



AWS FOR MIGRATION

Run your Windows workloads on AWS

Make the choice for more savings, services, and security options—and the most experience running Microsoft apps in the cloud

Why AWS for Windows?

Customers across multiple industries have been running Windows workloads on AWS since 2009—long before it was possible with other cloud providers. We have far and away the most experience running Microsoft applications in the cloud, and we offer the best platform for Windows Server and Microsoft SQL Server.

AWS supports everything you expect to build and run on Windows, including Active Directory, .NET, SQL Server, Windows desktop as a service (DaaS), and supported versions of Windows Server. We provide Amazon FSx for Windows File Server, the first and only fully managed native-Windows file system available in the cloud. And we enable durable, performant block storage for your most demanding SQL Server deployments with Amazon Elastic Block Store (Amazon EBS). With our proven expertise, AWS can help you select and implement the right solution for your enterprise. In fact, we've yet to find a Windows workload that can't be redeployed to run at a lower cost.

With AWS as the foundation for your Windows environment, there's no limit to the range of business benefits you can achieve, including:

- Accelerated transformation
- Lower capex and greater scale
- Reduced operating costs
- Elevated cloud skills
- Improved security and compliance
- Advanced agility and innovation
- Increased reliability and performance
- Unlocked cloud potential

AWS and Intel have collaborated for over 15 years to develop customized technologies and software optimizations tailored for mission-critical enterprise applications for AWS customers. This collaboration helps AWS customers migrate and modernize their applications and infrastructure to manage cost and complexity, accelerate business outcomes, and scale to meet current and future computing requirements.

Windows on Amazon EC2 instances powered by 3rd Gen Intel® Xeon® Scalable processors simplifies application portability, speeds application development on AWS, and enables reuse of existing application software. You can commission one or quickly scale to hundreds or even thousands of server instances simultaneously.

AWS is a proven choice for Windows workloads

Countless enterprise customers with large volumes of Windows workloads, including many leading organizations like Jack in the Box, are all in on AWS. Some of the largest enterprises in the world, including BP and Expedia, run their Windows workloads on AWS as part of an on-premises/cloud hybrid architecture.

“If you’re running Windows with other workloads or are thinking about future integrations with advanced analytics or machine learning, you’d be crazy not to consider AWS.”

Phillip Frantz, Former Special Projects, Redcat

Choose AWS for more savings, services, and security choices

36%

cost savings (over 3 years) by rightsizing instances with Migration Evaluator

442%

5-year ROI (projected) when you run Windows on AWS¹

2x

price/performance advantage vs. next largest cloud provider²

2x

more regions with multiple availability zones vs. next largest cloud provider

5x

more services with encryption vs. next largest cloud provider

Navigate your cloud journey with unparalleled expert guidance:

AWS Consulting Partners help all kinds of organizations accelerate their journeys to the cloud. These professional services firms include system integrators, strategic consultancies, agencies, managed service providers (MSPs), and value-added resellers (VARs).

AWS Professional Services is a global team of experts that can help realize your desired business outcomes when using the AWS Cloud. You will work with your chosen AWS Partner—an expert who architects, designs, develops, and implements the platform, helping your organization embrace a services-based model.

The AWS Microsoft Workloads Competency Partners website can help you select the most qualified AWS Partners for migrating and modernizing Windows-based applications to AWS. These partners have validated technical capabilities and demonstrated success in helping customers build, manage, and deploy Microsoft workloads to AWS.

Every enterprise is unique

AWS helps you choose the migration strategy that fits your specific requirements.

Rehost ("lift-and-shift")

Rehosting is the most popular choice for organizations that want to rapidly scale migration to meet a business case. Most rehosting can be automated, although you may prefer to do it manually (enabling you to learn how to rebuild your legacy systems on the AWS Cloud platform). Further optimization and rearchitecting are often easier once your applications are running in the cloud.

Re-platform

Make a few cloud optimizations during migration, but otherwise, keep your core architecture. By swapping common components, you can improve performance without the risk, complexity, cost, and time of a full refactoring initiative. You can also take advantage of cloud-native benefits, including easier management, higher availability, and lower costs.

Refactor/ Rearchitect

Rethink how applications are architected and developed to integrate cloud-native features. Refactoring is usually driven by a business need to add features, scale, or performance that would otherwise be difficult to achieve in the app's existing environment. For example, if you are looking to migrate from a monolithic architecture to a service-oriented (or serverless) architecture to boost agility or business continuity, refactoring may be the solution.

Retire

You may find that some of your apps no longer add value. Up to 10 percent of a typical enterprise's IT portfolio may have outlived its usefulness and can simply be turned off. These savings can boost the business case, direct your team's scarce attention to the things people use, and reduce the number of applications to be secured.

Retain

Usually, this means "revisit" or do nothing (for now). Maybe you are still riding out some depreciation, not ready to prioritize an application that was recently upgraded, or otherwise not inclined to migrate some applications.

Every enterprise is unique (cont'd)

Migration to the cloud is not merely a journey; it's a major step toward business transformation—and AWS is ready to be there with you every step of the way. We help manage your migration and optimize your Windows workloads after you migrate—so you can continue to save, automate, and scale.

And when you're ready to break free from the high costs of commercial licensing, AWS can help you modernize your applications to accelerate your innovation. This eBook highlights why and how your organization can successfully migrate, modernize, and build its Windows workloads on AWS.

"AWS Professional Services has been fantastic. They brought their technical expertise and culture to help change the culture at NAB, and they brought their delivery methodology to help us move at scale. They also helped us work through the strategy and delivery plan for our mass migrations."

Paul Roney, GM, Technology Platforms,
National Australia Bank (NAB)

SECTION 1

Migration in three stages

Cloud is the new normal, and companies of every size have realized its unmatched business and technology benefits. For most organizations that have yet to migrate, the question is no longer “Should we move to the cloud?” but “How fast can we move?” and “What are we moving first?” Migration to AWS can reduce the cost of operations by 56 percent (over five years), increase gross productivity by 32 percent, and lead to a 98 percent reduction in downtime.³ Statistics like these have helped drive the growing urgency to migrate now.

By moving to AWS, your organization has access to the critical Windows infrastructure you depend on, at a compelling price, with more reliable infrastructure than you’ve been able to commit to in an on-premises world. And you have the benefits of a three-stage process proven over millions of successful migrations.



STAGE 1

Assess

Your journey begins. The assessment stage determines your readiness for cloud migration, analyzes your organization's specific requirements, and establishes the business cases for migrating each workload.

Assess your readiness

Evaluate Windows workloads running on-premises and in cloud environments to determine your readiness to migrate.

Analyze your usage

Analyze resource utilization, third-party licensing, and application dependencies to inform your cost-optimization scenarios.

Build a business case

Build a TCO model that includes your migration and licensing strategies using AWS programs and tools.

AWS Optimization and Licensing Assessment (AWS OLA) is a free program for new and existing customers to assess and optimize existing on-premises and cloud environments based on actual resource utilization, third-party licensing, and application dependencies.

AWS OLA identifies everything in your organization's environment—regardless of platform, application, or geography—and provides recommendations for hardware and software, including optimized licensing, dedicated hosts, optimized CPU, and Reserved and Spot Instances.

AWS provides additional tools, questionnaires, workshops, and reports to help you quantify your migration readiness. One of these tools, Migration Evaluator, ingests millions of data points to determine the best fit for each of your workloads on AWS. Using validated processor performance data from Intel and up-to-the-minute pricing from AWS, you can make an informed decision to start your migration to the AWS Cloud.

“Even before we migrated, AWS helped us prepare for our migration through an Optimization and Licensing Assessment (OLA) that helped us rightsize our instances to control our costs during migration by 18–20%. Now, we are able to scale up and down easily to handle fluctuating server traffic—and we have the freedom to focus on innovation instead of managing our physical servers.”

Tommaso Salsetta, Former ICT Manager Italy, Giunti Psychometrics

STAGE 2

Migrate

The cloud migration stage includes building a secure landing zone, migrating resources and data, reporting, and viewing the progress of your migration.

Identify cloud capabilities

Uncover gaps in your existing skills and processes and identify capabilities needed for a successful migration.

Build and mobilize

Address the capability gaps and dependencies in your environment and determine which workloads to migrate first.

Migrate

Migrate your applications, servers, and databases with AWS tools and services while testing for application performance and security.

“By moving our legacy Windows workloads out of 20 data centers, we cut monthly costs by 50% and avoided an additional 70% expenditure increase. We also used learnings from the MAP for Windows program to upskill our staff. Engineers who hadn’t even known how to use the AWS console became fluent in services like AWS CloudFormation.”

Avi Boru, Director, Cloud Platform & DevOps Engineering,
World Fuel Services

AWS Migration Acceleration Program (MAP) for Windows is a comprehensive program that helps organizations execute large-scale migrations and modernizations of their Windows workloads on AWS. AWS MAP for Windows follows our proven three-step migration process and provides unique tools, services, best practices, and service credits to accelerate your migration. With expert guidance from AWS Partners and AWS Professional Services teams, including training and service credits, AWS MAP for Windows helps you reduce risk and lower costs as you embark on your migration journey.

Making the case for migrating SQL Server workloads in 2022

Microsoft ended its support for SQL Server 2008 on July 9, 2019, and Microsoft is planning to end support for SQL Server 2012 Service Pack 4 on July 12, 2022. This means Microsoft will stop security updates, potentially making your databases and applications vulnerable. That’s why now is the ideal time to migrate your legacy SQL Server workloads to AWS. AWS gives you the tools and programs to make your SQL Server migration efficient and cost-effective. Once migrated, you can use tools like AWS Systems Manager to easily upgrade your SQL Server 2008 and 2012 to the latest SQL Server version to address the end-of-support timelines.

STAGE 2 Migrate (cont'd)

SQL Server on AWS: The recommendation matrix

AWS offers many ways to run SQL Server workloads and manage SQL Server licenses, whether you're looking to modernize or simply lift and shift.

Need to stay on SQL Server?

Leverage Amazon Relational Database Service (Amazon RDS) for SQL Server to offload the undifferentiated heavy lifting of installation, configuration, patching, upgrades, and other administrative tasks.

Looking to stay on SQL Server and maintain full database control?

Rehost your SQL Server workloads on Amazon EC2 without having to make any code changes.

Ready to move away from SQL Server and leverage a superior cloud-native RDBMS?

Choose Amazon Aurora for three to five times faster performance at one-tenth the cost. To help you get started, AWS Database Migration Service (AWS DMS) and the AWS Schema Conversion Tool (AWS SCT) make migration to Amazon Aurora quick and easy.

Flexible options for your SQL Server licenses

If you have existing SQL Server licenses and Software Assurance (SA), you can bring them to Amazon EC2 in a shared tenancy. If you don't have SA, choose Amazon EC2 Dedicated Hosts. And if you don't have existing SQL Server licenses, choose SQL Server License Included (LI). This pay-as-you-go licensing model removes the difficulty of managing complex licensing terms and conditions, making it easier to track software license usage and reduce the risk of noncompliance.

Performance and storage for SQL Server workloads

Amazon EC2 offers z1d instances with high single-thread performance due to a custom Intel® Xeon® Scalable processor with a sustained all core frequency of up to 4.0 GHz. It's ideal for SQL Server workloads because SQL Server is licensed per CPU core, and z1d's higher clock speed of 4.0 GHz will reduce the number of CPU cores, which can result in significant cost savings.

Amazon EBS, with new Amazon EC2 R5b instances powered by custom 2nd Gen. Intel® Xeon® Scalable processors (Cascade Lake), provides easy-to-use, high-performance block storage for Microsoft SQL Server. With R5b on Amazon EBS, you can utilize up to 60 Gbps of Amazon EBS bandwidth and 260K IOPS (I/O operations per second) for large relational database workloads. Take advantage of this improved Amazon EBS performance to accelerate data transfer to and from Amazon EBS, reducing the data ingestion time and speeding the delivery of results.

Optimize

Optimize your costs, usage, and licenses to suit your business needs. Use managed services to automate tasks and workloads, centralize the management of operations, and open the doors to modernization.

Monitor usage and spend

Access custom reports to visualize and manage costs and usage. Identify trends and cost drivers and detect anomalies.

Optimize workloads

Analyze historical usage to optimize your workloads for additional cost savings and improved performance.

Automate operational tasks

Automate tasks such as monitoring, security, and backup services using AWS Managed Services.

Once your Windows workloads are running on AWS, you can continue optimizing your costs, usage, and licenses to suit your evolving business needs. With **AWS Cost Explorer**, you'll have the visibility to monitor and manage your AWS costs and usage over time to take control of spend. **AWS Compute Optimizer** recommends optimal AWS compute resources for your workloads to reduce costs up to 25 percent by leveraging historical utilization data. **AWS Managed Services** can help reduce operational overhead and risk post-migration by analyzing alerts and actively responding to incidents. And **AWS Systems Manager** is built to automate operational tasks across your AWS resources and better manage your infrastructure at scale.

"Having a team like AWS to provide the infrastructure services and tooling made the program. If we had to set up all of those tools and infrastructure services ourselves, we would probably still be doing it."

Justin Wright, VP of Architecture & Development, Thomson Reuters

SECTION 2

Modernize with AWS

Migration is just the beginning of your journey. Modernization is where your business breaks free from licensing lock-ins and software audits to accelerate innovation by unlocking the full potential of the cloud. With AWS as your dedicated cloud provider, you can transform your applications to increase agility, efficiency, cost savings, and security. You can also free-up resources and scale infrastructure on demand.

Modernization can mean many things, but AWS will help you find the pathway that's right for your organization. Whether you choose to move forward with managed services or open-source technologies, the following pathways can be used to modernize your Windows workloads on AWS.



Modernize with AWS (cont'd)

The three pathways to modernization

Here's how AWS can help you follow the right pathways at the right pace to modernize your apps and infrastructure.

1 Repackage

Repackage your applications with managed services and containers

Let the AWS experts manage your cloud infrastructure while you leverage the simplicity of serverless API services.

- **Run managed SQL Server databases:** Optimize your SQL Server workloads on Amazon RDS without needing to manage database administration tasks. Run Amazon RDS using the latest 2nd Gen. Intel® Xeon® Scalable technology for the right balance of compute, memory, and networking—and only pay for what you use.

2 Restructure

Restructure your code with open source

Break free from licensing and unlock the full capabilities of the cloud. Gain agility, cost savings, and performance by taking advantage of cloud-native open-source technologies.

- **Run .NET Core on containers:** Run your modernized Windows applications on container services such as AWS Fargate, Amazon Elastic Kubernetes Service (Amazon EKS), and Amazon Elastic Container Service (Amazon ECS).

3 Rebuild

Rebuild your monolithic applications

Separate monolithic apps into individual microservices dedicated to doing one thing really well. Switching to microservices can unlock value and cut operating costs dramatically.

- **Deploy .NET microservices:** By transforming its monolithic .NET Framework apps to a .NET Core microservices-based architecture, AgriDigital can “scale to meet our compute needs whenever we need to” rather than paying for unused but still running instances.

Windows on AWS modernization

Windows on AWS modernization helps you innovate and modernize your applications on the AWS platform. We provide incentives, service credits, and benefits for modernization of .NET applications and SQL Server on AWS, including leveraging partners, modernization COEs, and self-service resources.

ProServ offers a one-day free Envisioning and Alignment workshop to help customers lay a foundation for a cloud and product modernization strategy.

ProServ can co-develop the proof of concept (POC) for a high-value use case combining a pattern for scaling for modernization, high-level architecture, roadmap, and cost model.

“We were fortunate to have partnered with AWS during the development/rollout of the DMS migration service to move from Microsoft SQL Server to Aurora MySQL. In performing this migration, Jobvite realized cost reduction of 40%, improved responsiveness to customer requests by up to 40%, eliminated monthly database maintenance that took the application down for 3 hours, and reduced refresh time from 20 hours to 2 hours. All of these benefits have allowed Jobvite to invest efforts into other aspects of the business to improve customer satisfaction.”

Chaitanya Konduri, Former Engineering Manager, Cloud Infrastructure, Jobvite

This guide covers the common approaches AWS customers use to modernize their Windows-based applications. It also provides an overview of the available tools, services, and support AWS offers to help simplify your modernization journey.

Learn more in the eBook:

[Guide to Windows modernization](#)

SECTION 3

Build on AWS

Empower your .NET developers to build next-generation applications using their preferred tools and our industry-leading services.

AWS provides a reliable, scalable infrastructure platform offering a broad set of global cloud-based services. Any of these 200+ services can be provisioned quickly without upfront capital expenses. AWS provides the ideal environment for deploying existing .NET applications and creating new and innovative .NET applications with all the familiar tooling and integrations developers expect. AWS supports both legacy customer use cases with .NET Framework and modern workloads with support for LTS and current releases of .NET Core, .NET 5, and .NET 6.



Development tooling and DevOps

.NET developers and teams use a wide variety of tools to build, deploy, and monitor their applications. With the advent of .NET Core, .NET 5, and .NET6, developers can take advantage of other platforms (Linux, macOS) to code applications. AWS offers free plug-ins for popular IDEs for .NET development and an SDK that makes integration of AWS services with application code easy and convenient.

Software development kits (SDKs)

AWS SDK for .NET

For developers looking to integrate AWS services into their application code, AWS provides the free AWS SDK for .NET. Available on NuGet, each AWS service is encapsulated in individual packages together with a shared common core package. The SDK makes calling AWS service APIs from within application code as easy as calling a method on an object. AWS also provides additional open-source extension libraries to make application integration with AWS even easier. Each service package provides a client-type implementing the service's API and a collection of rich request, response, and model types associated with the API. The SDK handles all of the interactions with the services, including authentication, throttling, and retries.

AWS Cloud Development Kit

The AWS Cloud Development Kit (AWS CDK) is an open-source software development framework that enables your developers to define cloud applications using familiar languages. Your teams can also build and share libraries of constructs configured to your organization's cloud resources.

“After moving from .NET Framework to .NET Core, we are identifying and rapidly fixing code issues before moving into production. We can track and build enhancements and features more consistently now, which gives our development customers more confidence in our API.”

Dan Wilkins, Former Head of Development, Epos Now

Begin your journey today

AWS is the world's leading cloud provider and the ideal partner to help your team migrate, modernize, and build your Windows workloads in the cloud.

We provide the proven platform, experienced people, and advanced tools it takes to get the very best out of your Windows-based applications. Having completed thousands of successful migrations for some of the world's largest enterprises and fastest-growing startups, AWS has the unmatched cloud expertise you can depend on throughout your journey.

Choose AWS for Windows to dramatically reduce your costs while amplifying your agility, performance, and security. Then accelerate innovation and seize a world of opportunity. Together, we can help you establish a robust foundation to transform your applications—and your organization.

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