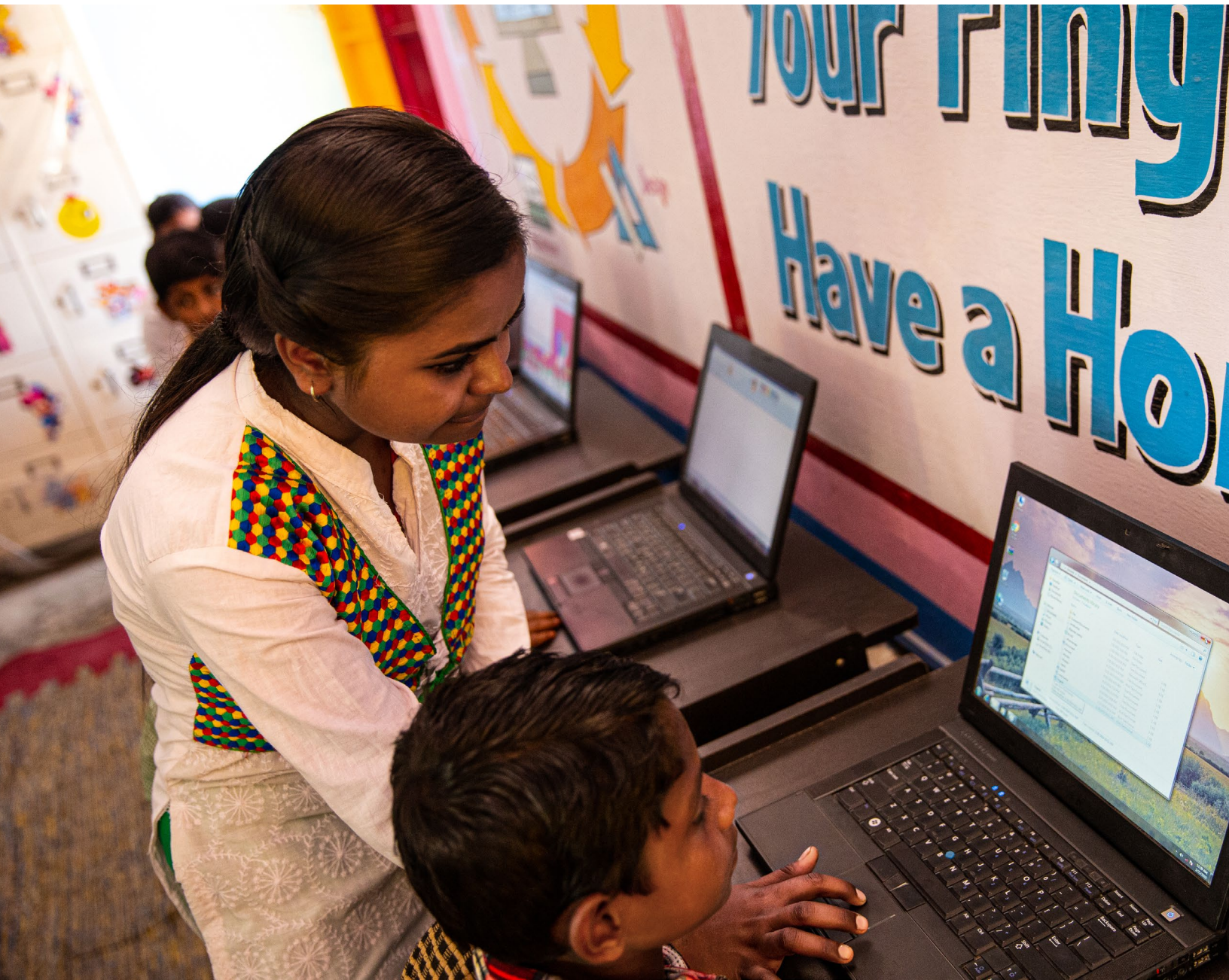


# Migrating to Azure

## Nonprofit Resource Guide for Your Database Migration



## Power your data and your nonprofit with Azure

Microsoft Azure offers an ever-expanding set of cloud services to help your nonprofit overcome challenges and create new opportunities to further your mission, powered by the latest technology.

Azure gives you the freedom to build, manage, and deploy applications on a massive, global network using your favorite tools and frameworks. Security and privacy are built directly into the Azure platform to provide the highest levels of trust with the most comprehensive set of compliance offerings of any cloud service.<sup>1</sup>

Use cloud computing to make more of the resources you have today, so you can continue to expand your organization's positive impact tomorrow.

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<sup>1</sup><https://azure.microsoft.com/overview/trusted-cloud/compliance/>



### Is this the right e-book for you?

- ✓ Are you in charge of migrating your databases to the cloud?
- ✓ Would you like to move your SQL Server, MySQL, PostgreSQL, Maria DB, NoSQL, or Oracle database to Azure?
- ✓ Do you need resources to help you choose a data migration strategy and create a plan?

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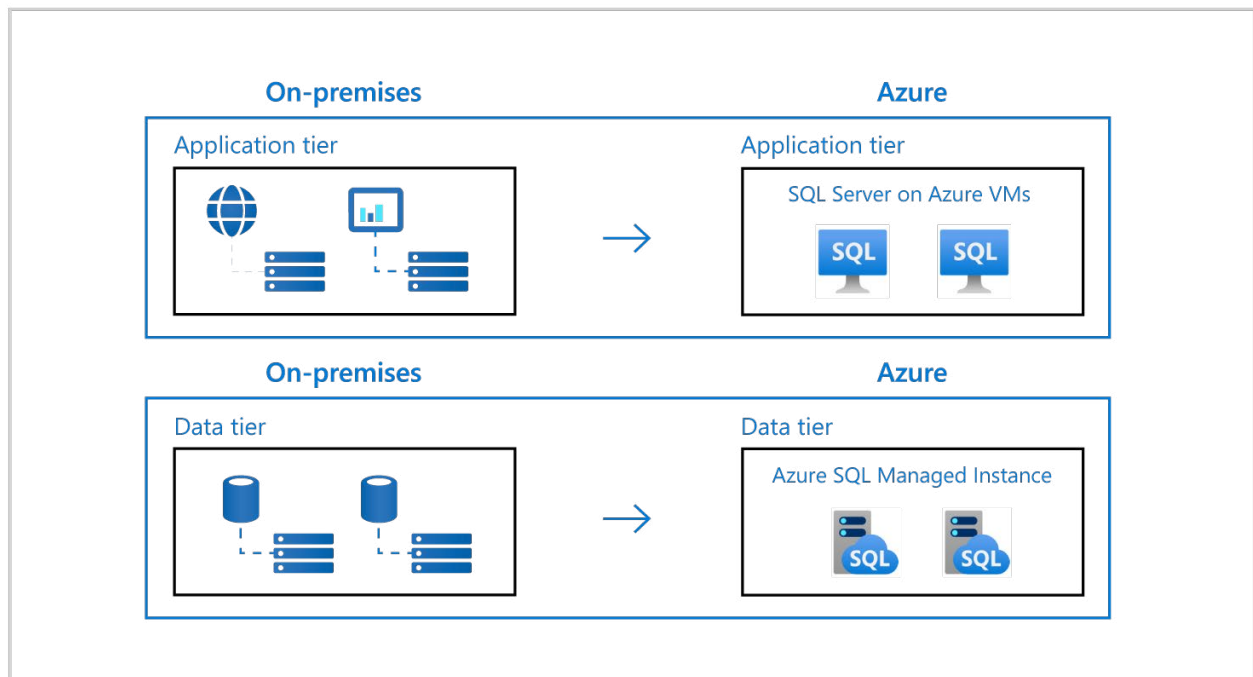
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**Are you ready  
for database  
migration?**

There are two distinct parts to cloud migration—migrating the application and migrating the database that runs it. It is important to make independent migration choices for each component in order to fully optimize the workload.

This e-book provides a high-level overview of the process for migrating databases to Azure.



# 01

## The Microsoft Cloud Adoption Framework

Whether you're planning to move a single database to the cloud, or you're tackling a larger scale cloud migration, we encourage you to refer to the Microsoft Cloud Adoption Framework for Azure. Created based on our experience with nonprofit customers of all sizes, the Microsoft Cloud Adoption Framework provides proven guidance and best practices to support your cloud migration process. The framework has a modular structure with six main phases starting with the 'define strategy' phase and continuing all the way to ongoing 'governance' and 'management' of cloud operations. It also includes tools and templates to accelerate your cloud adoption. This e-book will mainly focus on the 'adopt' phase of the framework, but for more information on the process please visit the [Cloud Adoption Framework website](#), or explore the [Cloud Migration Simplified e-book](#).

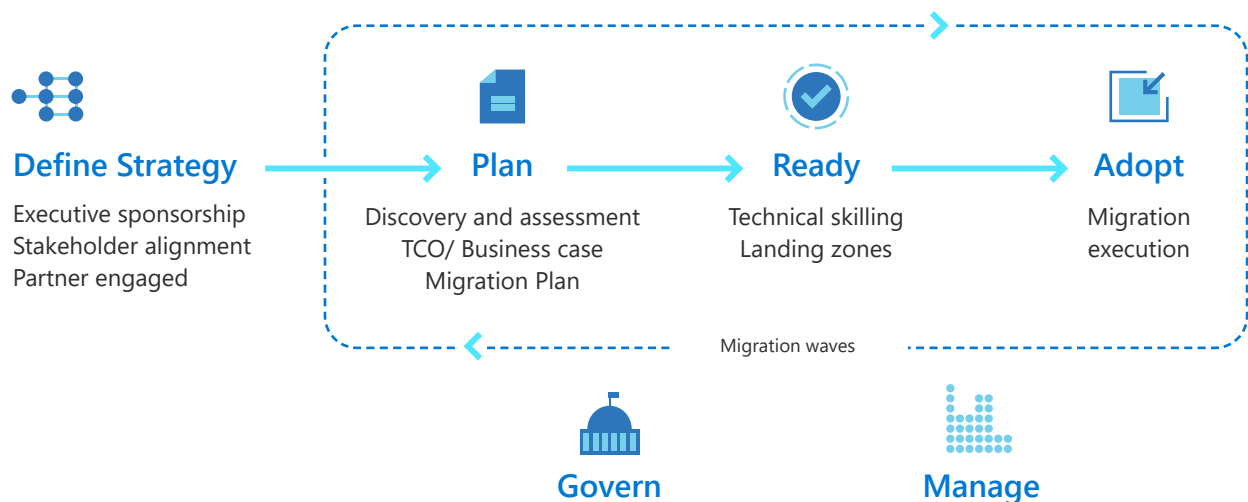


Figure 1: Common migration path

While the Cloud Adoption Framework provides end-to-end guidance for all types of migrations, we will also provide guidance on specialized database migration tools that may be different based on your scenario. You'll see these tools referenced throughout the e-book where they might come in handy.

# 02 Plan

## Make a case for database migration



Create a business case using the [Azure TCO Calculator](#) to estimate savings

238%

[ROI with Azure SQL Managed Instance<sup>2</sup>](#)

40%

[increase in DBA productivity with Azure SQL DB Managed Instance<sup>2</sup>](#)

Migrating workloads to the cloud can be a big step forward for your nonprofit. The cloud makes it easy to modernize your apps with innovative data technologies. It improves data management and security through integrated, managed services. And it helps you lower your overall costs.

By starting with a clear understanding of what you want to achieve, you can track and monitor your plan's success and build on it as you go. Some popular goals for migration include:

- Spend less time managing on-premises infrastructure and upgrades
- Reduce security risks through automatic security updates and patches
- Protect against threats posed by running end-of-support software
- Eliminate large, upfront investments for hardware and software
- Improve transparency into operational costs
- Decrease time to offer new services and react quickly to the changing needs of your constituents
- Engage donors, beneficiaries, and volunteers quickly across the globe

Connect with a [Microsoft Azure Partner](#) to prioritize workloads to migrate and build a migration plan that meets your organization's goals.

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<sup>2</sup> [The Total Economic Impact™ of Migration to Microsoft Azure SQL Managed Databases, a commissioned study conducted by Forrester Consulting, March 2020.](#)

## Start with the end in mind

Microsoft Azure offers just-right cloud options to help you get the most value from each individual database while ensuring a consistent experience across your hybrid estate.

You can accelerate your migration using proven strategies that support legacy database systems—SQL Server, as well as open source databases like PostgreSQL, MySQL, MariaDB, or NoSQL—and competitive databases, such as Oracle or IBM.

After you've taken stock of your data estate using [Azure Migrate](#) and determined which apps and corresponding databases you want to move, you'll need to know where they're going. Use the table on the next page to match your existing on-premises database with your target cloud database.

### Still need to assess your app?

To begin the discovery phase of your cloud migration, visit the [Azure Migrate](#) and [Azure Site Recovery](#) pages.
















	 Azure SQL DB & SQL DB MI	 SQL Server on Azure VMs	 SQL Data Warehouse	 Azure DB for PostgreSQL	 Azure DB for MySQL	 Azure Cosmos DB
 Microsoft SQL Server	✓	✓	✓			
 ORACLE	✓		✓	✓		
 DB2	✓					
 MySQL					✓	
 PostgreSQL				✓		
 mongoDB						✓
 cassandra						✓
 Access	✓					
 Microsoft Azure Table Storage						✓

Figure 2: Suggested migration paths for existing databases

Note: Our tools also support upgrade of on-premises databases



# 03 Ready

## Preparing your environment

To ensure a seamless migration, consider setting up a landing environment in Azure which supports agility and innovation and at the same time provides protection through proper governance, management, and operations. Azure landing zones help build a cloud environment aligned to the optimal technology operations specific to your needs in the cloud. They provide a clear architecture, reference implementations, and code samples to create the initial cloud environment. Review the various [implementation options](#) available with Azure landing zones to best suit your specific cloud adoption needs. To learn more about Azure landing zones, check out the [Ready section](#) of the Cloud Adoption Framework.

As you set out to prepare your environment, refer to the [Azure setup guide overview](#) for guidance on managing access, planning governance and compliance, and balancing cost and billing considerations.



# 04

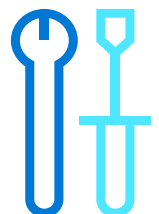
## Adopt

Once you have done the preliminary work to plan and prepare for cloud adoption, it's time to move into the core part of your migration. In this section, we'll share guidance specific to moving your database to the cloud.

### Get acquainted with Microsoft migration tools

Microsoft offers free tools to help simplify your database migration—many of which provide more than one service. Below is a list of the key tools that will be mentioned throughout the rest of this guide.

To stay up to date with the latest tools available and receive guidance on how to use them, visit: <https://docs.microsoft.com/data-migration/>



Use Case	Tool(s)	Description
For discovery and inventory of data assets across your entire IT environment and assessment of SQL Server migration readiness.	<a href="#">Azure Migrate</a>	<p>Azure Migrate helps you migrate on-premises virtual machines to Azure. It performs a complete data environment assessment, provides migration recommendations and offers migration guidance.</p> <p>Take advantage of Data Migration Assistant (DMA), which can be installed from Azure Migrate. It helps you identify the optimal Azure migration target and size, and detects compatibility issues that can impact database functionality in Azure SQL.</p>
For assessing readiness and migrating between different database platforms.	<a href="#">Microsoft SQL Server Migration Assistant (SSMA)</a>	SSMA helps with assessment of existing databases and automates schema conversion from Microsoft Access, DB2, MySQL, Oracle, and SAP ASE (Sybase) to SQL Server or Azure SQL Database.
	<a href="#">Data Access Migration Toolkit</a>	The Data Access Migration Toolkit provides tools to help migrate application source code from one database platform to another. Discover and extract SQL queries from files using APIs.
For validating workload performance on your migration target.	<a href="#">Database Experimentation Assistant (DEA)</a>	DEA evaluates a targeted version of SQL Server for a specific workload. It provides useful data metrics such as queries with compatibility errors and degraded queries and query plans to help you make the best choice.
For performing near-zero downtime migration to Azure.	<a href="#">Azure Database Migration Services (DMS)</a>	DMS offers a fully managed, end-to-end migration service with near-zero downtime. DMS provides rich orchestration capabilities to group together multiple database migrations. It supports PowerShell comandlets and REST APIs to automate migrations at scale.

## Assess your current on-premises environment

Discover, evaluate, and map your data estate to build an informed migration plan.

Perform an assessment of your entire data environment and plan your migration to Azure using Azure Migrate to create a holistic view of your on-premises IT infrastructure. [Azure Migrate](#) can discover and assess on-premises VMware VMs, Hyper-V VMs, and physical servers in preparation for migration to Azure. Azure Migrate also gives you access to tools for application and database assessments, including Data Migration Assistant (DMA).

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Not sure which is the best tool to use for your database conversion?

Check the [Data Migration Guides](#).

**Choose your database migration path** and plan to mitigate issues.

Use the Data Migration Assistant ([DMA](#)), accessed from the Azure Migrate tool, to evaluate your database, get recommendations for the Azure target and size of the migration environment, and surface new features that might benefit your data post-migration.

The Database Experimentation Assistant ([DEA](#)) shows you exactly how your workload will perform in the new target location, so you can decide the best way to move it. DEA captures the workload and replays it on your targeted cloud environment, providing you with specific insights.

**Assess other database management systems** to ensure compatibility.

Migrate from other relational database management systems such as Oracle, Sybase, and IBM DB2 to SQL Server in a VM using the Microsoft SQL Server Migration Assistant ([SSMA](#)). To migrate from Cassandra to Azure Cosmos DB, follow the [documentation](#) on using the Cassandra API.

## Migrate your databases to Azure

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Interested in scaling and optimizing your application for the cloud using rearchitecting and rebuilding migration strategies?

[Read up on migration strategies.](#)

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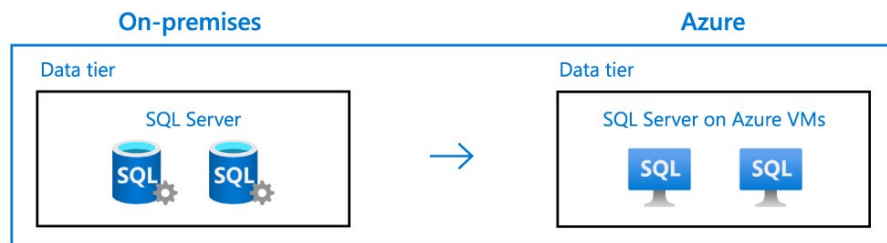
Also called the “lift and shift” migration path, rehosting allows you to migrate your existing database as-is without any code changes.

After assessing your database, the next step is to migrate your database using one of the two most popular database migration strategies, rehosting (“lift and shift”) or refactoring. Azure offers migration tools designed to help you get to the cloud faster and more intelligently.

### Migrate your databases by rehosting or refactoring

Migrate multiple database sources to Azure data platforms with minimal downtime using the fully managed Database Migration Service (DMS) for rehosting or refactoring. Database Migration Service supports multiple, simultaneous migrations at scale.

### Rehosting sample path



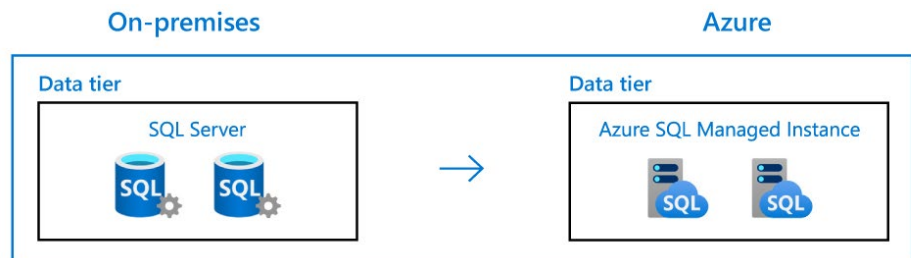
Ideal for:

- App and database requiring OS-level access
- Databases that have requirements best met by SQL Server on Azure Virtual Machines
- Apps architected to leverage the scalability of Azure IaaS (Infrastructure as a Service)

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Refactoring involves making some changes to the database and application design, but no wholesale changes to its code.

### Refactoring sample path



Ideal for:

- Modernizing apps quickly with services such as Azure App Service and Azure SQL Database or Azure SQL Managed Instance
- Addressing code portability concerns that necessitate using the existing codebase and development skills
- Using DevOps and containers to help drive continuous innovation
- Use in conjunction with the [App Service Migration Assistant](#) tool for migration to Azure App Service

## Optimize your databases to maximize your investment

Optimize performance of your migrated databases using Azure tools and services. Long after migration, you can continue to use these services to improve the ongoing value and performance of your cloud databases.

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Welcome to Azure!  
Let's make your  
database hum.

**Complete the migration process** with database optimization

- Run functional and performance tests immediately post migration (User Acceptance Testing).
- Use Intelligent Insights to monitor and troubleshoot database performance with customized recommendations for [Azure SQL Database](#) and [Azure Database for PostgreSQL](#).
- Assess what new features may be available on the target platform via a few clicks in the [Azure Portal](#).

Continue to optimize your cloud investment

- **Monitor your cloud spend** with [Azure Cost Management](#).
- **Lower out-of-pocket expenses** through the
  - [Azure Hybrid Benefit](#).
  - [Azure Reserved Virtual Machine Instances and SQL Database and Cosmos DB reserved capacity](#).
- **Identify security threats** using [Azure Security Center](#) with Advanced Threat Protection.
- **Avoid costly mission disruptions** and errors with [Azure Backup](#).
- **Ensure mission continuity** during outages with [Azure Site Recovery](#).
- **Track the health and performance** of your cloud services with [Azure Monitor](#).

# 05

## Customer case studies

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[American Cancer Society remains resilient, battles cancer through a digital-first strategy](#)

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[Digital transformation fuels the Arthritis Foundation's mission to improve quality of life and advance the search for a cure](#)

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[Boys & Girls Clubs of America serves youth most in need via a user-friendly, cloud-based platform](#)

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[American Council of the Blind scales up with accessible technology](#)

Explore more customer case studies >







## American Cancer Society remains resilient, battles cancer through a digital-first strategy

American Cancer Society funds and conducts research, supports patients, and educates the public to help people live free from cancer. Its recent digital transformation helps the nonprofit drastically reduce overhead, raise more money in a changing fundraising climate, and make each dollar raised stretch further. By adopting a cloud-first posture, American Cancer Society embraces efficiency and innovation in its battle against cancer.

[Read more >](#)

**“Microsoft and our partner Redapt were knowledgeable in not only the cloud but also security. By working with them, we didn’t have to go through a learning curve.”**

Keith Weller, Vice President of Enterprise Technology Services,  
American Cancer Society



## Digital transformation fuels the Arthritis Foundation's mission to improve quality of life and advance the search for a cure

The Arthritis Foundation serves people affected by arthritis and works to find a cure for the condition. One in five people lives with some form of arthritis. The Arthritis Foundation has embraced the three Microsoft clouds—Microsoft 365 productivity tools, Azure, and Dynamics 365 in its digital transformation. The nonprofit's pioneering work, combined with a seamless ecosystem of technology, is resulting in better collection and use of data, deeper relationships with supporters, and a savings of more than \$1 million.

[Read more >](#)

**"It was evident that embracing modern tools and technology was essential to our future. Microsoft and its collaborators provided the solution."**

Andy Gammuto, CIO,  
Arthritis Foundation



**BOYS & GIRLS CLUBS  
OF AMERICA**

## Boys & Girls Clubs of America serves youth most in need via a user-friendly, cloud-based platform

Boys & Girls Clubs of America rebuilt its MyFuture platform on Microsoft Azure in 2019. The responsive and highly secure platform has allowed more than 3,200 Clubs to reach members even when Clubs had to close during the COVID-19 crisis. The cloud platform will continue to connect members with staff, enable employees to customize the online experience of individual Clubs, and provide relevant programming to youth—now and after Clubs reopen.

[Read more >](#)

**“Like the rest of the nation and world, the biggest challenge we face is the lack of ability to come together. That’s where we’ve had to innovate.”**

Jim Clark, Chief Executive Officer,  
Boys & Girls Clubs of America



## American Council of the Blind scales up with accessible technology

American Council of the Blind is driven to support and advocate for all people who are blind or visually impaired. Yet its technology infrastructure held the nonprofit back. As part of its strategic plan, American Council of the Blind invested in Microsoft Azure and Microsoft Office 365. With more reliable and secure technology, it advances its mission and serves more people.

[Read more >](#)

**“The server stayed lightning fast, without a measurable difference from day-to-day performance. [Azure] is costing us literally half of what we were paying with our other provider, but we’re getting four to five times the value in performance.”**

Jeff Bishop, Board Member,  
American Council of the Blind

# 06

## Azure Training for Nonprofits

Empower your staff with many free and low-cost courses, demos, and trainings so you can advance your mission with cloud-powered technology.



### [Azure fundamentals](#)

Interested in the cloud, but aren't quite sure what it can do for you? Start with this set of modules that cover the basics and will help prepare you for more advanced Azure courses and certifications.



### [Digital transformation with Azure](#)

Dive deeper into how Azure can help you achieve your mission through data insights, artificial intelligence (AI), and the Internet of Things (IoT).



### [Securing your cloud application](#)

Learn how to secure your Azure apps and all your data with encryption, certificates, and policies in this set of modules.

Explore more nonprofit digital skills training and courses >

# 07

## Start your move to the cloud with our Azure Grant

Nonprofit organizations are eligible for our annual Azure credit grant. Explore how your institution can access the complete portfolio of Azure products and cloud services.

Get started with Azure >

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[Learn about the application migration process at the Azure migration center](#)

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[Find step-by-step guidance in the Azure Data Migration Guides](#)

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[Read answers to common questions on the Database Migration Service FAQ page](#)

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[Nonprofit Azure Onboarding Concierge and Success Center](#)

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[Connect with a Microsoft Azure Partner to support your nonprofit](#)

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### Contact us

Contact us to learn about nonprofit offers for your organization

Visit [Microsoft.com/nonprofits](https://Microsoft.com/nonprofits)

Submit an inquiry at [aka.ms/nonprofits.contact](https://aka.ms/nonprofits.contact)

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