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## Highlights

- Latest version of IBM®'s AIX operating system (OS)
  - AIX live update for non-disruptive kernel updates, service pack updates and technology level updates
  - Active Memory Expansion with large page support for efficient memory use and accelerating workloads
  - SR-IOV-enhanced virtual networking with Live Partition Mobility (LPM) support for better performance and scaling
  - AIX integrated virtual caching for flash optimised storage solutions.
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# AIX 7.2

*Secure, robust, scalable UNIX operating system for IBM Power Systems servers*

AIX provides an enterprise-class IT infrastructure that delivers the reliability, availability, performance and security for today's global economy.

Businesses need to maximise the return on investment (ROI). Their IT infrastructure should have the flexibility to quickly adjust to changing business computing requirements and scale to handle ever expanding workloads without adding complexity. However, just providing flexibility and performance isn't enough – IT infrastructure also needs to provide rock-solid security and near-continuous availability, while managing energy and cooling costs.

With the introduction of AIX 7.2, IBM® continues its robust roadmap by providing new functions that can dramatically improve system availability, performance and security, all while maintaining application binary compatibility to protect existing IT investments. The new AIX 7.2, coupled with IBM POWER8 processor-based Power Systems, delivers an optimised and more secure computing platform designed to adapt to changing business demands, including new cloud use cases. Together they deliver improved cloud economics with secure and open choices and incorporate innovation from a growing ecosystem that broadens application choice and enhances optimisation.

AIX version 7.2 is binary compatible with previous versions of the AIX OS, including AIX 6, AIX 5L and even earlier versions of AIX. This means that applications that ran on earlier versions of AIX will continue to run on AIX 7.2 – guaranteed.\*



The AIX OS is enhanced to provide the following significant capabilities in AIX 7.2:

- **AIX Live Update**
  - Introduced in AIX 7.2, AIX Live Update is now extended to support any future service pack or technology level update without requiring a reboot. Clients with Power Enterprise Pools will find automatic integration for acquiring the necessary resources for performing a live update
  - Many enterprises have a low tolerance for planned downtime and this capability – an industry first – helps them avoid rebooting the server when fixes and updates are applied
- **Cluster Aware AIX (CAA)** adds automatic repository replacement mechanism
  - Built-in cluster aware AIX capability was first released on AIX 7.1 with commands and programming APIs for creating clusters from a group of AIX instances. Kernel-based heartbeat, monitoring and event infrastructure was enabled for easy cluster management. Extending the automation and reliability further, AIX 7.2 adds support for automated replacement of a failed repository disk with predefined backup repository disk
- The SR-IOV-backed virtual network interface card (vNIC), or dedicated vNIC, feature provides the second generation of PowerVM virtual Ethernet technology. This enables the client logical partition (LPAR) to have direct access to the SR-IOV adapter resources residing in Virtual Input/Output Server (VIOS) and avoids data copy between client LPAR and VIOS. The dedicated vNIC feature offers better performance and scalability as well as the QoS capability honoured by the SR-IOV adapters. Furthermore, a LPAR with vNIC devices is LPM capable
- Support for high speed Mellanox connections using RDSv3 protocol, typically used for Oracle RAC cluster for higher performance
- AIX Dynamic System Optimiser takes advantage of the hardware optimisations in POWER8 and is now included as a part of AIX 7.2 Standard Edition and is designed to automatically and transparently improve the performance of workloads

- IBM BigFix lifecycle V9.2 provides an automated, simplified patching process administered from a single console. It provides near real-time visibility and enforcement to deploy and manage patches to all distributed endpoints. This offering will ship with AIX 7.1 and 7.2 Enterprise Editions.

This AIX release underscores IBM's firm commitment to long-term UNIX innovations. AIX 7.1 and 7.2 extend the capabilities of the OS to expand the vertical scalability of AIX to partitions with 256 processor cores and 1024 threads to handle the largest workloads. To support higher performance for large workloads, AIX 7.1 and 7.2 also include terabyte (TB) segment support, which leverages memory management capabilities of POWER7 and POWER8 processors designed to improve memory performance.

AIX 7.2 continues to support the consolidation of older, AIX 5.3 environments to new technology through 'AIX 5.3 workload partitions (WPARs) for AIX 7'. Using this separately licensed product administrators can simply back up an existing LPAR running AIX 5.3 and restore it into an AIX 7.1 or 7.2 WPARs. Versioned WPARs created on AIX 7.1 can be migrated to run on AIX 7.2.

### AIX editions

AIX 7.2 is available in two different editions:

- **AIX 7.2 Standard Edition:** The AIX 7.2 Standard Edition is the edition that many people would think of as 'AIX.' AIX 7.2 Standard Edition is eligible to run on any POWER7, POWER7+ and POWER8 server
- **AIX 7.2 Enterprise Edition:** The AIX 7.2 Enterprise Edition includes all the UNIX capabilities of AIX Standard Edition, but also includes significant enhancements that come with the inclusion of IBM Cloud PowerVC Manager, PowerSC, IBM Tivoli Monitoring and IBM BigFix Lifecycle. AIX Enterprise Edition includes all of these products under a single ordering and support structure.

## AIX Workload Partitions

WPAR are a way to save administrative overhead when consolidating systems. They provide the necessary isolation, consume less resources and ease the administrative burden when applying software updates. AIX provides for two types of WPARs:

- System WPARs look like independent AIX instances. They have their own copies of many system services and they have their own users and groups
- Application WPARs are much simpler. An application WPAR is simply a wrapper around an application that makes it more manageable. Application WPARs run inside the global instance and do not have their own administrator, file systems or security context. All processes running inside of an application WPAR can be grouped together for management.

## Security features

Providing a secure computing environment has always been a key goal for the AIX OS. AIX 7.1 and 7.2 are designed to be compliant under the Common Criteria at Common Access Protection Profile/Evaluation Assurance Level 4+, including the Role-Based Access Control Protection Profile (RBACPP) and the Labelled Security Protection Profile (LSPP). It includes many new features that can increase security while reducing the effort needed to provide a secure infrastructure. Role-based Access Control (RBAC) provides improved security and manageability by allowing administrators to grant authorisation for management of specific AIX 7.1 and 7.2 resources to users other than root. RBAC improves security by reducing the number of root users required to manage systems.

## Near-continuous availability

Over the years, the AIX OS has included many reliability features inspired by IBM legacy technologies. The release of AIX 7.2 provides unprecedented availability features that can

help reduce planned and unplanned outages. Live update for interim fixes is the latest to the arsenal where customers will be able to apply i-fixes without rebooting the system. Other features are easy capture of first failure data capture (FFDC) and second failure data capture (SFDC), faster and less disruptive problem determination, easier debugging of complex application code and robust functional recovery routines.

## Built-in manageability in AIX 7.2

Many of the features such as WPARs, Role-Based Access Control, AIX security expert and AIX concurrent updates can significantly improve the administrative efficiency of managing the AIX OS, particularly as AIX environments grow. AIX 7.1 and 7.2 also include additional features specifically intended to improve the manageability of the AIX OS such as the cluster aware AIX where administrators can use this new capability to cluster a pool of AIX nodes for easy monitoring and management.

## Virtualisation features in AIX 7.2

IBM systems based on the POWER7 or POWER8 processors provide additional virtualisation capabilities in PowerVM.

These features include:

- PowerVM Live Partition Mobility (LPM): This capability of POWER7 and POWER8 processor-based systems allows an entire running logical partition to be relocated from one server to another. The relocation is transparent to the end user and occurs with no application downtime. LPM can enable increased availability, workload balancing and energy savings
- PowerVM Shared Dedicated Capacity: This configuration option for dedicated processor partitions enables the administrator to donate excess processor cycles to a shared processor pool without affecting the workload running in the dedicated processor partition

- PowerVM Multiple Shared Processor Pools: Systems based on POWER7 or POWER8 processors support multiple separate shared processor pools. This feature can be used for additional control of processor resource allocations and potentially can reduce the license charges for applications running in a micro-partition
- PowerVM Active Memory sharing: Active Memory sharing allows the PowerVM hypervisor to automatically reallocate physical system memory between LPARs for flexibility in workload consolidation.

## Open source flexibility

AIX 7.2 offers a wide range of system interoperability features and open source tools to enable Linux applications to be recompiled and run in a native AIX 7.1 or 7.2 environment. AIX affinity with Linux can promote faster and less costly deployment of multiplatform, integrated solutions. Many solutions developed for Linux will run on AIX 7.2 with a simple recompilation of the source code. IBM provides the AIX Toolbox for Linux Applications, which is a collection of open source and GNU software commonly found with Linux distributions.

The installation of software from the AIX Toolbox for Linux Applications is now much easier, as Yum, a popular package management tool has been added. Benefits include automatic dependency discovery and update maintenance for rpm-based open source software installed on an AIX server.

Cloud automation tools like chef and ansible are compatible with AIX to achieve more efficient data centre (DC) operations. Building blocks are provided within the relevant open source communities to customise repository management and patch compliance within your infrastructure.

## For more information

For more information on AIX 7.2 releases and upgrade benefits, contact your IBM representative or IBM Business Partner (BP) or visit the following websites: [ibm.com/systems/power/software/aix/v72/index.html](http://ibm.com/systems/power/software/aix/v72/index.html) or [ibm.com/systems/power](http://ibm.com/systems/power)

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