IBM i 6.1 and 7.1 Technical Overview

Tracy Smith
Executive I/T Specialist

2011 Power Systems Portfolio

POWER7
IBM

Select from the broadest system portfolio in the industry
- The highest performance, most scalable UNIX system ever
- Entry thru Enterprise Servers for IBM i, AIX and Linux

Enterprise Servers

Power 795

Power 780

Express Servers

Power 770

Power 720/740

Power 750

Power 710/730

PS Blades

i Editions Express
for BladeCenter S

PowerHA™   PowerVM™   IBM® Systems Director

AIX®   i for Business   Linux

High Performance Computing

Power 755

Power 775

Power Systems   Example of POWER6

OS Level ▷	IBM i 6.1	IBM i 6.1	IBM i 5.4	IBM i 7.1

LIC Level ▷	LIC 6.1	LIC 6.1.1	LIC 5.4.5	LIC 7.1

Firmware Level ▷	POWER Hypervisor

Hardware

Disks

Disks

Tape drive/library

HMC and OS Console:
• SST – System Service tools
• OS Console - Twinax or Ops Console
• Service Focal Point

HMC Level ▷

Power is performance redefined
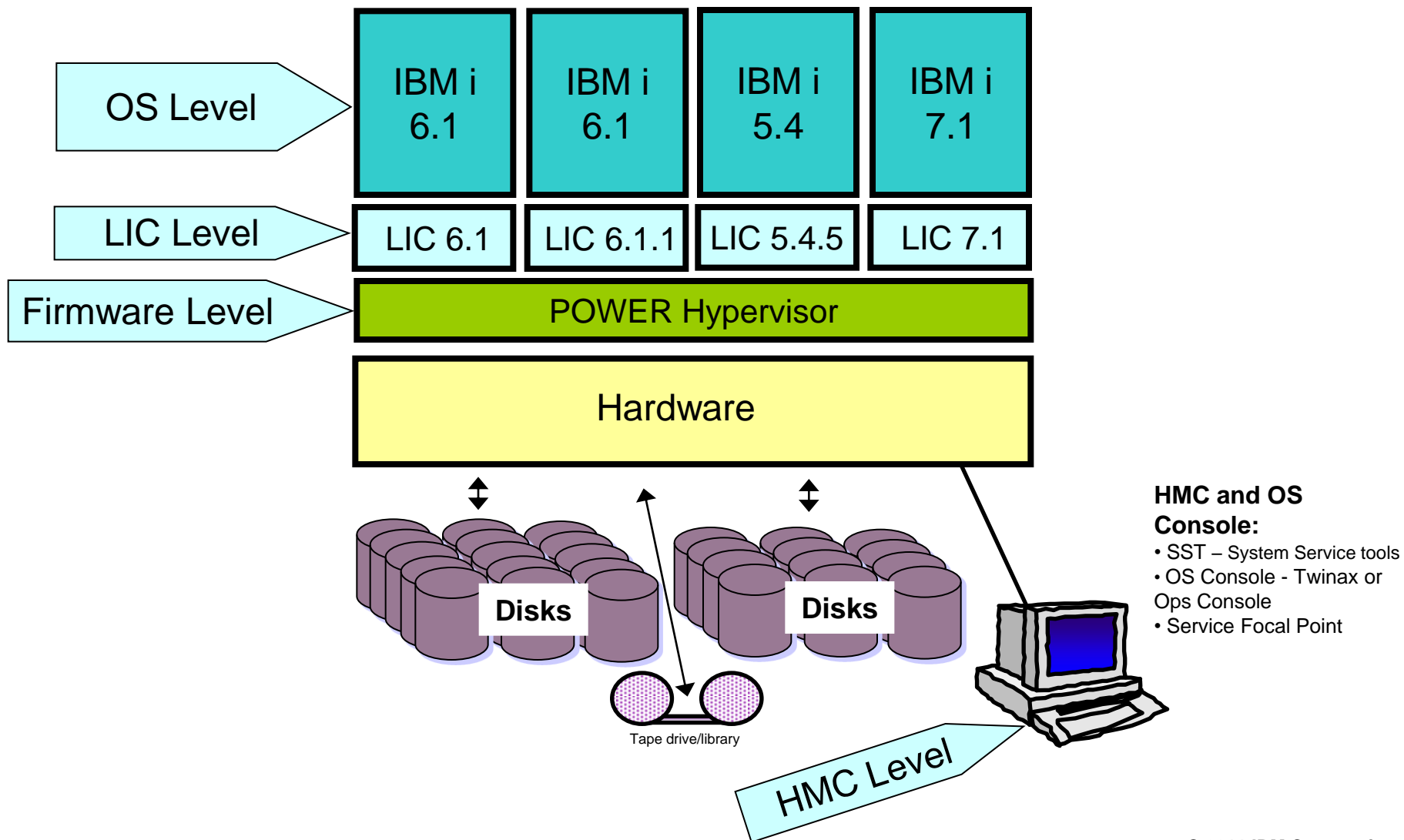
A Decade of OS/400 integrated innovations

2001	2002	2004	2006	2008	2010
OS/400	*OS/400*	i5OS	i5OS	i 6 for Business	i 7 for Business
V5R1 05/25/2001	**V5R2** 08/30/2002	LIC 5.3.5 12/14/2005 **V5R3** 06/11/2004	LIC 5.4.5 09/14/2007 **V5R4** 02/14/2006	LIC 6.1.1 10/23/2009 **ıBM i 6.1** 03/21/2008	**IBM i 7.1** 04/23/2010
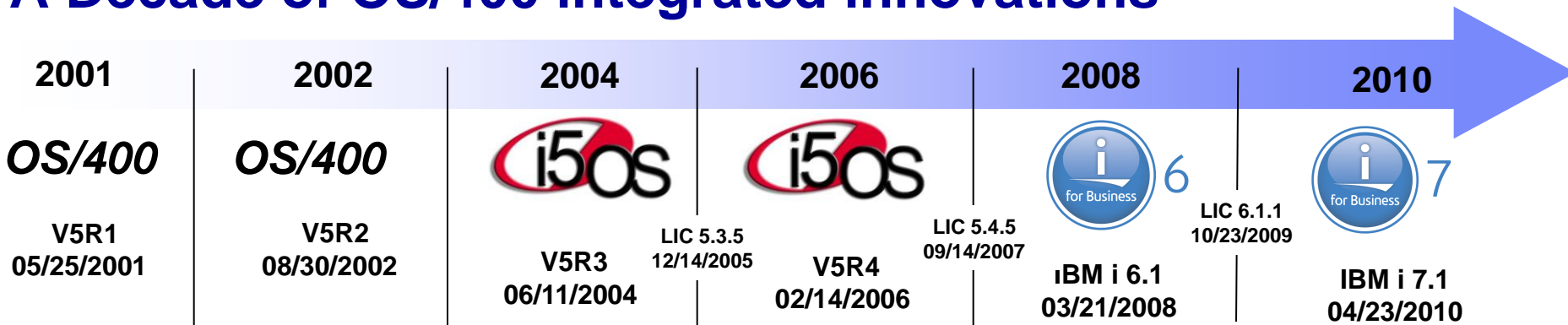
i5/OS V5R3 May 2004	IBM i 5.4 February 2006	IBM i 6.1 March 2008
▪ Virtual storage for AIX partitions ▪ Uncapped processor support for LPARs ▪ Cross Site Mirroring support for IASPs ▪ SQL Query Engine ▪ .NET Managed Providers ▪ iSeries Access for the Web - ▪ DB2 function & performance enhancements ▪ CL commands added: DOFOR, DOUNTIL, DOWHILE ▪ Concurrent tower add ▪ Middleware currency ▪ … and much more	▪ 32-bit IBM JVM ▪ Webfacing Deployment environment ▪ Web Services support for RPG ▪ TCP/IP V6 ▪ iSCSI introduced to connect BladeCenter ▪ DB2 On Demand Performance Center ▪ Enterprise Extender support for SNA ▪ Intrusion detection ▪ Administrative System Domain for HA ▪ Virtual tape support for backups ▪ DB2 function & performance enhancements ▪ CL support for subroutines ▪ Middleware currency ▪ … and much more	▪ Support for BladeCenter S and H ▪ Breakthrough performance with DS8000 ▪ Virtual storage for IBM i partitions with IBM i and PowerVM VIOS ▪ PowerHA disk clustering ▪ Improved Java and WebSphere performance ▪ 64-bit IBM JVM ▪ Systems Director Navigator for i ▪ Performance Investigator ▪ Encryption for data on disk and tape backup ▪ Intrusion prevention ▪ VMware VMotion support for iSCSI ▪ OmniFind Text Search ▪ DB2 function & performance enhancements ▪ Middleware currency

Power is performance redefined

IBM i 6.1 Enhancements

- *PowerVM* virtualization of IBM i storage

- *Solid State Drive* support with unique IBM i performance advantages

- *Enhanced Security* Features

  ❖ Encryption of backups, data on disk

- *Systems Director Navigator* web-based console

- *PowerHA* disk clustering

  ❖ Supports IBM i Geographic Mirror and IBM Systems Storage Metro Mirror

- Support for *BladeCenter*

- SAN performance optimization starting with *DS8000*

- Enhanced *Java Virtual Machine*, shared with AIX & Linux

and much more….

Announce	1/29/08
GA	3/21/08

IBM i 6.1 was the cornerstone release for strategic initiatives

Power is performance redefined

Virtual Storage for IBM i Partitions

IBM i Based Virtualization

- IBM i partition uses storage resources from another IBM i or VIOS partition
- Eliminates requirement for dedicated disk adapters and disk drives for each IBM i partition
- **Requires POWER6** systems with **IBM i V6R1 or later**

➤ Supports simple creation of additional partitions …. e.g., for test and development

Adds to IBM i Storage Virtualization Capabilities

- AIX and Linux partitions
- Integrated BladeCenter and System x servers running VMware, Windows, or Linux

VIOS   **i**

Power VM Hypervisor

POWER6

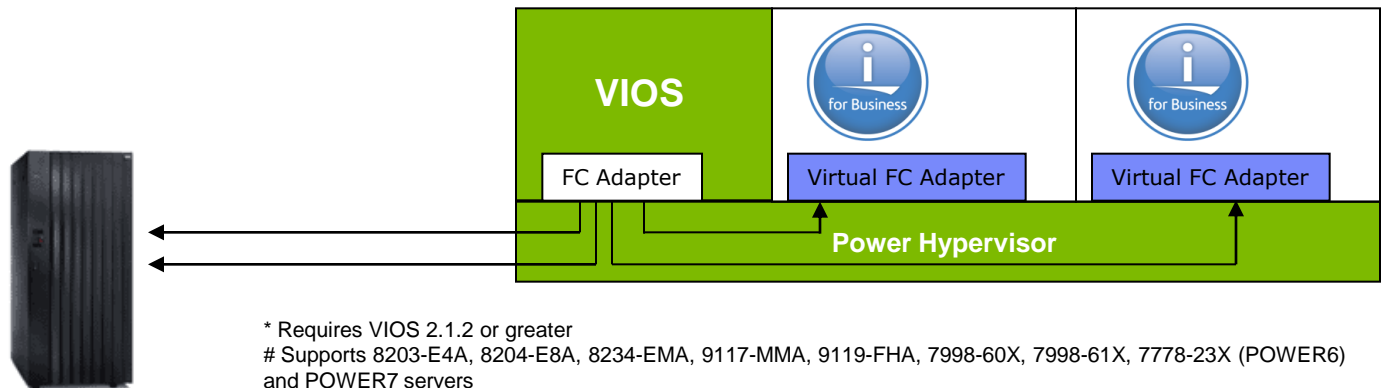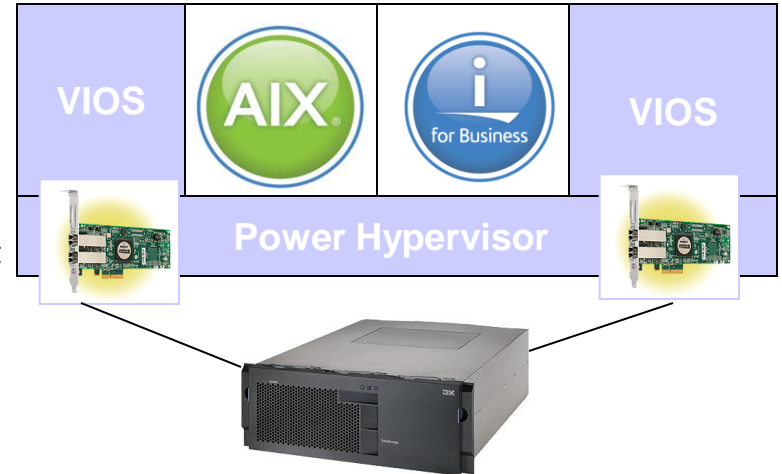**Power is performance redefined**
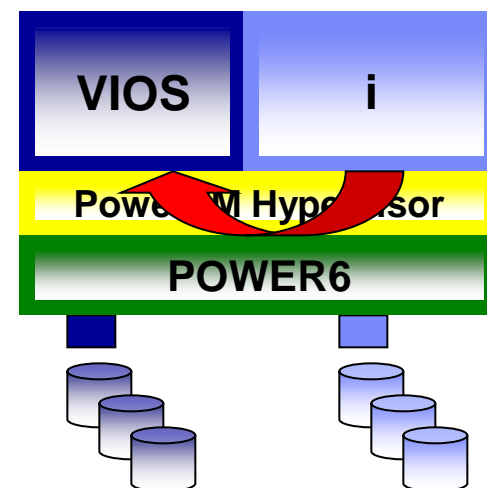
PowerVM Virtualization Enhancements for IBM i

Redundant VIOS Support

- Enables IBM i with LIC 6.1.1 partitions to utilize redundant VIOS partitions*
- Improves availability of virtualized environment
- VIOS partitions are Active/Active
- POWER6 processor-based servers
- BladeCenter requires SDMC

N_Port ID Virtualization (NPIV) Support

- Provides direct Fibre Channel connections from i 6.1.1 client partitions to SAN resources*#
- Simplifies the management of Fibre Channel DS8000 environments for POWER6 processor-based servers (not blades)
- Enables access to tape libraries 3584 (TS3500) and 3573 (TS3100 and TS3200) for POWER6 processor-based servers and blades
- Requires selected 8GB Fibre Channel Adapters
  - ❖ #5735, #8271, #8242, #8240

VIOS · AIX · i for Business · VIOS

Power Hypervisor

VIOS · i for Business · i for Business

FC Adapter · Virtual FC Adapter · Virtual FC Adapter

Power Hypervisor

* Requires VIOS 2.1.2 or greater
\# Supports 8203-E4A, 8204-E8A, 8234-EMA, 9117-MMA, 9119-FHA, 7998-60X, 7998-61X, 7778-23X (POWER6) and POWER7 servers

Power is performance redefined

I/O Enhancements for IBM i

Internal Disk Enhancements

- Dual SAS RAID Adapter support
  - ❖ Supports new PCIe 1.8GB adapter, PCIe 380MB, and the PCI-X 1.5GB Cache SAS RAID Adapters (#5805, #5903, #5904, #5906, #5908*)
    - ❖ Supports Active/Active configurations
- Hot Spare for Mirroring *

Support for new I/O devices and adapters

- PCIe (380 MB Cache) SAS RAID Adapter (#5913)**
- PCIe (1.8GB Cache) SAS RAID Adapter (#5903,5805)*
- Higher Capacity139GB SAS SFF Disk Drive (#1888) #
- 12X I/O Drawer for PCIe adapters, no disk (#5877)*
- Solid State Disk (SSD) support in 12X I/O Drawer #

BladeCenter Enhancements

- NPIV Support with 8Gb Fibre Adapters *
- Qlogic 8 Gb Fibre Channel Expansion Card (#8271) *
- Qlogic 2-Port 10Gb E'net FCoE (#8275) #
- Enhanced DVD performance via USB 2.0 support #

Dual RAID Adapter Support

Dual 5903, 5805

Dual 5913
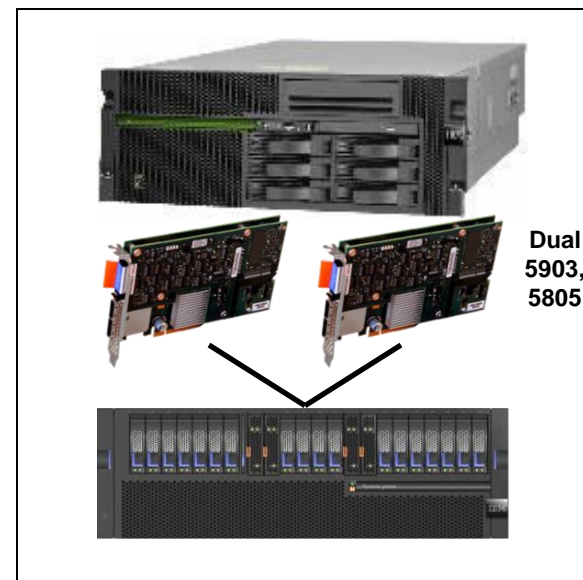
LIC 6.1.1
10/23/2009

Min level   *IBM i 6.1.1   # i 6.1 ^ i 5.4
** IBM i 6.1.1 or 7.1 on POWER7

IBM i Storage Management Enhancements with SSD

IBM i supports hierarchical storage management

- Now IBM i automatically collects I/O performance data and moves most active data to Solid State Drives (SSD)

DB2 for i supports SSD as preferred media

- New DB2 Random Read Statistics
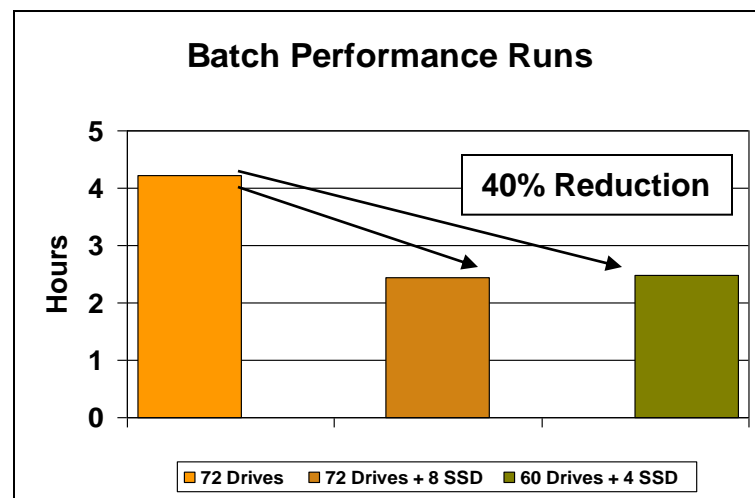
Additional enhancements for SSDs

- New "SSD-Aware" utilities
- Improved performance instrumentation
- Usability enhancements

SSD Analyzer Tool

- Designed to help determine if SSDs can help improve application performance
- Runs on IBM i 5.4 or later #

SSDs can improve performance of long running batch jobs or queries.   IBM i can easily get the right data on the SSDs

Associated Bank Reduces Batch Run Time by 40% with SSDs*

Batch Performance Runs

40% Reduction

Hours (y-axis: 0 to 5)

Legend: 72 Drives | 72 Drives + 8 SSD | 60 Drives + 4 SSD

72 Drives replaced by 60 Drives + 4 SSD

*http://www.ibmsystemsmagpowersystemsibmidigital.com/nxtbooks/ibmsystemsmag/ibmsystems_power_200909/index.php#/16
Download http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS3780

Security Enhancements

Offer Encryption to help meet regulatory requirements
- Encrypted BRMS backups of user data to tape or virtual tape
  - ❖ Encrypted Backup Enablement – i Option 44
- Encryption of data residing in an ASP (user and independent)
  - ❖ Encrypted ASP Enablement – i Option 45
- Both use AES symmetric key algorithm

Enhanced Intrusion Detection and Prevention
- Real time notification (e-mail, pagers), improved auditing, Navigator for i management
- Dynamic throttling down of clients initiating Denial of Service attacks

Strengthen IBM i Integrity
- Digitally sign all i executables
- Eradicate any altered programs through automatic retranslation of i executables

Power is performance redefined

Systems Director Navigator for i

Web based tool for managing IBM i
- Supports 300+ tasks
- Alternative to iSeries Navigator

Additional Functions:
- Performance Data Investigator
- PowerHA for i

Automatically installed with IBM i 6.1

Snaps into IBM Systems Director

PowerHA for i

IBM storage based clustering product

- Can enable near continuous application service
- Minimize impact from planned & unplanned outages
- Supports regular and sustained role swap operations

IBM i and SAN based mirroring

- IASP data synchronously replicated for Cross Site Mirroring
- Geographic Mirroring - i synchronous mirroring
- Metro Mirror - SAN synchronous mirroring
- Global Mirror - SAN asynchronous mirroring

i Cluster Management

- Enables automatic or manual failover
- Keeps systems in sync
- Establishes a heartbeat between the systems
- Backup recovery operations via Flash Copy

Integrated Solutions Console   **Welcome ray**   Help | Logout

Cluster Res... × **Nodes** ×

Cluster Resource Services

Cluster Resource Services - HAS(lp11ut15)

Display cluster properties   Stop cluster...
Display configuration information   Delete cluster...
Display device domains   Display cluster logs

↗ **Work with cluster nodes**
▪ Work with cluster resource groups
♠ Work with administrative domains

i Integration with BladeCenter Enhancements

VMware VMotion Support
- Enabled by shared storage spaces between integrated servers
- Supports VMotion, HA and DRS functions

Virtual Storage Enhancements
- Virtual storage space snapshot enables backup while server is active
- File level backup support for Linux

Configuration Enhancements
- Direct connect – Systems can be directly connected without an Ethernet switch
- i cluster support - replicate iSCSI configuration objects

Management Enhancements
- Management included in Navigator for i

New Operating System Support
- Windows Server 2008
- Linux – SLES 10 and RHEL5

IBM BladeCenter

IBM Power server

IBM System x

IBM Power server
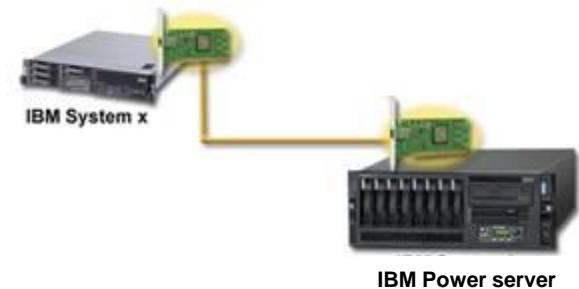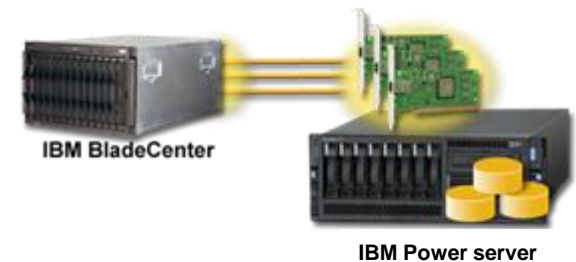
Enable High Performance DS8000 via IOPless Attachment

New FC adapters are supported for smart IOA attachment to non-blade systems
- The new FC IOAs can attach either disk or tape.

Benefits
- Over 50% greater performance for IBM i workloads
- Each port can access 64 logical volumes
  - ❖ Previous limit was 32 logical volumes per port
- Two ports per IOA yield 8 times improvement per slot
  - ❖ No IOP required per port, twice the logical volumes per port, two ports per adapter (2 x 2 x 2 = 8)
  - ❖ Lowers IBM i external storage configuration costs
- Enhanced storage flexibility
- Positions storage for exploitation of advanced features
  - ❖ Availability and Business Continuance

Supported Environments
- POWER6 systems only
- IBM i 6.1 or later

Feature Code   Feature Code
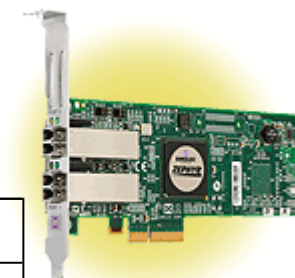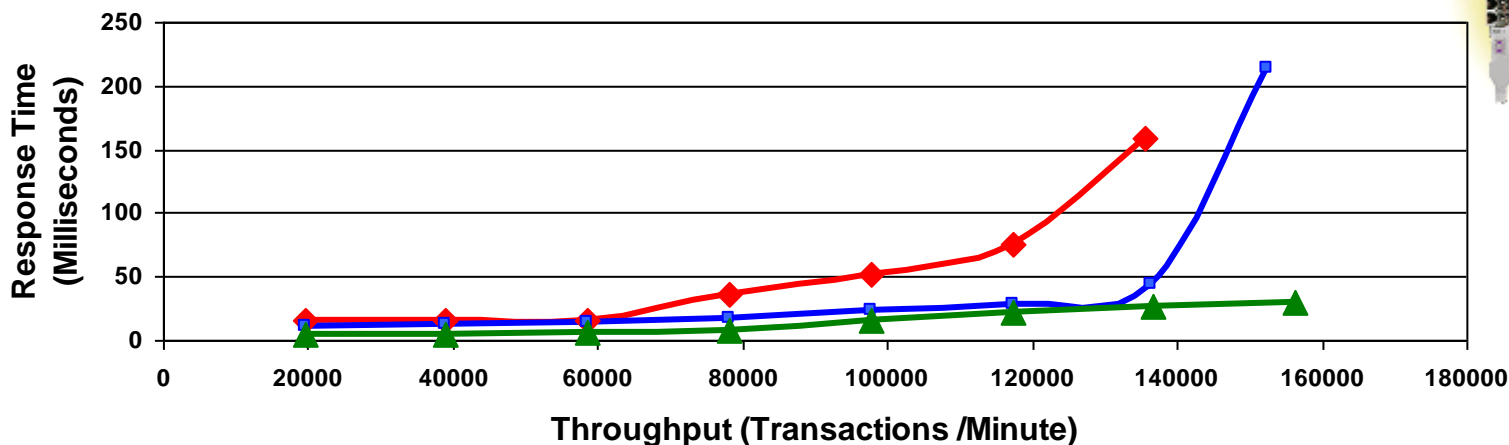#5749   PCI-X   #5774   PCIe

FC = Fibre Channel   IOP = Input/Output (I/O) Processor   IOA = Input/Output Adapter

Power is performance redefined

SAN Performance Optimization

New 4 Gbit Dual Port Fibre Adapters (no IOP required)
Optimizes disk performance for SAN storage
i 6.1, POWER6 processor-based systems, and IBM DS8000

CPW Application

Response Time (Milliseconds)

- DS8000 IOP Based
- Direct Attach (internal)
- DS8000 w/IOPless

Throughput (Transactions /Minute)

Performance based on specific workloads and configurations. Improvements shown are valid only for those workloads. Your results may vary and are dependent on the application and configuration.

Power is performance redefined

IBM i 7.1 Building on 6.1 Enhancements

DB2
- Support for XML and column level encryption

PowerHA
- Async Geographic Mirroring & LUN-level switching

Virtualization
- IBM i 6.1 virtualization for i 7.1 partitions

Solid State Drives
- Automatic movement of hot data to SSDs

Open Access for RPG
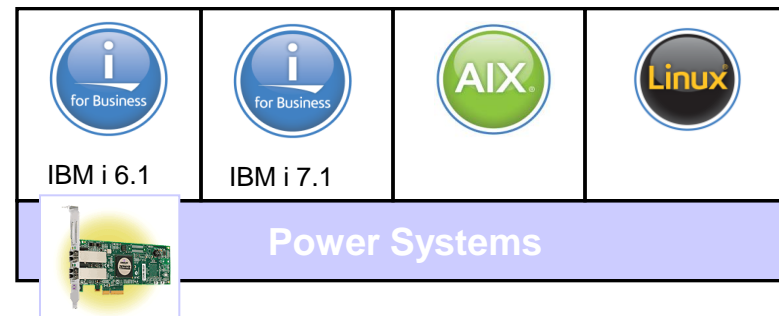- Extend application reach to pervasive devices

Zend Server Community Edition
- PHP environment preloaded with IBM i

Systems Director
- Richer management of IBM i via Systems Director

PO #	Customer #	Date	Credit Card	Purchase Order
123	2468	5/27/09	&#^$&$^	~ XML ~

IBM i PowerHA — IBM i PowerHA

IASP — IASP

IBM i 6.1 | IBM i 7.1 | AIX | Linux

Power Systems

| Announce | 4/13/10 |
| GA | 4/23/10 |

Power is performance redefined

DB2 for i – XML Support

XML is an industry standard for exchanging information between customers, suppliers, and partners

Rich XML Support now available with DB2 for i

1. XML data type stores XML documents supporting database operations
2. Decompose (shred) XML documents into relational columns
3. Generate XML documents from existing relational data

OmniFind Text Search Server provides support for searching XML documents

- Search elements of an XML document (e.g., customer name = Smith)
- SQL statements use OmniFind to search the XML documents
- Available with IBM i for no additional charge

Strategic replacement for XML Extenders Program Product

PO #	Customer #	Date	Purchase Order
123	2468	5/27/09	~ XML ~
456	1357	6/10/09	~ XML ~

DB2 for i - Additional Enhancements

Column Level Encryption

- Allows for transparent (no application changes) encryption of a specific column in a database table accessed through SQL or native
- Solutions from tool providers including Patrick Townsend, Linoma Software, and Protegrity supply encryption algorithms

First Name	Last Name	City	State	Credit Card#
Megan	Jones	Minneapolis	Minnesota	*&^%$*
Casey	Smith	Ames	Iowa	$%@^

Application Developers

- MERGE, Array support, Global Variables, and consuming result sets in RPG allows for more powerful and efficient programming

Performance

- Adaptive Query Processing can modify query plan while the query is running to significantly improve performance
- Advanced SQE query optimizer now supports native logical files

Management

- New tooling to monitor long running operations
- SQL_CANCEL procedure to cancel long running queries.
- Random or Sequential I/O statistics to identify tables that can benefit from SSDs

On-Demand Performance Center

- Rich tools for DB2 for i
- Including Visual Explain
- Adaptive Query Processing can automatically build an index to replace table scan …taking queries from 30 minutes to 1 minute
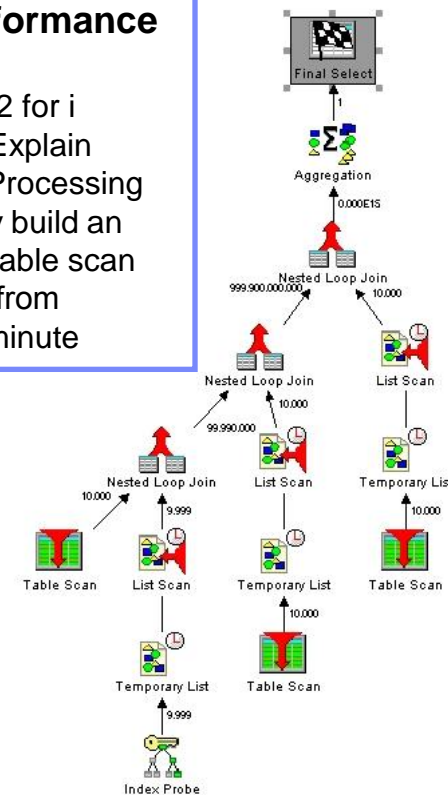
DB2 is an integrated database supporting transaction processing and business intelligence applications

Power is performance redefined

DB2 Web Query Enhancements

New functions for IBM i 5.4, 6.1 and 7.1

- Security Enhancements
  - ❖ Change password from within DB2 Web Query
  - ❖ Enhanced meta data control
- Administrative enhancements
  - ❖ Change Management
  - ❖ New WRKWEBQRY functions simplifies admin
- Performance Enhancements
  - ❖ Improved internal processing
  - ❖ Improved analysis capabilities
- Functional Enhancements
  - ❖ Improved Dashboard development
  - ❖ Active Reports usability enhancements

DB2 Web Query supports querying XML documents with IBM i 7.1

✓ **Upgrade Query/400 with DB2 Web Query**

> **Get Better Performance**
> - Up to 5x better performance over Query/400
>
> **Reduce Report Maintenance**
> - Leverage parameterized reporting or OLAP functions to minimize report maintenance
>
> **Remove Dependency on IT**
> - Give the Power of the data to end users in the formats they want it with information in real time
>
> **Upgrade into full blown BI**
> - DB2 Web Query enabled Data Mart/Warehouses

✓ **Bring BI and Query Solution Back to IBM i**

> Stop the pain and expense of replicating data
> Make decisions with current data

> *DB2 Web Query provides an integrated Business Intelligence solution that offers rich functionality and breakthrough performance*

PowerHA SystemMirror for i - IBM 7.1 Enhancements

Asynchronous Geographic Mirroring for multi-site DR solution

- IBM i based mirroring for geographically dispersed systems
- Asynchronously mirrors disk writes to target system
- Support for automatic failover
- Supports IASPs on integrated disk, SAN, and virtual disk

Space-Efficient Flash Copy

- Working with IBM DS8000 function to allow Flash Copy without requiring double DASD

LUN level switching for local HA solution

- Switch IASP on DS8000 or DS6000 between local systems
- Support for automatic failover
- Supports native and VIOS with NPIV attached SANs

PowerHA provides a robust, simple to manage High Availability and Disaster Recovery solution

Power is performance redefined
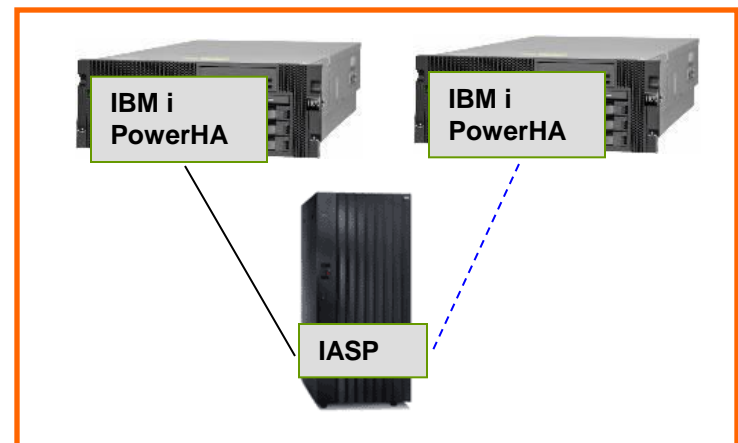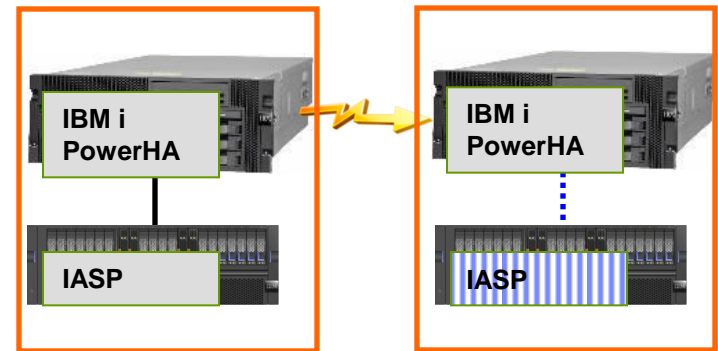
PowerHA SystemMirror for i Editions

- **PowerHA SystemMirror Standard Edition**
  - Targeted at data center high availability solutions

- **PowerHA SystemMirror Enterprise Edition**
  - Adds support for multi-site high availability and disaster recovery solutions

IBM i HA/DR Clustering	Standard Edition	EnterpriseEdition
Centralized cluster management	✓	✓
Cluster resource management	✓	✓
Centralized cluster configuration	✓	✓
Automated cluster validation	✓	✓
Cluster admin domain	✓	✓
Cluster device domain	✓	✓
Integrated heartbeat	✓	✓
Application monitoring	✓	✓
IBM i event/error management	✓	✓
Automated planned switch over	✓	✓
Managed unplanned fail over	✓	✓
Centralized Flash Copy	✓	✓
LUN level switching	✓	✓
Multi-Site HA/DR management		✓
DS8000/DS6000 Metro Mirror		✓
DS800/DS6000 Global Mirror		✓
Geomirror Async mode		✓

Power is performance redefined

Virtualization Enhancements for IBM i

IBM i 6.1 partition can host

- IBM i 7.1 and 6.1 partitions
- AIX 5.2, 5.3, 6.1 and SLES and Red Hat Linux partitions
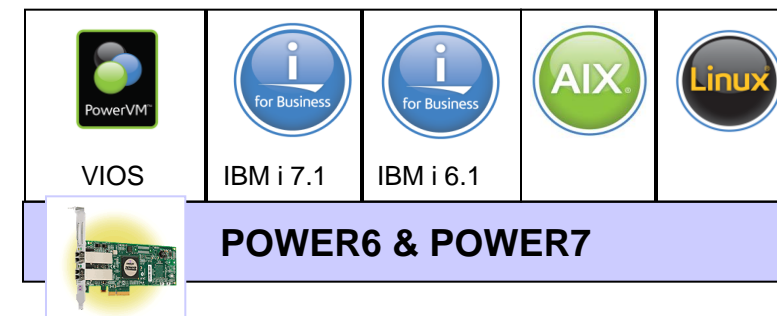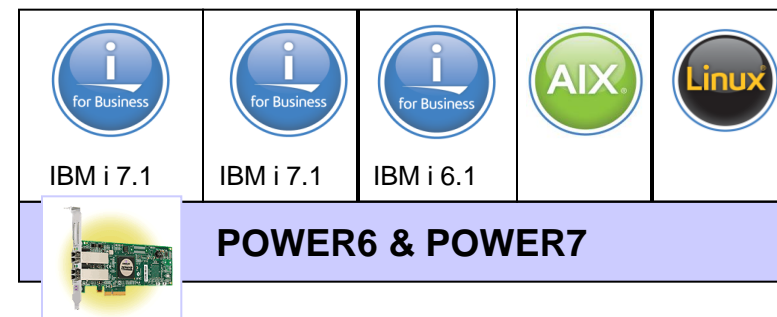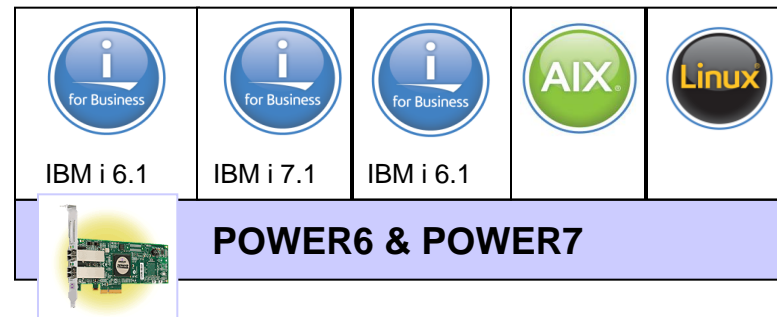- iSCSI attached System x and BladeCenter

IBM i 7.1 partition can host

- IBM i 7.1 and 6.1 partitions
- AIX 5.2, 5.3, 6.1 and SLES and Red Hat Linux partitions
- iSCSI attached System x and BladeCenter

PowerVM VIOS can host

- IBM i 7.1 and 6.1 partitions
- AIX and Linux partitions
- VIOS supports advanced virtualization technologies including Active Memory Sharing and NPIV

Storage Virtualization can reduce costs while improving IT infrastructure flexibility

IBM i 6.1	IBM i 7.1	IBM i 6.1	AIX	Linux
POWER6 & POWER7				

IBM i 7.1	IBM i 7.1	IBM i 6.1	AIX	Linux
POWER6 & POWER7				

VIOS	IBM i 7.1	IBM i 6.1	AIX	Linux
POWER6 & POWER7				

Power is performance redefined

IBM i integration with BladeCenter and System x Enhancements

iSCSI Software Target Supports Higher Speed Connection

- Replaces current iSCSI adapter on Power server side with software in IBM i
- Uses Ethernet adapters and network to connect Power to BladeCenter and System x
- Supports 1 Gb and 10 Gb Ethernet connections
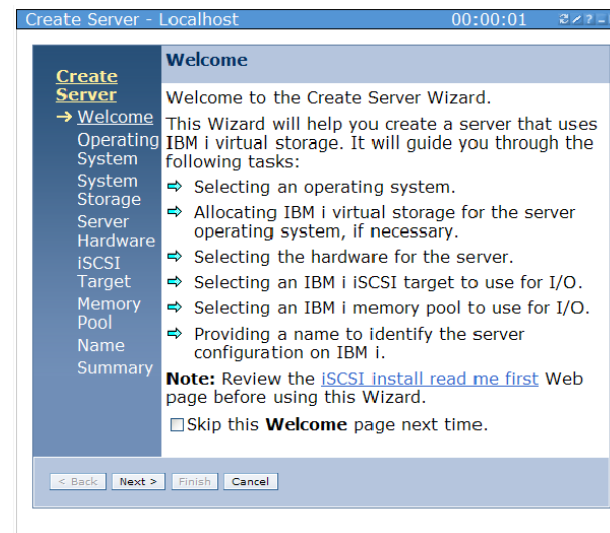- Can connect to iSCSI adapter or software initiator on BladeCenter and System x

IBM System x **Ethernet**

IBM BladeCenter

IBM Power Server with IBM i
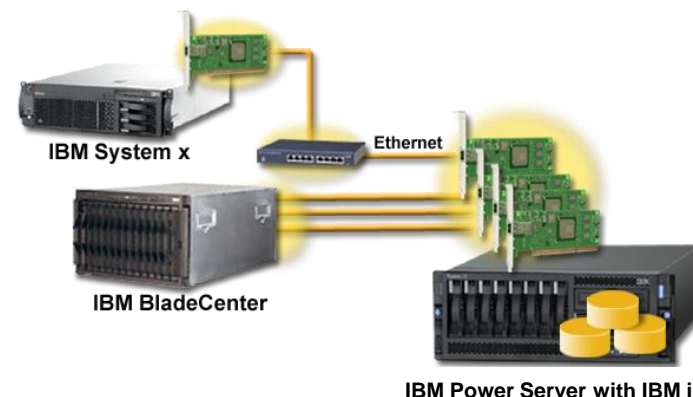
Supported Environments

- Windows Server 2008 and 2003 Server editions
- VMware ESX 4.0
- VMware ESXi Embedded 4.0

New installation wizard

- Simplifies setup of integration environment and then starts install of Windows Server or VMware operating system

IBM i provides advanced storage management for x86 systems enabling cost reductions and better risk management

Create Server - Localhost   00:00:01

Create Server
→ Welcome
Operating System
System Storage
Server Hardware
iSCSI Target
Memory Pool
Name
Summary

Welcome

Welcome to the Create Server Wizard.
This Wizard will help you create a server that uses IBM i virtual storage. It will guide you through the following tasks:

⇒ Selecting an operating system.
⇒ Allocating IBM i virtual storage for the server operating system, if necessary.
⇒ Selecting the hardware for the server.
⇒ Selecting an IBM i iSCSI target to use for I/O.
⇒ Selecting an IBM i memory pool to use for I/O.
⇒ Providing a name to identify the server configuration on IBM i.

Note: Review the iSCSI install read me first Web page before using this Wizard.

☐ Skip this **Welcome** page next time.

< Back   Next >   Finish   Cancel

Power is performance redefined

IBM i Storage Management Enhancements for SSD

IBM i supports hierarchical storage management

- Now IBM i automatically collects I/O performance data and moves most active data to Solid State Drives (SSD)

DB2 for i supports SSD as preferred media

- New DB2 Random Read Statistics

Additional enhancements for SSDs

- New "SSD-Aware" utilities
- Improved performance instrumentation
- Usability enhancements

SSD Analyzer Tool

- Designed to help determine if SSDs can help improve application performance
- Runs on IBM i 5.4 or 6.1 system#

SSDs can improve performance of long running batch jobs or queries.   IBM i can easily get the right data on the SSDs

Associated Bank Reduces Batch Run Time by 40% with SSDs*

Batch Performance Runs

40% Reduction

Hours (y-axis): 0, 1, 2, 3, 4, 5
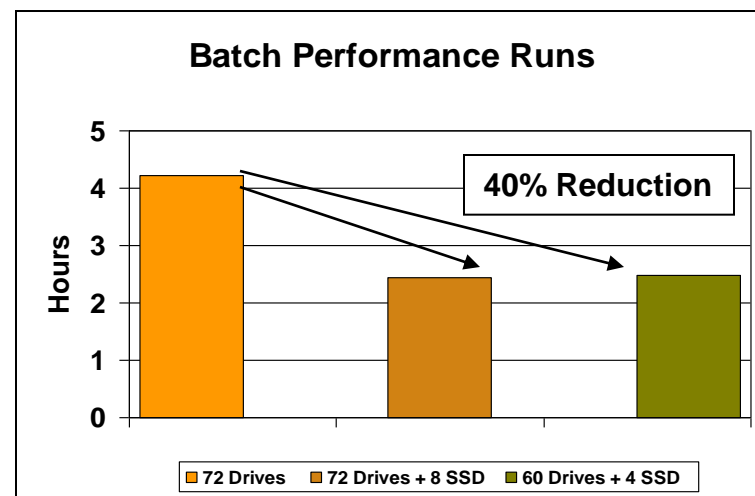
- 72 Drives
- 72 Drives + 8 SSD
- 60 Drives + 4 SSD

72 Drives replaced by 60 Drives + 4 SSD

Systems Management Enhancements

Systems Director Navigator for i

- Ability to manage a target IBM i 5.4, 6.1 or 7.1 system
  - ❖ Navigator management server runs in one place
  - ❖ One browser used to manage multiple environments
  - ❖ Extends Navigator management IBM i 5.4
- Support for Tape and Journal management and BRMS

Performance Management Enhancements

- More metrics into Collection Services: DS8000, 12X Bus, Save/Restore, and Tape
- Performance Data Investigator is enhanced to include Disk response time and Java memory perspectives

Systems Director Enhancements

- New functions for managing IBM i
- Management server runs on AIX, Linux, or Windows
- Manages IBM i 6.1 and 7.1 environments

Systems Director provides an integrated platform management solution for IBM i and heterogeneous servers
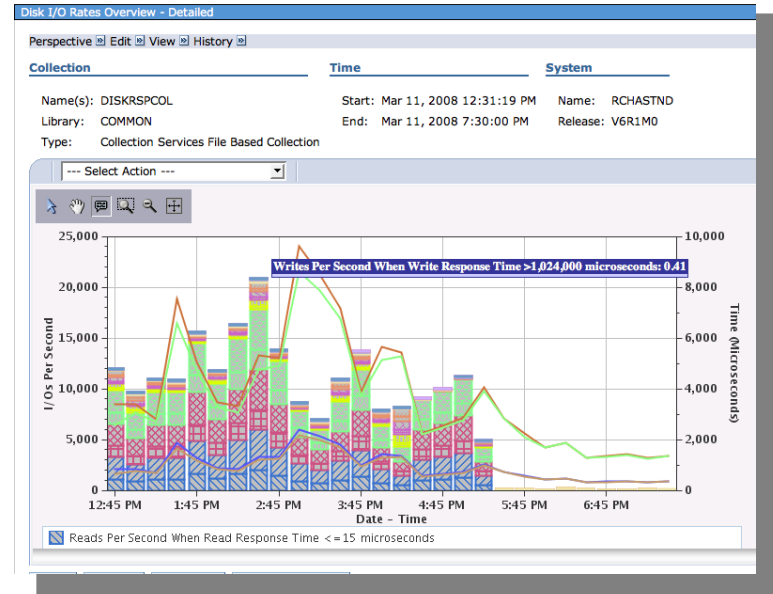
Systems Director	6.1.1 2Q 09	6.1.2 4Q 09	6.2 2Q 10
Support Group and CUM PTFs	✓	✓	✓
6.1.2 Agent for IBM i		✓	✓
Support individual PTF			✓
Additional monitors			✓

IBM i Network Upgrade Simplifies Upgrading Multiple Systems

IBM

DVD

Electronic software distribution

NFS Server

Save IBM or Custom Image

SAVSYS, SAVOBJ, SAVLICPGM... to NFS Device

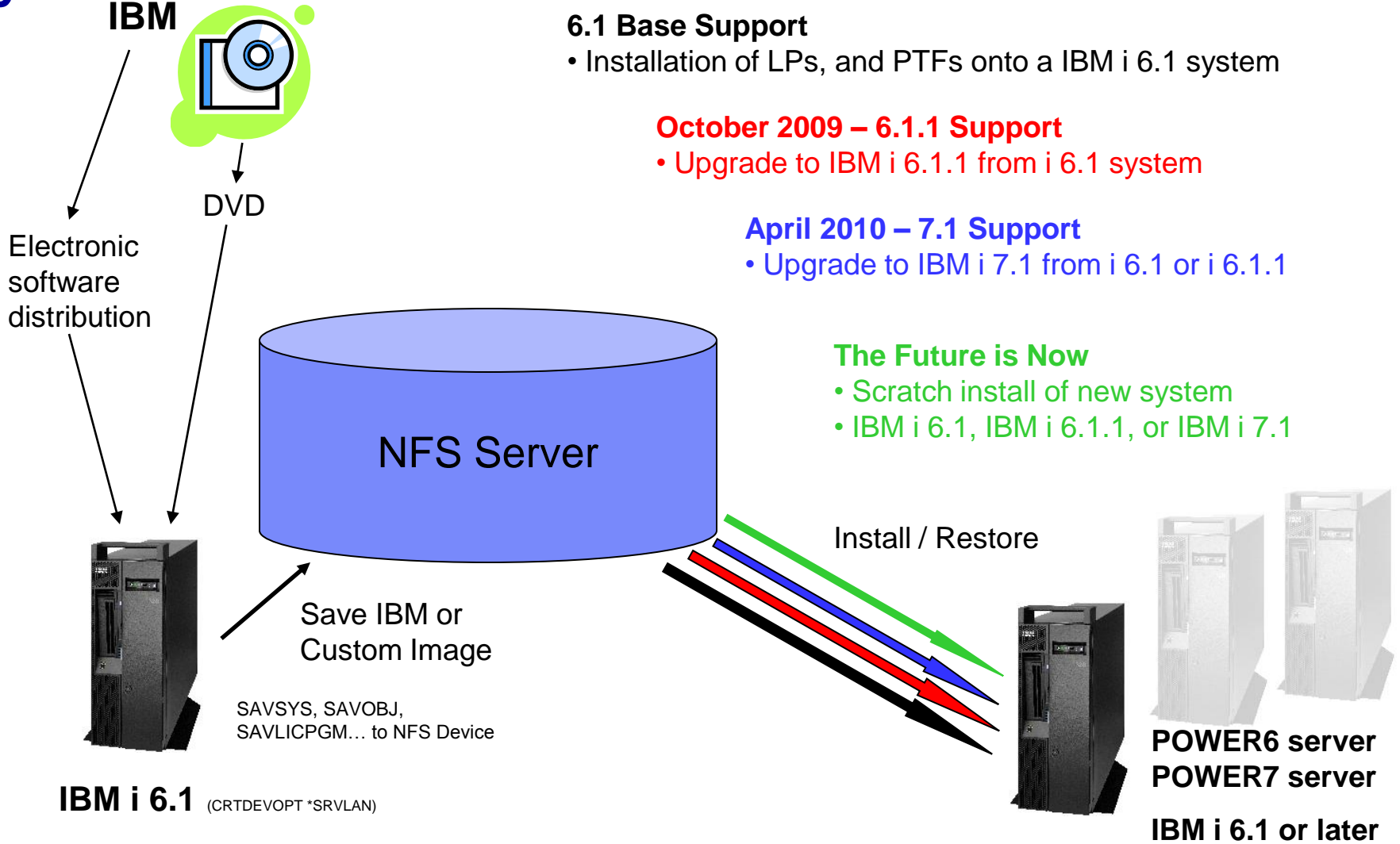**IBM i 6.1** (CRTDEVOPT *SRVLAN)

6.1 Base Support
• Installation of LPs, and PTFs onto a IBM i 6.1 system

October 2009 – 6.1.1 Support
• Upgrade to IBM i 6.1.1 from i 6.1 system

April 2010 – 7.1 Support
• Upgrade to IBM i 7.1 from i 6.1 or i 6.1.1

The Future is Now
• Scratch install of new system
• IBM i 6.1, IBM i 6.1.1, or IBM i 7.1

Install / Restore

POWER6 server
POWER7 server

IBM i 6.1 or later

Power is performance redefined

Rational Open Access: RPG Edition

Extends RPG application reach to pervasive devices

- Provides ability for RPG programs to work with a variety of clients including phones, XML, Web Services
- Developers write handlers for non-5250 interfaces

Tool providers plan to offer handler solutions for common devices and interfaces

**New product required to create or run programs that utilize Open Access for RPG**

Rational Developer for Power with RPG development feature is required to write the code to invoke handlers

Supported Environments

- IBM i 7.1 and 6.1

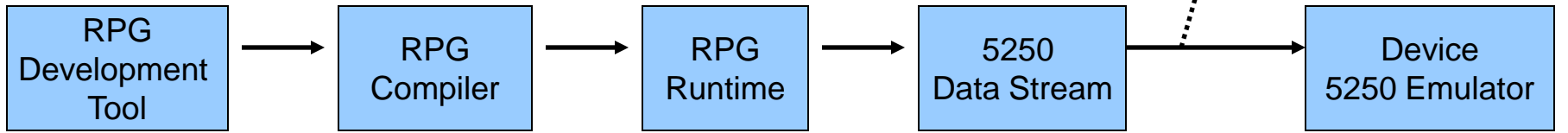*Open Access enables RPG applications to easily reach new devices and new users with new interfaces*

Power is performance redefined

Rational Open Access: RPG Edition

Browser

Web Services

Mobile
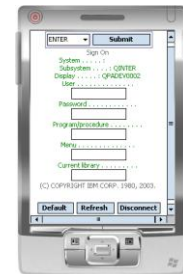
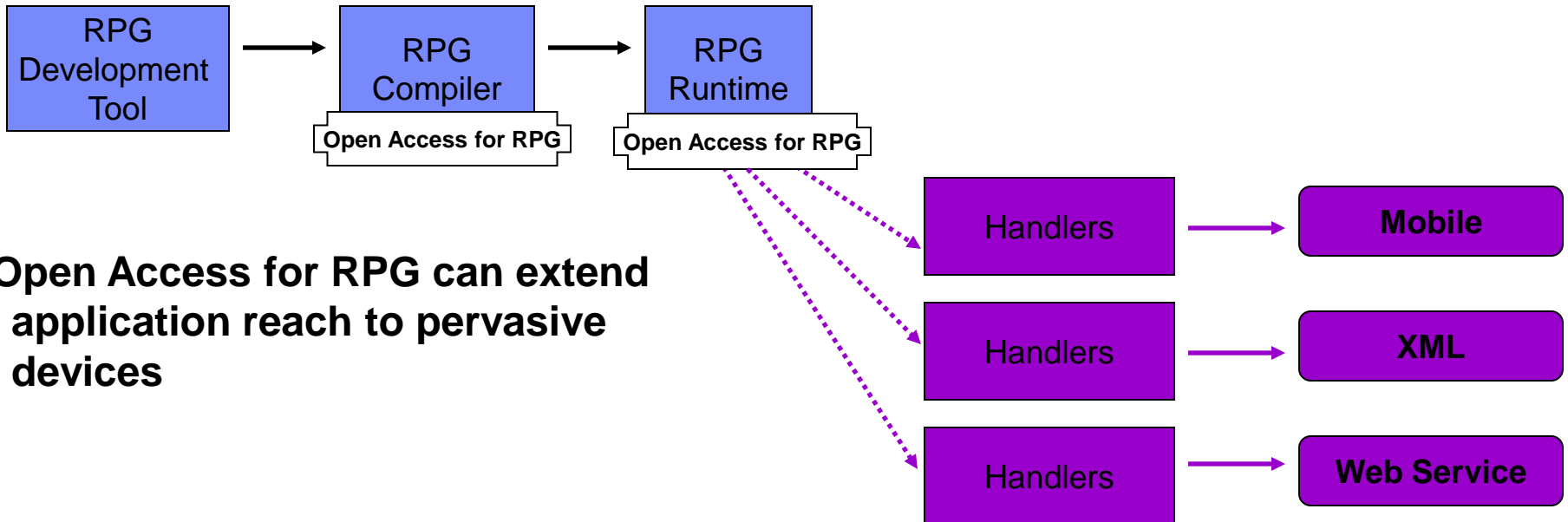## RPG applications produce 5250 data stream

- HATS and partner tools are used to extend to other user interfaces

HATS

| RPG Development Tool | → | RPG Compiler | → | RPG Runtime | → | 5250 Data Stream | → | Device 5250 Emulator |

RPG Applications Today

- -

RPG Applications with Open Access

| RPG Development Tool | → | RPG Compiler | → | RPG Runtime |

Open Access for RPG

Open Access for RPG

Handlers → **Mobile**

Handlers → **XML**

Handlers → **Web Service**

Open Access for RPG can extend application reach to pervasive devices

Power is performance redefined

WebSphere Support for IBM i 7.1

WebSphere. software

WebSphere Application Server
- WebSphere Application Server Express V6.1 and V7.0
- WebSphere Application Server V6.1 and V7.0
- WebSphere Application Server Network Deployment V6.1 and V7.0

WebSphere MQ
- WebSphere MQ V
- WebSphere MQ File Transfer Edition V7

WebSphere Portal
- WebSphere Portal 6.1.5

WebSphere Commerce Server
- WebSphere Commerce Server 6
- WebSphere Commerce Server 7
  - ❖(SOD for 2010 delivery for IBM i 6.1 and 7,1)

Validate

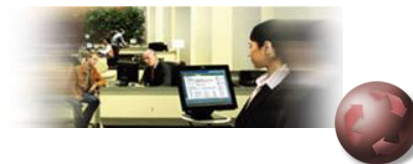*WebSphere offers rich web application server solutions for IBM i*

Access information

Customer retention

Operational efficiency

Cost reduction

Zend PHP Enhancements

Zend Server Community Edition for i
- Preloaded with IBM i 7.1, 6.1, 5.4
- Includes one year of Silver support from Zend
- Provided for no additional charge
- Also available for download from zend.com
- Replaces Zend Core

Zend Server for i
- Provides advanced functions
- Available from IBM with advanced support offerings
- Also available from zend.com
- Replaces Zend Platform

Zend Studio for i
- Eclispe-based development environment
- Integrates with Rational Developer for Power
- Available with one year of Silver support from Zend for no additional charge
- Advanced support offerings available

Simplified Set Up and Management
- FastCGI support between ILE Apache and PHP
- Eliminates 2nd copy of Apache and reverse proxy
- Software fixes via PTFs

Significant Performance Enhancements

New and improved features

Introducing
zend**server**
Next Generation Web Application Server
An enterprise-ready solution for running business-critical PHP applications.

zend**studio**
The Leading PHP IDE
A complete professional-grade solution to maximize developer productivity

Zend provides open, easy to use PHP-based development and deployment solutions for i

Power is performance redefined

Additional Enhancements

IBM i Access Family Enhancements

- IBM i Access for Windows 7.1 offers:
  - ❖ Enhancements to the .NET, ODBC, and OLE DB providers including support for XML data type
  - ❖ Enhancements to Data Transfer
  - ❖ Updated PC5250 Display and Printer Emulation based on IBM Personal Communications 6.0
  - ❖ Help files converted to html help format
  - ❖ Enhancements to Install, including install-time support for secondary languages
- IBM i Access for Web 7.1 includes:
  - ❖ Additional option for viewing spooled files as PDF documents

Networking Enhancements

- IBM i DHCP server is now based on the ISC (Internet Systems Consortium) DHCP server which contains support for IPv6 and DHCP failover
- IPv6 support for the DHCP Client, PPP (Point-to-point protocol), L2TP (Layer 2 Tunneling Protocol), and RADIUS (Remote Authentication Dial In User Service)
- Support for the IKEv2 (Internet Key Exchange version 2) tunneling protocol in the IBM i VPN support
- Telnet Client support on IBM i is now SSL enabled (also PTF to IBM i 6.1 & 5.4)

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IBM i 7.1 Summary

DB2
- Support for XML and column level encryption

PowerHA
- Async Geographic Mirroring & LUN-level switching

Virtualization
- IBM i 6.1 virtualization for i 7.1 partitions

Solid State Drives
- Automatic movement of hot data to SSDs

Open Access for RPG
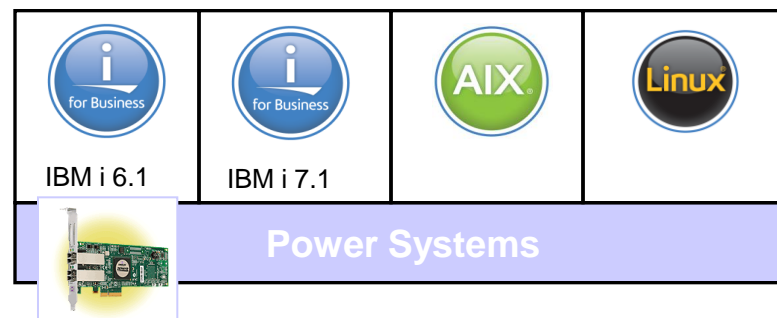- Extend application reach to pervasive devices

Zend Server Community Edition
- PHP environment preloaded with IBM i

Systems Director
- Richer management of IBM i via Systems Director

PO #	Customer #	Date	Credit Card	Purchase Order
123	2468	5/27/09	&#^$&$^	~ XML ~

IBM i PowerHA — IBM i PowerHA

IASP — IASP

IBM i 6.1   IBM i 7.1   AIX   Linux

Power Systems

Announce 4/13/10
GA 4/23/10

Power is performance redefined

IBM i Strategy and Roadmap

In 2010, we delivered new POWER7 processor-based systems, a new release of IBM i, and enhancements across our Power Systems Software portfolio, including PowerVM and PowerHA. These investments deliver significantly improved product offerings for our loyal IBM i clients, delivering a technology foundation for the future.

Vice President, IBM Power Systems

New IBM white paper reviews IBM i Strategy and Roadmap

Includes information about the IBM i market, Power Systems and IBM i roadmap, and concludes with a listing of the wide range of IBM initiatives to help businesses reduce costs, improve service, and manage risk.

http://www-03.ibm.com/systems/power/software/i/powerofi/index.html

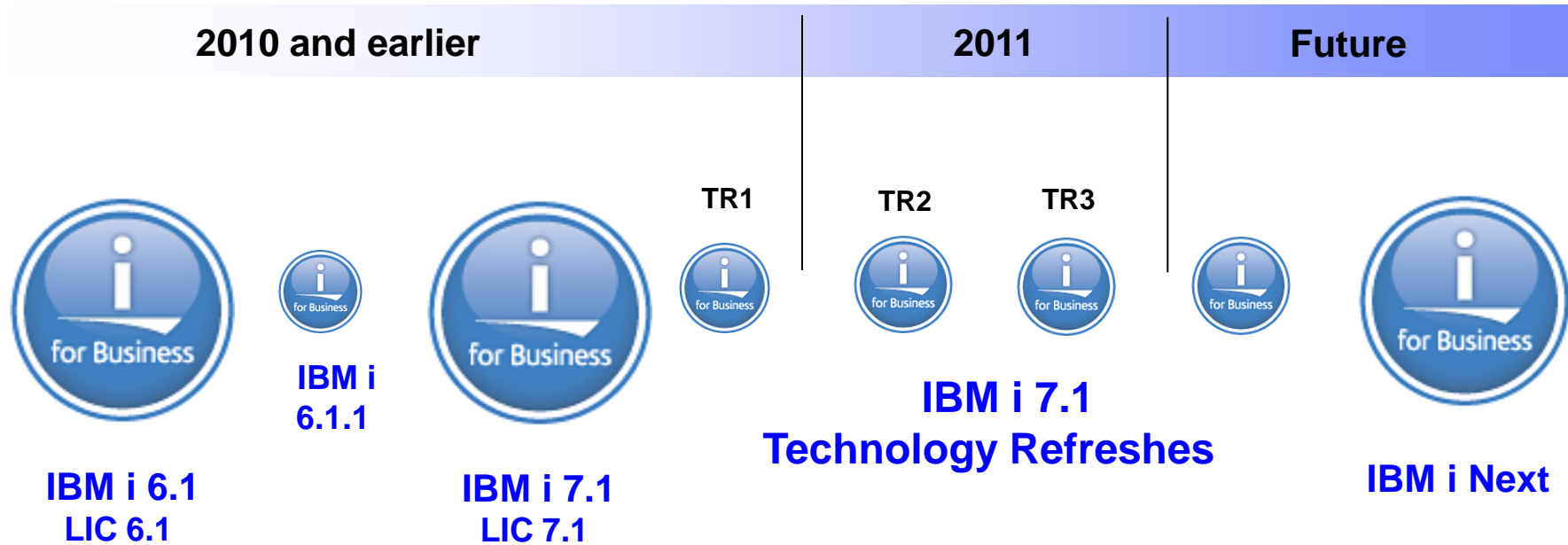**ITG** Executive Summary

February 2011

VALUE PROPOSITION FOR IBM POWER SYSTEMS SERVERS AND IBM i: MINIMIZING COSTS AND RISKS FOR MIDSIZE BUSINESSES

Challenges

The challenges faced by midsize businesses remain daunting. Weak markets, competitive pressures, cost reduction mandates, and demands for greater operating efficiency and productivity are the norm in most industries. In many, globalization continues.

Information technology has become central to meeting these challenges. Even relatively small organizations now have enterprise resource planning (ERP), customer relationship management (CRM), business intelligence (BI), e-commerce and other state-of-the-art systems. The number of "must have"

Mid-sized businesses save with IBM i

Power is performance redefined

IBM i Roadmap

2010 and earlier	2011	Future

TR1 TR2 TR3

IBM i
6.1.1

IBM i 6.1
LIC 6.1

IBM i 7.1
LIC 7.1

**IBM i 7.1
Technology Refreshes**

IBM i Next

Clients requesting fewer operating system releases and longer support cycles
• Major release upgrades can be disruptive and costly for a business

Interim technology refreshes provide new functions and hardware support
• Simpler to install on a current release and less disruptive

http://www-947.ibm.com/systems/support/i/planning/techrefresh/index.html

IBM i 7.1 Technology Refresh

IBM i Technology Refresh

Get more from your operating system

| IBM Systems support | Overview | IBM i 7.1 | More information | FAQs |

IBM Systems support
- BladeCenter
- Power
- System i
  - Support search
  - Register
  - Feedback
- System p
- System x
- System x Integrated Solutions
- System z
- System Storage
- Systems networking
- System Blue Gene
- IntelliStation Pro
- IBM Monitors
- Systems Management software
- Hardware options and upgrades

Related links
- Warranties and licenses
- developerWorks
- alphaWorks
- IBM Business Partners

Following the GA of IBM i 7.1, IBM i point / modification releases are being replaced by a new release delivery mechanism called a Technology Refresh. A Technology Refresh is a collection of operating system software that is developed together, packaged together, tested together, and delivered together as a PTF Group for a base release.

The Technology Refresh PTF Group contains a Technology Refresh PTF plus related PTFs, including the most recent pre-GA fixes. The Technology Refresh PTF is Machine Code / Licensed Internal Code (57xx-999) and is part of the code stream of the base release, e.g., IBM i 7.1, rather than being a separate code stream, as is the case with a point release. A Resave associated with the Technology Refresh is also available.

A Technology Refresh may provide:

- Support for new hardware and firmware (for example, new I/O devices or newly announced models)
- Support for new virtualization functions
- Performance improvements
- New function enablement

The Technology Refresh PTF Group, Resave, or PTF may be downloaded, requested on media, and installed using standard procedures and tools. It is recommended that customers either install the Technology Refresh PTF Group plus the most recent Cumulative PTF package, or the Technology Refresh Resave plus the most recent Cumulative PTF package plus the Technology Refresh PTF Group. When a Technology Refresh is installed, the system release level, e.g., V7R1M0, does not change.

A Technology Refresh should be installed:

- To provide support needed for new hardware or virtualization functions
- To take advantage of performance improvements or new function enablement
- When required by subsequent PTFs (for example, fixes to code in the Technology Refresh PTF)

It is a best practice to keep the system up to date with the latest Technology Refresh installed, to avoid unnecessary down time. To determine the Technology Refresh level needed for a specific hardware feature code, refer to the IBM Prerequisite tool. The PTF Cover Letter, or Preventive Server Planning (PSP) information, will identify whether a Technology Refresh is a requisite for that PTF. If a PTF has a Technology Refresh requisite, the Technology Refresh PTF must be permanently applied before the PTF that requires it can be loaded.

Since 7.1 GA: Technology Refresh 1 & More

Virtual Media Auto-Changer – Delivered with TR1 9/10
- Client partitions can change the image loaded in the server's IMGCLG.
- Customer Value: Load media into one partition's IMGCLG and do unattended installs of other IBM i LPARs on the same box.

Virtual optical media library – Delivered with TR1 9/10
- Migrate optical libraries into a virtual optical media library backed by disk.

Y4 Cryptographic card for IBM i customers - Delivered 12/10
- PCIe attached so it can plug into the newer PCIe slots

Support for LTO5 in TS2900 Tape Library - Delivered 10/10
- Low Profile Entry level Tape Library TS2900 will now support the newest LTO5 tape drive. (Tucson will announce in Feb, IBM i GA will be in March for 6.1.1 and later.)

Full Network install - Delivered 12/10
- Initial (scratch) install of an IBM i v7.1 system from a network device

Technology Refresh 2 & More

IBM i Hibernation – Delivered with TR2 5/11
- Ability to suspend a partition and resume it from the suspend point
- Customer Value: Saves IPLs. Suspend before CEC maintenance, do the repair or CEC IPL and then resume.

I/O Performance – Multi-path – Delivered with TR2 5/11
- New load balancing multi-path algorithm that tries to push more I/O down the faster path.
- Example: When using NPIV, running both disk and tape traffic on the same port more feasible since the disk traffic will move off the port if the tape traffic starts slowing down the disk performance.

DS5K NPIV support – Delivered with TR2 5/11
- Allow better utilization of FC adapter/switch resources by using NPIV with the DS5300/DS5100.

IBM i to IBM i Virt Tape – Delivered with TR2 5/11
- Allow multiple IBM i partitions to share the tape drive owned by a different IBM i partition.

SFF DASD Drawer – Delivered with TR2 5/11
- SFF (Small Form Factor) SAS disk drawer that supports up to 24 SFF (2.5 inch) disks in a 2U 19 inch rack drawer.

Director Navigator (web console) 7.1& 6.1 – Delivered 4/11
- Interface with improved usability
- Adds 7.1 Director Navigator function to 6.1
- Includes "set target system" to a v5r4 or later system

DB2 for i semi-annual updates - Delivered 4/11
- SQL earliest supported release
- Performance updates
- Building on XML support
- Security/Role support

Power is performance redefined

IBM i Life Cycle

	Planning	Upgrade planning					
	IBM i 7.1	IBM i 6.1	IBM i 5.4	Future Software/Hardware		**Release life cycle**	

Release life cycle

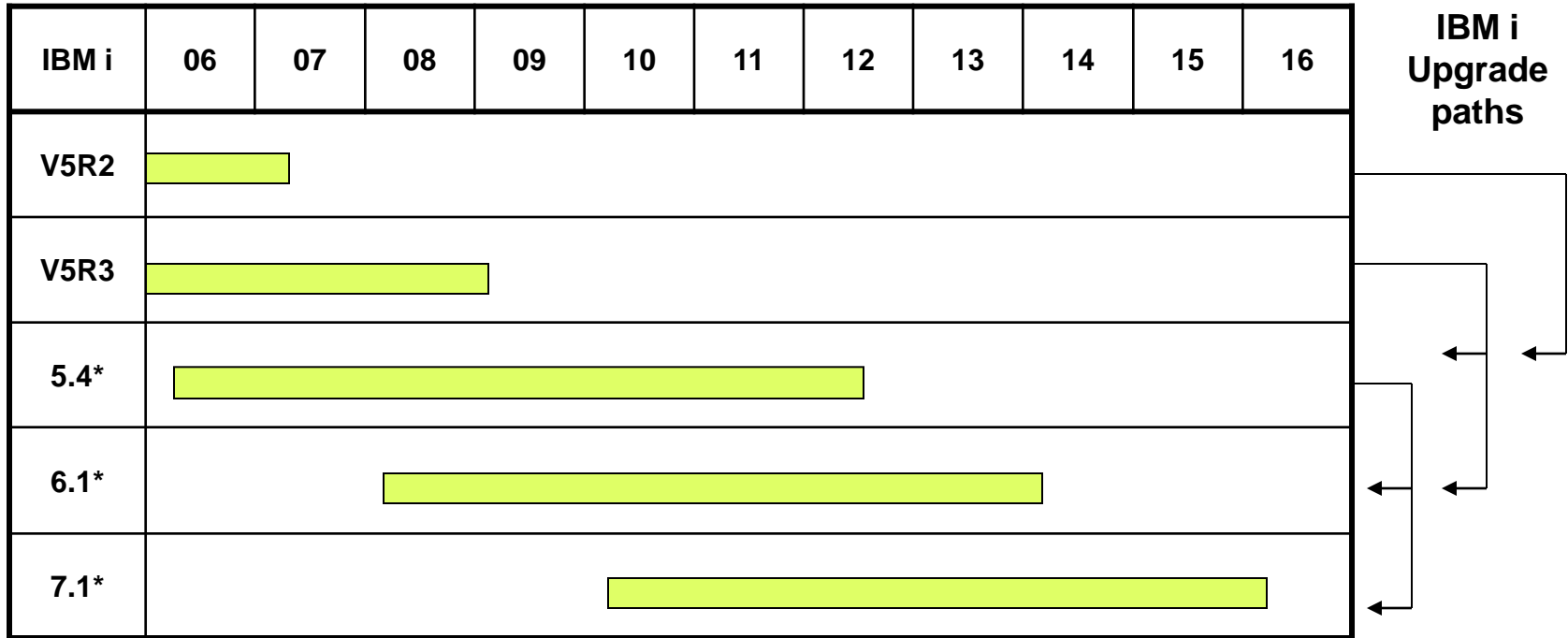| Release	Announce date*	GA date*	Announce End of Marketing date*	Effective End of Marketing date*	End of Program Support*	Program Support Extension Available*
V4R5	05/22/2000	07/28/2000	02/12/2002	07/02/2002	07/31/2002	12/31/2002
V5R1	04/23/2001	05/25/2001	07/29/2003	11/21/2003	09/30/2005	
V5R2	06/04/2002	08/30/2002	02/08/2005	10/01/2005	04/30/2007	
V5R3	05/04/2004	06/11/2004	02/06/2007	01/04/2008	04/30/2009 Note 3 Note 2	
V5R4	01/31/2006	02/14/2006	01/27/2009	05/27/2011	Notes 1, 2	
6.1.x	01/29/2008	03/21/2008			Note 1	
7.1	04/13/2010	04/23/2010			Note 1	

* All dates are shown in MM/DD/YYYY format.

Note 1: End of program support date will be announced with at least 12 months notice prior to the effective termination date.

Note 2: Includes both Machine Code Level V5RxM0 and V5RxM5.

Note 3: IBM Service Extension Offering for i5/OS and OS/400 is available for U.S. Customers.

http://www-947.ibm.com/systems/support/i/planning/upgrade/suptschedule.html

IBM i Life Cycle

IBM i	06	07	08	09	10	11	12	13	14	15	16
V5R2	███										
V5R3	████										
5.4*		██████									
6.1*			████████							
7.1*				██████████					

IBM i Upgrade paths

███ **Service**

*The projected date for the service of IBM i releases is based on current IBM planning assumptions. Note that it is IBM's current practice to support an IBM i release until the next two releases have been made available, plus twenty four months. This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

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IBM i System Support

Servers	IBM i 5.4	IBM i 6.1	IBM i 7.1
POWER7# PS700, 701, 702, 710, 720, 730, 740, 750, 770, 780, 795		✓	✓
POWER6 JS12, 22, 23/43, 550* 560		✓	✓
POWER6 520, 550*, 570, 595	✓	✓	✓
POWER5+ 515, 525	✓	✓	✓
POWER5 520, 550, 570, 595	✓	✓	✓
800, 810, 825, 870, 890	✓	✓	
270, 820, 830, 840	✓		

http://www-947.ibm.com/systems/support/i/planning/upgrade/osmapping.html

* Specific models   # with LIC 6.1.1

42   **Power is performance redefined**

IBM i Info Center

Welcome Mr. Tracy Smith [Not you?]

IBM i and System i Information Center

IBM Systems Information Centers

Hardware Information Center

IBM i and System i Information Center

IBM Linux Information Center

IBM Storge Information Centers

IBM Systems Director Information Center

IBM System p and AIX Information Center

The IBM® i and System i ® Information Centers are your source for technical information about hardware and software solutions for the IBM System i™ platform.

The IBM i information centers are powered by Eclipse. The local language setting of your browser determines the language version of the information center content.

IBM i Information Center versions

i 7.1	▶
i 6.1	▶
V5R4	▶

Related links
- IBM Publication Center
- Support for IBM Systems
- IBM Systems Education

http://publib.boulder.ibm.com/eserver/ibmi.html

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Redbooks

http://publib-b.boulder.ibm.com/Redbooks.nsf/portals/Power?Open&page=drafts

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| Just published | Drafts | Most popular | Residencies | Workshops |

Search again IBM AND i   **Sort by** relevance   **Search**

138 results in **Power Systems Redbooks**

1. IBM i 7.1 Technical Overview, SG24-7858-00
   Draft Redbooks, last update 17 August 2010, Rating: ★★★★★ (based on 2 reviews)

2. IBM Systems Director Navigator for i, SG24-7789-00
   Redbooks, published 2 December 2009

3. IBM i and Midrange External Storage, SG24-7668-00
   Redbooks, published 16 January 2009, last updated 7 July 2009

4. AIX 5L on the IBM System i Platform: Implementation Guide, SG24-6455-01
   Redbooks, published 30 March 2007, last updated 9 June 2009, Rating: ★★★★★ (based on 1 review)

5. End to End Performance Management on IBM i, SG24-7808-00
   Redbooks, published 23 November 2009, Rating: ★★★★★ (based on 3 reviews)

6. IBM Electronic Services Support using Automation and Web Tools, SG24-6323-01
   Redbooks, published 13 September 2007

7. Logical Partitions on System i5: A Guide to Planning and Configuring LPAR with HMC on System i, SG24-8000-01
   Redbooks, published 17 May 2006, Rating: ★★★★★ (based on 3 reviews)

8. IBM i 6.1 Independent ASPs: A Guide to Quick Implementation of Independent ASPs, SG24-7811-00
   Redbooks, published 10 December 2009

9. Using IBM DB2 for i as a Storage Engine of MySQL, SG24-7705-00
   Redbooks, published 12 March 2009, Rating: ★★★★★ (based on 2 reviews)

10. Security Guide for IBM i V6.1, SG24-7680-00
    Redbooks, published 29 May 2009

Power is performance redefined

IBM i 7.1 Technical Overview

http://www.redbooks.ibm.com/redpieces/abstracts/sg247858.html?Open

Abstract

This IBM® Redbooks® publication introduces a technical overview of the main new features, functions and enhancements available in IBM i 7.1. It gives a summary and brief explanation of new capabilities and what has changed in the operating system, and also discusses many of the licensed programs and application development tools associated with IBM i.
Many of the new and enhanced functions are described such as:
- DB2® for i support for XML and column level encryption
- PowerHA™ for i asynchronous Geographic Mirroring & LUN-level switching
- Virtualization enhancements for IBM i hosted partitions and PowerVM™
- Storage management enhancements for solid state drives
- Systems management enhancements for Systems Director Navigator for i
- Rational® software development product enhancements
- Zend PHP Enhancements
- Web Application Serving enhancements
The information provided in this book will be useful for clients, business partners and IBM service professionals involved with planning, supporting, upgrading, and implementing IBM i 7.1 solutions.

Rating: ★★★★★
(based on 2 reviews)

→ Rate this Draft

Author(s)

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- Robert Jacobsen
- Ingo Dimmer
- Allyn Walsh
- Ivan Berrios

Feedback

✉ Send e-mail

Table of contents

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POWER7 Prereqs

https://www-912.ibm.com/e_dir/eserverprereq.nsf

IBM Systems support
BladeCenter
Power
System i
System p
System x
System z
System Storage
Systems networking
System Blue Gene
IntelliStation Pro
IBM Monitors
Systems Management software
Hardware options and upgrades

Related links
- Warranty and licenses
- developerWorks
- alphaWorks
- IBM Business Partners

IBM Prerequisite

Feature Prerequisites | **POWER5 & POWER6 Systems** | **POWER7 Systems** | **Software**

The IBM Prerequisite site provides you with compatibility information for hardware features. This tool helps you to plan a successful system upgrade by providing you with the prerequisite information for features you currently have or plan to add to your system.

To begin your search, select the Hardware or Software tab.

Visit the IBM Systems Hardware Information Center for the latest information about planning, upgrading, installing hardware and software, getting fixes, and more.

Power is performance redefined

POWER7 Prereqs

https://www-912.ibm.com/e_dir/eserverprereq.nsf

IBM Prerequisite

| Feature Prerequisites | POWER5 & POWER6 Systems | POWER7 Systems | Software |

Specify a feature code to search for, or search for multiple features by selecting a machine type and model from the list provided.

Machine Type-Model: Select one of the following

Feature Code:

Go

Machine Type-Model: 8202-E4B

Feature Code:

Go

Search results

Feature code	Machine type - Model	Feature Description
0551	8202-E4B, 8205-E6B, 8231-E2B, 8233-E8B, 8236-E8C, 9117-MMB, 9119-FHB, 9179-MHB	19 inch, 1.8 meter high rack
0553	8202-E4B, 8205-E6B, 8231-E2B, 8233-E8B, 8236-E8C, 9117-MMB, 9119-FHB, 9179-MHB	19 inch, 2.0 meter high rack
0555	8202-E4B, 8205-E6B, 8231-E2B, 8233-E8B, 9117-MMB, 9119-FHB, 9179-MHB	19 inch, 1.3 meter high rack
1103	8202-E4B, 8205-E6B, 8233-E8B	USB Internal Docking Station for Removable Disk Drive
8350	8202-E4B, 8231-E2B	4-core 3.0 GHz POWER7 Processor Module
8351	8202-E4B	6-core 3.0 GHz POWER7 Processor Module
8352	8202-E4B	8-core 3.0 GHz POWER7 Processor Module

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POWER7 Prereqs

Feature prerequisite information	
Machine type-model(s) supported	8202-E4B, 8231-E2B
Feature code	8350
Description	4-core 3.0 GHz POWER7 Processor Module
Initial feature announce date	08/2010
Information last updated	07 Sep 2010 02:14 PM
Other information	

OS information			
Code type/OS	**Version/Release**	**Fix level**	**Other information**
Server Firmware	Base Server Firmware Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: FW 7.2.0	AL720_xxx, AM720_xxx, AH720_xxx	
HMC Firmware	Base HMC Firmware Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: V7R7.2.0M0	MHxxxxx	
AIX Version 7.1	Base AIX 71 Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: 7100-00		
AIX Version 6.1	Base AIX 61 Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: 6100-06		
AIX 5L Version 5.3	Base AIX 5.3 Levels for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: 5300-12 SP1, 5300-11 SP5, 5300-10 SP5. Planned availability September 30, 2010		
IBM i 6.1	Base IBM i 6.1 Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: IBM i 6.1 with i 6.1.1 machine code - i 6.1.1: RS610-10 OS & RS611-C LIC	C0215610	
IBM i 7.1	Base IBM i 7.1 Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: IBM i 7.1 with i 7.1.0 machine code: RS710-00 OS & (RS710-B LIC or Technology Refresh 1 (PTF Group SF99707))	C0229710	
SLES	Base SUSE Linux Enterprise Server Levels for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: SLES 11 SP1, SLES 10 SP3		
RHEL	Base Red Hat Enterprise Linux for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: RHEL 5.5		
PowerVM Virtual I/O Server	Base VIOS Level for 8231-E2B, 8202-E4B, 8205-E6B and 9119-FHB: VIOS 2.2		

Power is performance redefined

Useful Resources

IBM i home page: http://www.ibm.com/systems/i

IBM Announcement Letters: http://www-01.ibm.com/common/ssi/index.wss

IBM i 6.1 and 7.1 Information Centers: http://publib.boulder.ibm.com/iseries/

- V6R1 Memo to users: http://publib.boulder.ibm.com/infocenter/iseries/v6r1m0/topic/rzaq9/rzaq9.pdf
- V7R1 Memo to users: http://publib.boulder.ibm.com/infocenter/iseries/v7r1m0/topic/rzaq9/rzaq9.pdf

IBM i 7.1 Technology Refresh: http://www-947.ibm.com/systems/support/i/planning/techrefresh/index.html

IBM i, i5/OS and OS/400 release support: http://www-947.ibm.com/systems/support/i/planning/software/i5osschedule.html

IBM i and i5/OS release life cycle: http://www-947.ibm.com/systems/support/i/planning/upgrade/suptschedule.html

Listing of Servers and the supported levels of i5/OS & IBM i:

http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/osmapping.html

i5/OS Program Conversion Redpaper (REDP-4293): http://www.redbooks.ibm.com/redpieces/abstracts/redp4293.html

9/19/07 iSociety Fireside Chat on 'i5/OS V6R1 Program Conversion' - transcript online at
http://www.isociety.org/Chat20070919.html

Info APAR II14306 (ANZOBJCVN PTFs): http://www-912.ibm.com/n_dir/nas4apar.nsf/51d11a683a56a5cc862564c000763b23/3af47a966c4df94586257306003c6868?OpenDocument

IBM i Upgrade Planning site (e.g. V6R1 FAQs): http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/v6r1/index.html

IBM Electronic Software Delivery site: http://www-304.ibm.com/jct01004c/systems/support/software/delivery/en_US/downloadinfo.html

IBM Prerequisite tool (use to verify software requirements for hardware models/features)

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

IBM Pre-Upgrade Verification Tool

- http://www-912.ibm.com/s_dir/slkbase.nsf/1ac66549a21402188625680b0002037e/5a6b33f04dcc093a8625736a00590072?OpenDocument&Highlight=2,pruv

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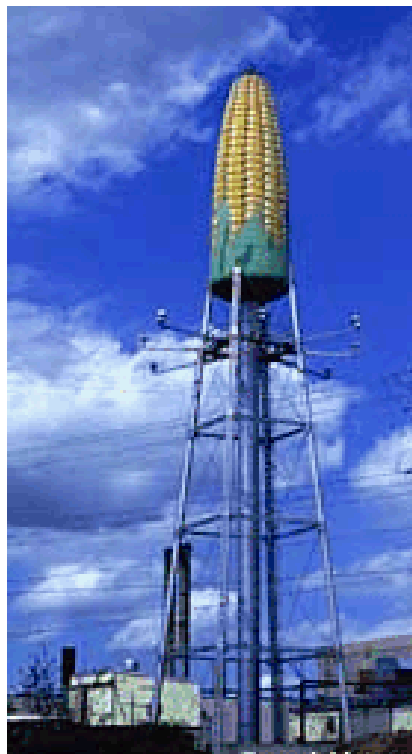
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