Six + Six Reasons to Upgrade to IBM i 6.1

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Overview

IBM i 6.1 is the next step for efficient business processing. i 6.1 is the latest release of the integrated operating system that clients with AS/400, iSeries, System i and now Power Systems servers have been using for over 20 years. While IBM i continues to deliver support for running multiple applications on a single system and the reliability, security, and simplicity required for business systems, the latest release delivers enhancements for enterprise and mid-market clients as well as for IT executives and system administrators.

From a strategic angle, i 6.1 delivers enhancements that can enable new IT infrastructure implementations, reducing costs, reducing energy consumption, and supporting business growth. IBM i 6.1 adds support for BladeCenter, delivers breakthrough performance with Storage Area Networks, supports PowerHA disk clustering, new virtualization options, improved performance for Java and WebSphere workloads, and new options for encryption.

IBM i 6.1 also delivers enhancements to improve the productivity of the IT staff with a new web based management tool, a new tool to analyze performance data, improvements to the iSCSI based integration with System x servers, support for TCP/IP V6, BRMS enhancements, and additional virtualization capabilities.

IBM i and BladeCenter for a new IT infrastructure

Now you can deploy your IBM i applications on the fastest growing server footprint in the industry. Blades are being used today to consolidation servers, simplify server and storage management, reduce energy costs, and save space in the datacenter.

IBM i is supported on two high performance POWER6 blade servers, the 2 core BladeCenter JS12 and the 4 core JS22. POWER blades can be deployed in either the BladeCenter H or BladeCenter S chassis. The BladeCenter H chassis supports up to 14 POWER or x86 processor based blades. The BladeCenter S supports up to 6 blades. Storage for blade servers installed in the BladeCenter S is provided by installing up to 12 disks integrated in the chassis and the attachment of the DS3200 SAN. A DS3200, DS3400, DS4700, DS4800, or DS8000 SAN provides storage resources for the BladeCenter H chassis. A special *IBM i Edition Express for BladeCenter S* is available that combines the chassis, its associated components, a POWER6 blade server and IBM i in an attractive, affordable package.

The BladeCenter JS12 and JS22 servers are equipped with PowerVM™ Micro-Partitioning™, that support any combination of IBM i, AIX and Power Linux partitions on the same blade. With the addition of x86 blades running Windows Server®, Linux® or VMware® in the same chassis, the IBM BladeCenter solution can support the consolidation of a small or mid-sized IT infrastructure in a central or branch location.

Delivering SAN Performance Optimization

Many enterprise clients are implementing Storage Area Networks to consolidation, virtualize, and manage their storage resources. While IBM i has supported SANs for a number of years, the performance available with integrated disk drives was typically better. Not anymore. IBM i 6.1 with POWER6 processor-based servers support a new fibre channel adapter that can deliver significantly improved performance with DS8000 Storage Area Networks. The performance of i applications in this SAN configuration is comparable to the excellent performance clients have experienced with integrated drives

The new fibre channel adapter and its firmware take advantage of existing DS8000 features to optimize command traffic and reduce seek times on disk sector header information by consolidating the data. This new Smart I/O adapter can also yield over a 4 to 1 reduction in the number of IO slots needed to support a given configuration.

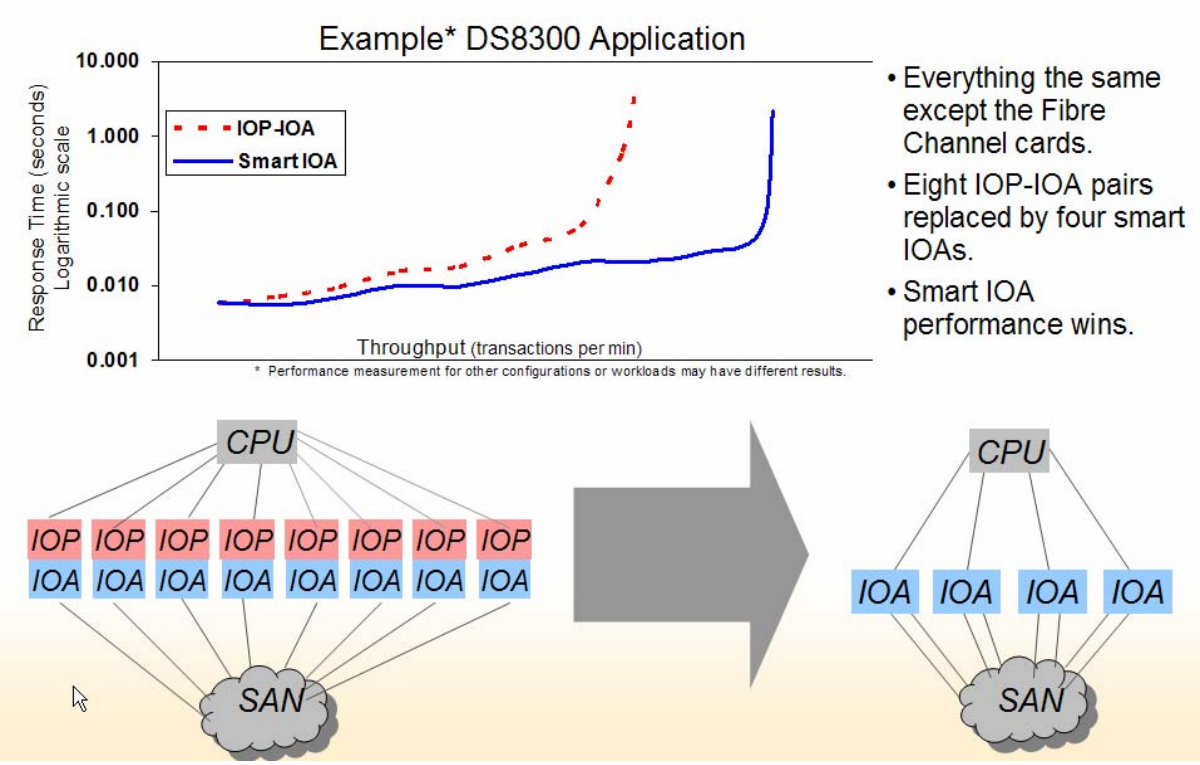


Figure 1 Performance gains and slot savings with the smart fibre channel IOA

New Options for High Availability

From an IT perspective, business continuity is all about the availability and security of your core business applications and data. The need to keep mission critical applications in production continuously, the need to recover data, and the need to secure data from both internal and external entities has risen to the top of the IT requirements list. IBM i 6.1 offers platform resiliency and data protection technologies enabling information and systems to be highly available.

IBM i 6.1 offers state of the art availability and reliability capabilities. With the introduction of PowerHA for i and iCluster for i, IBM now offers a full range of high availability products for virtually any customer scenario. These solutions enable two systems to have synchronous copies of data to enable ease of use switching operations between the primary and secondary systems in a cluster. PowerHA for is a disk clustering solution that supports integrated as well as SAN based storage. Cross-Site® Mirroring (XSM) functions may be deployed via geographic mirroring (Geo Mirror), the i native replication technology, or Metro Mirror and Global Mirror, the IBM DS8000™ hardware replication technology. Geo and Metro Mirror enable two systems to have synchronous copies of independent storage pools (IASP) data to enable ease of use switching operations between the primary and secondary systems in a cluster. Global Mirror enables asynchronous mirroring for disaster recovery operations.

For clients desiring a logical replication (software-based) solution from IBM, IBM iCluster is another option. Logical replication is the traditional way that i clients achieved multiple system data recoverability and iCluster is one of those traditional solutions.

New Virtualization Options

IBM PowerVM™ provides virtualization technology that enables multiple images of i, AIX® or Linux operating systems to run on the same Power processor-based system with resources automatically balanced between partitions. The PowerVM hypervisor ensures each operating system partition—either i, AIX or Linux—is completely independent and secure. Up to ten micro-partitions can be defined per

processor, with dynamic or automatic balancing of processor resources between the micro-partitions. PowerVM also supports memory and I/O resource virtualization to improve asset utilization and decrease system costs. Companies deploying i have routinely deployed their business applications using logical partitioning to optimize their IT operations over the past decade.

For a number of years IBM i has extended its advanced storage management capabilities to other operating environments by hosting storage for AIX and Linux logical partitions or attached System x and BladeCenter servers running Windows, Linux and VMware. This virtualization solution has enabled clients to reduce costs for storage resources, centralized storage management, and consolidate backups across multiple environments. Now with i 6.1 on POWER6 processor-based servers, this support has been expanded so that IBM i 6.1 can host another IBM i 6.1 partition as a client partition without having to purchase separate adapters for the client partition (see Figure 2). This provides a quick and easy method to create test partitions, consolidate servers, or to evaluate new applications.

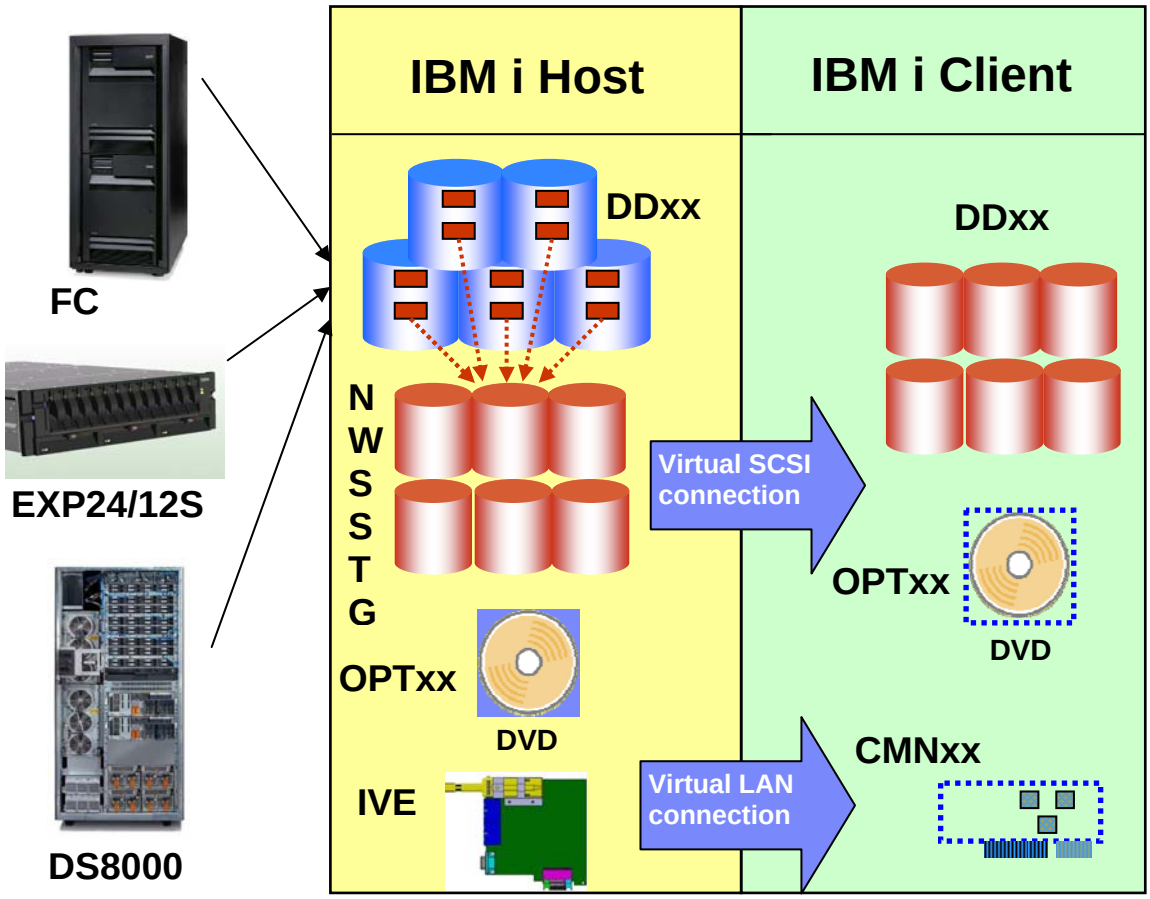


Figure 2 IBM i hosting a client IBM i partition.

PowerVM offers another virtualization option for I/O resources with Virtual I/O Server (VIOS) (see Figure 3). VIOS is an appliance partition that can provide storage and networking resources to AIX, i, and Linux client partitions VIOS brings with it the ability to attach a DS3400, DS4700, DS4800, or DS8000 SAN as the storage for hosting these client partitions. VIOS is used to provide I/O resources to IBM i in BladeCenter configurations.

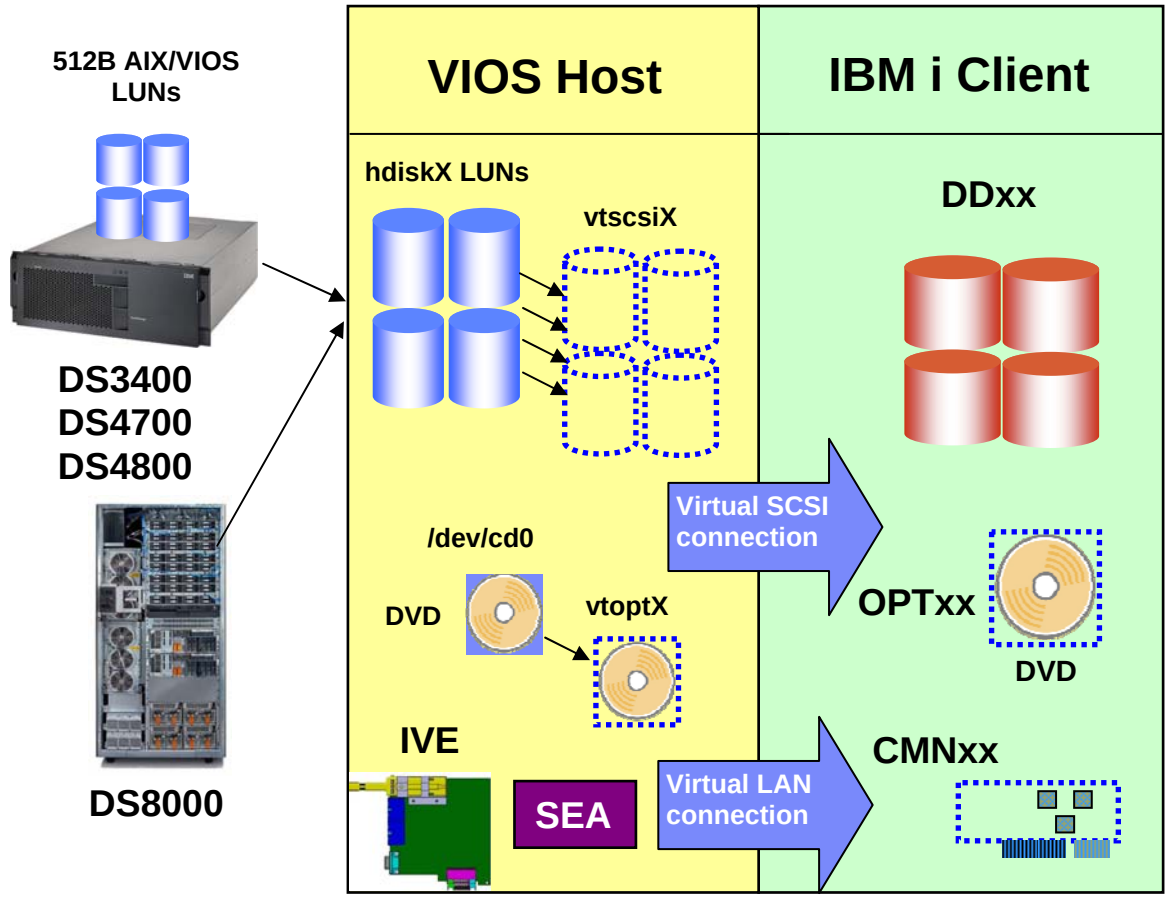
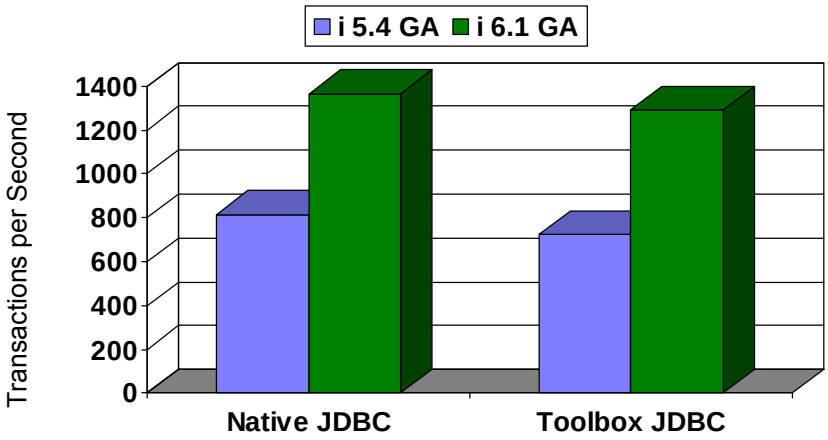


Figure 3 VIOS hosting a client IBM i partition.

JAVA Performance, Scalability and Portability

IBM i can deliver significantly improved performance for Java and WebSphere applications. In IBM tests, i 6.1 delivered 68% to 78% more transactions per second on the same POWER5 based server than i 5.4. IBM i 6.1 provides the foundation for clients to deploy applications on the web, using advanced technologies like SOA and Web services.

IBM i 6.1 also supports the same 32-bit and a 64-bit Java virtual machines that run on AIX and Linux operating systems offering great application portability for software developers.



Test Environment

IBM Technology for Java VM 32 bit

WebSphere Application Server 6.1

DB2 for IBM i

2-tier environment

POWER5+ 2.2 GHz 2-core partition

Trade 6.1 (stock trading) workload

Figure 4: Performance results from Trade 6.1 on i 5.4 versus i 6.1 32-bit JVM.

New Encryption Options

IBM i 6.1 introduces two new encryption options to help protect information and support new regulatory and audit requirements. i 6.1 can encrypt data as it is backed up to any tape device attached to the system. This software-based encryption is an alternative to purchasing a specific tape drive that supports hardware encryption. i 6.1 can also encrypt data as it resides on disk drives. With this support, when drives are returned to vendors or provided to a third party, the data on the drives is encrypted and thus is protected

Management with Systems Director

IBM i 6.1 includes a new web based management tool, Systems Director Navigator for i. This tool provides a system administrator access to over 300 management tasks from a browser. This new tool is the strategic management tool for a single IBM i environment, replacing the Windows-based iSeries Navigator. The new tool provides access from a variety of clients and no longer requires management software to be installed on Windows desktops. Accessing the new Navigator is as simple as entering the system name or its IP address followed by the 2001 port in a browser. It uses the HTTP administration server to connect to the system and the new built-in web application server to serve the web interface.

One of the new tools available in Navigator is the Performance Data Investigator. This web-based tool uses collection services data to present performance information in graphs and tables. The interface supports zooming in on specific points of data and hovering over a point on the graph to get more detailed information.

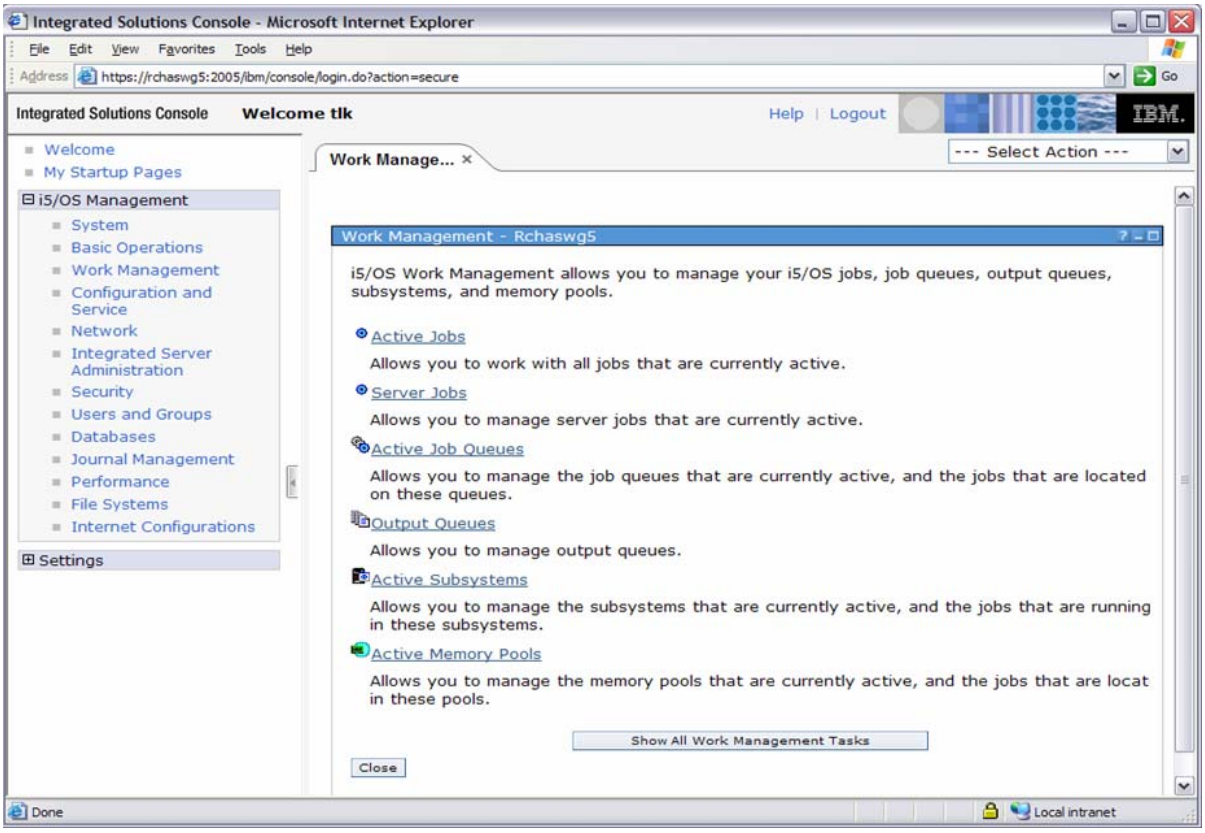


Figure 5 Sample screen shot of the IBM Systems Director Navigator for i web interface.

While Systems Director Navigator for i provides management of a single system or partition, IBM Systems Director 6.1 can manage multiple heterogeneous systems. These complementary tools are built on the

same technology, have the same look and feel, and both manage IBM i environments. Systems Director 6.1 runs on an AIX, Linux, or Windows server and can manage i 5.4 and 6.1 as well as Windows, Linux, and AIX environments through agent technologies. While Systems Director 6.1 supports the same 300 tasks provide in Navigator, it provides a rich set of management capabilities such has health check, topology views, and system update capabilities.

PowerVM Multiple Shared Processor Pools

IBM i 6.1 supports a new capability provided with PowerVM, multiple shared pools. With this support, the processor resources a group of partitions use can be capped. Within the pool, processor resources used by the partitions can automatically change based on workload demands, but the total processor resources used by the partitions is capped at the maximum defined for the pools. This new capability provides more flexibility for consolidating servers and can reduce software licensing costs. By capping the amount of processor resources the partition can use, fewer software licenses are required in some configurations (Figure 6).

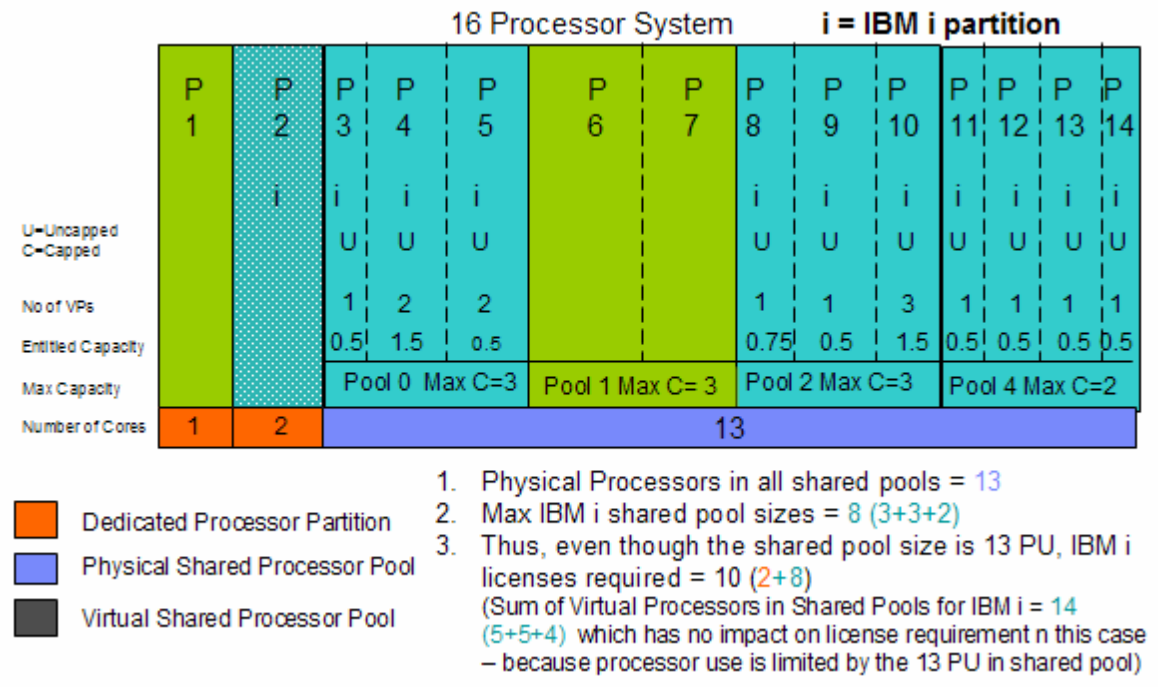


Figure 6 i 6.1 Shared virtual shared processor pools

Integration with System x and BladeCenter

IBM i offers integration with System x and BladeCenter servers via iSCSI. Internet small computer system interface (iSCSI) is an industry standard for connecting a server to a storage area network (SAN). With this support IBM i provides storage resources for attached VMware, Windows, and Linux servers.

IBM i 6.1 now supports VMware VMotion that allows migrating a running virtual machine from one System x or blade server to another. i 6.1 has been enhanced to allow the VMware servers to have shared access to the same network server storage space.

IBM i 6.1 also adds support for Windows Server 2008®, SUSE® LINUX Enterprise Server 10 and Red Hat® Enterprise Linux 5 on the System x or blade. The storage management facilities have also been enhanced with support for storage space snap shots and file level back up support for Linux servers.

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New built-in web application server

IBM i 6.1 introduces a new built-in web application server. IBM i uses this integrated web application server for the System Director Navigator for i and IBM DB2 Web Query. This web application server can also be used by clients and software providers While this server does not provide the advanced functions available with WebSphere Application Server, it is integrated in the operating system, ready to run, and requires a much smaller memory footprint. The integrated web application server runs in the IBM Technology for Java (32 –bit) JVM, supports Java Toolbox and Native DB drivers and was designed as a web container for 'simple' applications.

TCP/IP v6 certified

TCP/IP version 6, also denoted as IPv6, is an expansion of the IPv4 addressing that is used throughout most of the internet and intranets today. IPv6 expands the existing IPv4 addressing model dramatically from 32 bits to 128 bits to allow for current demand, broader future growth and for the eventual replacement as the addressing standard for the internet. IBM i has completed certification testing for configuration and implementation of IPv6 on i 6.1. With this new support, IBM i can support advanced networking infrastructures and web deployments.

Backup recovery and media services (BRMS) enhancements

For those users that are implementing a high availability based solution, BRMS, along with a SAN's FlashCopy® support can be used to save an entire copy of the IBM i and its associated data from a mirrored copy of the disks configured as an independent disk pool. To get the most current data copied to the back up system a new quiesce function can be used to force the current memory pages out to disk prior to running the FlashCopy tool on the SAN. The quiesce function replaces the need to vary off the independent disk pool or to power down the entire partition prior to the FlashCopy.

BRMS has also been enhanced to support encryption of IBM i 6.1 backups. The management interface for BRMS is now provided through the web-based System Director Navigator for i.

Summary

With enhancements to Java performance, SAN performance, support for a disk clustering, support for BladeCenter, new encryption options, and management through Systems Director, i 6.1 has something for almost everyone.

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