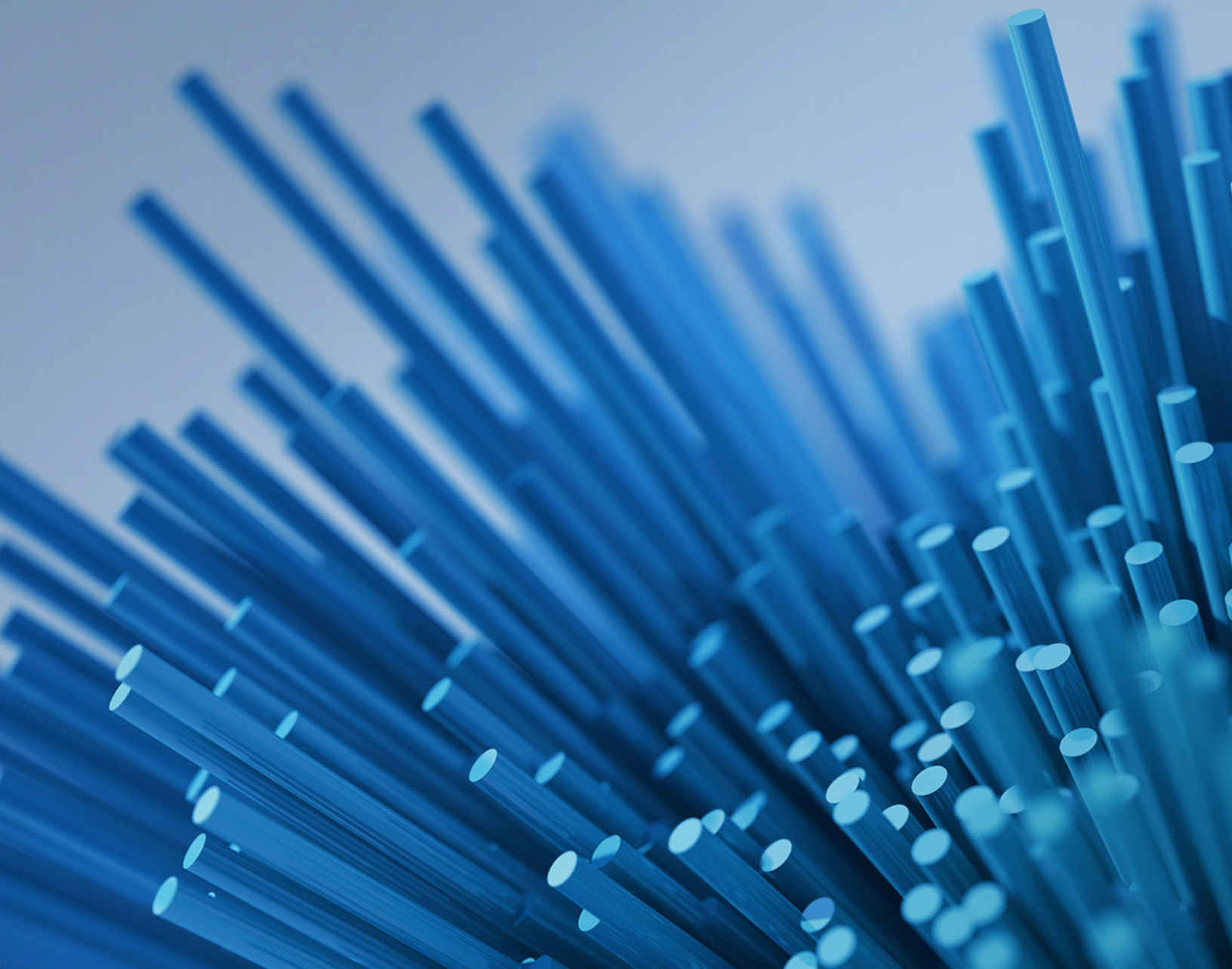
Microsoft Azure

Cloud Skills Resource Kit:

Migrating Windows Server and SQL Server

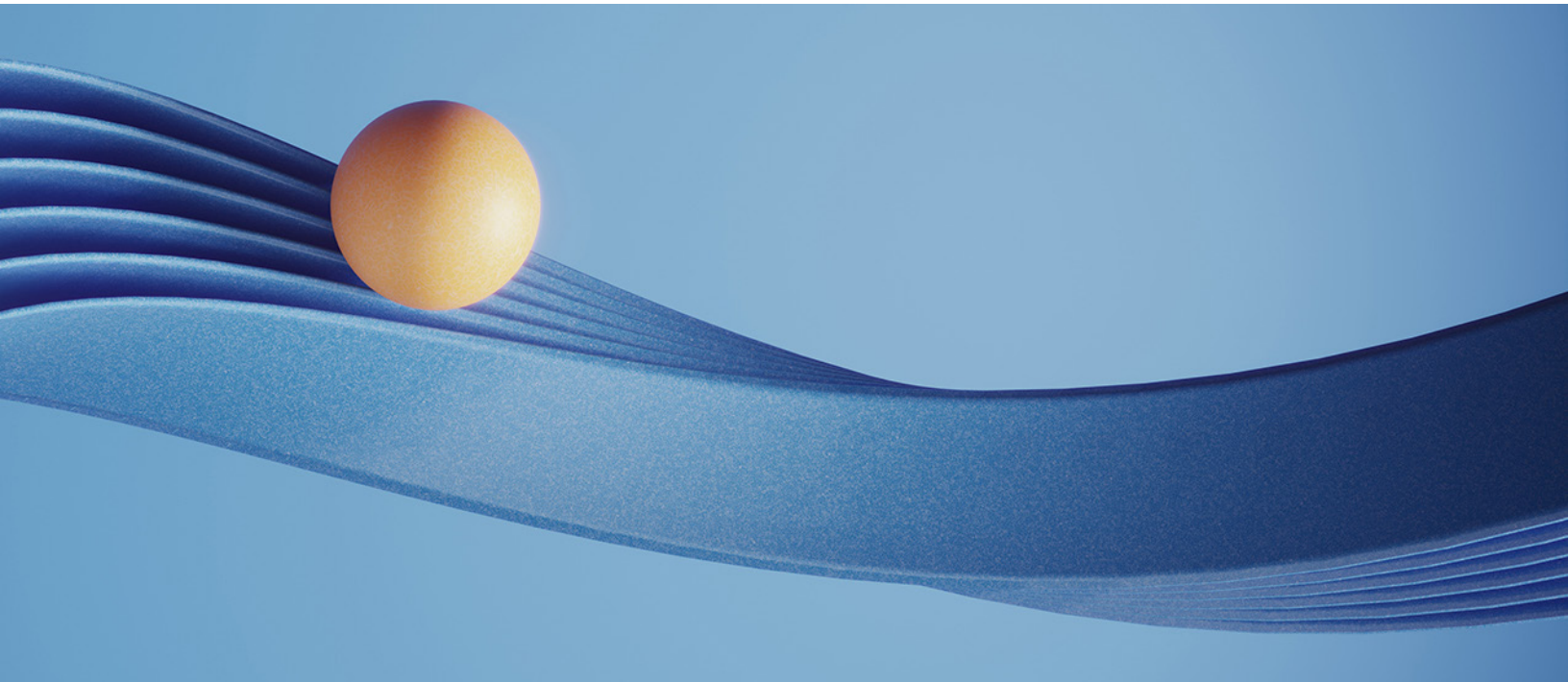


This is for you if ...

You're an applications engineer, database administrator, data architect, or other IT professional currently working with Windows Server or SQL Server on-premises, and want to learn more about how your skills can translate to a cloud environment.

Estimated reading time: **about 10 minutes**

Expanding your skillsets to the cloud: Six use cases for Windows Server and SQL Server users



Transferring your skills and knowledge to the cloud

Today, many organizations are sharpening their competitive edge by making the move to cloud-based workloads, applications, and databases. They want faster and leaner processes so they can deliver exciting, new features with greater speed and at scale—but without overextending their teams' energy or resources. They also want the flexibility of cloud tools and services that let them focus on strategic priorities and stay up to date with changing customer expectations.

Despite these clear benefits, keep in mind that the migration process isn't always a simple one. Transitioning to the cloud must be done in a way that doesn't disrupt legacy infrastructure and applications, and is easy and translatable for IT professionals.

Where does this leave teams who have worked with on-premises systems successfully for years using Windows Server and SQL Server? Already faced with limited time frames and budgets, how can they learn the skills necessary to migrate essential systems without sacrificing security or operational efficiency?

It turns out, you already have much of the expertise you need for a successful migration. Using your current skillsets and systems as a jumping-off point—as well as the numerous available Azure learning tools—it's possible to migrate and modernize with security, confidence, and speed.

On-premises and cloud working together

Cloud migration and spending continue to gain momentum as leaders invest in resilient solutions that can adapt to rapidly changing conditions. Gartner expects 2023 worldwide public cloud spending to reach nearly $600 billion—a 21 percent growth compared to 2022.[1]

Although the changes seem fast, the reality for most organizations is that the shift won't happen overnight (nor should it). Instead, many prefer a balanced, phased approach by adopting and integrating cloud services to solve specific problems while simultaneously building up the necessary skills for migration. This approach lets organizations continue making good use of their on-premises IT investments, as well as act with greater visibility if they have regulatory considerations to take into account. These realities are why the hybrid cloud market is expected to grow at a compound annual growth rate (CAGR) of 21.06 percent between 2023 and 2028.[2]

[1]Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly $600 Billion in 2023
[2]Hybrid Cloud Market Analysis - Industry Report - Trends, Size & Share | Mordor Intelligence

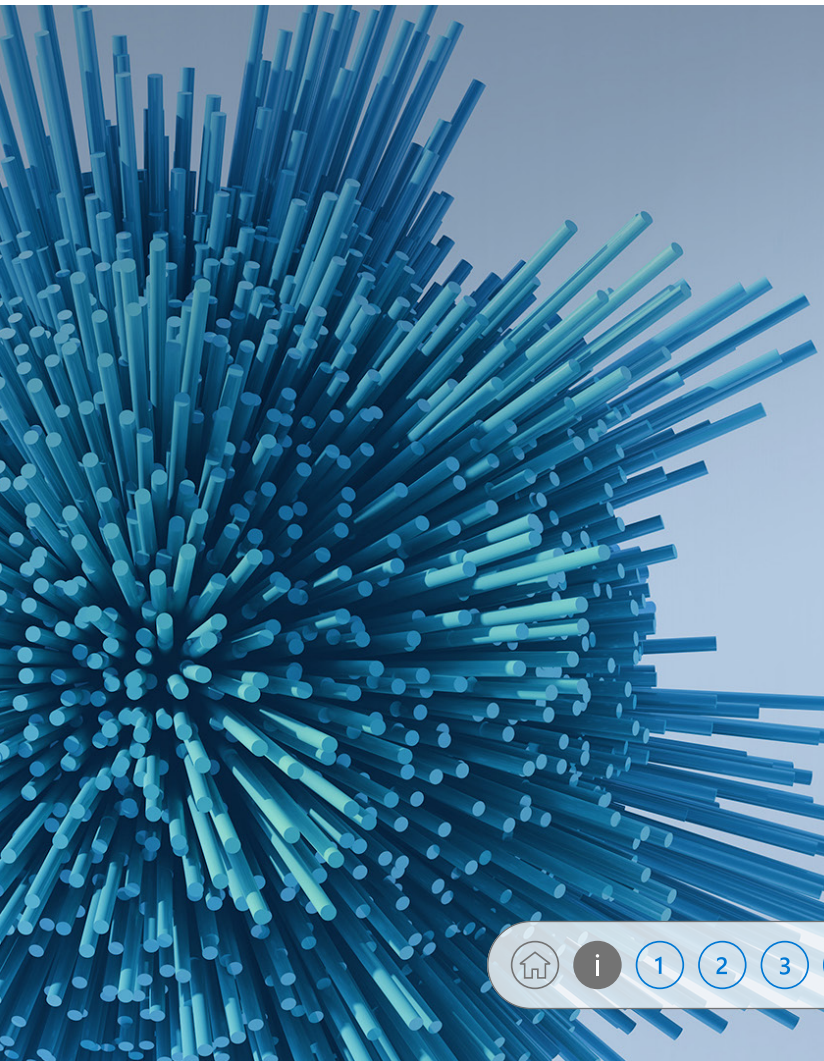
Start small and simplify

Moving to the cloud is a significant undertaking, so the most efficient approach is to start small and take stock of what's in front of you. If you begin with a specific problem or pain point—essentially as a proof of concept—working on that one project will help you gain experience and confidence that can be applied to more and bigger projects in the future.

Of course, you'll also want to plan with caution. After all, the problems with on-premises solutions are at least familiar ones, often with known solutions (and costs). Modernizing applications in the cloud still needs the care and support of your IT professionals, which means your team will continually need to develop new skills if they want to deliver the best possible features and innovations.

The key is finding the right entry point or problem that the cloud can solve, setting a pace that makes sense for your company's tools and skillsets, and then building from there. This build-from-where-you-are approach gives you more control over timetables and budgets, and lets you discover all the different ways the cloud can improve efficiencies across your organization.

This toolkit will review different use cases that illustrate the inefficiencies IT teams face in their on-premises environments—and how moving to the cloud can help overcome those challenges. You'll also find Azure learning tools and services to help you expand your team's skills when it comes to modernizing on the cloud.



For some companies, a gradual migration makes the most sense for their budgets. Azure Hybrid Benefit is a cost-effective way to migrate at your own pace by transferring your existing on-premises licenses to the cloud, letting you migrate in phases.

Learn about Azure Hybrid Benefit

Case 1:

File server management

As file servers reach capacity, storage becomes a major issue. Meanwhile, file retrieval and backup can also cause management headaches.

The cloud can simplify these tasks, but the potential work and risk involved to move huge file servers with sensitive data to the cloud can seem like a nonstarter. With many users being familiar with mapped drives, they may be hesitant to learn a new cloud-based storage tool.

A perfect starting point for addressing this challenge is a hybrid approach that seamlessly blends on-premises and cloud storage. Using a service like Azure File Sync and this learning module on extending your on-premises capacity, you can transform your on-premises Windows Server file share into a quick cache of a serverless Azure file share, letting you centralize everything in the cloud while avoiding disruptions.

Using this approach, you can maintain the performance, efficiency, security, and compatibility of an on-premises file server while capitalizing on the benefits of Azure Files. These benefits include the ability to:

- Synchronize data between multiple on-premises data stores for cross-location file sharing
- Quickly overcome on-premises storage limitations by holding unused data in the cloud with tiered storage
- Replace or provision new on-premises file servers with seamless replication from Azure Files to Windows Servers

Case 2:

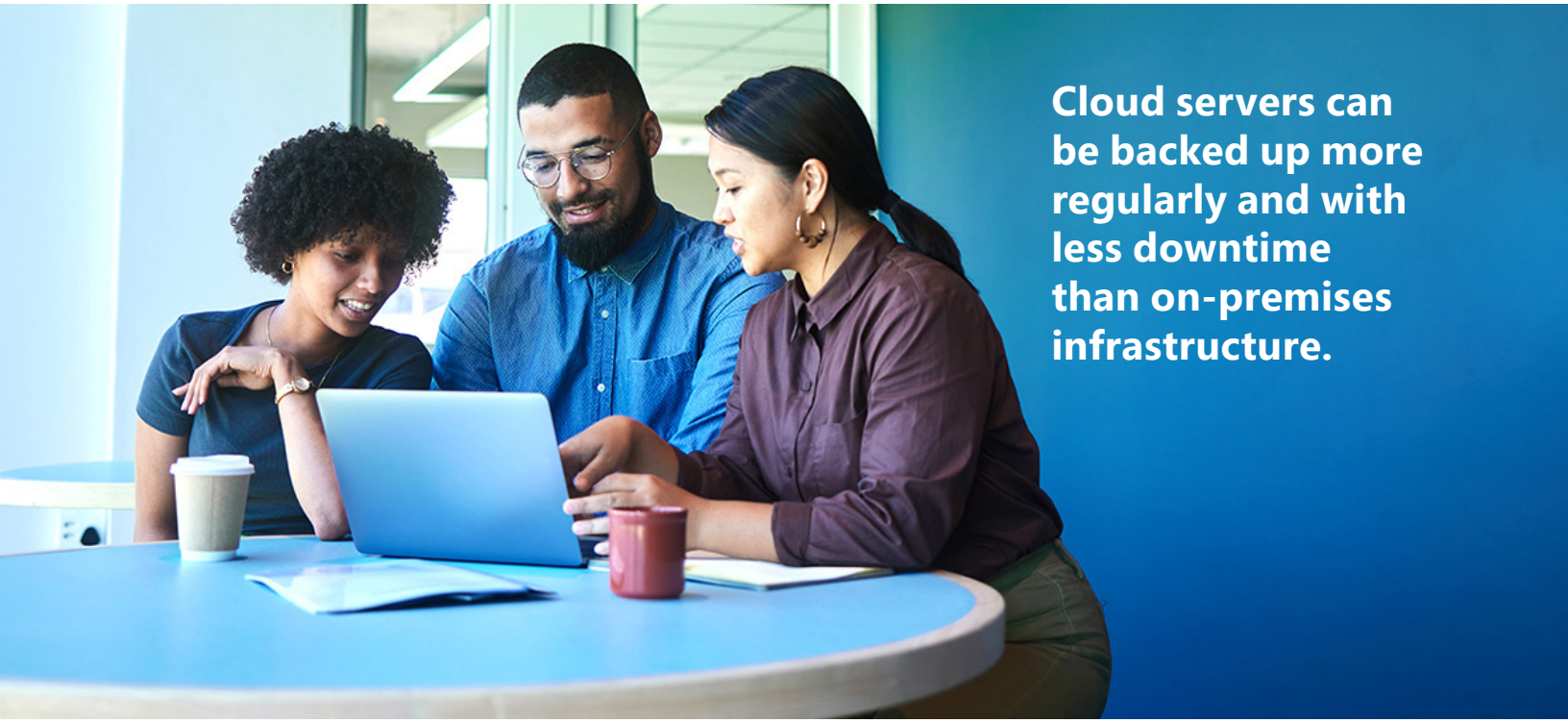
Site backup and recovery

Beyond day-to-day file server management, IT teams must also anticipate and plan for the unexpected. Unplanned outages, natural disasters, and other incidents can put data at risk and cause immense delays in service—not to mention the headaches.

While most organizations have some type of business continuity and disaster recovery strategy, the on-premises backup and recovery process still can't match what's possible in the cloud. For example, IDC research showed that compared to on-premises environments, backup in the cloud can be 76 percent faster, and data recovery can be 66 percent faster.[3]

Once you've used Azure File Sync to create a hybrid file-sharing, Azure offers an end-to-end backup and disaster recovery that's simple, secure, scalable, and cost-effective—and can be integrated with on-premises data protection solutions. This solution includes native integration with existing tools and providers, a centralized interface for defining and managing policies across all your environments and workloads, and even new capabilities like built-in security controls and cloud-based failover for your on-premises virtual machines (VMs).

In short, your day-to-day site backup and recovery will look completely different—in a good way. You'll be able to back up whatever you need without worrying about capacity or storage limitations, while also avoiding downtime caused by local power outages or network issues.



[3] "Business Continuity in the Cloud: Simple, Secure, and Cost-effective," IDC, 2020

Case 3:
Security

A common roadblock to the cloud can be security, especially if you're used to dealing with complex on-premises environments. Given that 65 percent of organizations are planning to increase their cybersecurity spending in 2023,[4] it's clearly a high-priority concern that shouldn't be overlooked.

Traditionally, IT teams approached security with firewalls and blocking network traffic. With this single perimeter approach, usernames and passwords were generally enough to keep systems safe and secure, and most access attempts were considered benign by default. Today, IT teams know that an identity-based approach paired with a unified network segmentation strategy (spanning IT, security, applications, and more) is now paramount. Instead of basing security around a single perimeter, they're now using multifactor authentication, identity signals, behavioral analytics, and layered privileges built around network segmentation to manage the security of applications, data, and users.

The challenge for on-premises IT teams is that it's not always clear exactly how identity-based security should be implemented in the cloud. How should fundamentals like authentication and access control be managed across cloud and on-premises environments? What new risks and threats need to be accounted for when applications and data are lifted and shifted into the cloud?

One solution for facing these challenges is to use a universal identity platform like Microsoft Entra ID paired with Microsoft Defender for Cloud, an application protection platform that provides a single sign-on and multifactor authentication solution that is replicated across your on-premises and cloud environments. It provides onsite and remote employees with seamless and secure access to their files, whether at the office or working remotely, and incorporates required compliance standards, such as the Health Insurance Portability and Accountability Act (HIPAA).

With the spread of remote and hybrid work arrangements making some companies more vulnerable to cyberattacks, migrating to the cloud makes it easier to take preventative measures to protect their data.

[4]Cybersecurity spending and economic headwinds in 2023 | CSO Online

Microsoft Defender for Cloud acts as a foundation for security management and advanced threat protection. It makes it simple to assess the security posture of your environments, uses AI and automation to cut down on alerts while quickly identifying threats, and has integrated tools like Azure Defender to protect all of your hybrid cloud workloads—including application containers and IoT devices.

Learn about multilayered security across Azure

Microsoft Defender for Cloud

- Assess and visualize your security state across all environments with Azure Secure Score.
- Simplify and manage your compliance against a wide variety of regulatory and company requirements with centralized policies.
- Protect hybrid workloads including servers, data, storage, containers, and IoT devices with Azure Defender.
- Cut down false alarms, rapidly detect threats, and streamline investigations using AI and automation.

Microsoft Entra ID

- Automate the detection and remediation of identity-based risks with Identity Protection.
- Manage, control, and monitor sensitive resources with just-in-time, privileged access.
- Adopt a Zero Trust posture with Conditional Access, using multiple identity signals (e.g., device, location, app) for enforcement decisions.
- Quickly integrate new identities or extend access to applications and data without compromising security.

Manage all Windows Servers from one tool

Windows Admin Center allows you to remotely manage Windows Server anywhere—physical, virtual, on-premises, in Azure, or in a hosted environment. You can save significant time by streamlining day-to-day management tasks, such as applying updates, resolving server issues, or visualizing performance and capacity. You can also easily set up and manage new Azure integrations, from Azure Files to backup and recovery to Microsoft Defender for Cloud.

Case 4:

SQL Server in the cloud

Running SQL Server in the cloud or using a cloud-native Azure SQL Managed Instance provides practically the same on-premises experience—but with more significant benefits.

For example, SQL Server on Azure VMs is popular because it essentially provides a "lift-and-shift" of your on-premises VMs into the cloud—no new skills required. Furthermore, it provides benefits like extended security updates for Windows and SQL 2008 R2, and access to tools like SQL Server IaaS Agent. With SQL Server IaaS Agent, you can automate different SQL Server tasks, including portal and license management, backup and patching, and compliance fulfillment.

If small steps aren't your thing, you can make a bigger jump to Azure SQL. Using cloud-heavy options like Azure SQL Managed Instance, you're not left to manage VMs or the SQL Server engine—everything is kept up to date with the latest features and functionality. Another "go-big" option is Azure SQL Database, which lets you abstract away everything but the database service itself, giving you a fully managed database solution for the highest possible availability and performance.

Whether you use Azure SQL VMs, Azure SQL Managed Instance, or Azure SQL Database, you'll have access to Azure's performance, scalability, and high availability—along with extras like automated indexing, security services, and other powerful tools.

While extending a Windows Server file share to the cloud is a relatively simple process, migrating a SQL Server to the cloud can be slightly more complicated based on existing application dependencies. Nevertheless, you have several tools and options at your disposal that don't require an all-or-nothing migration. Start by exploring Azure Database Migration Service to see how you can easily lift and shift your SQL Server instances and applications into the cloud. You can do a full migration with little downtime or start by migrating select applications over to new SQL Server VMs on Azure, Managed Instances, or SQL Databases.

In addition to being slightly complicated, migrating to the cloud can also be a time- and cost-intensive process. You may not know which workloads to prioritize or how to estimate costs, putting even more pressure on IT professionals to get it right the first time. Unifying your migration and modernization on a pay-as-you-go platform like Azure Migrate can help bring all moving parts of migration together, simplifying an otherwise complex undertaking. Migrate is a one-stop portal that includes assessments, guided walkthroughs, cost estimation tools, and built-in security so teams can plan for a simpler and more cost-effective migration. Additionally, the Azure Migrate and Modernize are other tools that help build up training and discover cost-saving migration practices.

Case 5:

Database automation

One of the benefits of moving SQL Server to the cloud is the ability to automate tasks, from regular maintenance and multi-instance administration, to performance, resource, and failure alerts. Database administrators find they can deliver entirely new value to the business after abstracting away much of the hardware provisioning, OS maintenance, and database administration-related drudgery.

For example, both Azure SQL Database and Azure SQL Managed Instance use automatic, continuous performance tuning based on AI and machine learning to ensure peak performance and stable workloads. These databases dynamically adapt to changing workloads, with the automatic tuning leaning horizontally across all databases on Azure. Your fully managed SQL service can also simplify and perform time-consuming and complex tasks on your behalf, including automated backups and disaster recovery.

"With Microsoft as our partner, the platform engineers have a reduction in operational toil and the time that they have to spend on infrastructure. We can now maximize all of our engineers' time on being able to build and code products."

Charlotte Saayman
Project Manager in the Service Platform Team at TomTom

Case 6:

Modern, intelligent apps

The cloud also offers access to powerful, intelligent Azure services that can help your team build modern apps faster. Using Azure DevOps, they can implement agile CI/CD pipelines and accelerate innovative app development. They can also add AI capabilities to the apps with App Service, which sits on top of Azure's cognitive services, and use Azure Data Factory to create workflows for ingesting, preparing, and transforming app data at scale. And for testing new applications and services, Azure SQL Database helps development teams quickly spin up new sandboxed database environments.

Resource guide

Explore these guided learning paths, demo series, and videos to help you transfer your team's skills to a cloud environment.

Microsoft Learn for Azure

- Learning resources, including (with your Azure subscription) a free sandbox to try out Azure SQL Database

Azure and cloud fundamentals

- Learning path: "Azure Fundamentals: Describe cloud concepts"
- Azure demo series Q&A

Windows Server migration

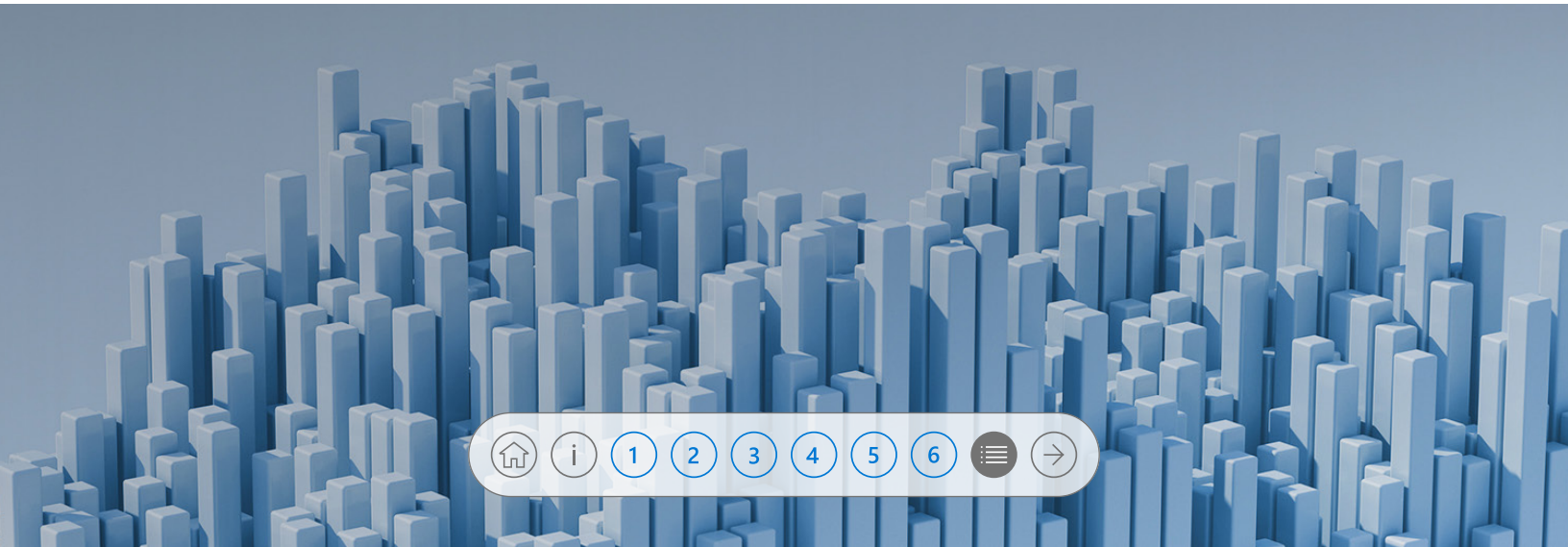
- Create a Windows VM in Azure
- Migrate on-premises Windows Server instances to Azure IaaS VMs
- Monitor Windows Server IaaS VMs and hybrid instances
- Implement a Windows Server hybrid cloud infrastructure
- Implement Windows Server hybrid cloud management, monitoring, and security

SQL Server migration

- Azure SQL fundamentals
- Azure SQL for beginners videos
- Compatibility certification
- The Azure SQL Workshop
- Deploy IaaS solutions with Azure SQL learning module
- Deploy PaaS solutions with Azure SQL learning module

Certifications

- Administrator certification path
- Data engineer certification path
- Windows Server Hybrid Administrator Associate certification



Learning cloud solutions doesn't have to be about learning a new platform end to end. As outlined in this e-book, it can be about solving specific problems and focusing on where the cloud can help most while maintaining necessary on-premises operations.

After all, IT transformation is not always a straightforward proposition. Difficult-to-move applications could prolong the time spent operating in a hybrid model. For some teams, hybrid may be an end state, while for others it might merely be a stopping point on the longer path to full migration and modernization. Wherever you are on your journey, the key is to build from what you already know and have. This approach can give your team their best foundation for a seamless cloud migration across multiple environments.

The Azure Migrate and Modernize can help accelerate your progress with proactive guidance and the right mix of expert support along your migration journey. Get help migrating infrastructure, databases, and apps, and move forward with confidence.

Explore Azure Migrate and Modernize

Take the next steps

Connect with a sales specialist for guidance, pricing, and solutions for your needs.

Get in touch