IBM AIX

An executive guide to the strategy and roadmap for the AIX Operating System for IBM Power Systems

2019

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AIX has been the foundation of mission-critical workloads for a large and dedicated client community for more than thirty years. AIX has evolved to help drive cloud and enterprise AI initiatives for thousands of enterprise businesses and organizations around the world. And now, the team behind AIX have developed a forward-looking strategy and roadmap.

Review this IBM AIX strategy paper to understand the key pillars of the AIX strategy and the value it can provide to your business.

For more information, call us for a consulting meeting to define a plan to keep your business up and running with AIX today.

Contact an IBM Business Partner.

[Business Partner Name]
[Business Partner Phone/Email]
[Business Partner Website]

July 15, 2019

Dear Clients and Business Partners,

Digital transformation remains a key IT initiative as enterprises look for innovative ways to increase speed to market and improve operational efficiency to reduce costs and better serve customers. To be successful, it's important to invest in the right technology that supports the strategic needs of your current and future IT infrastructure.

IBM continues to be a leading innovator in server and storage solutions, with outstanding performance, resiliency and security capabilities that scale based on the needs of our client community. And AIX has been the foundation of mission-critical workloads for a large and dedicated client community for more than thirty years. AIX has evolved to help drive cloud and enterprise AI initiatives for thousands of enterprise businesses and organizations around the world. And now, the team behind AIX have developed a forward-looking strategy and roadmap.

In this strategy paper, you'll hear stories from the community of businesses transforming their work with AIX and Power Systems, see the latest upgrades to our complete software stack and learn about IBM's commitment to AIX and Power Systems through the AIX roadmap to 2030.

We are excited to share our ongoing commitment and strategy for the AIX platform. And we hope to build on the trust you have in AIX community to take your business well into the future.

Stephen Leonard
General Manager
IBM Cognitive Systems

Introduction

In the age of the internet of things (IoT), the demand for elastic computing capabilities, flexible infrastructure, continuous availability and security is essential. As companies navigate these dynamic market conditions and develop plans to satisfy their customers while growing their business, they need an operating system they can rely on to adapt and change when needed.

The strategic direction of AIX® is to continue innovating for the needs of the AIX community today while embracing new industry technologies and IT landscape trends for tomorrow. IBM Power Systems with AIX is well-positioned to meet the demands of your most crucial data and business production workloads.

As IBM Power Systems expands its portfolio to deliver value-driven offerings for the emerging Enterprise AI workload market, we remain committed to delivering a roadmap of innovation for both Power Systems hardware and AIX. The strategy focuses on supporting workload growth for the POWER architecture and solidifies an investment stream and market relevance for the AIX platform. Power Systems with AIX is the foundation for many core business applications and database environments.

The business world on AIX

AIX is deployed across a variety of industries such as finance, manufacturing, retail, telecommunications, healthcare, travel and government, along with many others. Today, it's no secret businesses are experiencing growth as it relates to data. Fortunately, AIX is and will continue to be built to meet such growing demands for its community.

While many AIX deployments are on-premises, AIX has a long history as a hosted solution with growing deployments in modern, elastic and off-premises cloud offerings.

As IT infrastructure expands into new workloads, the ability of Power Systems and PowerVM virtualization allows AIX, IBM i® and Linux® to run side by side for efficient consolidation and optimization of data exchange and processing between these different environments. Power Systems is unique in its capabilities to host this wide range of solutions efficiently with scale so that clients can naturally extend their existing IT infrastructure solution landscapes for emerging workload trends.
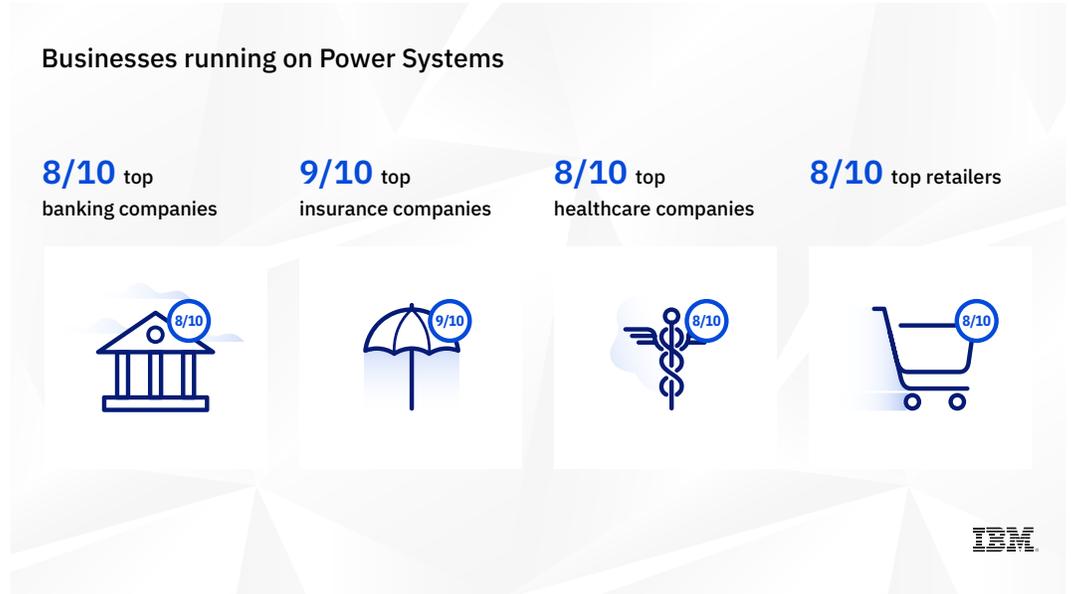
Industry leaders trust IBM Power Systems

Why do industry leaders trust Power? IBM Power Systems continues to fuel innovation and extend Power's leadership in performance, scale and security, while maintaining our longstanding position as the most reliable server in the industry.[1] Clients also choose IBM Power Systems with AIX for its performance, scalability, high reliability and outstanding security. Another reason clients value AIX is the investment protection offered by a proven binary compatibility guarantee and long release life spans.

AIX offers unique security features to protect client data such as AIX Trusted Execution for malware intrusion prevention, that can verify the integrity of the system and implement advanced security policies to enhance the trust level of the complete system. There is PowerSC, which hardens AIX environments against security threats and

misconfiguration, simplifies administration and accelerates compliance. Plus, POWER9® servers come with firmware and operating system security patches that mitigate known Meltdown and Spectre vulnerabilities.

As Power Systems expands its reach into new markets and workloads such as machine learning, deep learning, AI and cloud-native applications the AIX enterprise solution will continue to be a strategic, foundational component of the portfolio with a roadmap and support plan that extends beyond 2030.

Businesses running on Power Systems

8/10 top
banking companies

9/10 top
insurance companies

8/10 top
healthcare companies

8/10 top retailers

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IBM Power Systems has the lowest percentage of unplanned annual server downtime and best-in-class reliability.

Innovation in the AIX community

Today, thousands of AIXers around the globe are running their core business on the AIX platform and leveraging it to drive business growth and innovation. Here are a few of their stories.

Niagara Bottling makes a splash in new markets

"Thanks to our work with IBM, we are confident that we've created a trading partner integration platform that will meet our needs for at least the next decade to come."

— Paul Gonzalez, Senior Database Administrator, Niagara Bottling, LLC.

If you're picking up a bottle of water at a store in the USA, there's a good chance that Niagara Bottling was responsible for every step of its journey to your shopping cart. As Niagara Bottling took on new markets and business models, demand on its trading partner integration platform was rising fast. Niagara Bottling migrated to a modular, multi-node EDI platform based on IBM B2B Integrator and IBM MQ running on AIX and Power Systems, enabling seamless continuity of EDI services in the event of unplanned downtown. With a future-ready, high-availability platform supporting its trading partner integration processes, Niagara Bottling can continue moving forward into new markets and business models with confidence.[2] Learn more about their story here.

CenturyLink supports strategic transformation

"New competitors and emerging technologies are continuing to dramatically change our industry."

— Connie Walden, Director, IT Development & Support at CenturyLink

Seeking higher net income through revenue-growth, CenturyLink needed to move faster on the integration of corporate acquisitions and the creation of new services. To support its revenue-growth plans, CenturyLink migrated their SAP Business Suite to the SAP HANA database running alongside AIX on IBM Power Systems, accelerating reporting and projects, and simplifying acquisitions. Migrating to SAP HANA on IBM Power Systems alongside AIX delivered substantial performance gains for CenturyLink, enabling the company to run both financial transactions and financial analysis faster than ever.[3] Learn more about their story here.

Copel keeps the lights on in Brazil

"In our industry, service outages can literally be a matter of life and death."

— Vicente SlobodaTechnical Support Analyst, Copel

Companhia Paranaense de Energia (Copel) is responsible for providing electricity to more than 4.5 million customers in the Brazilian state of Parana. With their business continuing to grow rapidly, they needed to ensure that they could provide exceptional service to an increasing number of commercial and residential customers. So, Copel upgraded to two IBM Power Systems E880C servers running AIX to support core business applications and their Oracle database. Since deploying their two new Power Systems E880C servers, Copel has seen increased efficiency and performance across its core systems, helping the company offer exceptionally reliable services to their millions of customers.[4] Learn more about their story here.

Modernizing businesses with AIX on IBM Power Systems

We understand that many AIXers are executing a hybrid multicloud strategy and have requirements to access AIX in their cloud service. And so, for the past two years, we made AIX available on the public cloud. And now, we're expanding availability to the IBM Cloud as well as on Google Cloud™. This provides flexibility and makes AIX available in multiple ways to best support your evolving business needs.

PowerVM™ and PowerVC™ enable clients to run and manage new workloads consolidated on their Power Systems stack side by side with their traditional workloads. A single instance of PowerVC can manage a mix of PowerVM, with traditional VIOS, or PowerVM software-defined I/O, as well as KVM based systems, like the Power Systems LC servers. By integrating with Spectrum Scale, we now allow for deploying SAN-less clouds. By enabling cloud-ready AIX images and capabilities within PowerVC to export and import those images, flexible cloud operational use cases are provided. This facilitates hybrid cloud deployments and allows clients to move AIX VMs not only between datacenters, but also between their datacenter and a public cloud, such as the IBM Cloud or the Skytap solutions without having to do a whole lot of refactoring. This allows clients to pick and choose which workloads need to remain on-prem and which they can move to an off-prem cloud for increased cost-efficiency.

Open source is being used for a variety of applications, not only on Linux but AIX as well. The AIX Toolbox for Linux Applications contains a collection of open-source software built for AIX IBM Systems. These tools provide the basis of the development environment of choice for many Linux application developers. All the tools are packaged using the easy to install RPM format. The AIX operating system (OS) has a long history of standards compliance and it is generally straightforward to rebuild Linux applications for AIX. The AIX Toolbox for Linux Applications demonstrates the strong affinity between Linux and AIX operating systems.

IBM is heavily expanding and continuously updating our portfolio made available via the AIX Toolbox. For example, there is a package that allows clients to deploy an AIX node in a Kubernetes cluster and thus leverage the various benefits of containers for security and application development. Kubernetes®, a container orchestration tool, has become the premier enterprise container platform for enterprise. We will continue to evaluate our client needs in this space and continue to enhance AIX in this area based on their feedback.

Recently, we published a package on the AIX toolbox to use AIX in the context of Kubernetes to deploy containerized solutions here.

Future of AI on AIX

AIX workloads are a natural source for AI as these systems host a tremendous amount of high-quality data on customer behavior and transactional information that could be further leveraged for AI. When clients combine historical data with emerging technologies like machine and deep learning, on the same platform, leveraging all kinds of sources and trained systems appropriately, they will get new insights. This is core to our mission as an IT provider for enterprise businesses and true investment protection. AIX on POWER9 connects Oracle®/DB2® databases into IBM Watson™ Analytics, enabling clients to take advantage of advanced AI capabilities to analyze their data while gaining insights to drive their business forward.

Read more about how AIX is at the center of cloud and AI initiatives in this IBM Systems Magazine article.

AIX and the IBM Power Systems software stack

AIX and the IBM Power Systems software stack

PowerVM

Every POWER9 based server workload is virtualized, mobile and fully cloud-enabled with Power VM.

Mobile workloads are compressed and encrypted for improved security and acceleration

Live migration from POWER7, POWER8 to POWER9 based systems with Live Partition Mobility

PowerVC

Export / import capability to share images across data centers/ clouds

Integration with Spectrum Scale to support SAN-less clouds

OpenPower Support: Seamlessly manage AIX, IBM i and cloud native applications with a single pane of glass

Support for IBM Cloud Private

PowerSC

Simplify management to security & compliance across AIX and LoP.

Improved real-time Malware detection

Enhanced compliance automation with support for GDPR.

Scalability enhancements including REST APIs

Improved audit support (end-to-end) including a new interactive time-line

PowerSC MFA

Enhanced support covering AIX, Linux on Power and HMC

Supports multiple authentication factors including; RSA SecurID, certificate based smart cards, TOTP on your phone, Yubikey, Radius protocol and more.

PowerHA

New back-up to the Cloud option

New metrics that allow to track failover times and calculate recovery time

Automated offline backup (SVC only)

Policy-based incremental and full backups

Support for the one-site and multisite deployments

VMR HA / VRM DR

VMR provides a simplified VM replication and restart solution

Server, VM and workload-level HA OS agnostic

Co-location and anti-colo policy support

Non-disruptive DR rehearsal

Application monitoring agents for DB2, Oracle and SAP HANA

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With the AIX roadmap to 2030, we're upgrading the entire software stack.

AIX is highly integrated with the IBM Power Systems family of software offerings. With flexible integration at multiple levels within the hardware and software stack, the AIX platform provides dependability AIXers have come to expect for their mission-critical workloads.

High availability and disaster recovery with PowerHA® System Mirror and VM Recovery Managers

Simplified management of security and compliance with PowerSC Standard Edition and PowerSC Multi-Factor Authentication (MFA)

Simplified cloud management, workload optimization and scaling capacity on demand with PowerVM and PowerVC.

Hybrid cloud integration

AIX is helping over 3,000 clients transform their IT infrastructure into a private, on-premises cloud with PowerVC. Just this year, we announced new hybrid cloud functionality, including the ability to easily import and export AIX VMs between clouds, as well as new Software-Defined Infrastructure capabilities allowing you to spin up SAN-less clouds for DevOps environments.

Security enhancements

Our security portfolio was improved as well with significant enhancements to PowerSC (PowerSC Standard Edition) with the primary focus being AIX providing new malware intrusion detection and alerting capabilities, integration with IBM Cloud PowerVC Manager, reporting capabilities to support security audits, and more. Plus, we released PowerSC Multi-Factor Authentication (PowerSC MFA) that provides the highest level of capability around the emerging requirement for two or more authentication factors for system administrators to meet mandatory regulations.

Disaster and recovery protections

Datacenter and service availability are some of the most important topics for IT infrastructure. Natural disasters not only affect normal operations, but human errors and terrorist acts may affect business continuity and even with fully redundant infrastructure, services are vulnerable to such disasters. Replication of data between sites is a good way to minimize business disruption since backup restores can take too long to meet business requirements, or equipment may be damaged depending on disaster extent and not available for restoring data. High availability software is intended to minimize downtime of services by automating recovery actions when failures are detected on the various elements of the infrastructure.

PowerHA for AIX is the premier HA/DR solution with years of continuous enhancements it is the solution of choice for mission-critical operations where all outage types both planned and unplanned are covered. PowerHA minimizes planned and unplanned outage events, simplifies HA administration, provides multi-site solutions and minimizes operating expenses.

Introducing IBM Power Systems Enterprise Cloud Editions

More and more Power users are taking advantage of modern Power Systems software offerings. Recently, IBM introduced two software bundles that bring together all the software components you need to fully manage your cloud platform. The Enterprise Cloud Edition Software bundles replace the need to purchase individual software components to manage your cloud. You can learn more about these software bundles here.

IBM Power Systems Enterprise Cloud Editions

Enterprise Cloud Edition with AIX

AIX Standard Edition 7.2 is included in this edition to enable easy upgrade from AIX Enterprise Edition

Enterprise Cloud Edition

This edition does not have any OS included but it can be deployed on top of any OS on Power Systems, primarily benefitting with AIX and Linux on Power for now

Rapidly deploy and easily manage private cloud

Simplify security and compliance management

Simplify high availability

Accelerate large file transfers a cross clouds

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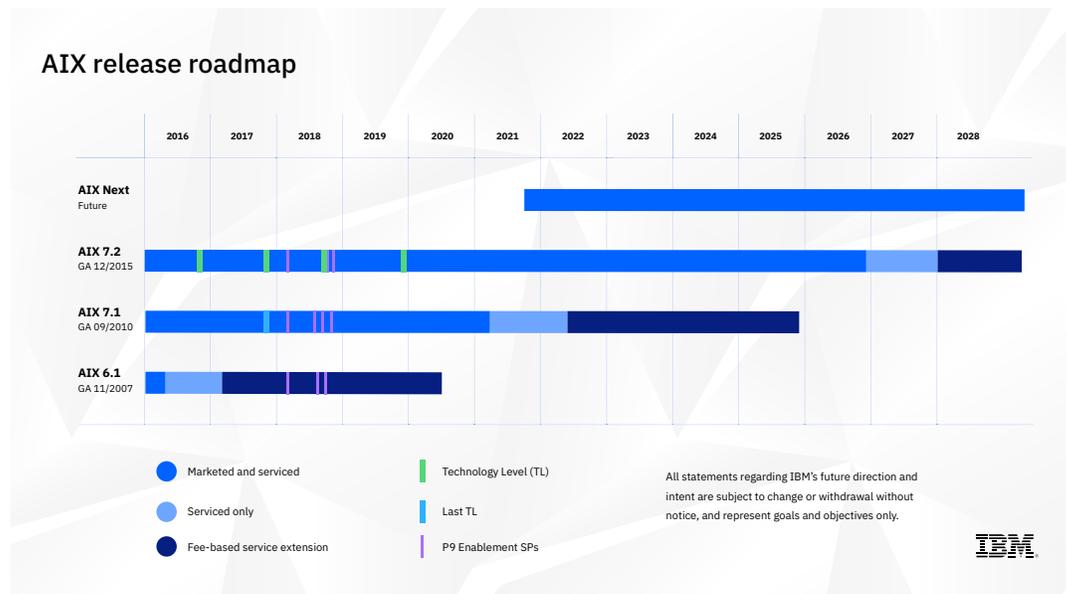*Easily deploy and manage a highly available and secure private cloud on Power Systems.*

Check out this video to learn more about the IBM Power Systems Enterprise Cloud Editions.

Only on AIX features

AIX offers some unique features like AIX Live Kernel Update, which was introduced with AIX 7.2 (TL0) in December 2015 to allow for general application and activation of any interim fix without a required reboot. Subsequent AIX 7.2 TL updates added support to also do live updates of the AIX kernel with service packs and new TLs, again without the requirement to reboot in order to activate the changes. In April 2019, IBM certified the compatibility of the AIX 7.2 Live Update feature with Oracle Database 12c Release 2 RDBMS and Oracle ASM. Learn more about the Oracle certification testing is done for AIX 7.2 here. Enhancements continue with AIX live update to support new use cases so that clients can broadly apply and use them. This includes recent enhancements to support live update in PowerVC managed landscapes and to automate the use of Power Enterprise Pools for CPU and memory resource management. Recently, we enabled clients to leverage Live Partition Mobility (LPM) to do a live update across frames or bring down the overall resources needed in case LPM is not an option.

AIX roadmap to 2030

There are three available major versions of AIX that are in support. These include AIX 7.2 and AIX 7.1 in regular support. AIX 6.1 is in its extended support period so clients will need to purchase a service extension to continue receiving AIX support. The latest innovations to AIX are available with AIX 7.2. And in April 2019 AIX 5.3 reached its end of life.

AIX release roadmap

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
AIX Next Future													
AIX 7.2 GA 12/2015													
AIX 7.1 GA 09/2010													
AIX 6.1 GA 11/2007													

● Marketed and serviced   ▮ Technology Level (TL)

● Serviced only   ▮ Last TL

● Fee-based service extension   ▮ P9 Enablement SPs

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

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Roadmap for AIX through 2030.

The AIX release and service model has gone through several phases of refinement in its history. The current model has been in place for several years. A given AIX release typically has a lifespan of roughly fifteen years. Once a release reaches its EOS, a priced extended support option is typically offered for a couple of years. A given release may no longer be ordered after about ten years. The event is known as end of marketing (EOM).

IBM may adjust these timeframes for a given AIX version or release.

IBM remains committed to AIX, beginning with our ten-year roadmap to continue to maximize performance, reliability and security alongside with technical innovations and modernizations.

AIX support phases

Power Platform	AIX 5.3	AIX 6.1	AIX 7.1	AIX 7.2
POWER4				
POWER5				
POWER6				
POWER7				
POWER8	*			
POWER9				

- Support expired
- Not supported
- Supported in POWER8 mode
- Supported in POWER7mode
- Supported in Native mode

* AIX 5.3 requires full I/O virtualization on POWER8

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The expected phases of release based on the service model.

AIX enhancements, plans and updates

With thirty years of release engineering practices, AIX has a proven model for delivering new hardware support and software innovation through TLs. This approach minimizes disruption for AIX clients and ISVs by enabling them to easily adopt new capabilities because we are able to introduce all-new features via TLs. Experience has shown that new major AIX releases require additional qualification activities by clients and create a dependency on ISV certification and support statements before clients can adopt the new releases. TL's minimize client disruption and the possible need for ISV's to recompile, re-test and re-certify their software. Based on these factors, IBM intends to focus on delivering innovation through TL updates with its AIX 7.2 release while it explores an appropriate future time frame for a possible new AIX major release. This may lead to an extension of the historical lifecycle model for AIX 7.2. Read more about our release strategy in **IBM AIX Operating System Service Strategy and Best Practices**.

As IBM enhances AIX and plans updates, the following factors are considered. AIX has a very strong commitment to binary compatibility for APIs and command-line outputs across TL releases. Even across AIX major releases where compatibility impacts may be considered, this compatibility is an important goal. Binary compatibility changes are very carefully reviewed with new major releases. If new technology innovation in AIX were to challenge binary compatibility in a significant manner, a new major AIX release would be considered. **Learn more about AIX binary compatibility here**.

Conclusion

AIX is a mature enterprise-class operating system that, when combined with PowerVM, the POWER processor and our outstanding Power Systems software portfolio, has a much better TCO, the highest uptime and the least amount of security vulnerabilities when compared to other platforms.

IBM is committed to the thousands of AIX users running their core, mission-critical business applications and databases on AIX. And in doing so, AIX leads the market for scalable, distributed operating environments in many key industries including banking, insurance, telecommunications, retail distribution, healthcare and the federal sector. Our community of users select AIX based on the leadership it continues to deliver in performance, scale, availability and security to run their most critical workloads. With the release of the ten-year roadmap and support, IBM commits to delivering new innovations in cloud, AI and wherever AIX users plan to go next.

AIX is here to support the emerging technologies your future work depends on. And with new technology comes new growth for the platform. AIX will continue to thrive because the nature of AIX workloads is durable. AIX is here for enterprises and their demand for secure, reliable, efficient processing of traditional structured data on systems of record.

IBM is strongly committed to AIX. With a 30-year history of innovation, AIX continues to deliver on its robust roadmap with every release, and with the 10+ year roadmap in place, AIX is there to support your next step or giant-leap forward.

Endnotes

1 "ITIC 2019 Global Server Hardware, Server OS Reliability Survey." Laura DiDio, Information Technology Intelligence Consulting. 2019

2 Case Study: Niagara Bottling

3 Case Study: CenturyLink

4 Case Study: Copel