



Better on Azure

Maximising the power of Linux and PostgreSQL workloads

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Introduction

Why Azure?

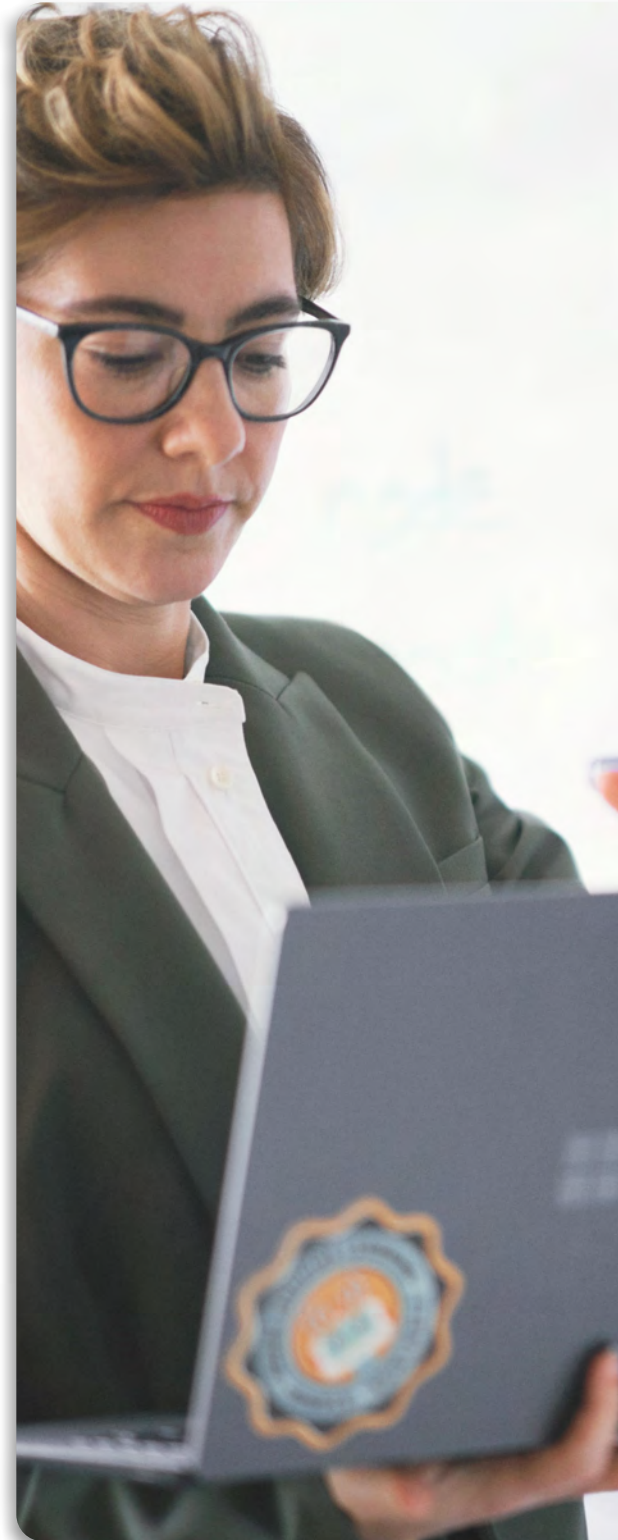
In the era of AI, it is more crucial than ever to adopt technical infrastructure that matches the pace of digital transformation and leverages cloud technologies to unlock innovation and efficiency. Companies are looking to increase their agility and adaptability in the face of these transformational shifts in computing, weighing how to balance the need for security and control over technology with the need for modernisation and growth. Typically, on-premises infrastructures do not provide as much flexibility and scalability as cloud-based architectures, leading many organisations to transition their workloads to the cloud. With Azure, it is no longer necessary to weaken your security posture to maximise growth.

[Microsoft Azure](#) is a robust and flexible cloud platform designed to run Linux and open source workloads. Microsoft works closely with all major Linux suppliers and is an active participant in the open source community, driving industry standards while prioritising customer choice.

This e-book outlines the benefits of migrating popular open source workloads to Azure, providing insights into its capabilities, from code-to-cloud security to cost optimisation and scalability.

Five key reasons for migrating your Linux and open-source workloads to Azure:

- 1 Leverage a platform and ecosystem with deep roots in the open source community, with successful implementations across thousands of companies.
- 2 AI runs on Linux with Microsoft offering industry-leading AI capabilities and solutions.
- 3 Comprehensive protection from code to cloud, designed to provide world-class security from the beginning of development all the way to deployment.
- 4 Achieve significant and proven ROI by moving Linux and open source workloads to Azure.
- 5 Rely on the cloud to unlock unprecedented levels of performance and scalability.



A proven platform for Linux and open source

Open source is quickly growing in popularity, with 80% of companies increasing usage of open source in the past year¹. This is becoming a significant differentiator if you want to move fast and remain agile. Open source enables Microsoft products and services to bring choice, technology and community to its customers. This is evident in the company's own usage of open source software (OSS) and contributions to the open source community.

Consistently one of the top open source contributors

60K+

Microsoft developers active in GitHub

Top 3

Contributor to Kubernetes and CNCF ecosystem

Microsoft provides extensive contributions and support for Linux and other open source technologies like Kubernetes, Dapr and PostgreSQL. The company's contributions to PostgreSQL have enhanced its performance, security and scalability, making it even more useful for deployment within open source architecture. Microsoft also offers some of the most popular tools and frameworks for open source development, such as GitHub, VS Code and .NET. Today, over 60% of customer cores in [Azure run Linux workloads](#).

Many of Microsoft's own services run on Linux and the company provides its own Linux distribution, Azure Linux container host for [Azure Kubernetes Service \(AKS\)](#), in addition to supporting a wide range of other distros, including Red Hat Enterprise Linux, SUSE Linux Enterprise Server and Canonical Ubuntu. With Azure you gain access to a rich ecosystem that increases developer velocity with open source tools and services and developers can contribute and extend the capabilities of those very same tools and services.

Azure offers hundreds of services tailored for Linux environments, providing a versatile and powerful platform for a variety of workloads. The platform provides specialised tools like Terraform, Bicep and ARM templates, in addition to fully managed AI-Ready open source databases like PostgreSQL and MySQL. This deep ecosystem and robust support make Azure an ideal choice if you are looking to modernise your IT infrastructure while capitalising on the benefits of open source technologies. By choosing Azure, you can rely on a platform that not only supports your current needs but also scales with your future growth and technological advancements while providing flexibility to choose your open source software stack. This commitment to open source ensures that enterprises can innovate without being locked into proprietary solutions, thus fostering an agile and adaptive IT environment.



¹Perforce 2023: OS Report 2023 - OpenLogic by Perforce

Tools and services to accelerate your AI journey

Today, every business is balancing pressing priorities with the desire to be AI ready. You may be facing competing demands, including managing rising costs, staying ahead of security concerns and controlling IT sprawl while attempting to embrace responsible and secure AI technologies. You must focus on reliability and agility to stay competitive, which often means utilising open source software. Azure equips you with the cutting-edge AI capabilities necessary to achieve this balance, like [Azure OpenAI Service](#) and [Microsoft Copilot](#). In fact, Azure's AI workloads as well as OpenAI and ChatGPT all run on Linux, demonstrating the powerful nexus between open source and AI. Together, these offerings and deep integrations are designed to enhance productivity and innovation by lowering costs, speeding up processing times and reducing operational complexity. The platform's fully-managed, AI-powered PostgreSQL database also ensures that data-driven applications can leverage AI efficiently.

The first step in deploying AI solutions is to co-locate by moving all applications, data and infrastructure to a cloud provider like Azure. By migrating to Azure, you can achieve cloud agility and optimised performance. Azure's purpose-built AI infrastructure provides superior performance, offering up to 5.1x faster training² and 5.8x faster inferencing³ than the competition.

75%

Survey respondents from organisations with Azure infrastructure who said migrating to the cloud was necessary or significantly reduced the barriers to enabling AI/ML

A commissioned study conducted by Forrester Consulting | The Total Economic Impact™ Of Migrating To Microsoft Azure For AI-Readiness 2024



²MLCommons. "Training." MLCommons, April 2024, <https://mlcommons.org/benchmarks/training/>

³MLCommons. "Inference - Data Centre." MLCommons, April 2024, <https://mlcommons.org/benchmarks/inference-datacenter/>

Chapter 2

In turn, co-location allows seamless infusion of other AI tools and services into software development pipelines. For example, with the [pgvector extension](#), you can natively store vector embeddings created by generative AI models in [Azure Database for PostgreSQL](#), simplifying model integration across different deployment options in Azure. This reduces IT sprawl and reduces costs. Using the [Azure AI extension](#) in Azure Database for PostgreSQL it is also possible to leverage large language models (LLMs) in Azure OpenAI Service to generate those vector embeddings to begin with. With [Azure Machine Learning](#), you can build and train models at scale, automate the deployment process and monitor model performance. [Azure AI Services](#) is the umbrella that covers all of these offerings, encompassing everything from machine learning to advanced analytics. Using these services you can develop AI models that transform raw data into actionable insights.

These capabilities are paired with Microsoft's commitment to empower safe and [Responsible AI](#) deployments. Launched in 2016, the company's commitment to Responsible AI follows Microsoft's vision for a future where artificial intelligence is fair and inclusive. These [core principles](#) are woven into the fabric of Azure AI Services and empower every Azure user to effectively follow the path of ethical AI innovation.

[Sapiens International](#), is a leader in the Insurtech sector, serving customers in more than 30 countries worldwide. Recently, Sapiens undertook the process of modernising its app and data technologies by moving them to Azure Kubernetes Service (AKS), using Azure-managed databases – including [Azure SQL](#), [Azure Database for PostgreSQL](#), [Azure Database for MySQL](#), and [Azure Cosmos DB](#) – to enhance its data management and analytics capabilities. “With Azure OpenAI, we’re developing and supporting automated solutions that improve the accuracy and speed of processes like underwriting, claims processing, fraud detection, as well as creating chatbots for supreme customer service,” says Alex Zukerman, Chief Strategy Officer at Sapiens.

“

Being AI-ready was the driver for our earlier migration to Azure. We made a pivotal shift towards modernising our infrastructure and improving operational efficiencies to support AI innovation.

Michael Mirel

Director, Cloud Centre of Excellence at Sapiens.



Comprehensive security from code to cloud

In AI as well as broader open source cloud technologies, security is paramount. Thankfully, Azure offers end-to-end security solutions from code to cloud that make it easy to deploy comprehensive protection for your Linux and open source workloads.

Azure security is built-in and it is not an 'add-on'. At the foundation is the physical security of Microsoft's datacentres and Microsoft's security teams. Azure is the only leading public cloud that is also a security vendor. In addition, Microsoft plans to invest \$20 billion in security in the next 5 years, has over 10,000 dedicated security professionals and analyses 65 trillion global signals daily.

100+

Compliance certifications, the most of any cloud provider.

Compliance in the trusted cloud | Microsoft Azure

On top of that foundation, Microsoft provides security solutions across all aspects of infrastructure and application hosting – which provides peace of mind for open source teams looking to compile their ideal security stack. This includes the company's pioneering work in confidential computing over the past 10 years. [Azure confidential computing](#) helps organisations in highly regulated industries protect their most sensitive data in the cloud. These services extend more broadly to [Microsoft Defender for Cloud](#), [Azure Network Security](#) and [GitHub Advanced Security](#) and AI-powered solutions such as [Microsoft Copilot for Security](#). These services can be overlaid on top of databases like PostgreSQL to provide security for any size workload.

72% Reduction in likelihood of cloud security breaches

50% Increase in efficiencies of IT and security teams

A commissioned study conducted by Forrester Consulting | The Total Economic Impact™ Of Microsoft Security 2023

[NTT](#) has leveraged Azure's security solutions to enhance its protection and compliance on a global scale. Facing the challenge of modernising a complex digital estate, NTT partnered with Microsoft to develop a standardised and consistent Azure-based platform. "Moving to Azure reinforces our security posture, with the aim of having more than 200 security controls in a single global tenant", according to Pascal Weiss, Regional Chief Information Officer for Asia Pacific at NTT Ltd. NTT estimates the overall three-year total cost of ownership savings from the move to a consumption-based Azure model to be \$1 million.



Cost-effective solutions for maximum ROI

Cost optimisation is often a top priority for technology leaders and this has been truer than ever in recent years. Accurately tracking and managing cloud costs is equally important. Azure provides you with spend management capabilities and significant cost savings through flexible pricing models, offers and cost analysis tools. Services such as the latest [Azure Virtual Machines](#) and [Azure Spot Virtual Machines](#) and flexible pricing offers are designed to maximise value for Linux and open source workloads.

Cost savings achieved through these improved efficiencies can then be reallocated into other strategic initiatives, such as driving AI innovation. By reducing infrastructure costs, you can invest more in developing cutting-edge solutions, fostering innovation and maintaining a competitive edge in your respective markets.

By leveraging Platform as a Service (PaaS) offerings that are fully managed – such as Azure Kubernetes Service, [Azure Database for PostgreSQL](#) and [Azure Database for MySQL](#) – organisations can reduce total cost of ownership (TCO) by simplifying infrastructure management, deployment and operations. For instance, migrating on-premises PostgreSQL instances to Azure can [save up to 62% on total costs](#).

76%

Lower costs with [Azure Hybrid Benefit](#) for Linux and reserved instances

Azure offers flexible pricing models such as [Pay-As-You-Go \(PAYG\)](#) and Bring Your Own Subscription (BYOS), catering to diverse business needs. Offers like [Azure Hybrid Benefit for Linux](#) let you easily

Switch the software subscription model for your virtual machines. You can remove the licencing cost by bringing your Red Hat and SUSE Linux subscriptions directly to Azure or utilise a model where you pay for subscriptions as you use them

192%

3-year ROI from using Red Hat Enterprise Linux on Microsoft Azure

80%

Reduction in data centre spend

60%

Reduction in legacy solution costs

A commissioned study conducted by Forrester Consulting | The Total Economic Impact™ Of Red Hat Enterprise Linux On Microsoft Azure 2024

Azure also provides [Azure reservations](#) and [Azure savings plan for compute](#), which allow you to either save costs by reserving resources in advance or agreeing to spend a fixed hourly amount on compute services, depending on which type of workload and traffic pattern the company expects. Together, these models and offers provide you with the flexibility to choose the most cost-effective option for your specific workloads, helping you optimise your cloud expenditure.



Chapter 4

To track expenses with ease, Azure offers a suite of cost analysis tools designed to give you a clear view of your cloud spending. The [Azure pricing calculator](#) allows you to estimate costs based on your specific usage, while the [Total Cost of Ownership \(TCO\) calculator](#) helps compare on-premises and cloud expenses to highlight potential savings. [Microsoft Cost Management](#) provides comprehensive insights and tools for tracking, analysing, and optimising spending, and [Azure Advisor](#) delivers personalised recommendations to enhance cost efficiency.

[Bank of Montreal \(BMO\)](#) recently migrated its market risk management platform to Microsoft Azure, resulting in substantial cost savings and performance improvements. Within a year, BMO improved platform performance, running twice as fast as with its secondary cloud vendor. It also reduced overall costs by 30%, unlocking enhanced risk management from multiple angles. Using Azure Spot Virtual Machines, BMO will soon be able to take its platform from

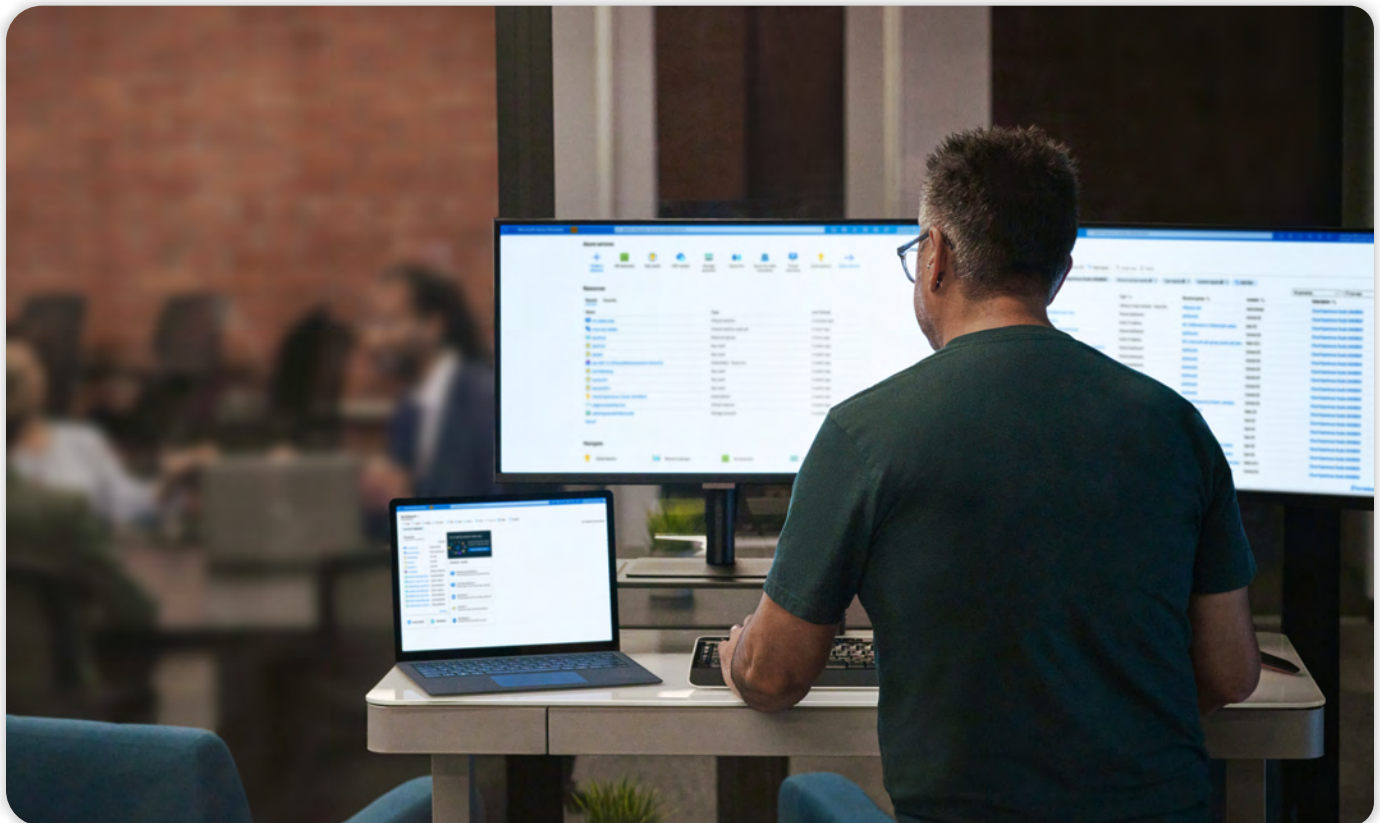
35,000 cores a night to up to 80,000 cores a night if needed. This transformation highlights Azure's ability to deliver both economic and operational benefits, enabling BMO to better manage its financial risk and drive business growth.



BMO's use of Azure has ultimately led to a sixfold reduction in overall analysis time, cut overall costs by 30% and helped us run jobs twice as fast and we can do more than a billion calculations a night

Carl Gomes

Chief Information Officer, Market Risk and Treasury Technology.



Global scale with uncompromising performance

In today's fast-moving world, it is crucial for you to have full visibility into your operations so that you can adapt quickly. This agility is what creates next generation companies. Azure's global cloud infrastructure provides just this type of scalability and performance. [Offered in 60+ regions across 300+ data centres](#) – more than any other cloud provider - Azure supports high availability and disaster recovery.

With Azure you can avoid sunk costs associated with HW overprovisioning in your on-prem data centres. You can take advantage of a variable cost structure and increase your operational agility by scaling your IT footprint up or down depending on several factors, including macroeconomic trends and seasonality. For example, Azure services like [Azure Virtual Machine Scale Sets](#) and [Azure Compute Fleet](#) enable you to provision compute capacity automatically at scale and 'rightsize' your infrastructure to meet demand.

85% Reduction in outage downtime

50% Reduction in outage frequency with RHEL on Azure

A commissioned study conducted by Forrester Consulting | The Total Economic Impact™ Of Red Hat Enterprise Linux On Microsoft Azure 2024

Azure's support for containers and microservices enables agile development and deployment. The platform's integration with Azure Kubernetes Service empowers developers to easily build, deploy and manage containerised applications at scale. This cloud-native approach enhances flexibility and scalability, enabling you to respond quickly to changing market conditions and customer needs.

[AIA](#), a multinational insurance and financial services provider, relied on Azure to transform its

IT operations and achieve remarkable scalability and performance. Faced with the need to boost compute capacity by tenfold for a weekend, AIA dynamically scaled up and back down using Azure with zero business interruption. This flexibility has allowed AIA to process 1.2 billion transactional reports a month and realised a cost savings benefit of more than 20% compared to their previous on-premises setup. The company's commitment to Azure has enabled it to handle its complex, growing demands efficiently and maintain high service levels across its 18 markets.



We had a scenario where we needed to boost compute by 10 times for just a weekend. Using Azure, we dynamically scaled up and back down with zero business interruption. It was seamless

Marcel Malan

Head of Group IT Operations and General Manager.



Conclusion

Your trusted cloud for limitless innovation

Azure stands out as a premier choice for your Linux and open source workloads. Its robust Linux and open source ecosystem, advanced security, cost-efficiency, and phenomenal scalability make it the ideal platform for modern enterprises to simplify the complex and accelerate growth.

| **Thriving Linux and open-source ecosystem:** Azure provides a rich ecosystem that empowers you to leverage the Linux distributions and open source software of your choice, allowing you to customise your environment to best meet your needs.

| **Innovate confidently with advanced AI capabilities:** Azure provides you with cutting-edge AI services, AI-ready PostgreSQL database, and a commitment to responsible AI to help you innovate on an open and trusted platform.

| **Protect your organisation with robust security:** Azure's end-to-end security solutions, including Microsoft Defender for Cloud and Azure confidential computing, help protect your workloads from code to cloud.

| **Achieve significant cost savings:** Flexible pricing models and offers, cost optimisation tools, and services like the latest VMs and Spot Virtual Machines maximise value and reduce total cost of ownership.

| **Exceptional scalability and performance:** Azure's global infrastructure supports high availability and disaster recovery, with high-performing infrastructure and cloud-native solutions designed for large-scale Linux and open source workloads.

Get expert help and guidance on your cloud adoption journey.

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[Get Started](#)

Explore PostgreSQL on Azure.

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