AIX 5L Operating System

Highlights

■ *Supports balanced server growth while providing enhanced security for e-business applications*

■ *Helps ensure critical applications remain responsive and available even during periods of unpredictable demand*

■ *Helps protect and leverage current investments as new technologies and applications are integrated*

Extending your reach

When managing a business, every detail is important, particularly information technology. That's why more and more companies are running their mission-critical operations on a UNIX® operating system. With its proven scalability, reliability and manageability, UNIX is an excellent choice for building an IT infrastructure. There are a number of UNIX operating systems available, but only one leverages IBM experience in building the solutions that run businesses worldwide. And, only one UNIX operating system leads the industry in

vision and delivery of advanced support for 64-bit platforms with an affinity for Linux®. That operating system is AIX® 5L™.

Conforming to The Open Group UNIX 98 Base Brand industry standard, AIX is fully integrated to support 32- and 64-bit applications running concurrently, in their full range of scalability. It operates across the range of IBM @server™ pSeries™ and IBM RS/6000® workstations, servers and massively parallel supercomputers. A datacenter utilizing AIX 5L is ideal for business applications that require very high throughput, quick response times and 24x7 availability.

AIX 5L Version 5.2 moves the AIX operating system into the next stage of autonomic computing infrastructure. It provides innovative scalability technology while continuing to offer application affinity with Linux, tools that simplify systems management, and leadership security mapping between heterogeneous platforms. AIX 5L V5.2 also has new and improved functions for operational flexibility, workload management, system availability and system resource use in the datacenter.

Virtual servers

With the introduction of Dynamic Logical Partitioning (DLPAR) in AIX 5L Version 5.2, IBM delivers advanced flexibility and scalability to POWER4™-based pSeries systems.

LPAR makes it possible to run multiple, independent operating system images of AIX 5L and Linux on a single pSeries server. Logical partitions do not need to conform to the physical boundaries of the building blocks (collection of resources) used to build a system. LPAR adds more operational flexibility with finer granularity to select components from the entire pool of available system resources. A single processor, 256MB memory region, and an I/O adapter represent the minimum resources required for a pSeries partition.

Using DLPAR, customers can create "virtual servers within a server" and dynamically add and remove processors, real memory and I/O slots from active partitions — each partition isolated from other partitions — each partition running its own instance of the AIX 5L V5.2 operating system — from within the partitioned environment and without the need to reboot. Customers can assign system resources where they are most needed, easily adjusting to changing system priorities and growth requirements while consolidating workloads into multiple partitions on a single server. And, they can accomplish these activities while maintaining operations, service and support at the desired level.

Operational efficiency and capacity planning

For even more flexibility, scalability and availability, AIX 5L Version 5.2 introduced dynamic Capacity Upgrade on Demand (CUoD) for p670 and p690 systems.

CUoD allows customers to install systems with more processors than are initially required, keeping those processors in reserve until business needs require their activation. With the CUoD option, an encrypted key is used by the system administrator to activate additional processors. The newly activated processors can be dynamically assigned to partitions without system disruption.

System availability is enhanced by CUoD. In the unlikely event that a processor reaches an error threshold, AIX 5L V5.2 transparently activates an available CUoD processor and assigns it to replace the faulty processor until it is convenient for the customer to schedule a repair activity. This function, called Dynamic Processor Sparing, is supported even in single-processor partitions and allows the system to continue running at the same processing capacity so performance and availability are not impacted.

Stay in control

AIX 5L Version 5.2 introduced enhancements that help customers ensure that critical applications meet user expectations even during periods of heavy, unpredictable demand. AIX 5L V5.2 Workload Manager (WLM) supports the automatic switching of system resource policies based on time of day that dynamically allow processor cycles, real memory and disk I/O to be divided between jobs. System administrators can translate business needs into policies that automatically recognize both job and scheduling priorities. This capability is a valuable asset for business solution

areas such as e-business, business intelligence, server consolidation and enterprise resource planning.

Administrators can easily access Workload Manager through the intuitive graphical interface of Web-based System Manager, via the System Management Interface Tool (SMIT) or by using AIX commands. From the Web-based System Manager interface, administrators can register for notification of WLM-related events and can define actions to be taken in response to those events — which help reduce administrator workload and help maximize system utilization.

Cluster management

A clustered environment requires sophisticated coordination among nodes for quick synchronization and response coordination. AIX 5L is designed to support and optimize the management of clustered servers through the use of IBM Cluster Systems Management (CSM) for AIX 5L and Linux software. CSM provides a single point-of-control for installing, configuring, maintaining and updating selected pSeries and IBM @server xSeries™ servers. CSM for AIX 5L is included with AIX 5L

Version 5.2 base media as an optionally installable and separately licensed product.

Linux affinity

AIX 5L affinity with Linux helps enable faster and less costly deployment of multi-platform, integrated solutions across AIX and Linux platforms. Many applications developed on and for Linux will run on AIX 5L with a simple recompilation of the source code. IBM provides at no cost, an AIX Toolbox for Linux Applications which is a collection of Open Source and GNU software commonly found with Linux distributions. Because the applications run on AIX, businesses can combine the flexibility of Linux with the advanced features of AIX, including advanced workload management, sophisticated systems management tools, scalability and security.

Security

Certified at the C2 level, AIX 5L offers and makes integral use of strong, industry standard security and directory technologies. AIX 5L v5.2 includes and expands these technologies with integrated support for Pluggable Authentication Module

(PAM), user-based PKI certificates, Enterprise Identity Mapping (EIM), BIND V9, SNMP V3, Mobile IPv6, Wireless Access Protocol (WAP) v1.1, OpenSSH v3.4, and new cryptographic library support for: AES (Rijndael), SEAL, Mars, Twofish and other algorithms. These features are in addition to continued support for IBM Network Authentication Server (NAS), IBM Directory Server 4.1 and ICSA Certified IPsec/VPN secure networking. Java™ security technology offerings include JAAS, JCE/JCE, JSSE, JGSS, and J-PKI.

Selected features of AIX 5L Version 5.2

Feature	Benefits
Interoperability	
Affinity with Linux	• Helps deliver services across technology boundaries by allowing portable Linux applications to be combined with the scalability and robustness of AIX
CSM software in base AIX	• Optionally installable and separately licensed software helps drive down cost associated with managing clustered servers running AIX and Linux
System Scalability	
JFS2 File System	• Efficient storage of large (up to 16 Terabyte) files that assist deployment of advanced applications and databases
Large Pages*	• 16MB pages help improve throughput for compute-intensive workloads and applications that require large amounts of data to be transferred between memory and storage
Dynamic Resource Management	
Dynamic Logical Partitioning**	• Enables addition or removal of processors, adapters or memory without system reboot, improving system availability and resource utilization
Dynamic Capacity Upgrade on Demand**	• Allows activation of additional processors when needed — without a system reboot, for greater flexibility and improved workload throughput
Dynamic Processor Sparing (with CUoD)**	• Supports dynamic substitution of error threshold processors with spare, unlicensed processors to help keep systems available and processing their assigned workloads
Dynamic Workload Manager	• Adds automatic time based policies and new control points to allocate resources to applications within a single system image
e-business and Network Performance	
Virtual IP Address (VIPA)	• Helps applications remain available if a network connection is lost
IP Multi-path Routing	• Improves network availability by providing multiple routes to a destination
Multiple Default Gateways	• Keeps traffic moving through a network by detecting and routing around dead gateways
Mobile IPv6	• Extends Internet connectivity to handheld devices
Network Tuning Interface	• Helps reduce administrative effort associated with managing and tuning networks
Security	
Kerberos V5 Authentication	• Helps administrators simplify password authentication for users connecting to several machines
Pluggable Authentication Module	• Permits the use of distributed security services to reduce administrative effort associated with linking users to multiple applications
Enterprise Identity Mapping	• Allows a user single-point access to a network comprised of heterogeneous server platforms

  * Supported on pSeries POWER4 systems
 ** Supported on selected pSeries POWER4 systems

Feature	Benefits
Java and XML Parser for Java	
Included in base AIX	• Delivers a popular cross-platform programming language for e-business applications and a parser than enables applications to read and write XML data
Systems Management	
Fix Manager	• Provides reports that compare fix levels on a system to a reference system or base level of fixes for easier administration
RSCT Resource Monitoring and Control	• Delivers clustering technology to automate resource monitoring, improving system availability and performance
Distributed Command Execution Manager	• Offers centralized management of groups of AIX-based servers through a Web browser interface
Storage	
Split Mirror backup support	• Helps reduce any impact to system performance by removing the need to rebuild an entire mirror
JFS2 Filesystem Snapshot	• Helps administrators monitor and manage a filesystem for action and easier backup
I/O size and alignment for Logical Volume Manager	• Removes size and alignment restrictions to help improve filesystem and overall system performance
Storage Area Network (SAN) boot	• Adds capability to initiate system boot from a single point-of-contact in a SAN
Migration via Alternate Disk Install	• Improves management of multiple operating system migrations in environments where downtime is critical
Reliability, Availability, Serviceability (RAS)	
Automated system hang recovery	• Helps systems remain available without administrator intervention
Dynamic Processor Deallocation	• Proactively checks processor integrity and removes failing processors so that systems are more available
System UE-Gard	• Improves system uptime by proactively managing checkstop errors at a thread level
Multi-path I/O (MPIO)	• Enhances internal reliability of storage connections and permits maintenance deferral while offering interoperability between heterogeneous storage subsystems in a SAN
Debugging and Performance Tools	
Xprofiler	• Helps developers identify the most processor intensive software functions via a graphical interface
New and enhanced tools plus program interfaces for access to Performance Monitor data	• Allows administrators and users to more easily collect information and optimize system performance in addition to identifying correct upgrade components
Template-based performance tuning	• Allows administrators the capability to capture system tuning schemes via stanza files and export them to multiple servers

AIX 5L Expansion Pack and Bonus Pack

The AIX 5L Expansion Pack extends the base operating system by providing encryption support, a browser to view online HTML publications, and an HTTP server to serve online publication pages and support Web-based System Manager.

The AIX Bonus Pack complements AIX by adding tools, utilities, "as-is" software and try-and-buy applications. An Expansion Pack and a Bonus Pack are included with every new order of AIX 5L at no additional charge when media is selected. Both packs can be ordered separately for existing AIX licenses.

Service and support to help keep businesses running

AIX 5L provides an environment that delivers a platform that lets you get the most out of today's applications while positioning your business for the future. And like all pSeries products, AIX 5L is backed by IBM's worldwide service and support.

For more information

For more information on AIX releases and upgrade benefits, contact your IBM representative or IBM Business Partner or visit the following Web sites:

- **ibm.com**/servers/aix
- **ibm.com**/eserver/pseries
- **ibm.com**/ibmlink