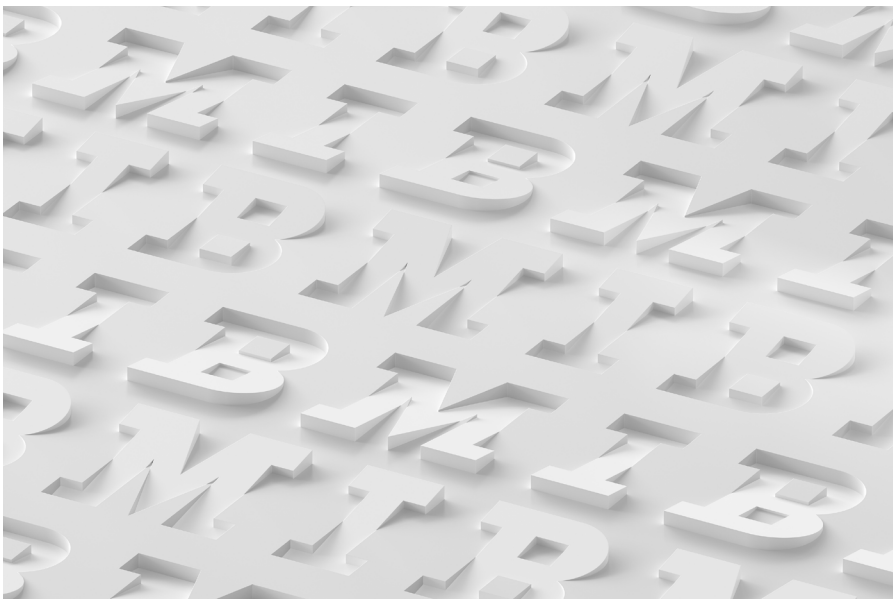
IBM AIX

An executive guide to the strategy and roadmap for the IBM® AIX® operating system for IBM Power® servers



Contents

Dear Clients and IBM Business Partners,

Almost every business today recognizes that digital transformation is critical to better serving its customers, reducing costs and improving operational efficiency, while also stepping up environmental sustainability. To that end businesses are embarking on both infrastructure and application modernization to help drive these improvements—developing or moving more applications to the cloud and adopting new technologies such as Linux containers. The most successful of these companies also recognize that this journey requires a hybrid cloud approach.

Over the past two years, IBM Power has introduced new offerings to help businesses accelerate this transformation—introducing IBM Power Hybrid Cloud capability featuring on-premises Power Private Cloud with consumption pricing and Power Virtual Server. We've also continued to expand our focus on open-source technologies, bringing popular open-source tools to IBM AIX and creating a collection of Ansible automation packages and playbooks to make managing AIX easier than ever, all with consistent skills and processes as on x86-based platforms.

AIX and Power have been the foundation of mission-critical workloads and databases for tens of thousands of customers over the past 35 years, leading the industry in performance, scalability, resiliency, flexibility and security. We remain committed to sustaining that platform leadership and will continue to evolve and extend AIX to help you capitalize on new capabilities, including running Red Hat® OpenShift® containers adjacent to AIX in order to reduce latency or embedding AI inference capability in enterprise applications on AIX.

This paper will provide you with a look into the strategy and roadmap for the future of AIX. You'll hear stories from the community of businesses transforming their work with AIX and IBM Power, discover the latest upgrades to our software stack, learn how to modernize your existing AIX environment through colocation of cloud-native applications with Red Hat OpenShift, and view the roadmap (including a new AIX 7.3 release) that shows IBM's continued innovation and commitment to AIX and Power through 2035 and beyond.

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 the AIX community to take your business well into the future.

Ken King
General Manager
IBM Power

Introduction

In the era of hybrid cloud, there is increased demand for enhanced computing capabilities, flexible infrastructure, continuous availability and security. 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 scale when needed, and a trusted partner who will support them during times of uncertainty.

To address the growing market demand for varied consumption and deployment models, AIX and Power are delivering increased flexibility for Power Hybrid Cloud, comprised of on-prem IBM Power Private Cloud with consumption pricing and IBM Power Virtual Server. Power Hybrid Cloud delivers a consistent hybrid technical architecture and commercial integration across on prem and Power.

As IBM Power expands its portfolio to deliver value-driven offerings for the hybrid cloud era, we remain committed to delivering a roadmap of innovation for both Power Systems hardware and AIX. 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 with AIX is well-positioned to meet the demands of your most crucial data and business-production workloads.

AIX runs some of the most critical and data-intensive workloads for enterprises around the globe.

The business world on AIX

AIX is deployed today across a variety of industries such as finance, manufacturing, retail, telecommunications, healthcare, travel and government, along with many others. It's no secret that businesses like these are scaling at a rapid rate. Fortunately, AIX is and will continue to be built to meet such growing demands for its community. AIX is committed to meeting the needs of our customers and providing end-to-end support. Digital transformation is top of mind for organizations, and AIX supports the adoption of new technologies with subscription-based consumption models that are designed to meet the needs of your business.

With IT infrastructure expanding rapidly into new workloads, the ability of Power and IBM PowerVM® allows AIX, IBM i and Linux® to run side by side for efficient consolidation and optimization of data exchange and processing between these environments. IBM Power is designed to host this wide range of solutions efficiently at scale so that clients can naturally and effortlessly extend their existing IT infrastructure landscapes across their hybrid cloud. In addition, clients can now colocate their new, cloud-native applications with existing workloads, thanks to Red Hat OpenShift.

Industry leaders trust IBM Power

Why do industry leaders trust IBM Power? IBM Power fuels innovation and is driven to extend leadership in performance, resiliency, scale and security of Power, while maintaining our longstanding position as the most reliable server in the industry. Clients value AIX because IBM provides the investment protection offered by a proven binary compatibility guarantee and long-release life spans.

AIX supports the adoption of new technologies with subscription-based consumption models designed to meet the needs of your business.

Cybercriminals are making significant strides in improving their abilities to attack organizations around the globe. To combat the increasing number of cyberattacks, AIX 7.3 is now equipped with enhanced security features that protect client data. Enterprises can take additional steps to ensure security by implementing advanced policies that can verify the integrity of the systems. For example, IBM PowerSC strengthens AIX environments against complex security threats and misconfiguration, simplifies administration and accelerates compliance.

As IBM Power expands its reach into new markets and workloads, such as hybrid cloud, AI and cloud-native applications, AIX will continue to be a strategic, foundational component of the portfolio with a roadmap and support plan that extends beyond 2035.

Innovation in the AIX community

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

DataVision transforms rural economics with digital banking

> "After intense research, we concluded that running Oracle on IBM Power ... offered the best combination of price, performance, flexibility, resilience and scalability. We could replace all eight legacy servers with just two IBM Power ... servers for the entire banking workload."
>
> — Sujit Chattaraj, Technical Director, DataVision Software Solutions

Farmers and remote communities in India struggle to access full-service banking, slowing much-needed economic development. Regional and state banks are key to rural development in India, but serving remote communities can be difficult and cost-prohibitive. By moving its Oracle-based core and digital banking applications to Power servers and storage, DataVision has transformed the economic model, enabling full-service, mobile and branchless banking. Furthermore, DataVision is now able to resolve key issues for midmarket banks that serve rural development needs. The new private cloud infrastructure enables DataVision to onboard new customers to a standard platform, complete with full-service banking capabilities. Learn more about their story.

Clarks lays the foundation for omnichannel retail

> "With our SAP solutions running on a responsive, high-performance private cloud platform, we are in a strong position to build value-added services, integrate our data with new applications and ultimately bring our products to market faster."
>
> — Zoe Jones, Service Manager – SAP Applications, Clarks

To convert fleeting fashion trends into sales, Clarks needed to activate new channels and digital services rapidly—but found that existing systems could not support the volume and pace of change. Clarks migrated their SAP Business Suites to the SAP HANA database running alongside AIX on Power to enable rapid creation of multiple digital routes to market, maximizing sales and ensuring that every boot fits. Migrating to SAP HANA on Power alongside AIX, Clarks boosted its available compute resources by almost 50% while keeping costs flat, creating the headroom to launch innovative digital channels more quickly and drive new sales. Learn more about their story.

AIX 7.3 is now equipped with enhanced security features that protect client data.

Modernizing businesses with AIX on IBM Power in the hybrid cloud era

We understand that many AIX users are shifting to a hybrid cloud strategy and have requirements to access AIX in their cloud service. Today, clients can continue to modernize their AIX applications by deploying them in a hybrid cloud environment and automating common IT operations with Ansible. They can also modernize their AIX business applications by extending to containerized Linux application components on the same co-resident system using microservices.

AIX is available on IBM Power10 on Power Virtual Server. AIX clients can leverage greater workload scalability, better automation with Ansible, enhanced security and flexible licensing models. They can also run AIX workloads in a hybrid or public cloud without having to refactor or rewrite them, saving time and resources.

Integration with Red Hat OpenShift
Clients can modernize their existing environment and develop new cloud-native applications with Red Hat OpenShift Container Platform. IBM Power remains committed to supporting the modernization of your existing applications and building new cloud-native workloads required for transformation and business growth. Red Hat OpenShift on Power Virtual Server allows customers to deploy highly available OpenShift clusters between containers and AIX applications on Power Virtual Servers. In addition, you can now colocate AIX and IBM i apps with containerized Red Hat OpenShift apps.

Automation with Ansible
Effortlessly manage your entire hybrid cloud data center with a single interface using Ansible modules built for AIX. Red Hat Ansible® Certified Content for Power helps you manage workloads on Power Systems infrastructure as part of your wider enterprise automation strategy through the Red Hat Ansible Automation Platform ecosystem. It is delivered as a fully supported enterprise-grade solution and is designed to provide easy-to-use modules that can accelerate the automation of operating system patching, upgrades and configuration management tasks. This also helps bridge the AIX skills gap, because admins can leverage their existing Ansible skills to automate these environments. Lastly, clients benefit from additional community-provided open-source Ansible modules in Ansible Galaxy (that is, no enterprise support available) to automate hybrid cloud operations on Power. With Ansible, you can manage your IBM Power easily with consistent tools, processes and skills.

Clients can continue to modernize their AIX applications by deploying them in a hybrid cloud environment.

Enterprise AI on AIX

AIX runs some of the most critical and data-intensive workloads for enterprises around the globe. Businesses today are looking for ways to integrate AI directly into their workstream and leverage their vast amounts of data to harness the power of AI and unlock valuable insights.

By bringing your own individualized models and colocating them with transactional workloads on AIX, businesses can gain insightful information from the vast amounts of valuable data already residing on their Power servers without having to move the data off of the system, eliminating any potential disruptions and improving overall system performance. AI inferencing can occur on an OpenShift-enabled Linux VM (for example, IBM Cloud Pak® for Data) running adjacent to the AIX-based transactional or analytical workload on the same Power server or directly on the AIX VM with models generated from products such as H2O Driverless AI.

For clients that prefer open-source machine learning packages, AIX open-source technologies are supported with the AIX Toolbox for Linux Applications. AIX has various open-source packages compiled for AIX, including Python along with a set of package components such as pandas for data preparation and scikit-learn for machine learning. The OpenBLAS library, which is the basis for math functions used by packages such NumPy and SciPy, has been ported to AIX with IBM Power10 Matrix Multiply Assist (MMA) support.

No matter your preference, AIX and Power are committed to meeting the needs of your business and provide the tools needed to help you get your AI models up and running quickly so you can start seeing the benefits of AI for your business.

AIX and the IBM Power software portfolio

PowerVM

- Every Power-based server workload virtualized, mobile and fully cloud–enabled with hypervisor built into the firmware
- Mobile workloads compressed and encrypted for improved security and acceleration
- Extreme scalability supporting VMs with up to 192 cores and 64 TB of RAM
- Live migration of VMs between Power10 servers and IBM Power9® and IBM Power8® servers

PowerSC

- Simplified management of security and compliance across AIX and Linux on IBM Power
- Improved real-time malware detection
- Enhanced compliance automation with support for GDPR, PCI, CIS and more
- Improved audit support (end to end), including a new interactive timeline

IBM PowerHA®

- Provides high availability for software and hardware running business-critical operations
- Monitoring and management of PowerHA clusters from the UI included at no additional cost
- Policy-based incremental and full backups
- GLVM for IP-based replication

AIX is seamlessly integrated with the IBM Power family of software offerings.

PowerVC
- Graphical lifecycle management of VMs
- Scalable management up to 10,000 VMs
- Web-based private cloud management
- Export/Import VMs between data centers and hybrid cloud deployments
- Comprehensive API for integration and automation of private cloud operations

PowerSC Multi Factor Authentication
- Enhanced support, covering AIX and Linux on Power
- Factors in addition to RSA SecurID and certificate-based smart cards—such as TOTP on your phone, Yibikey, Radius protocol and more

VM Recovery Manager HA/VM Recovery Manager DR
- VM Recovery Manager for IBM Power replicates and automates VM restart operations
- Designed for highly automated disaster recovery data
- UI for monitoring and managing HA restart operations
- Application monitoring agents for IBM Db2®, Oracle and SAP HANA

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

- **High availability and disaster recovery** with IBM PowerHA System Mirror and VM Recovery Managers
- **Simplified management of security and compliance** with PowerSC Standard Edition and PowerSC Multi Factor Authentication
- **Simplified cloud management, workload optimization and scaling capacity on demand** with PowerVM and PowerVC

AIX is available as a stand-alone operating system or can be bundled with products in the IBM Power software portfolio.

IBM Power Systems Enterprise Cloud editions

More clients on the digital transformation journey are taking advantage of the full portfolio of Power software offerings to deliver all of the IT capabilities they need across their data centers. AIX is available as a stand-alone operating system or can be bundled with products in the IBM Power software portfolio through the Enterprise Edition or IBM Power Systems Enterprise Cloud Edition, which deliver a ready-to-deploy private cloud infrastructure and replace the need to purchase individual software components.

IBM Power Systems Enterprise Cloud Edition includes:
- PowerVC for Private Cloud
- IBM Cloud® Management Console for Power
- IBM Tivoli® Monitoring
- PowerSC Multi Factor Authentication
- PowerSC MFA
- VM Recovery Manager DR
- IBM Aspera® High-Speed Transfer Endpoint
- AIX 7.2or AIX 7.3 Standard Edition (optional addition)

Benefits:

Rapidly deploy and easily manage private cloud.

Simplify security and compliance management.

Simplify high availability.

Accelerate large file transfers across clouds.

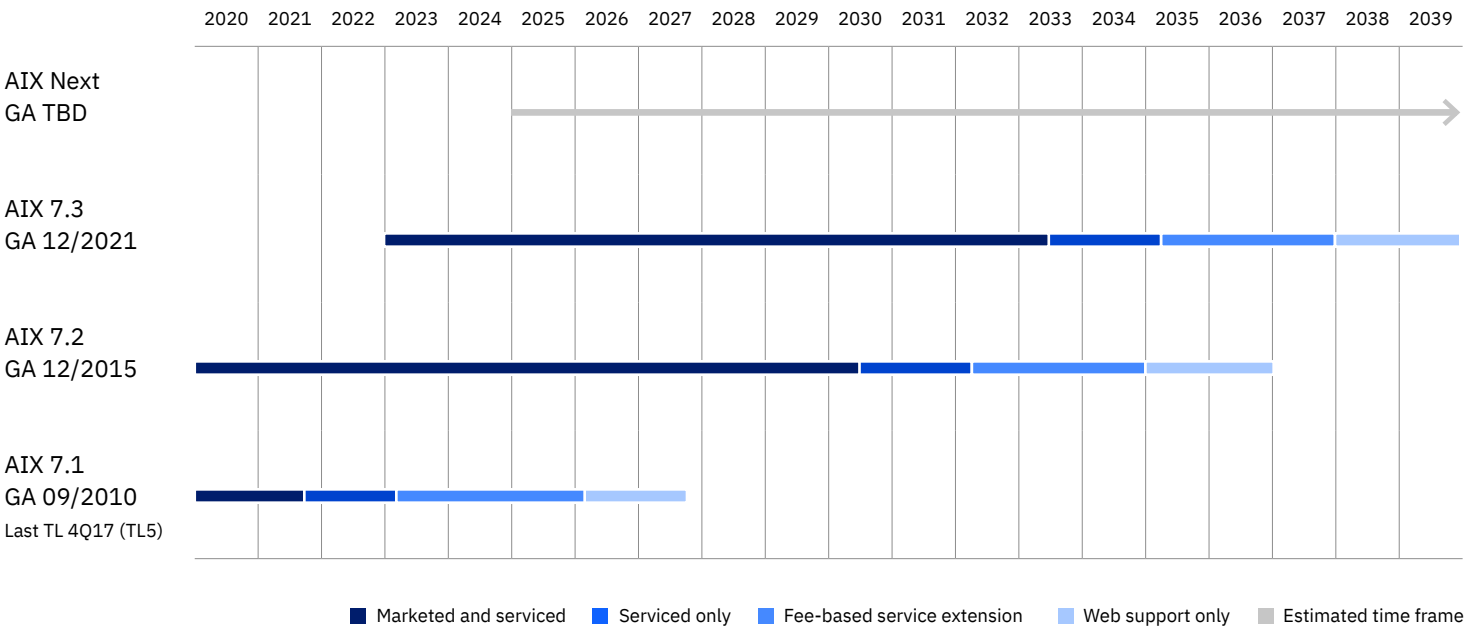


Figure 1: AIX roadmap. Timeline is subject to change.

AIX continues to innovate with hybrid cloud and open-source capabilities.

AIX roadmap beyond 2035

IBM remains committed to AIX and Power, beginning with our long-term roadmap to continue delivering high levels of performance, reliability and security alongside new technical innovations and modernizations. The new AIX 7.3 provides enhanced capabilities that deliver the resiliency, security and scale needed to modernize your IT environment. The long-term IBM Power processor roadmap is a key element in the AIX ecosystem investment protection story. IBM revealed the next-generation Power10 processor at the Hot Chips industry event in 2020. As presented at Hot Chips, Power10 enhancements bring differentiating value to AIX clients, including increased capacity, energy efficiency, security and enterprise AI. AIX continues to innovate with hybrid cloud and open-source capabilities supporting our clients who are undergoing digital transformation.

Over decades as an enterprise-class operating system, AIX has catered to every changing business need of enterprises in an ever-changing technology landscape. On a twice-a-year cadence, the AIX roadmap is updated based on feedback from its users—truly putting our clients first. The AIX technology roadmap is driven by its core strengths in security, scalability, performance and high availability. In addition to building further on core strengths, future AIX releases will focus on modernization in areas of hybrid cloud and enterprise AI. AIX will continue its investment-protection policy through support for multiple Power generations, a longer release lifecycle and binary compatibility—enabling simplified migration of applications to new AIX versions without the need to recompile.

In order to provide the investment protection our clients need, there are always at least two versions of AIX marketed and supported at any given time. The current versions of the AIX operating system in the market are AIX 7.1, AIX 7.2 and AIX 7.3. Clients with active Software Maintenance Agreements (SWMA) can upgrade to newer versions of AIX at any time through the Entitled Systems Support (ESS) website.

Currently, AIX 7.1, AIX 7.2 and AIX 7.3 are in full support mode. Earlier versions of AIX that are no longer marketed can be supported through a paid extended period so that clients can continue getting required fixes for optimal performance. The availability and duration of extended support options is dependent on several variables, such as length of the product in the lifecycle, upcoming releases and associated Power hardware lifecycle durations. The AIX Best Practices Guide is a free resource available to AIX clients and gives insight into the AIX service strategy, while also providing helpful lifecycle information to best maintain your version of AIX. For more information, contact your IBM Technology Lifecycle Services representative.

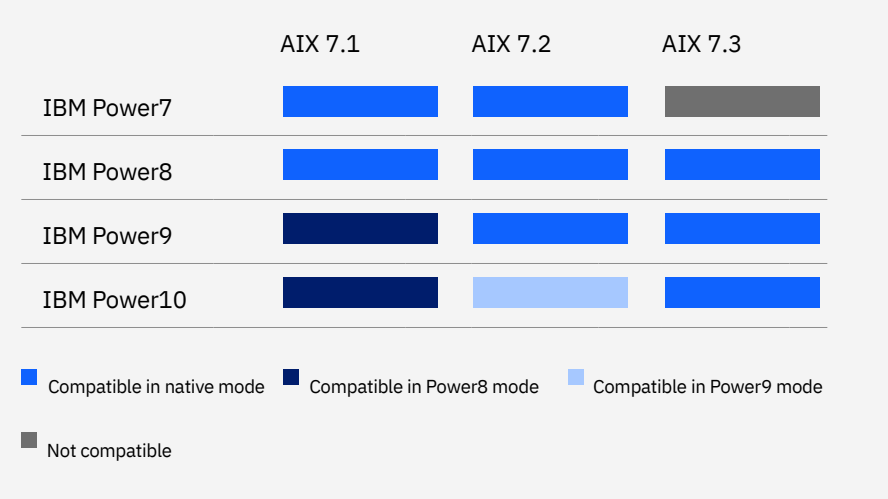


Figure 2: AIX support for Power processor compatibility modes

Conclusion

AIX leads the market for scalable, distributed operating environments in many key industries.

IBM is committed to the thousands of business users running their core mission-critical business applications and databases on AIX. Because of this, 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 10-year-plus roadmap and ongoing support, IBM proves its commitment to delivering new innovations in hybrid cloud, AI and wherever AIX users and their businesses plan to go next.

AIX is here to support the emerging technologies your future work depends on. With new technologies, innovations and business changes—including the current transition to hybrid cloud—come 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. Keeping up a 35-year history of innovation, AIX continues to deliver on its robust roadmap with every release, and our roadmap shows how AIX and Power are there to support your next step—or leap—forward.

References:

AIX marketplace page
AIX client success stories
AIX toolbox for Linux applications
AIX lifecycle and support

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