  - ▶ Recommend for OS/400

<b>iSeries 800 Edition</b>	<b>Package Feature</b>	<b>Server Feature</b>	<b>Processor Feature</b>	<b>CPW</b>	<b>Price Tier</b>
Advanced	7408	0865	2464	950/50	P10
Standard	7400	0864	2463	300/25	P05
Value	7400	0863	2463	300/25	P05

## Notes: iSeries 800

iSeries offers three editions tailored specifically for small enterprises, with a growth path within the model so you can start small and grow as your needs change. It incorporates a uni-processor processor with either 300 CPW or 950 CPW (25 or 50 CPW available for 5250 OLTP), up to 8 GB of memory and up to 4 TB of disk. iSeries 800 is ideal for growing small enterprises that need an affordable, easy-to-use server with the flexibility to grow quickly to new demands. The iSeries 800 allows you simple management of core business applications and your Intel-based servers all from the same system.

iSeries 800 Value Edition is the iSeries' entry-level server for customers who run core business applications (5250 OLTP) and want a base configuration with the flexibility to add features as necessary. The Standard Edition offers a more robust configuration for customers who want run their core business applications, manage their Windows server workloads from the iSeries, and begin the move to e-business through optionally adding WebSphere Application Server – Express for iSeries. The Advanced Edition, with its 950 CPW, is ideal for the customer seeking a multi-platform operating system with room to expand as they take on the increasing demands of e-business.

# iSeries 800 specifications

<i>Maximums</i>	<b>#2463 Proc Feat.</b>	<b>#2464 Proc Feat.</b>
<i>Processor CPW / 5250 CPW</i>	<b>300 / 25</b>	<b>950 / 50</b>
<i>Number of SStar processors</i>	<b>1</b>	<b>1</b>
<i>Main Storage - Min/Max cards, storage</i>	<b>1/8, .25 GB - 8 GB</b>	<b>1/8, .25 GB - 8 GB</b>
<i>DASD - Min/Max (GB)</i>	<b>17.5-4445</b>	<b>17.5-4445</b>
<i>DASD arms</i>	<b>63</b>	<b>63</b>
<i>DASD LUNs</i>	<b>62</b>	<b>62</b>
<i>IXS / IXA</i>	<b>4 / 3</b>	<b>4 / 3</b>
<i>Internal Tape/DVD</i>	<b>4</b>	<b>4</b>
<i>External Tapes/CD/DVD</i>	<b>15</b>	<b>15</b>
<i>Crypto. Accelerator</i>	<b>2</b>	<b>2</b>
<i>Crypto. Processor</i>	<b>4</b>	<b>4</b>
<i>LAN Ports</i>	<b>12</b>	<b>12</b>
<i>WAN Lines</i>	<b>60</b>	<b>60</b>
<i>Twinax Controllers/Devices</i>	<b>15 / 600</b>	<b>15 / 600</b>
<i>Max I/O Towers / HSL Loops</i>	<b>1 / 1</b>	<b>1 / 1</b>
<i>Linux LPAR</i>	<b>9 per processor</b>	<b>9 per processor</b>
<i>OS/400 LPAR</i>	<b>4 per processor</b>	<b>4 per processor</b>
<i>Software Tier</i>	<b>P05</b>	<b>P10</b>

# Notes: iSeries 800 specifications

1 way 300 CPW - #2463

1 way 950 CPW - #2464

540 MHz PowerAS Processors (#2464 with L2 cache)

256 MB - 8GB memory

- 8 slots plugged in pairs - 1st card an exception
- 256MB, 512MB, 1GB, 2GB memory features

17.5 GB - 4445 GB disk capacity

1 - 63 disk drives

Up to 6 disk (18 with expansion unit) without I/O towers

V5R2 or later (all OS/400 partitions)

P05 software tier #2463 - P10 software tier #2464

Max 1 I/O tower

Max 1 HSL Loop

- HSL copper cabling ports

Windows Integration

- Max 3 Integrated xSeries Adapters
- Max 4 Integrated xSeries Servers

Max 60 communication lines

- One 2-line ECS comm. adapter at no-charge

Max 12 LAN

- One #9749 no-charge 10/100 Ethernet LAN with new server (new serial number shipments)

Max 21 PCI slots (PCI-X slots in I/O towers)

7 PCI slots in CEC (not counting imbedded IOP)

Minimum 1 DVD-ROM or DVD-RAM

No SPD I/O towers, devices or cards supported

120-240V single phase

Rackable - max 2 per 1.8m rack

Hot Plug disk slots (optional for base six slots of #2463)

Customer Set Up (CSU)

# Comparing iSeries Model 800 with Model 250 and 270

- Replaces Model 270 in most proposals
- Similar to "GreenStreak" pricing
- Upgradeable within Model 800



	250	iSeries 800	270
n way	1-way	1-way	1-way
Processor CPW	50, 75	300, 950	150, 465, 1070
5250 CPW	15, 20	25, 50	0, 25, 30, 50
Memory (maximum)	1 GB	8 GB	8 GB
Disk Capacity (maximum)	0.07 TB *	4 TB	0.8 TB
Disk Arms (maximum)	4	63	24
I/O towers	0	1	1
HSL loops	0	1	1
IXA	0	3	2
IXS	0	4	3
Software tier	PPS / P05	P05, P10	P05, P10, P10
Logical partitioning	No	Yes	some processors
LinuxJ ready	No	Yes	some processors
CUoD Available	No	No	No
WebSphere ready	No	Yes*	some processors*

\* Minimum of 300 CPW recommended for WebSphere Application Server without EJBs

# iSeries Servers and Lotus Domino

- iSeries for Domino™
  - ▶ Ideal for Domino server consolidation
  - ▶ Extend Domino with additional Lotus software, WebSphere, Linux applications, and DB2 integration, all on a single server footprint
  - ▶ Highly flexible performance management
  - ▶ Up to 6 way scalability with i825



# Notes: iSeries Servers and Lotus Domino

The new iSeries for Domino, based on i810 and i825 servers, is designed for the end-to-end integration that businesses need to succeed with collaborative and business applications, and is packaged with base hardware and software components to enable a fast start. Combined with Lotus Domino (not supplied), the iSeries provides an ideal environment for effective collaboration, integration and enables consolidation of multiple environments such as OS/400, DB2 integration, Lotus applications, WebSphere and Linux – all on a single server footprint.

The new servers offer full functionality with DB2 for iSeries, and offer upgrade paths from the i825 into the i870 and i890 for larger workload consolidations that have delivered industry-leading performance using Lotus Domino 6.

iSeries for Domino includes memory and disk configuration appropriate for Domino workloads. To purchase iSeries for Domino, a customer must purchase or transfer (if already purchased) a minimum number of Domino server and Notes or iNotes client licenses, as shown below.

- i810 (1-way): one server and 100 client licenses
- i810 (2-way): two server and 400 client licenses
- i825 (4-way): four server and 700 client licenses
- i825 (6-way): six server and 700 client licenses

For more information, see: <http://www.ibm.com/eserver/iseries/domino>

# iSeries for Domino - January 2003 Announced Servers

**825 and 810 Server Feature Codes are Domino Specific**

825 and 810 Processor Feature Codes are not Domino Specific

Standard Package Features (not Enterprise Packages)

	Mail/Calendar Users*	Server FC	Processor FC	Package FC	Min Disk (GB)	Min Mem (GB)	Processor Activations	Minimum Notes or iNotes Licenses	Minimum Domino Server Licenses
825 6 way	17400	0773	2473	7416	945	12	3	700	6
825 4 way	11600	0772	2473	7416	560	6	1	700	4
810 2 way	7900	0771	2469	7428	525	5.5	N/A	400	2
810 1 way	4200	0770	2467	7410	315	3.5	N/A	100	1
810 1 way	3100	0769	2466	7407	105	1.5	N/A	100	1

6 way = 3/6 way + 3 processor activations (comes with a total of six OS/400 licenses)  
 4 way = 3/6 way + 1 processor activation (comes with a total of four OS/400 licenses)

**No upgrade paths into these server solutions**  
 ---> new purchase only  
**Once installed: normal 810, 825 upgrade and 825 capacity on demand support**

- All jobs and tasks have access to system resources, except for 5250 OLTP
  - ▶ Limited ("0") 5250 CPW is available for a system administrator who wishes to use a 5250 interface to manage the system

\* MCU values are estimates requiring more than the minimum memory and disk



## New Structure: Simplification, all on one single table

MODEL N-WAY	SERVER FEATURE SW GROUP	PROCESSOR FEATURE CPW	STANDARD EDITION FEATURE*	800 EDITION FEATURE* 5250 CPW	ENTERPRISE EDITION FEATURE*	CUoD ACTIVATION FEATURE	TEMPORARY ENABLEMENT FEATURE	TEMPORARY BILLING FEATURE
<b>i890</b> 24 - 32	<b>0898</b> P50	<b>2498</b> 29300 / 37400	7425	N/A	7427	1613	1778	1792
<b>i890</b> 16 - 24	<b>0897</b> P50	<b>2497</b> 20000 / 29300	7422	N/A	7424	1612	1777	1789
<b>i870</b> 8 - 16	<b>0886</b> P40	<b>2486</b> 11500 / 20000	7419	N/A	7421	1611	1776	1786
<b>i825</b> 3 - 6	<b>0873</b> P30	<b>2473</b> 3600 / 6600	7416	N/A	7418	1609	1773	1783
<b>i810</b> 2	<b>0869</b> P20	<b>2469</b> 2700	7428	N/A	7430	N/A	N/A	N/A
<b>i810</b> 1	<b>0867</b> P10	<b>2467</b> 1470	7410	N/A	7412	N/A	N/A	N/A
<b>i810</b> 1	<b>0866</b> P10	<b>2466</b> 1020	7407	N/A	7409	N/A	N/A	N/A
<b>800</b> 1	<b>0865</b> P10	<b>2464</b> 950	N/A	<b>7408</b> 50	N/A	N/A	N/A	N/A
<b>800</b> 1	<b>0864</b> P05	<b>2463</b> 300	N/A	<b>7400</b> 25	N/A	N/A	N/A	N/A
<b>800</b> 1	<b>0863</b> P05	<b>2463</b> 300	N/A	<b>7400</b> 25	N/A	N/A	N/A	N/A

\* The Edition feature number appears in system value QPRCFEAT and DSHPDWRSC TYPE(\*AHW) CEC Processor feature code

## Notes: Simplification, all on one single table

This single table shown here contains the complete overview of the new family of iSeries servers with the different feature codes and some of the most important specific properties of the different server features that come available with this announcement.

**Note: The Edition feature number appears in system value QPRCFEAT and DSHPDWRSC TYPE(\*AHW) CEC "Processor feature code" parameter. This value is also shown for the CAPACITY CARD CCIN value when performing temporary Capacity Upgrade on Demand through the Service Tools interface.**

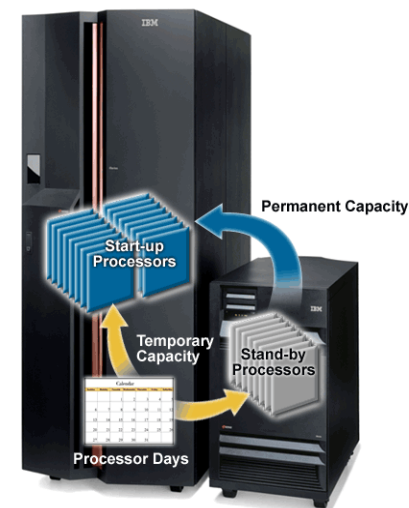
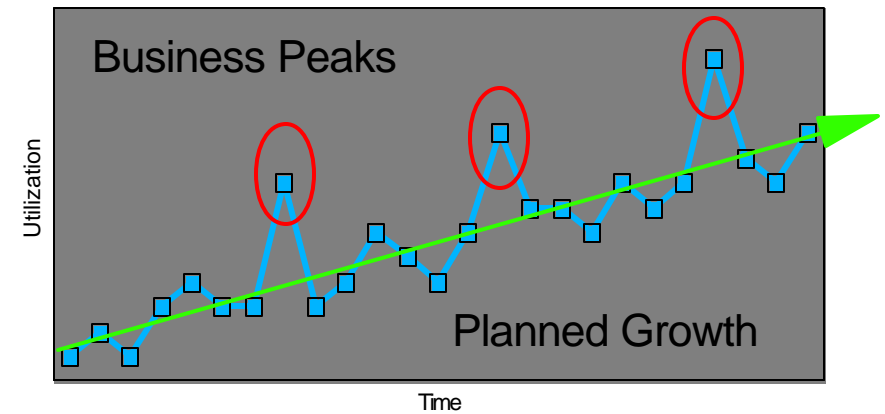
**The system value QPRCFEAT may be used by software products using software tier licensing.**

# Agenda

- Announcement Highlights
- e-business on demand™
- The Customer Challenge: Solving the Cost Equation
- Hardware Capabilities
  - ▶ Specifications
  - ▶ Capacity Upgrade on Demand
  - ▶ Additional Hardware
  - ▶ Upgrades

# Capacity on Demand

- Adjust to unpredictable demand without interrupting operations or applications
- Affordable processor activation price simplified upgrade procurement
- Activate a processor for Linux without paying for OS/400
- IBM eServer Capacity Upgrade on Demand (permanent) - CUoD
  - ▶ Planned growth, Pay when purchased
- IBM eServer On/Off Capacity Upgrade on Demand (temporary) - On/Off CoD
  - ▶ Business peaks, Pay after activation
  - ▶ 14 bonus processor days of up to 192 processor days



# Notes: Capacity on Demand

e-business is driving change at an unprecedented pace and a server must be able to adapt at the same rate. iSeries has exceptional flexibility to adjust dynamically to your business priorities. With temporary capacity on demand, you can turn processors on when you need them – turn them off when you don't. You pay only for what you activate, and not a penny more.

iSeries now offers capacity on demand (permanent and/or temporary) activations for i825, i870 and i890, which are equipped with standby processors when shipped. The user interface to enable this support and view in-progress statistics is through the Service Tools interface, so you need a Service Tools server user id and password, as was introduced with V5R1.

The permanent activation option of Capacity Upgrade on Demand enables a customer to activate standby processors permanently without restarting the iSeries. Customers planning to permanently activate processors order a activation code from IBM that is placed on a secure website. The permanent capacity is available as soon as the activation code is applied.

Once a customer has ordered the ability to use On/Off CoD (temporary) **and an enablement feature**, then available standby capacity can be requested in units of one processor day and activated or deactivated dynamically without restarting the system or applications.

Temporary capacity is designed for customers who want to use capacity to match business peaks, turning reserve processor capacity on when needed, turning it back off when no longer required. Temporary capacity is requested in units of Processor Days, and up to 14 bonus processor day entitlement (not charged in the billing) this included with a purchase of an On/Off CoD capable server. You can elect to use these bonus processor days during business peaks or when trying out new workloads. For example, if you have 7 standby processors, you can either use all 7 processors for 2 days (48 hrs), or one at a time for 14 processor days, or in several separate activations and deactivations. These "bonus processor days" are included in the maximum of up to 192 temporary activation processor days. that is, if used 192 processor days, you would be billed for 178 activation days. After activating a processor the billing period starts. You must immediately assign them to the system or an available partition in an LPAR configuration to productively use the activated processors.

You can use either the Service Tools interface or iSeries Navigator LPAR interfaces to assign the activated processors to the appropriate partition.

The system has a On/Off CoD (temporary) counter that provides logged statistics based on processor days you activated. You can use the Start Service Tools (SST) interface to view the logged statistics to see the status of your activation. You can use temporary activation is several separated activations, up to a total of 192 processor days. When 192 processor days have expired, you have to contact your IBM or business partner representative to request additional temporary capacity in units of 192 days. You receive a new enablement key to reactivate 192 processor days. Each reenablement resets the maximum to 192 processor days and the 14 bonus days.

The notes in a following foil on temporary activation, give an example of a sequence of temporary activations.

## Capacity Upgrade on Demand - CUoD (permanent)

- Offered on i825, i870 and i890
- Standby processors can be permanently activated by placing an order for a quantity of POD Activation Features
- The "POD" Activation Code will be mailed to you and also posted at this web site:  
<http://www.ibm.com/servers/eserver/series/hardware/ondemand>

Model	Processor Feature	Startup Processors	Standby Processors	Installed Processors	"POD" Activation Feature
825	2473	3	3	6	1609
870*	2486	8	8	16	1611
890*	2497	16	8	24	1612
890*	2498	24	8	32	1613

\* For Enterprise Package one FC 9603 is used to activate a processor for LinuxJ use (no charge)

Note:

- Additional operating system licensing is required if using an OS that is licensed by processor
- Additional software licensing is required if using SW that is licensed by processor

# Notes: Capacity Upgrade on Demand (permanent)

Additional operating system licensing is required if using an OS that is licensed by processor. Additional software licensing is required if using SW that is licensed by processor

For Enterprise Package one FC 9603 is used to activate a processor for LinuxJ use (no charge)

## On/Off Capacity on Demand - On/Off CoD (temporary)

- No Charge Enablement Feature enables the activation of temporary processor capacity
- Capacity is assigned or released via SST interface and associated with a partition
- Capacity is billed on a quarterly basis
- Additional operating system licensing may be required if using an OS that is licensed by processor (not required for OS/400) - Additional software licensing may be required if using software that is licensed by processor

Model	Processor Feature	Package Edition	On/Off CoD - "TCoD" Enablement Feature	On/Off CoD - "TCoD" Billing Feature
i825	2473	7416 (standard) 7418 (enterprise)	1773	1782
i870	2486	7419 (standard) 7421 (enterprise)	1776	1785
i890	2497	7422 (standard) 7424 (enterprise)	1777	1788
i890	2498	7425 (standard) 7427 (enterprise)	1778	1791



# On/Off CoD - Temporary Capacity Request

WORK WITH SYSTEM CAPACITY

SYSTEM: SYS1

ATTENTION: THIS SERVICE FUNCTION IS USED TO DISPLAY AND ALTER SYSTEM PROCESSING CAPACITY. SEE SERVICE DOCUMENTATION.

SELECT ONE OF THE FOLLOWING:

1. DISPLAY SYSTEM CAPACITY INFORMATION
2. ACTIVATE PERMANENT SYSTEM CAPACITY (PCOD)
3. ENABLE TEMPORARY SYSTEM CAPACITY (TCOD)
4. WORK WITH TEMPORARY SYSTEM CAPACITY (TCOD)

CONFIRM TEMPORARY SYSTEM CAPACITY CHANGES

VERIFY INFORMATION, PRESS ENTER TO START THE REQUEST, OR PRESS F12 TO CHANGE YOUR CHOICE.

REQUESTED:

```

PROCESSORS . . . . . :
DAYS . . . . . :
PROCESSOR-DAYS . . . . . :
    
```

YOU HAVE SPECIFIED REQUESTED UNITS (A QUANTITY OF PROCESSORS AND A DURATION OF DAYS) OF TEMPORARY CAPACITY. AFTER YOU CONFIRM THIS REQUEST FOR SUCH TEMPORARY CAPACITY, BY PRESSING ENTER ON THIS MENU, YOU MUST ASSIGN THE NEWLY ACTIVATED PROCESSORS TO A PARTITION(S) OF YOUR CHOICE TO ACTUALLY BEGIN USING THE TEMPORARY CAPACITY. PLEASE NOTE, ACCOUNTING FOR BILLING PURPOSES BEGINS WHEN YOU CONFIRM THIS REQUEST. ACCORDINGLY, IT IS IMPORTANT THAT YOU ASSIGN THE NEWLY ACTIVATED PROCESSORS TO A PARTITION TO TAKE FULL ADVANTAGE OF YOUR REQUESTED UNITS. ONCE THE NUMBER OF DAYS YOU HAVE REQUESTED HAVE PASSED, YOU ARE REQUIRED TO MAKE THE TEMPORARY CAPACITY YOU HAVE REQUESTED 'AVAILABLE' (LPAR

**Move Processing Power**

Move from logical partition "Unassigned Dedicated"

	Current	After Move	Amount to Move
Dedicated processors:	3	0	3 processing units
Interactive performance:	87	87	0 percent

Move to Logical partition: Primary (0)

	Current	After Move	
Dedicated processors:	8	11	processing units
Interactive performance:	13	13	percent

Buttons: OK, Schedule..., Cancel, Help, ?

# Notes: On/Off CoD - Temporary Capacity Request

These screens show some of the interfaces in Service Tools and from iSeries Navigator which are used to enable and assign processors to a partition. **Even if the system does not use Logical Partitioning, you will still have to assign activated processors to the single partition that exists on the server.**

Activations are done based on the number of processors and the number of days you need the extra capacity; the CoD temporary capacity ("TCoD") counter provides statistics based on the multiplication of processors times the number of days. Before you can activate any processor, you need to order an enablement feature, orderable via the web, that will provide you a key that gives you the capability to use up to 192 units of the TCoD counter; when these have expired, a new key has to be ordered.

Once a number of processor days has been activated and these processors have been assigned to a partition, they will remain active until you remove them from the partition configuration and deactivate them. The Service Tools interface allows you to view and print the activation requests.

Information about your requests for temporary capacity must be reported to IBM (minimum of once per month per On/Off CoD Contract). This can be done via fax, e-mail or via the Electronic Service Agent (part of Management Central). Billing is done on a quarterly basis.

## Example

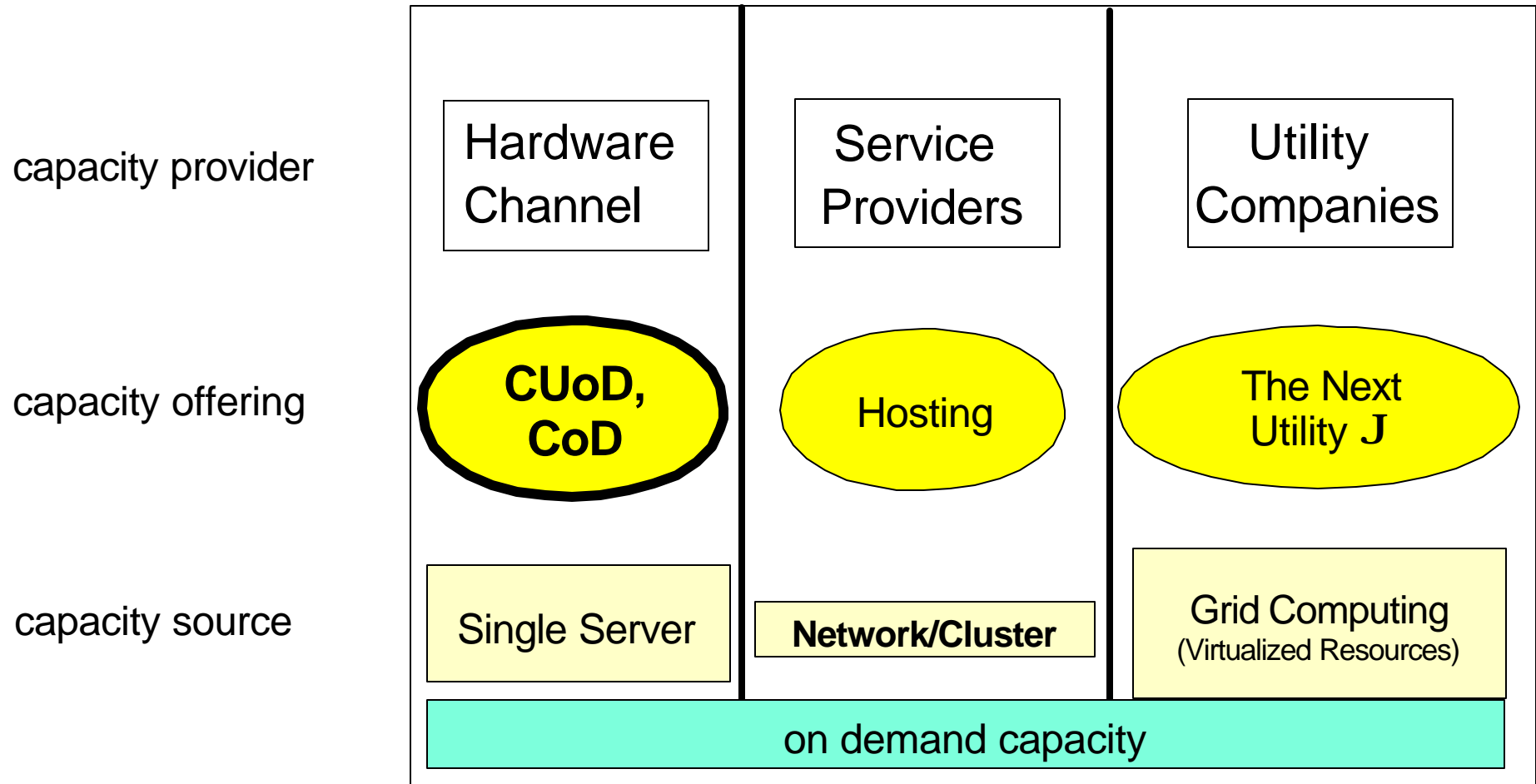
You can enable the temporary capacity in several "one at a time sequences." For example, with the first enablement you enable 3 processors for 3 days (24 hours times 3). At the end of 3 days you have consumed 9 processor days of your 14 bonus days (no charge) and 9 processor days of your total 192 temporary capacity days. If you do not end the temporary activation, the 3 processors continue to be active and billing past the original activation of "9 processor days" will continue until you specifically end the activation.

Using our 9 processor days example, assume during processor day 7 you think you need 1 additional processor for 2 days. This now means you need 4 processors activated. To accomplish this you must deactivate your current activation and re enter the total processors (4) and activation days (2), So your billing is essentially 3 processors times 7 days plus 4 processors for 2 days.

Note: The permanent or temporary activation terminology is subject to change which could affect the words used on the permanent and temporary descriptive texts used on screens we have captured here. At the time this presentation was published screen captures showed the "then current" text on system screens.

# CUoD/CoD ... one part of e-business on demand

## Today and into the Future



# Notes: CUoD/CoD ... one part of e-business on demand

Remember, hardware capacity upgrade on demand (permanent and/or temporary) is only one part of IBM's initiative of e-business on demand.

# System Performance Properties

Model	Processor Feature	Min-Max # Processors/ Technology / MHz / L2 - L3 in MB/Mem GB / Arms/ DASD	Processor CIW	5250 /Processor CPW	Mail/Calendar Users@70% CPU estimate
iSeries 800	2463	1 / 540 / 0 - 0 8 GB / 63 / 4.4 TB	NA*	25 300	NA*
iSeries 800	2464	1 / 540 / 2 - 0 8 GB / 63 / 4.4 TB	350	50 950	2900
i810	2466	1 / 540 / 2 - 0 16 GB / 108 / 7.6 TB	380	1020 0 / 1020	3100
i810	2467	1 / 750 / 4 - 0 16 GB / 108 / 7.6 TB	530	1470 0 / 1470	4200
i810	2469	2 / 750 / 4 - 0 16 GB / 108 / 7.6 TB	975	2700 0 / 2700	7900
i825	2473	3-6 / 1100 / 1.42 - 32** 48GB / 825 / 58 TB	1570 - 2890	3600 - 6600 0 / 3600 - 6600	8700 (3-W) 11600 (4-W) 17400 (6-W)
i870	2486	8-16 / Power4 / 1300 / 1.42 - 32** / 128 GB / 2047 / 144 TB	5280 - 9100	11500 -20000 0 / 11500 -20000	29600 - 57600
i890	2497	16-24 / Power4 / 1300 / 1.42 - 32** / 192GB / 2047 / 144 TB	8840 - 12900	20000 - 29300 0 / 20000 - 29300	57600 - 84100
1890	2498	24-32 / Power4 / 1300 / 1.42 - 32** / 256 GB / 2047 / 144 TB	12900 - 16700	29300 - 37400 0 / 29300 - 37400	84100 - 108900

# Notes: System Performance Properties

\*NA means not available as of January 28, 2003. Refer to <http://www.ibm.com/eserver/series/perfmgmt> for latest information.

\*\*Each processor chip contains two processors and 1.42 MB of L2 cache per chip; each MCM has 128 MB of L3 cache; each processor can access 32 shared or dedicated L3 cache, depending on the numbers of processors activated on each chip

The Domino Mail/Calendar number of users estimates are not formally validated NotesBench benchmark numbers.

CPW is an internal iSeries benchmark used as a relative measure of performance among iSeries processors. CIW (Compute Intensive Workload) is another internal iSeries benchmark that is significantly more CPU intensive than the CPW benchmark. Performance in customer environments may vary. The values are measured on maximum configurations. If you have a CPU intensive application environment consider using the relative CIW rating rather than CPW rating among iSeries processors to size the server for acceptable performance. See the Performance Capabilities Reference manual for more information.

# Agenda

- Announcement Highlights
- e-business on demand™
- The Customer Challenge: Solving the Cost Equation
- **Hardware Capabilities**
  - ▶ Specifications
  - ▶ Capacity Upgrade on Demand
  - ▶ **Additional Hardware**
  - ▶ Upgrades



# PCI-X Expansion Towers

- I/O Tower #5094
- I/O Tower #5294
- I/O Tower #0595 / 5095
  - ▶ 0595 is rack mounted
- I/O Tower #0588 / 5088
  - ▶ 0588 is rack mounted
- Base I/O Tower #9094
  - ▶ Base I/O tower for i870 / i890
- Optional Base I/O Tower #8094
  - ▶ Optional Base I/O tower for i870 / i890
- Bus Adapters:
  - ▶ #9886 Base Optical HSL cables
  - ▶ #9887 Base Copper HSL, HSL-2 cables

**5095****5094 / 9094****5294 / 8094**



# Notes: PCI-X Expansion Towers

The #5094 has 15 disk unit slots, with an additional 30 slots available with feature #5108 (if #5115 not present) or #5118 (if #5115 is present). The #5094 also has 2 removable media slots and 14 PCI-X IOP/IOA card slots.

A #9844 Base PCI IOP is included as "base".

The #5294 is equivalent to two #5094 PCI Expansion Towers, with covers and casters removed and positioned in 1.8 meter rack. It includes two bus adapters to provide the HSL-2 interface to the system.

The #5095/#0595 (rack mountable - 5 EIA units) has 7 PCI-X IOP/IOA slots and supports up to 12 disk units. A #9844 Base PCI IOP is included as "base". It includes a bus adapter to provide the HSL-2 interface to the system.

The #5088/#0588 (rack mountable - 8 EIA units) has 14 PCI-X slots for installation of PCI IOPs and IOAs. It includes a bus adapter to provide the HSL interface to the system.

Bus adapters to provide the HSL interface to the system:

- #9886 Base Optical Bus Adapter is used when attaching to optical HSL ports but is not supported when attaching to models 810 and 820 (these models do not have optical HSL ports)
- #9887 Base HSL-2 Bus Adapter is used when attaching to copper HSL or HSL-2 ports

These towers attach to 270 and all 8xxs, with appropriate cabling.

# Disk Unit Expansions

- 30-Disk Expansion #5108
  - ▶ Orderable for Expansion Towers #5094 and #9094
  - ▶ Expansion Towers #5294 and #8094 shipped with two #5108
- 5-Disk Expansion #7124
  - ▶ Up to two in the i825 system unit
- Optional base 6-Disk Expansion #7137 with concurrent maintenance enabled for the iSeries Model 800 Processor feature #2463
- 6-Disk Expansion #7116 for iSeries Model 800 and i810
  - ▶ Base Expansion supports 6 disk units and additional 6 with optional #7136 DASD Expansion Unit
- All New Disk Unit Expansion slots support
  - ▶ 7.2 K RPM (4 GB #4308, 8 GB #4314 and 17 GB #4324) drives
  - ▶ 10 K RPM drives (18 GB #6718, 35 GB #6719) drives
  - ▶ 15K RPM drives (35 GB #4326, 70 GB #4327) drives

## #0551 Rack Offering

- Allowed combinations in a standard 1.8 meter 36 EIA unit rack
  - ▶ Shipped from Plant:
    - Up to four #0588 units
    - The #5294 equivalent of two #5094 (total of 90 disk unit slots)
    - The #5079 equivalent of two #5074 (total of 90 disk unit slots)
    - The #8093 / #8094 equivalent of #9094 with one #5074 / #5094 (total of 90 disk unit slots)
  - ▶ Field installable:
    - Up to four #0588 units
    - Up to seven #0595 units
    - Up to two Model 800 / 810 / 825 servers
    - Valid combinations of the above
- Up to 4 Power Distribution Units (#516x) per rack, each with 6 power sockets
- #7116 Disk Expansion Unit required for racked 800, 810 servers

# Notes: #0551 Rack Offering

The iSeries Model 800, i810 and i825 occupy 15 EIA Units.

Two servers are allowed per rack.

If an iSeries Model 800 or i810 are to be racked, the #7116 Disk Expansion Unit is required.

# Rack Offering Examples



i825 with two #0588 in a rack



Two #5094s in a 5294 rack



Two 825s in a rack



iSeries 800, i810 in a rack

# Notes: Rack Offering Examples

The pictures on this foil show a couple of possible combinations for mounting iSeries hardware in a rack. Rack placement can be useful for saving floorspace. During the planning consider the weight of a populated rack.

From left to right:

- i825 with two #0588 in a rack
- #5294
- two i825s in a rack
- iSeries Model 800 and i810 in a rack

# Physical Specifications

	Width (mm)	Depth (mm)	Height (mm)	Weight (kg)
<b>iSeries 800 / i810 with #7116</b>	<b>366</b>	<b>610</b>	<b>610</b>	<b>52.7</b>
	<b>552</b>	<b>610</b>	<b>610</b>	<b>79.6</b>
<b>i825</b>	<b>445</b>	<b>830</b>	<b>610</b>	<b>110</b>
<b>i870 / i890</b>	<b>785</b>	<b>1494</b>	<b>2025</b>	<b>800</b>
<b>#0588 / #5088</b>	<b>485</b>	<b>1075</b>	<b>366</b>	<b>68</b>
<b>#5095</b>	<b>200</b>	<b>728</b>	<b>610</b>	<b>52.7</b>
<b>#0595</b>	<b>485</b>	<b>728</b>	<b>200</b>	<b>52.7</b>
<b>#5094 / #9094</b>	<b>485</b>	<b>1075</b>	<b>910</b>	<b>280</b>
<b>#5294</b>	<b>650</b>	<b>1020</b>	<b>1800</b>	<b>726</b>
<b>#0551</b>	<b>650</b>	<b>1020</b>	<b>1800</b>	<b>244*</b>

\* Empty

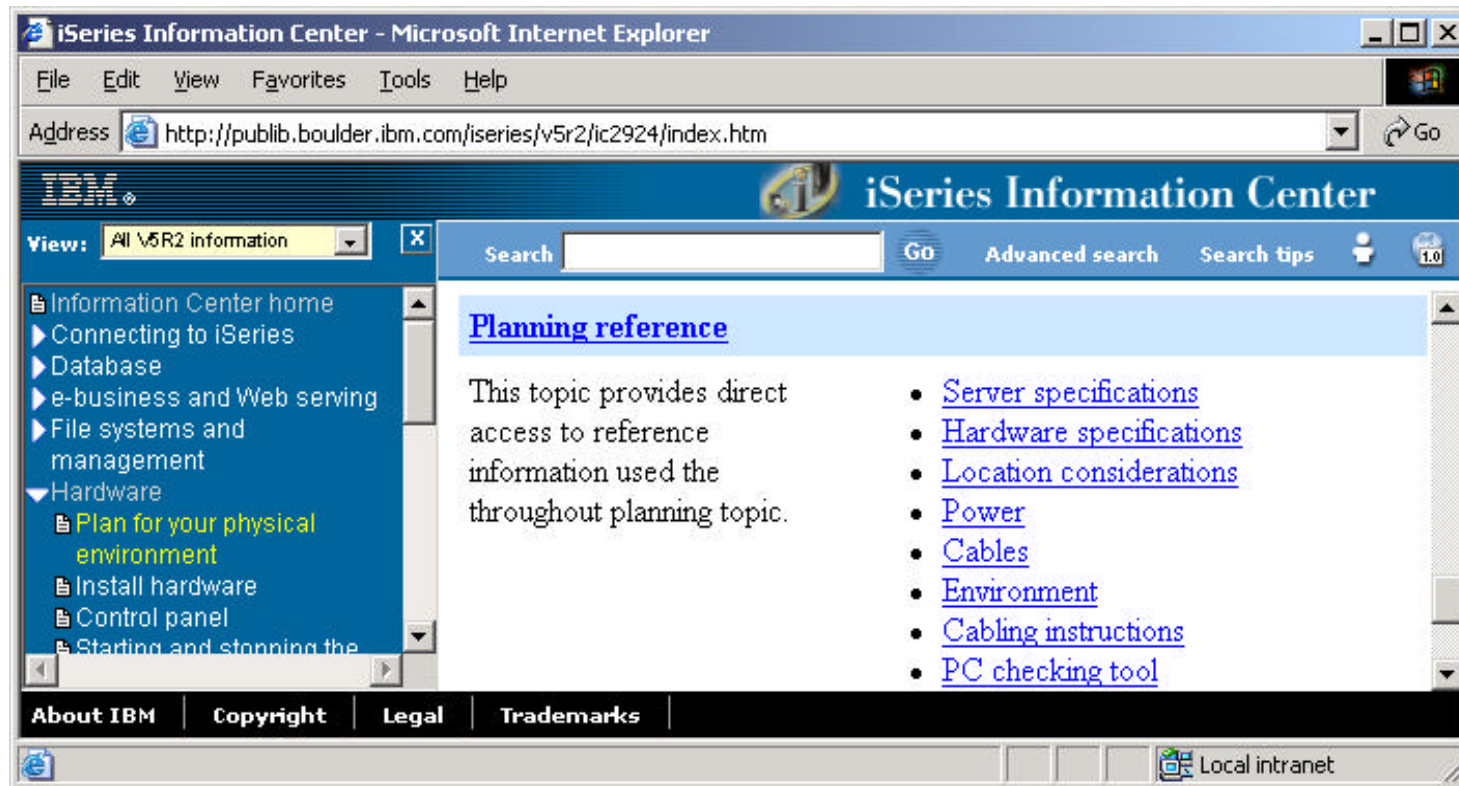
**Special option available for reduced height when shipped (#0126) for i870 and i890 CEC**

# Notes: Physical Specifications

Table with iSeries server and expansions and towers dimensions and weight. Important for physical planing: due observance of the fact that a service clearance for each and every server, expansion, tower and rack is required.

Especially for the high end iSeries servers, make sure that all physical planning requirements are met. These new servers and the other components in their configuration can generate new demands of the installation environment which is also a very important consideration when upgrading to this type of server.

For details on physical planning go find them on the iSeries InfoCenter and select one of the topics under planning reference as shown here





# Power Considerations

## ■ Voltage

- ▶ iSeries Model 800, i810 and expansions #7116, #0595 and #5095 operate at 110-127 Volt or 220-240 Volt
- ▶ i825, and expansions #0588, #5088, #5094, #5294, #8094, and #9094 operate at 220-240 Volt only
- ▶ i870 and i890 CEC require 200-480 Volt three phase

## ■ Dual Line Cords

- ▶ Standard for i825, i870 and i890 CEC
- ▶ Standard or mandatory for expansion #0588, #5088 and #9094
- ▶ Optional dual line cord enablement features for
  - Expansion tower 5094: #5115
  - Expansion tower 5294: #5116
  - Expansion units 0595 and 5095 require redundant power and cooling feature 5138 for dual line cord enablement
- ▶ Special considerations for using dual line cords in a #0551 rack (PDUs!)

## ■ Consider using a Uninterruptable Power Supply

# Notes: Power Considerations

The iSeries Model 800, i810 and expansions #7116, #0595 and #5095 are equipped with an autotransformer and automatically adapt to 110-127 Volt or 220-240 Volt input voltages. For the i825, and expansions #0588, #5088, #5094, #5294, #8094, and #9094 input voltages in the 220-240 Volt range are required.

The i870 and i890 both function normally with a nominal input voltage in the range of 200-480 V, AC, three phase. Order the power cord feature that applies to the power source used.

Rated current for the i870 and the i890 per phase:

- For 200-240 Vac : 45 Amps
- For 380-415 Vac : 25 Amps
- For 480 Vac : 20 Amps

Dual Line cords can be used for protection against a single phase failures. Some iSeries hardware has dual line cords by default, other hardware requires the dual line cord feature to be ordered. When using dual line cord features to protect the configuration against a certain type of failure, make sure that all components have this feature the order and the power distribution is wired according to your needs. Marking the receptacles in a self-explainable way can be very useful.

When using a #0551 standard rack with a configuration using dual line cords as a protective vehicle, make sure that the rack itself is wired accordingly. Make sure that (depending of the number of units to be installed in the rack ) 2 or 4 Power Distribution Units (PDUs) are ordered. The Power Distribution Units can then be connected to the power receptacles just as for other expansions or units with the dual line cord feature. The dual line cord units mounted in the rack can then be connected to the Power Distribution Units in such a way that their protection is likewise assured.

To protect your critical equipment against various types of power failures, it is strongly advice to use a UPS. Most common failures such as power loss can be caused by a number of events such as a lightning strike, over demands, accidents and natural disasters. Protection against other but also very common malfunctions such as power sags and surges, noise, frequency variations and harmonic distortion can be assured by using a UPS too. Selecting the UPS that is right for your environment is a critical part of the planning cycle.

## #2844/#9844 PCI I/O Processor

- Replaces existing IOP #2843/#9943
- Powered by PowerPC processor
- 64 bit PCI bandwidth and increased processor bus speed
- 4 GB per second instantaneous data transfer
- Faster internal memory (DDR)
- Increased internal L2 cache

## Notes: #2844/#9844 PCI Processor

The new PCI-X IOP #2844 / #9844 replaces the existing PCI IOP #2843 / #9943. The new IOP has a 64 bit Power PC processor an DDR memory on board and is working with its own level two cache. The new technology provides a much higher bandwidth on the PCI or PCI-X bus. The following IOAs are supported by the #2843/#2844 PCI IOP:

#2742 - PCI Two-Line WAN IOA	#2743/#2760 - PCI 1Gbps Ethernet IOA
#2744 - PCI 100/16/4Mbps Token Ring	#2749 - PCI Ultra Mag Media Ctrlr
#2757 - PCI RAID Disk Unit Ctrl	#2763 - PCI RAID Disk Unit Ctrl
#2765 - PCI Fibre Channel Tape Ctrlr	#2766 - PCI Fibre Channel Disk Ctrlr
#2768 - PCI Magnetic Media Ctrlr	#2772/#2773 PCI Dual WAN/Modem
#2782 - PCI RAID Disk Unit Ctrlr	#2793/#9793 - PCI 2-Line WAN w/Modem
#2794/#9794 - PCI 2-Line WAN w/Modem	#2805 - PCI Quad Modem IOA
#2806 - PCI Quad Modem IOA (CIM)	#288E CCIN - Imbedded 100/10 Ethernet IOA (model 825 only)
#2817 - PCI 155MBPS MMF ATM	#2849 - PCI 100/10Mbps Ethernet IOA
#4723 - PCI 10Mbps Ethernet IOA	#4745 - PCI WAN IOA
#4746 - PCI Twinaxial IOA	#4748/#9748 - PCI RAID Disk Unit Ctrlr
#4778/#9778 - PCI RAID Disk Unit Ctrlr	#4801 - PCI Crypto Coprocessor
#4805 - PCI Crypto Accelerator	#4815 - PCI ATM 155MBPS UTP OC3
#4816 - PCI ATM 155MBPS MMF	#4818 - PCI ATM 155MBPS SMF OC3
#4838 - PCI 100/10Mbps Ethernet IOA	#5700 - PCI 1Gbps Ethernet IOA
#5701 - PCI 1Gbps Ethernet UTP IOA	#5702 - PCI Ultra Controller
#9767 - Base PCI Disk Unit Ctrlr	#9771 - Base PCI 2-Line WAN w/Modem
#9793/#9794 - Base PCI 2-Line WAN w/Modem	

## #2757 PCI-X Ultra RAID Disk Controller

- Huge write cache:
  - ▶ 757 MB compressed write cache
- New RAID-5 implementation and options for optimization
  - ▶ Capacity (one 15/18 disks RAID set)
  - ▶ Balanced (up to two RAID sets: 9/9, 9/6 disks per set)
  - ▶ Performance (up to five/six 3 Disk RAID sets)
- Four Ultra SCSI buses
- Up to 18\* disk units and two internal optical / tape devices
- No Data Compression



\* 18 when #2757 is in 270, 800, 810 system tower

# Notes: #2757 PCI-X Ultra RAID Disk Controller

The DASD controller plays an important role in determining the I/O busy time for a given process. Each time an I/O request has to be staged to online storage, the DASD controller is one of the prime vehicles to provide the components and the code to provide persistence of the data between main storage and online storage. The key elements that reduce the time spent for this operation are:

**Bandwidth** : the new 2757 controller has a up to 8 times larger bandwidth on the PCI bus compared to 2778/4778 controller, meaning that transfer of large blocks or transfer of multiple small blocks will improve its speed considerably.

**Processing capacity** : the use of a Power PC processor, running at 500 MHz and 256K of L2 cache allows faster execution (6.25 times) of all storage transfer commands, including the parity checking and data scrubbing.

**Cache memory** : the performance of I/O commands can greatly benefit from staging data into temporary RAM, especially if the memory has enough capacity to store large segments. Using data compression, the store write buffers in cache memory can support up to 757 MB. In comparison, the 2778/4778 controller supported up to 104 MB of compressed write cache.

**Number of SCSI buses** : the 2757 supports 4 SCSI buses, which allows to better distribute the disk units over the controller, thus optimizing the data flow.

## Renewed RAID-5 Technology:

A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of six arrays are allowed per controller, with a maximum of 18 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either 2, 4, 8 or 16 disk units in an array. If an array of 3 disk units is started, parity is spread across 2 disk units. If an array of 4-7 disk units is started, parity is spread across 4 disk units. If an array of 8-15 disk units is started, parity is spread across 8 disk units. If an array of 16-18 disk units is started, parity is spread across 16 disk units. The number of arrays and size of each array can be influenced by specifying an optimization of either "Balance", "Performance" or "Capacity" in Operations Navigator when starting arrays. An optimization of "Balance" will be used by default when starting arrays from the green screens. If disk units are included into an existing array, parity may be spread across less than the preferred number of disk units. In this case, the RAID function must be stopped and then started in order to redistribute the parity.

## RAID Options:

Starting RAID-5 from a green screen will result in the creation of a "balanced" type of parity spreading across the disk units.

Optimization options selectable from iSeries Navigator when starting RAID-5:

- **Capacity:** A parity set optimized for capacity stores the most data possible. The I/O adapter may generate fewer parity sets with more disk units in each parity set. For example, if an I/O adapter has 15 disk units and is optimized for capacity, the result could be one parity set containing 15 disk units.
- **Balanced:** A balanced parity set compromises between the ability to store large amounts of data and also provide fast access to data. For example, if an I/O adapter has 15 disk units and you choose balanced parity optimization, the result could be two parity sets, one with nine disk units and one with six disk units.
- **Performance:** Parity sets optimized for performance provide the fastest data access. The I/O adapter may generate more parity sets with fewer numbers of disk units. For example, if an I/O adapter had 15 disk units and is optimized for performance, the result could be three parity sets with five disk units each.

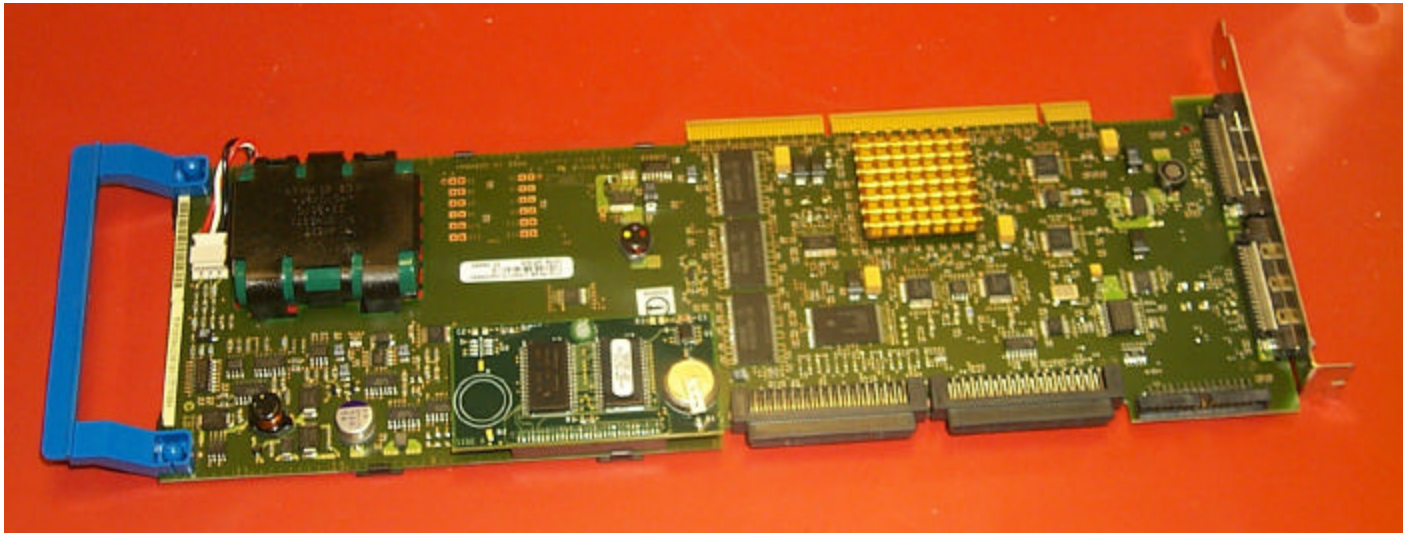
# High Performance RAID Controller Comparisons

<b>Feature</b>	<b>2778 / 4778</b>	<b>2757</b>	<b>Improvements</b>
SCSI bus	80 MB/s	160 MB/s *	2x faster
# SCSI buses	3	4	1.25x more
Max PCI Burst Rate	133 MB/s	532 MB/s	4x more
Processor Speed	80 MHz	500 MHz	6.25x faster
Compressed Write Cache	104 MB	757 MB	7x larger
Min/Max drives in RAID5 array	4 / 10 disks	3 / 18 disks	Optimized
SCSI bus tagged command queuing	N/A	Yes	Faster Response Time (under heavy I/O load)
Array parity checking and memory scrubbing	Yes	Yes - New HDW assist	5x faster
RAID Configuration	Enable or Disable	Capacity, Performance, Balance or disable	Greater Flexibility

\* NOTE: Shipped in February 2003 with 160 MB/second support.

## #2782 PCI-X RAID Disk Unit Controller

- 40 MB write cache
  - Uncompressed; compression ratio depends on data structure
- New RAID-5 implementation and options for optimization
- Two Ultra SCSI buses
- Up to 12 disk units and two internal optical / tape devices
- Available for iSeries 800, i810 and #0595/#5095 PCI-X Expansion Towers  
Also available - with V5R2 - for iSeries 270 and 820 and for #5075 Expansion Tower





# Notes: #2782 PCI-X RAID Disk Unit Controller

## **RAID-5 Rules** for the new disk unit adapters #2757 and #2782

A minimum of three disk units of the same capacity are needed for a valid RAID-5 configuration. A maximum of six arrays are allowed per controller, with a maximum of 18 disk units allowed per array. All disk units in an array must be of the same capacity. Parity is spread across either 2, 4, 8 or 16 disk units in an array. If an array of 3 disk units is started, parity is spread across 2 disk units. If an array of 4-7 disk units is started, parity is spread across 4 disk units. If an array of 8-15 disk units is started, parity is spread across 8 disk units. If an array of 16-18 disk units is started, parity is spread across 16 disk units. The number of arrays and size of each array can be influenced by specifying an optimization of either "Balance", "Performance" or "Capacity" in iSeries/Operations Navigator when starting arrays. An optimization of "Balance" will be used by default when starting arrays from the green screens. If disk units are included into an existing array, parity may be spread across less than the preferred number of disk units. In this case, the RAID function must be stopped and then started in order to redistribute the parity.

## **RAID Options** for the new disk unit adapters #2757 and #2782

Starting RAID-5 from a green screen will result in the creation of a "balanced" type of parity spreading across the disk units.

Optimization options selectable from iSeries Navigator when starting RAID-5 on disk units under a #2757 or #2782:

**Capacity** : A parity set optimized for capacity stores the most data possible. The I/O adapter may generate fewer parity sets with more disk units in each parity set. For example, if an I/O adapter has 15 disk units and is optimized for capacity, the result could be one parity set containing 15 disk units.

**Balanced** : A balanced parity set compromises between the ability to store large amounts of data and also provide fast access to data. For example, if an I/O adapter has 15 disk units and you choose balanced parity optimization, the result could be two parity sets, one with nine disk units and one with six disk units.

**Performance** : Parity sets optimized for performance provide the fastest data access. The I/O adapter may generate more parity sets with fewer numbers of disk units. For example, if an I/O adapter had 15 disk units and is optimized for performance, the result could be three parity sets with five disk units each.

# PCI RAID5 Adapters for Internal Storage

Disk Unit Adapter (IOA)	Write-Cache Base / Compressed	Hardware Disk compression	Min/Max # of drives in a RAID set
2763	10 MB	No	4/10
2782 <sup>(1)</sup>	40 MB	No	3/12
2748 /4748	26 MB	Yes <sup>(2)</sup>	4/10
2778 /4778	26 MB / 104 MB	Yes <sup>(2)</sup>	4/10
2757	235 MB / 757 MB	No	3/18

New V5R2  
Adapters

**NOTES:**

1. Available on Model 800, i810, and 0595/5095 PCI-X I/O Towers only  
(Also available on Model 270 and 820 as well as #5075 I/O tower - with V5R2)
2. Hardware Disk compression is not supported on 70 GB or larger 15K RPM internal drives

## #5702/#5705 PCI-X Controllers

- #5702 PCI-X Ultra Tape Controller
  - ▶ Two external Ultra SCSI ports
  - ▶ Attachment for selected external tape and optical devices
  - ▶ Includes support for LVD SCSI LTO Devices (358x-Lxx)\*
  
- #5705 PCI-X Tape/DASD Controller
  - ▶ No write cache
  - ▶ Internal Ultra SCSI bus with support for up to 6 Disk Units (no RAID support), for the required DVD and optional removable media feature
  - ▶ External Ultra SCSI bus with support for selected Magnetic Media and Optical devices
  - ▶ Includes support for LVD SCSI LTO Devices (358x-Lxx)\*



\*First iSeries attachment of 358x Low Voltage Differentiator features

## Notes: #5702/#5705 PCI-X Controllers

The #5705 adapter has two Ultra SCSI ports, the first port is an internal port supporting up to 6 internal disk units and up to two internal removable media devices, the second port is external, please find supported devices and combinations below.

The #5702 external SCSI adapter has two external Ultra SCSI ports.

Devices supported on the external SCSI ports of the #5705 and the two ports of the #5702

- LTO drives with LVD (Low Voltage Differential) SCSI interface, more in general the 358X-Lxx tape devices and tape libraries.
- Model 7207-122 QIC-SLR Tape Bridge Box
- Model 7208-345 60GB 8mm Tape Drive
- Model 7329-308 1/4-inch Tape Autoloader
- Model 7210-020 CD-ROM Bridge Box
- Model 7210-025 DVD-RAM Drive

Possible combinations on a single port:

- One Model 7207-122 QIC-SLR Tape Bridge Box
- One 7208-345 60GB 8mm Tape Drive
- One Model 7329-308 1/4-inch Tape Autoloader
- One Model 7210-020 CD-ROM Bridge Box
- One Model 7210-025 DVD-RAM Drive
- One Model 7210-025 and one Model 7210-025 (the two devices are daisy-chained)
- One Model 7210-025 and one Model 7210-020 (the two devices are daisy-chained with the Model 7210-025 physically connected first)
- One Model 7207-122 and one Model 7210-020 (the two devices are daisy-chained with the Model 7207-122 physically connected first)
- One Model 7207-122 and one Model 7210-025 (the two devices are daisy-chained with the Model 7207-122 physically connected first)
- One Model 7208-345 and one Model 7210-020 (the two devices are daisy-chained with the Model 7208-345 physically connected first)
- One Model 7208-345 and one Model 7210-025 (the two devices are daisy-chained with the Model 7208-345 physically connected first)

# New Storage Devices

- 15 K RPM Disk Units

- ▶ 35 GB Disk Unit #4326
- ▶ 70 GB Disk Unit #4327



- ▶ Can be mounted in PCI-X towers and new server DASD slots only
- ▶ Outstanding performance

- DVD-ROM

- ▶ Internal optical media device #4631
  - When mounted in Model 800 / 810 CEC #4531
- ▶ Read capability
  - 640 MB CD format
  - 4.7 GB/ 9.4 GB DVD format
- ▶ Performance
  - Reads 48X versus 24X for DVD-RAM (#4630)

### 15 K RPM Disk Units

- 35 GB Disk Unit #4326: #4326 is a 15k rpm disk with a SCSI interface. This disk unit is not supported in #5065, #5066, #5074, #5079, or #5075 expansion units/towers, or in the system units of Models 270, 820, 830, and 840.
- 70 GB Disk Unit #4327: #4327 is a 15k rpm disk with a SCSI interface. This disk unit is not supported in #5065, #5066, #5074, #5079, or #5075 expansion units/towers, or in the system units of Models 270, 820, 830, and 840.
- Prerequisite: Disk Unit Controller and an available disk unit slot.
- Refer to Informational APAR II13440 at:
  - [HTTP://WWW.IBM.COM/ESERVER/ISERIES/SUPPORT](http://www.ibm.com/eserver/series/support)

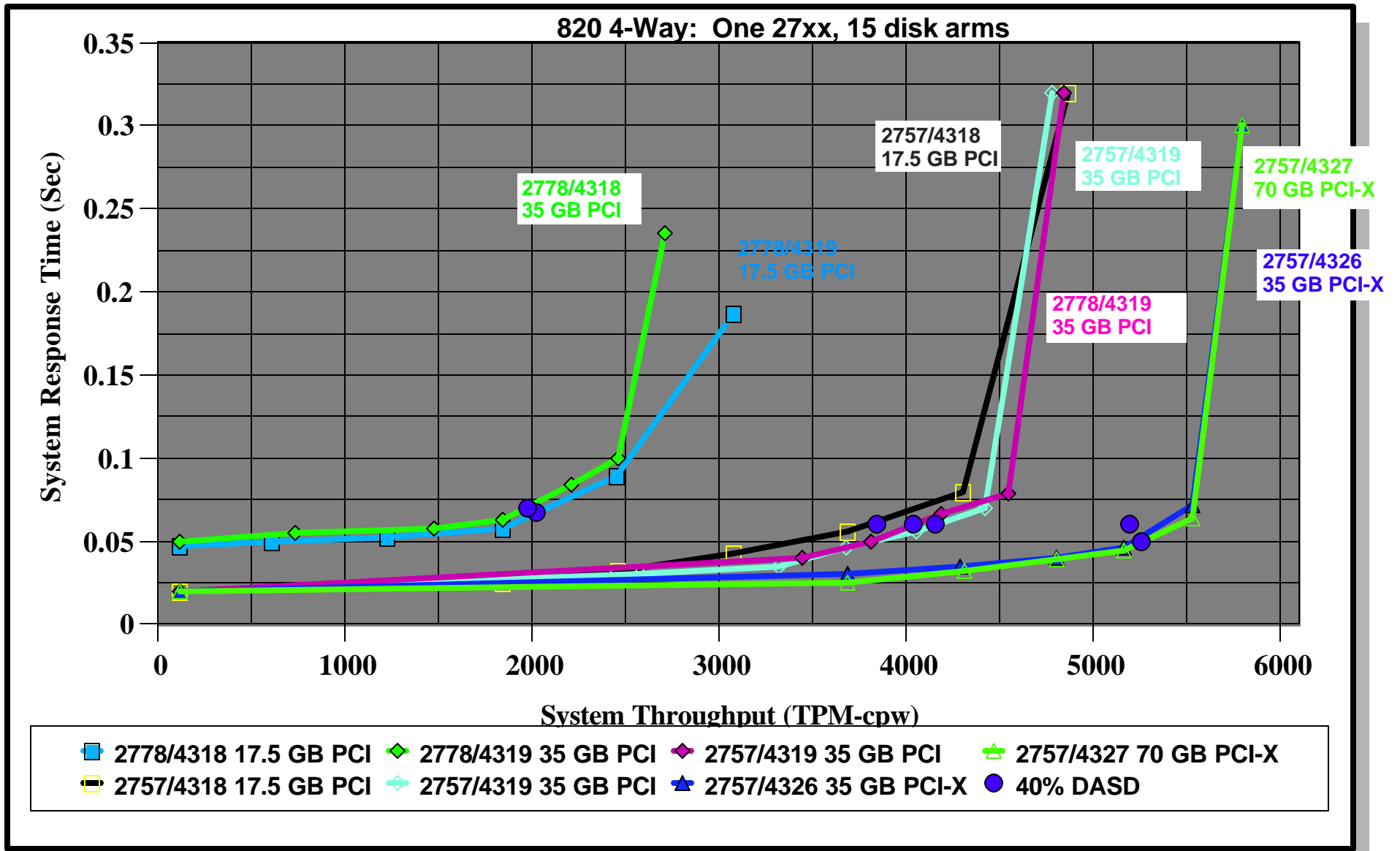
DVD-ROM (#4531/#4631): These DVD-ROMs are 5 1/4-inch, half high devices that mount in a removable media device slot. They can read 640MB CD-ROM and 4.7GB DVD-RAM media. They can be used for Alternate IPL (IBM distributed CD-ROM media only) and program distribution.

Prerequisites: Removable media device slot and disk unit controller in the system unit or expansion tower/unit where the device is mounted.

# RAID-5 Redefined with the new RAID Controllers

- The new RAID-5 disk unit controllers use an improved striping mechanism
  - ▶ Parity data spread across drives on 16 subarrays (when IOA / Disk Controller supports 18 disks)
  - ▶ Short seeks compared to earlier RAID striping algorithm
- Possible array disk unit members
  - ▶ Three unit array: parity data across two units
  - ▶ Four to seven unit array: parity data across four units
  - ▶ Eight to fifteen unit array: parity data across eight units
  - ▶ Sixteen to eighteen unit array: parity data across sixteen units

# DASD Performance





# Notes: DASD Performance

This foil compares the existing 2778/4778 disk controller with the new 2844 IOP, 2757 disk controller and combinations of 10K RPM and 15K RPM disks, along with the I/O towers in which they can be attached. The best performance results were conducted with one 2757 attached to the 2844 in this foil.

When combining the new Input Output Processor (IOP) #2844 and new 2757 with the new 15K RPM disk drives, you can achieve a global gain of performance up to three when running an identical workload, such as CPW, on a given configuration. These results reflect a simulated workload on a 8xx-xxxx with xx GB of main storage, running the CPW workload on a set of disks in either a 5074 or 5094 tower, using a single IOP, one RAID controller and 15 disk units

Progressing from left to right, you can see the System (Disk) Response time and the CPW metric progress from the existing 2778 controller and 10K RPM disk drives, improve with the new 2757 disk controller with 10K RPM disk drives, and improve further with the combined new 2757 controller and 15K RPM disk drives. This is as you would expect. However, we note that CPW transaction throughput improvement is quite dramatic even with the existing 10K RPM disk drives on the new 2757 controller.

# RAID, what RAID ?

- Redundant Array of Independent Disks
  - ▶ RAID-0
    - Data striped across all disks in the array
    - No error checking or redundancy
    - Not used on iSeries, used on other platforms
  - ▶ RAID-1
    - Also called disk mirroring within an array
    - On iSeries implemented with Storage Management functions on ASP level
    - Disk, IOP and bus level mirroring supported with OS/400
    - Full redundancy
  - ▶ RAID-1/0
    - Combination of RAID-0 and RAID-1,
  - ▶ RAID-3 and RAID-4
    - Parity data stored on a dedicated disk unit, slow and hardly used
  - ▶ RAID-5
    - Striping of data and parity across all or some disks in the array
    - Specific rules by adapter type, iSeries internal disk units with RAID-5 adapters

# Notes: RAID, what RAID ?

**RAID-0:** iSeries does not use the data striping on disk unit arrays. iSeries storage management functions however are spreading the data over all available and configured drives in a auxiliary storage pool. No error checking or redundancy. The failure of one drive in the array results in the loss of all data stored in the array. When used with file based operating systems, where parts of the files not residing on a failed drive can be recovered, not all data is lost when a fatal drive failure occurs.

**RAID-1** On the iSeries, the implementation is called mirroring and is part of the operating system functions. Since iSeries storage management functions are also spreading the data over all available and configured drives in a auxiliary storage pool (actually over half of the available units because the mirrored image is on the others), some call this way of protection a semi-RAID-1/0 being (for the iSeries) a combination of distributing data over multiple units and mirror them at the same time. For the iSeries there are different levels of RAID-1 protection. There is disk level mirroring, IOP level mirroring and bus level mirroring. For description of these levels, look for descriptions on mirrored protection specify codes : #0040, #0042 and #0043.

**RAID-3:** A dedicated drive keeps the parity information for the other data drives in the RAID set. These data drives make use of byte-level striping to spread large record information across the entire array. RAID-3 makes use of each sector's embedded ECC to detect and repair errors. The utilization of byte-level striping makes RAID-3 a suitable choice for single-user environments where large files are in use.

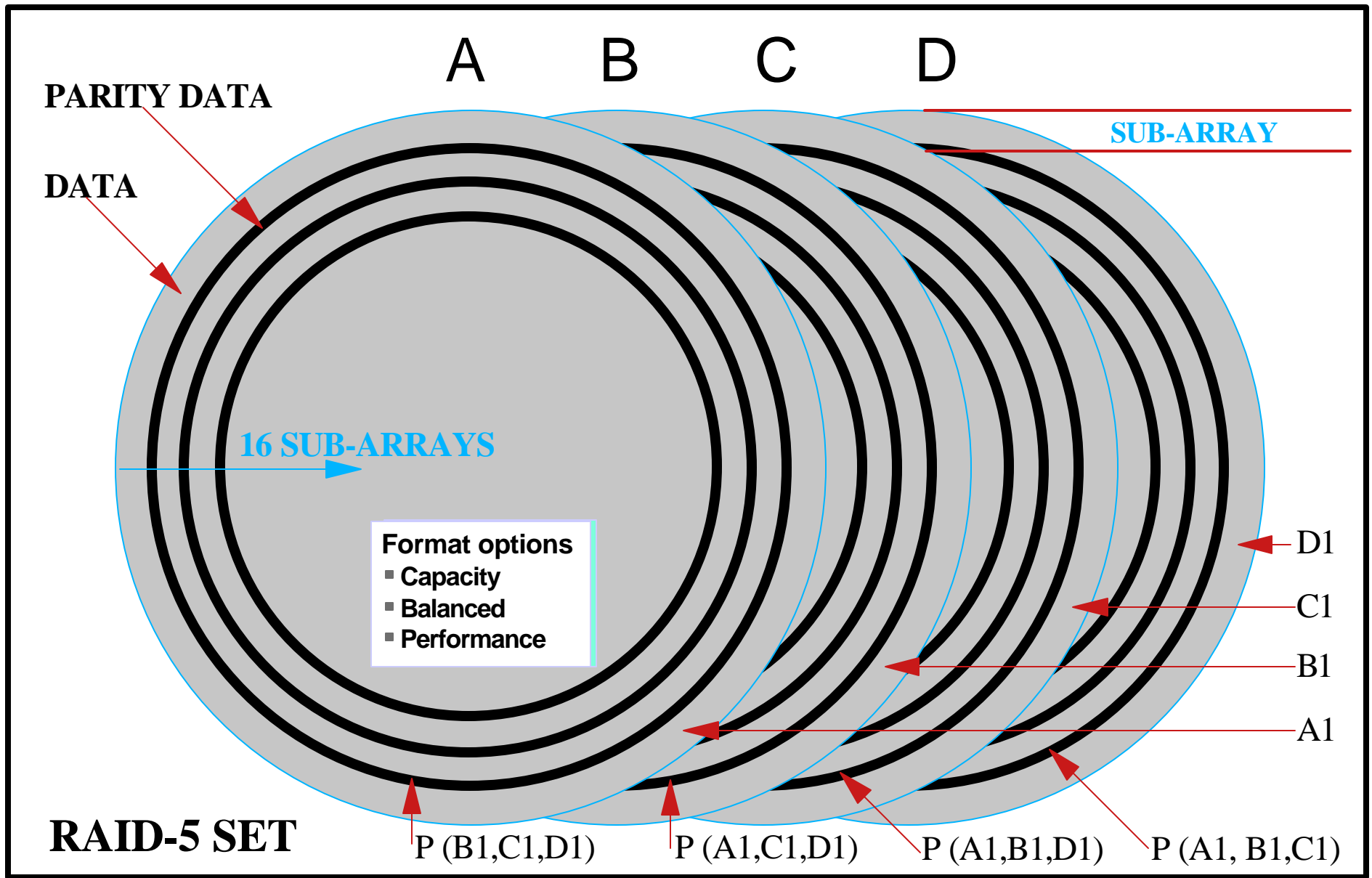
**RAID-4:** Almost identical to RAID-3 protection, with a single dedicated parity drive and striped data drives. The difference is that unlike RAID-3, RAID-4 striping consists of block-level striping, allowing an entire record to be written to each stripe. This makes RAID-4 more suitable for systems with transactional environments where many smaller reads are needed at the same time.

**RAID-5:** The optimal combination of redundancy, performance, and storage efficiency make RAID-5 one of the most widely favored data protection methods currently used. This controller implemented protection methodology spreads the parity locations across the entire disk set or a number of units in the set, installing a parity segment on each drive or a number of drives in the set. This arrangement is called distributed parity, and it greatly enhances the array's I/O performance, since the burden of parity write operations is shared throughout the array. RAID-5 is sometimes referred to as a Rotating Parity Array. While write efficiency is greatly improved over other RAID methods, parity calculations must still be performed for each write, and this still creates a slowdown. Using the new iSeries adapters with large, fast, intelligent AND protected write cache, physical write performance slow down can almost be ignored. Optimization of a RAID-5 array can be achieved by adjusting the stripe size to best deal with the environment's needs. Data protection is still optimal, with the full regenerative capabilities of parity and the fact that parity blocks are isolated from their associated data blocks. Cost effectiveness of RAID-5 is also good, comparable to other data protection methods. Hardware control is likewise a necessity. RAID-5 as implemented with the new iSeries adapters is also ideally suited to applications where large numbers of users are accessing information simultaneously.

# RAID-5 Redefined with the new RAID Adapters

- The new RAID-5 disk unit adapters use a improved striping mechanism
  - ▶ Parity data spread across drives
    - 16 subarrays
  - ▶ Short seeks
  
- Possible array disk unit members
  - ▶ Three unit array
    - Parity data across two units
  - ▶ Four to seven unit array
    - Parity data across four units
  - ▶ Eight to fifteen unit array
    - Parity data across eight units
  - ▶ Sixteen to eighteen unit array
    - Parity data across sixteen units

# Parity Data Striping Example with new RAID 5 Adapters



## Notes: Example with new RAID-5 Adapters

The previous foil is a graphical representation of the distribution of the data and the parity data on disk drives in a RAID-5 set driven by the latest iSeries RAID-5 disk controllers (#2757 or #2782). The example shows four drives (A,B,C and D) in a RAID-5 set, each drive represented by a single platter.

The RAID-5 striping of data and parity data now works with subarrays. There are 16 subarrays per drive. The size of such a subarray is 6.25% of the disk unit capacity. The array includes data and parity data if the disk unit contains parity data. This existing of parity data in the subarray restricts the size of the subarray available for data with exactly the same percentage as if there were no subarrays whatsoever. Easy to understand that the total amount of disk space reserved for parity data stays the same as before. The difference with the new adapters is also the possible distribution of parity data over more or less units than before (see previous foils covering the new adapters).

Back to the details of the four disk unit example on the foil. The data in each subarray (A1,B1,C1,D1) has its parity data distributed over the units in the corresponding subarrays. The parity data of subarray 1 on disk A contains the parity bits for subarrays 1 of the other (B, C, D) disk units. The main advantage here is that when for example parity data has to be written, on disk units with low occupancy, the disk unit actuator will only need to be moved over a very small distance on the platter before a write can start. This provides a serious advantage over the previous design, when data was written on one side of the platters and parity data on the opposite side. Seeks over more than 2/3 of the platter were happening all the time with the previously used method for parity data striping, especially when the used storage capacity of the disk(s) was rather low.

As we stated earlier in the foil describing the 2757 controller the V5R2 user has additional control of how the RAID parity data is physically striped. Starting RAID-5 from a Service Tools 5250 workstation results in the creation of a "balanced" type of parity spreading across the disk units. Optimization options selectable from **iSeries Navigator** when starting RAID-5 on disk units under a #2757 or #2782 offer more flexibility:

- **Capacity:** A parity set optimized for capacity stores the most data possible. The I/O adapter may generate fewer parity sets with more disk units in each parity set. For example, if an I/O adapter has 15 disk units and is optimized for capacity, the result could be one parity set containing 15 disk units.
- **Balanced:** A balanced parity set compromises between the ability to store large amounts of data and also provide fast access to data. For example, if an I/O adapter has 15 disk units and you choose balanced parity optimization, the result could be two parity sets, one with nine disk units and one with six disk units.
- **Performance:** Parity sets optimized for performance provide the fastest data access. The I/O adapter may generate more parity sets with fewer numbers of disk units. For example, if an I/O adapter had 15 disk units and is optimized for performance, the result could be three parity sets with five disk units each.

# HSL Considerations

# HSL Loops, I/O Towers: iSeries 800, i810, i825, i870, i890

- Special attention required for migrated towers and upgrades
- No migration towers supported on any loop
- Tower placement rules and recommendations
  - ▶ Cabling rules and efficiency
  - ▶ Performance

Model	Max. Loops: Copper/Fiber Optic	Type	Max. I/O Towers per Loop	Total Max. I/O Towers	Max. IXA per Loop	Total Max. IXA	Combined Max. per Loop	Combined Max. Total
800	1	HSL	1	1	3	3	4	4
i810	1	HSL	4	4	7	7	8	8
i825	3 / 2	HSL-2	6*	(16) 18*	5 / 8**	18	9	27
i870	8@ / 6	HSL-2	6	48***	8	60	9	61***
i890	14@ / 12	HSL-2	6	48***	8	60	9	61***

\* 5 PCI (6 PCI-X) towers max. on first and second loop ( i825 has TWO base HSL loops )

\*\* 8 on 3rd loop only \*\*\* includes base I/O tower @ OptiConnect should not use first loop, which accesses load source disk

Non PCI-X towers include the #0578, #5078, #5074, #5075, and the #5079 which counts as two towers. An I/O Tower has two HSL Ports (0 and 1).



## Notes: Number of HSL Loops, I/O Towers by Model

This table shows an overview of the iSeries servers and the associated HSL loops. You can also find the maximum number of towers and IXAs allowed on these servers. The following foils will cover more details on the HSL connectivity. There are no essential changes for HSL loop rules except for server maximums for PCI, PCI-X and IXA towers and their combinations allowed on the HSL loops.

Combined maximum means the total of 48 I/O Towers plus maximum IXAs on a single system cannot exceed 61. 48 I/O towers includes the base I/O tower for the 870 and 890.

# HSL Adapter Overview

- Support for:
  - ▶ HSL-2 cables
  - ▶ HSL to HSL-2 cables
  - ▶ Optical HSL Cables
- All adapters are cluster enabled
  - ▶ Except base HSL adapter on i825
  - ▶ Three-server cluster loops
    - Selected loop on i825, Model 830, Model 840, i870 and i890
- #2776 (copper) and #2788 (optical)
  - ▶ 8 ports active
  - ▶ Only 4 ports are active
    - On i870
    - On i890 16-24 way in slot M39 see (\*) in table

iSeries	Adapter Feature	Active ports	Type
800	N/A	2	Cu / HSL
i810	N/A	2	Cu / HSL
i825	9787 (base)	2	Cu / HSL-2
i825	2785 / 9785	2	Cu / HSL-2
i825	2786 / 9786	2	Optical
i870 i890	9730 (base)	4	Cu / HSL-2
i870 i890	2776	4 8*	Cu / HSL-2
i870 i890	2788	4 8*	Optical

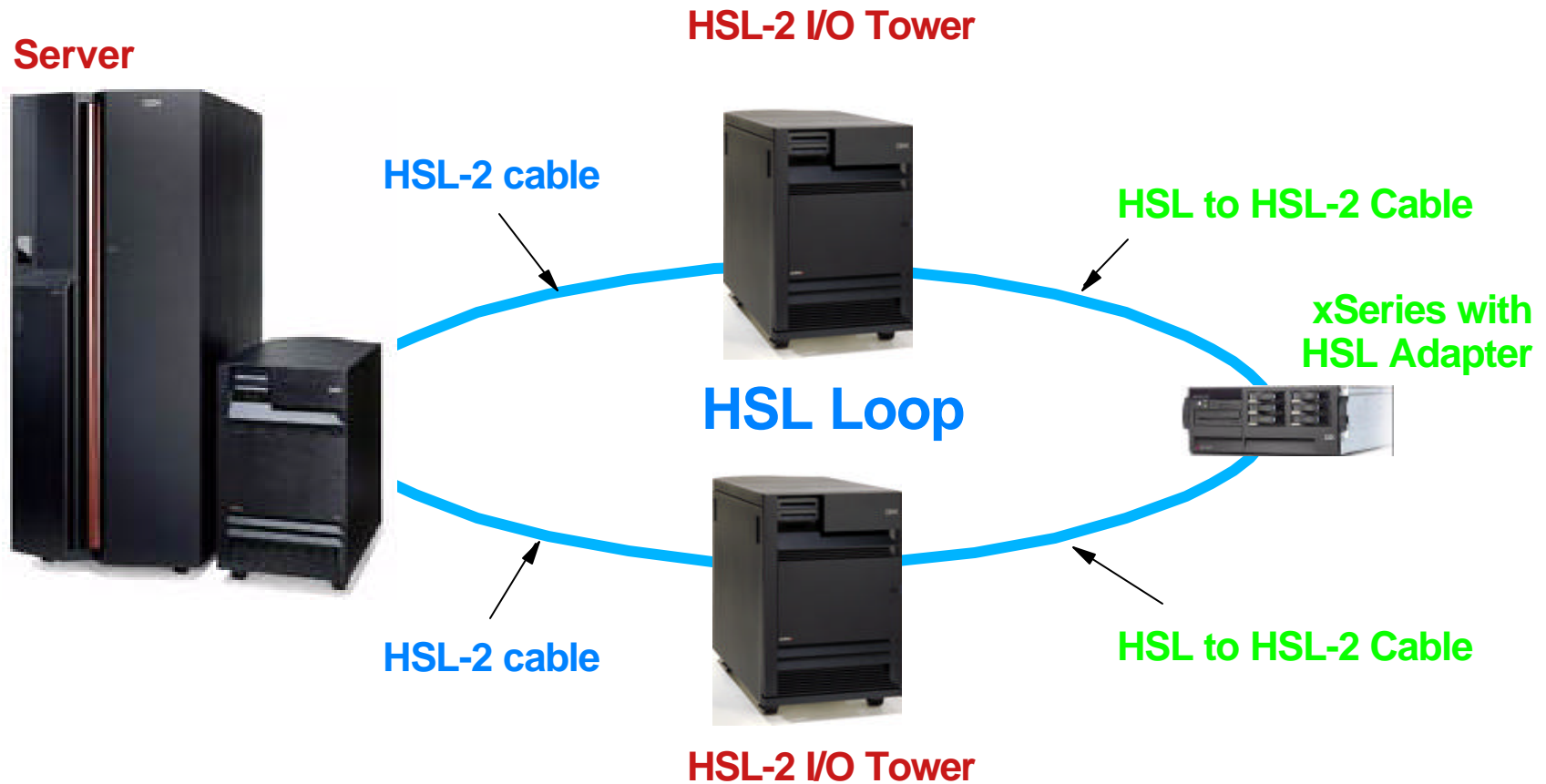
## Notes: HSL Adapter Overview

The new iSeries servers i825, i870 and i890 can have a variety of different HSL ports depending on the HSL adapters selected. It is important for planning the physical connections between the servers and the towers (can be PCI, PCI-X or IXA).

All HSL adapters for the new iSeries servers support HSL clustering - with one exception, the base HSL adapter (**HSL ports C0 and C1**) on the i825 does not support HSL clustering. The high end servers (i825, i870 and i890) can have dedicated three server loops. All participating servers on any HSL clustered loop must be at V5R2 when at least one iSeries 800, i810, i825, i879, i890 server is the loop.

The i870 HSL adapters all have 4 ports enabled (2 loops per adapter), the i890 24 to 32-way adapters all have 8 ports enabled (4 HSL loops per adapter) and the i890 16 to 24-way adapters all have 8 ports enabled (4 HSL loops per adapter) - except for the HSL adapter in position M39, which has only 4 ports (A0, A1, B0 and B1) enabled (2 loops per adapter).

# Single Loop configuration with IXA



*Plan ahead*

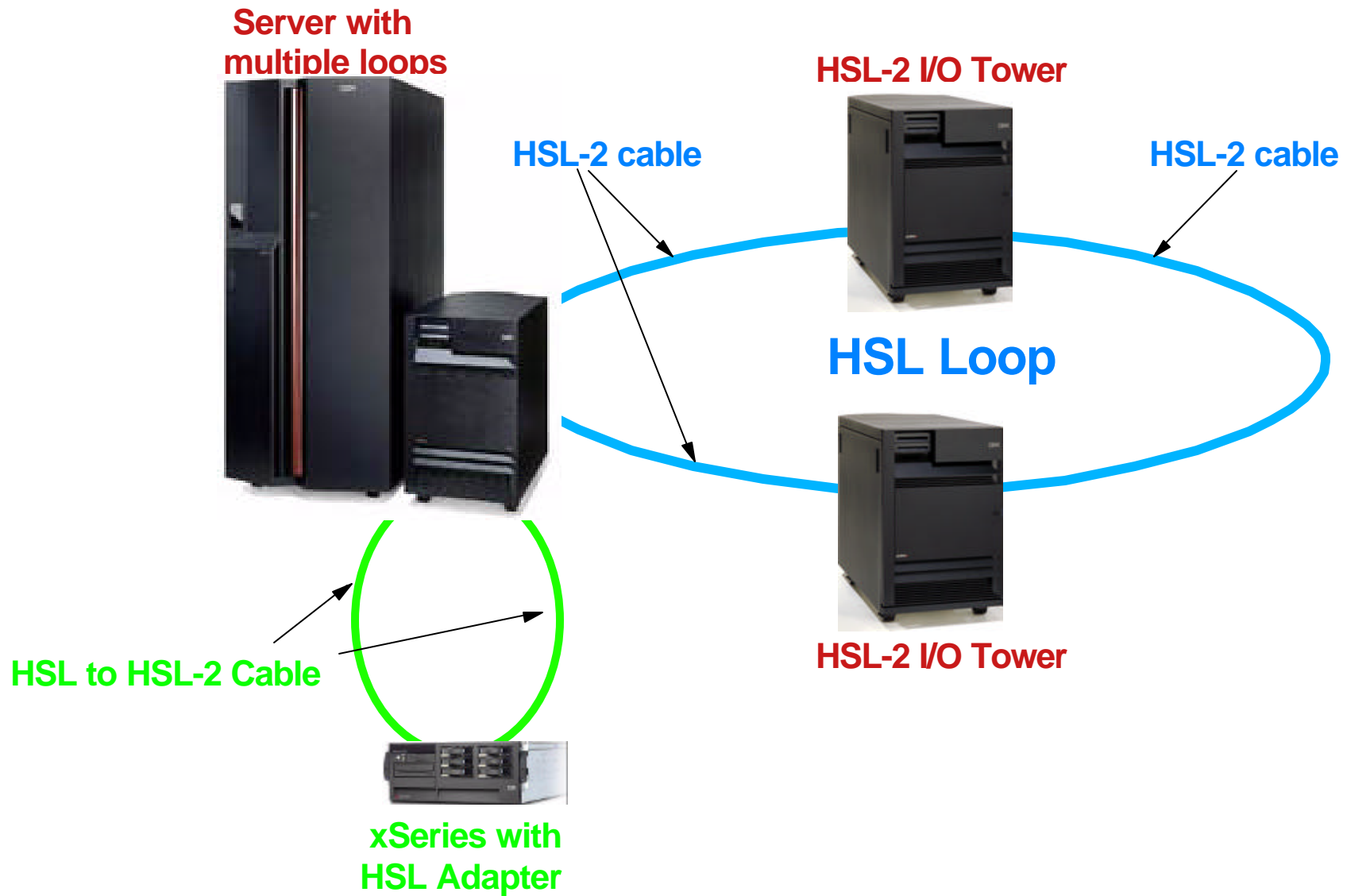
## Notes: Single Loop configuration with IXA

Planning is important for configuring HSL loops, the associated cables and their type and length. The aspects of performance and availability may dictate configuration less than the maximums. For example, do not put 5 I/O towers with heavily utilized disk arms on the same loop and expect best performance during times of highest disk I/O rates.

Since we will see more complicated combinations than before with the new type of PCI-X towers, extra considerations must be taken into account. The HSL loop will be reduced to two HSL segments when the IXA is powered down from the xServer console.

In the next foil we see a good performing configuration.

# Dual Loop configuration with IXA



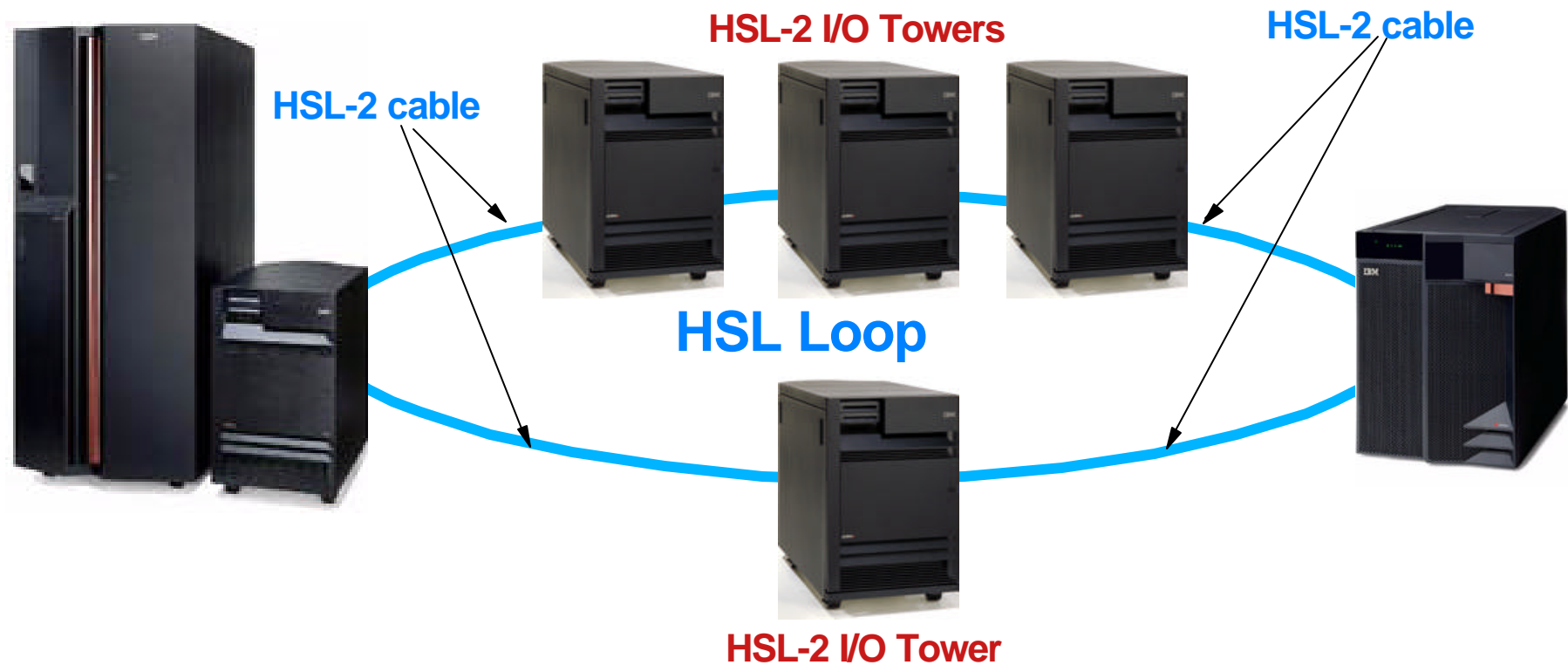
## Notes: Dual Loop configuration with IXA

On a server with more than one HSL loop, moving the IXA(s) to a separate loop only requires one additional HSL to HSL-2 cable. The chance to have a serious outage on the first HSL loop are reduced.

This is a very simple example of improving the HSL configuration. The implementation of such improvements gets more complicated when adding more towers to the configuration since there are different type of towers available.

## Two Server Loop configuration

- Maximum 4 I/O Towers in a two server loop
- Maximum 3 I/O Towers in any segment of a two server loop





# Notes: Two Server Loop configuration

For loops that contain two servers the following rules apply:

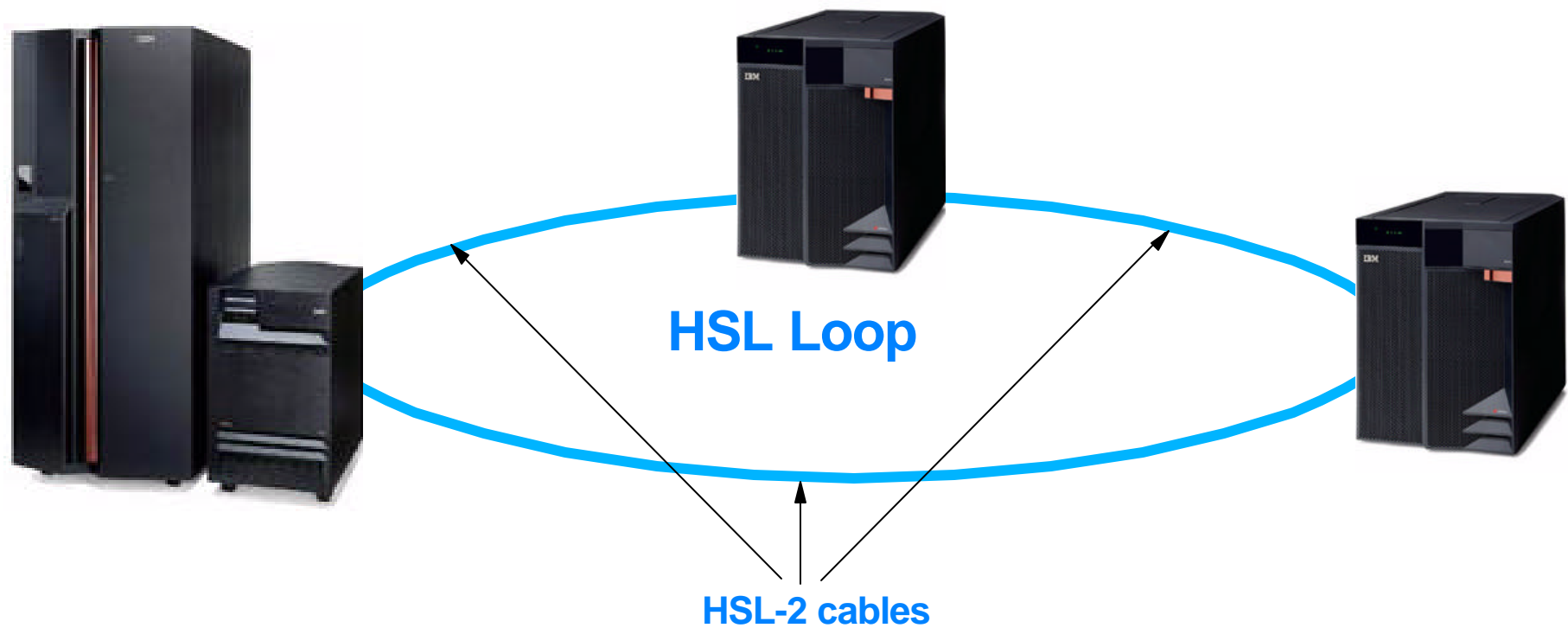
- The maximum number of external towers per **loop** is 4.
- The maximum number of external towers per **segment** is 3.
- These limits apply to the sum of all types of external towers, including IXS towers.

Switchable towers in this type of setup must be placed according to other rules such as:

- A switchable tower must be immediately adjacent in the HSL loop to the alternate system, or to a tower (private switchable, or switched) owned by the alternate system.
- Two systems define the ends of an HSL loop segment on which a switchable tower resides. One of those systems must be the home system and the other must be the alternate system for that tower. (This rule is essentially a direct result of first rule.)
- IXS towers are not switchable towers

# Three Server Loop configuration

- No I/O Towers allowed in any segment of a three server loop



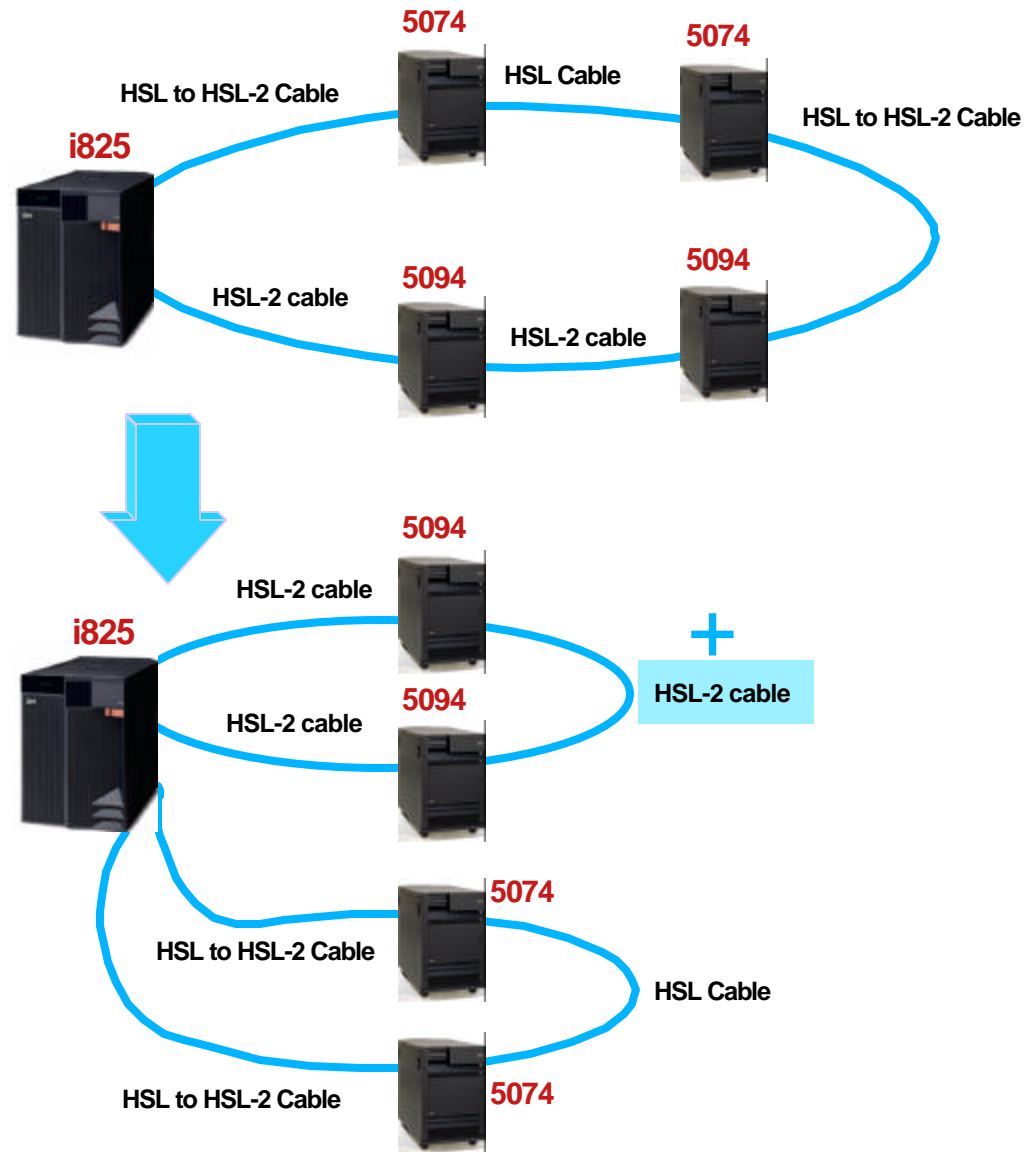
# Notes: Three Server Loop configuration

For the three server loop configuration there is one simple rule that applies: there can't be any towers on this loop. All segment cables need to run directly from one server to the other. All three participating servers must be at V5R2!

# Cable Configurations and Tower Arrangements

- Tower arrangement for performance

- ▶ Populate available loops
  - Balance number of towers
  - Find examples in System Builder
- ▶ Depending on the number of towers and the arrangement:
  - More adapters required
  - More cables required
- ▶ Group towers by type if possible
  - Order correct number and correct type of cables
    - HSL cables
    - HSL-2 cables
    - HSL to HSL-2 cables (all copper only)



# Notes: Cable Configurations and Tower Arrangements

In the example given on this foil, changing the I/O tower arrangement for better performance requires just a single additional cable.

Since the i825 has two base HSL-2 adapters, it is much more efficient from a performance perspective to populate both loops with I/O towers. Depending on the specific requirements, one can decide to order additional HSL adapters with the correct type of HSL cables for a suitable tower cabling configuration.

In the Tower chapter under High-speed link tower placement for iSeries in the iSeries System Builder SG24-2155-07, you can find a set of rules and recommendations for setting up the I/O towers on the different servers.

# Cabling Details

# HSL Cabling Information Servers

Feature Number	Feature Name	i270	800 i810	820	i825	830 840	i870 i890
<b>COPPER</b>							
1460	3m HSL Copper cable	X	X	X		X	
1461	6m HSL Copper cable	X	X	X		X	
1462	15m HSL Copper cable			X*		X	
1474	6m HSL to HSL-2 cable	X	X	X	X	X	X
1475	10m HSL to HSL-2 cable			X*	X	X	X
1482	4m HSL-2 cable				X		X
1483	10m HSL-2 cable				X		X
1485	15m HSL-2 cable				X		X
<b>OPTICAL</b>							
1470	6m HSL Optical cable				X	X	X
1471	30m HSL Optical cable				X	X	X
1472	100m HSL Optical cable				X	X	X
1473	250m HSL Optical cable				X	X	X
<b>SPCN</b>							
1463	2m SPCN cable	X	X	X	X	X	X
1464	6m SPCN cable	X	X	X	X	X	X
1465	15m SPCN cable	X	X	X	X	X	X
1466	30M SPCN cable	X	X	X	X	X	X
1468	100m Optical SPCN cable				X	X	X
0369	250m Optical SPCN cable				X	X	X

\* Not supported to connect to port A1

Optical SPCN cables include two copper to optical adapters, p/n 90H6287


# HSL Cabling Information Towers

Feature Number	Name	5074	5075	5078 0578	5079 8079	IXA card	5094 9094	5095 0595	5088 0588	5294 8094
<b>COPPER</b>										
1460	3m HSL Copper cable	X	X	X	X	X				
1461	6m HSL Copper cable	X	X	X	X	X				
1462	15m HSL Copper cable	X	X	X	X	X				
1474	6m HSL to HSL-2 cable	X	X	X	X	X	X	X	X	X
1475	10m HSL to HSL-2 cable	X	X	X	X	X	X	X	X	X
1482	4m HSL-2 cable						X	X	X	X
1483	10m HSL-2 cable						X	X	X	X
1485	15m HSL-2 cable						X	X	X	X
<b>OPTICAL</b>										
1470	6m HSL Optical cable	X		X	X		X	X	X	X
1471	30m HSL Optical cable	X		X	X		X	X	X	X
1472	100m HSL Optical cable	X		X	X		X	X	X	X
1473	250m HSL Optical cable	X		X	X		X	X	X	X
<b>SPCN</b>										
1463	2m SPCN cable	X	X	X	X	X	X	X	X	X
1464	6m SPCN cable	X	X	X	X	X	X	X	X	X
1465	15m SPCN cable	X	X	X	X	X	X	X	X	X
1466	30m SPCN cable	X	X	X	X	X	X	X	X	X
1468	100m Fiber Optic SPCN cable	X		X	X	X	X	X	X	X
0369	250m Fiber Optic SPCN cable	X		X	X	X	X	X	X	X

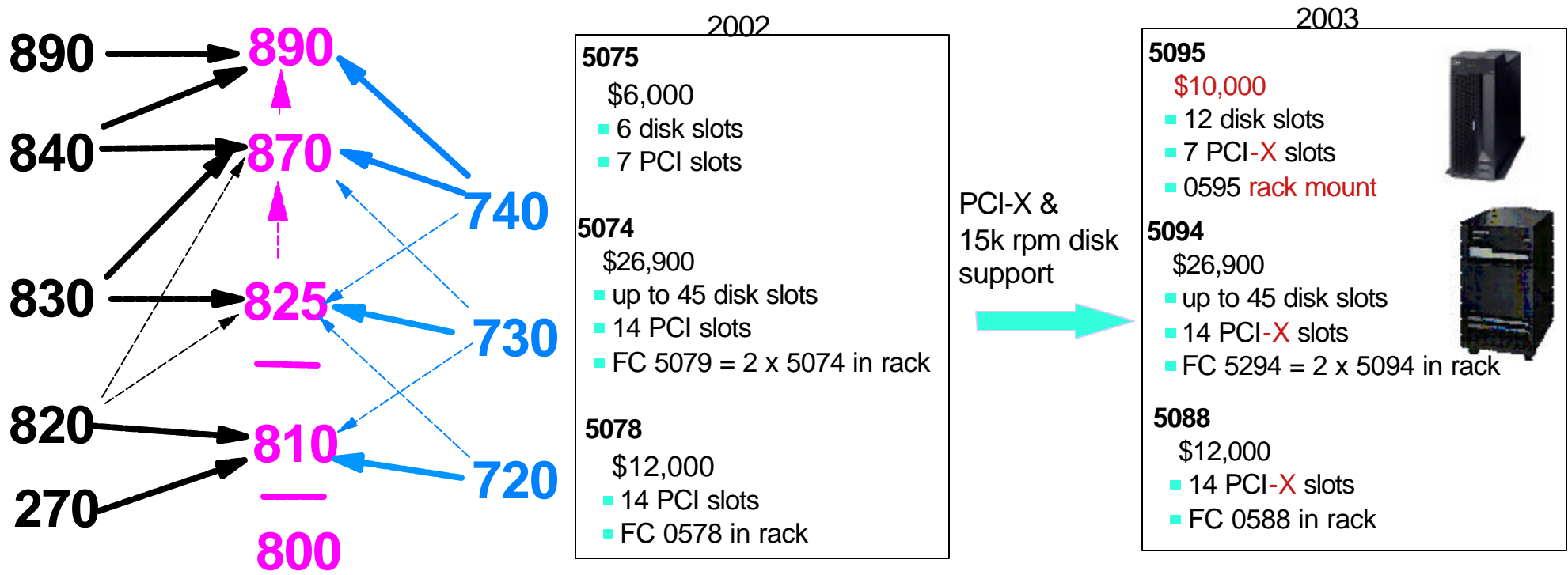
Consider a 8093 as a rack with 9094 bottom unit and a 5074 top unit installed  
 Optical SPCN cables include two copper to optical adapters, p/n 90H6287



# Agenda

- Announcement Highlights
- e-business on demand™
- The Customer Challenge: Solving the Cost Equation
- **Hardware Capabilities**
  - ▶ Specifications
  - ▶ Capacity Upgrade on Demand
  - ▶ Additional Hardware
  - ▶  Upgrades

# Server and I/O Tower Upgrades, Migration at a Glance



References:

- IBM eServer iSeries Server Migration: System Migration and Upgrades at V5R1 and V5R2, SG24-6055-02
- Installation and physical planning at <http://boulder.ibm.com/series/v5r2/ic2924/index.htm>
- ITSO Redbooks Redpaper - *IBM eServer iSeries Supported Upgrades*, REDP0322, planned availability February 24, 2003

# Notes: Server and I/O Tower Upgrades at a Glance

This foil shows graphics from the Marketing Product Positioning presentation for server to server upgrades and disk I/O tower to disk I/O tower upgrades. The bold lines between an older and upgraded to / migrated to system indicates the primary "to system."

The disks and the PCI cards need to be accommodated in a 5074 or a 5094 based on their compatibility. Some of the expansion units can be converted to work with the new models. However detailed planning needs to be done before beginning the expansion unit conversion if you are upgrading a partitioned server. For example:

- 5065 to 5074 conversion: 5065 has one bus while the 5074 has two buses. Hence after the conversion two buses report into the system.
- 5066 to 5079 conversion: 5066 has two buses while the 5079 has four buses. Hence after the conversion, four buses report into the system.
- 5074 to 5094 conversion: 5074 has two buses while the 5094 has three buses. Hence after the conversion, three buses report into the system.

Review other documentation on hardware migration detail. For example, the following current I/O tower disk drives **can be moved**:

- 7.2K rpm #4308 (4 GB)
- 7.2K rpm #4314 (8.5 GB)
- 7.2K rpm #4324 (17.5 GB)
- All 10K rpm disks

iSeries has spent extensive hours testing upgrade and migration testing of upgrades to minimize the impact to "hours of operation" required to run a business. Note that many other vendors do not yet have the extensive capacities to support upgrades the way the iSeries does.

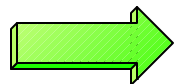
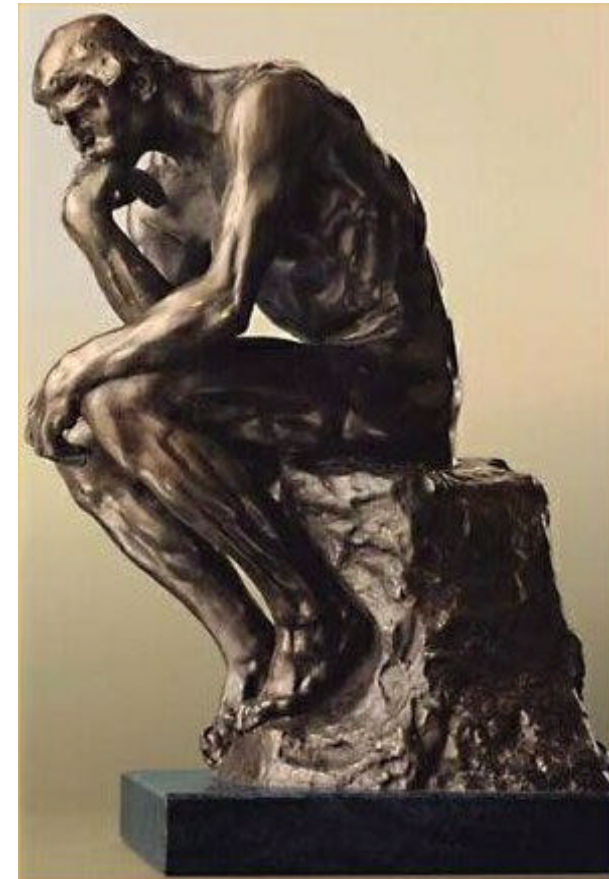
Upgrades are defined as moving to the new server from an existing server and **retaining the existing system's serial number**. Migration is used to mean actually "moving" current hardware to the new system, independent of retaining the serial number.

## Notes:

- Additional iSeries presentations and other marketing materials can be found on the IBM Systems Sales Web site at: [w3.ibm.com/sales/systems/iseries/](http://w3.ibm.com/sales/systems/iseries/)
- There is also a Migration redbook being updated: IBM eServer iSeries Server Migration: System Migration and Upgrades at V5R1 and V5R2, SG24-6055-02 (red draft Feb 2003)
- See the Hardware presentation in the January 2003 Announcements Technical Overview set of presentations
- The following ITSO Redpaper is intended to be a summary of supported upgrades/migrations that can be updated as necessary - *IBM eServer iSeries Supported Upgrades*, REDP0322, planned availability February 24, 2003

## Upgrade or Migrate?

- Recent vintage hardware more likely to be eligible for upgrade
- V5R2 not supported on 4xx, 5xx hardware - requires migration
- Consider migration if
  - ▶ Converting to new HSL PCI-X I/O support
  - ▶ Server Consolidation - partitioning
  - ▶ Short maintenance windows for upgrades
- Upgrades include upgrade to an edition
  - ▶ Interactive capacity requirements
  - ▶ Capacity on demand (permanent and/or temporary)



***Solution Assurance may be required in many cases (e.g. i870, i890)***

## Notes: Upgrade or Migrate?

One of the decisive factors for selecting an upgrade of an existing system or replacing the hardware will be based on the number of components that can be reused on the new system. Features, such as SPD towers, migration towers and SPD IOAs are not supported on the new hardware; other components, such as slower disk or tape drives, might be replaced since they are not delivering the performance or usability features one is looking for. Remember also that any 4xx and 5xx systems do not support V5R2, so a side-by-side migration will be required.

Another criteria that will decide whether or not to select a straightforward upgrade will be the maximum allowable downtime the service delivery can tolerate. Also, a simple box upgrade will take considerably less time than if you need, at the same time, change the RAID5 implementation by introducing the new RAID5 controllers, or have to replace all expansion towers with new expansion towers. Remember also that upgrading from an LPAR environment will take more time to bring up the system again, especially when adding or changing the configuration drastically.

This announcement introduces a line of products that allow to easily perform server consolidation and enable a very useful way to dynamically adjust server and partitioning resources (i.e. processors) than before; the enhanced support, offered by V5R2, for hosting Linux, Windows and UNIX applications allows to use a single footprint for a variety of workloads. Combined with the excellent management tools provided by tools such as iSeries Navigator, an offering for a consolidated server becomes a very attractive proposition to deliver outstanding levels of service delivery.

With the new systems, the notion of different interactive capacity cards has disappeared. This means that instead you need to validate whether or not the server can run with either 0 5250 OLTP capacity, such as offered by the Standard Options Package, or with the full processor CPW 5250 OLTP capacity, as included in the Enterprise Package.

Finally, the upgrade or migration choice for such a hardware change will be influenced by the budget. In some occasions, especially when the original system has older components, you also need to consider the recurring costs for manpower (e.g. the attended time needed for handling backup volumes will be shorter if the backup/restore medium is automated or faster than the new one), maintenance, floorspace, power and cooling to complete this picture.

Please also to the *Planning* chart later in this presentation for more details on the outline of an upgrade or migration process.

# Upgrade Paths - Summary View

	<i>i800</i>	<i>i810</i>	<i>i825</i>	<i>i870</i>	<i>i890</i>
<i>270</i>		x (#2469/7430)			
<i>720</i>		x	x		
<i>730</i>			x	x	
<i>740</i>			x	x	x
<i>i820</i>		x	x	x	
<i>i830</i>			x	x	x
<i>i840</i>				x	x
<i>i800</i>	x				
<i>i810</i>		x			
<i>i825</i>			x	x	
<i>i870</i>				x	x
<i>i890</i>					x

## i870/i890 Physical Planning Considerations

- Size (2+ meters (79.72 in) tall, Weight (800 kg (1762 lbs))
- Main system power: 240/480 volt, 60/30 amp, 3-phase service
- Customer and SSR/CE Responsibilities:
  - ▶ Customer: Install hardware necessary for console device (twinax, Operations Console); install necessary software on console device; provide proper cooling, power facilities
  - ▶ SSR/CE: Install 870/890 system, validate SLIC installation, connect console device
- Business Partner Responsibilities:
  - ▶ Pre-Sale and Pre-Installation Solutions Assurance Review, including physical planning. IBM will assist if requested
  - ▶ Business Partner web assistance locations:
    - <http://partners.boulder.ibm.com/src/assur30i.nsf/Web/SA>
    - <http://w3.ibm.com/support/assure/assur30i.nsf/Web/SA>

# Software Required for New Hardware

- New systems ordered after January 28, 2003, come with appropriate level of V5R2 software already installed
- Upgrading from existing hardware to January 2003 hardware requires updated V5R2 software
  - ▶ Device-driver-like changes grouped together to support the new hardware
- Info APAR II13365
  - ▶ Software required for new models iSeries 800, i810, i825, i870, and i890 (2497/2498) and new I/O
  - ▶ Information on new OS/400 software licensing
- Info APAR II13440
  - ▶ Software required to support new I/O and towers on pre January 2003 models
- Info APARs available 01/20/03 with details on ordering and installing software
- Customers can start preparing now and be ready for the hardware upgrade on 2/21/03
  - ▶ Software planned to be available by February 3, 2003



# End-of-Life and Planning Information



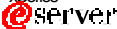
- Withdrawal from Marketing Announcements
  - ▶ Upgrades from 720, 730, 740 to 820, 825, 830, 870, 840, 890
    - **Last day to order 8 October 2003**
  - ▶ Originally announced 890 processor feature codes #2487, #2488, #0197, #0198
    - **Last day to order 7 May 2003**
  - ▶ Software Subscription and Support Line (replaced by Software Maintenance)
    - ▶ **Last day to order 31 July 2003**
- Previously announced withdrawals include
  - ▶ V5R2 will be the last release to support Model 150, 6xx and Sxx processors
  - ▶ V5R2 does not support 13GB QIC tape drives
  - ▶ V5R2 does not support ISDN adapters
- Model 800, i810, i825, i870 and i890 do not support
  - ▶ SPD I/O
  - ▶ 1.6 GB Read Cache
  - ▶ Older QIC tape drives (#1349, 1379, 6368, 6369, 6380, 6480, 1450, 1380, 6381, and 6481)
  - ▶ Older 8mm tape drives (7208-002)

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AFP	CODE/400	HTTP Server for AS/400	Net.Commerce	PowerPC	VisualAge for RPG
AIX	DataGuide	IBM	Net.Data	PowerPC AS	WebSphere
AnyNet	DB2	IBM Logo	Netfinity	Print Service Facility	WebSphere Advanced Edition
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