Pegasus One

The Benefits of a
Cloud Migration
from On-Premise Microsoft SQL
Server to Azure

The future of database management is undoubtedly the cloud. According to Gartner, 75% of all databases will be deployed or migrated to a cloud platform by 2020, with only 5% continuing to use a fully on-premise solution. If your organization is utilizing on-premise Microsoft SQL Server, you should strongly consider a cloud migration to Azure SQL Server to enable intelligent, scalable database services. Microsoft's on-premise infrastructure, though widely popular and reliable, comes with a wide range of challenges that often frustrate organizational productivity and profitability. Its cloud alternative, Azure, provides the broadest SQL Server engine compatibility and is ideally suited for organizations looking to scale business operations.

Below, we will outline some of the key differentiating factors between on-premise and Azure Microsoft SQL Server in order to help you determine the quantifiable benefits of migration for your organization.

Scalability and Availability

As most Microsoft SQL Server users are already aware, scalability is perhaps the biggest challenge associated with on-premise databases. Adding resources is costly and time-consuming, and it is difficult to reduce capacity during times of low server demand. Open-source databases, however, allow your data to be backed up in more than one geographic location, which is ideal for organizations that want to expand or adjust processing power as needed. Azure SQL Database enables unmatched scalability for computing and storage without compromising performance or disturbing operations.

Azure supports both vertical and horizontal scaling without the costs your organization dreads. Scaling up refers to the process of adding resources to a database in order to provide more computing power and is generally done when your workload hits a performance limit. Azure enables you to choose how many CPUs and how much storage you need, and to dynamically change these parameters as required. Scaling out, on the other hand, refers to the process of adding databases and sharding data into multiple database nodes. This is typically done when scaling up is insufficient. For example, Azure has a maximum single-database storage size of 1 to 4 TB; however, you can scale beyond this restriction by distributing your data across multiple instances.

Scaling is much easier in Azure as compared to its on-premise counterpart because it eliminates the downtime and physical expansion necessary for higher throughput. Cloud computing allows your organization to be flexible and cost-efficient at all stages in your business development.
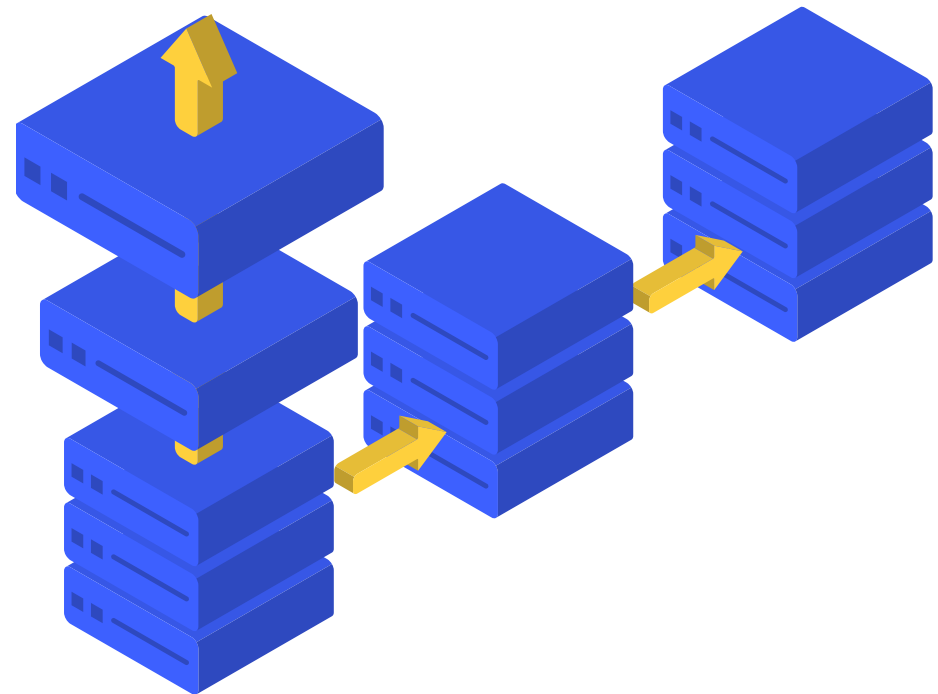
Flexible Pricing Structure

Scaling on-premise Microsoft SQL Server requires purchasing new servers or data warehouses, which often cost tens if not hundreds of thousands of dollars and is, of course, irreversible. In order to make Azure SQL attractive for organizations of all sizes, Microsoft has developed a pay-as-you-go pricing structure, with costs starting at $4.99 per month. You can easily calculate your estimated cost savings as compared to on-premise SQL Server using Azure's TCO calculator, which recommends a set of equivalent Azure services that will support your applications. Furthermore, cloud computing eliminates financial concerns related to on-premise computing such as depreciation, obsolescence, and replacement. If you are debating between cloud solutions, it is important to note that Azure is cheaper than its Amazon alternative, AWS, largely due to the fact that Amazon requires organizations to repurchase existing licenses. Azure provides one of the best price-to-quality ratios in cloud computing, marrying affordable pricing with outstanding computing power and intelligent processing capabilities.
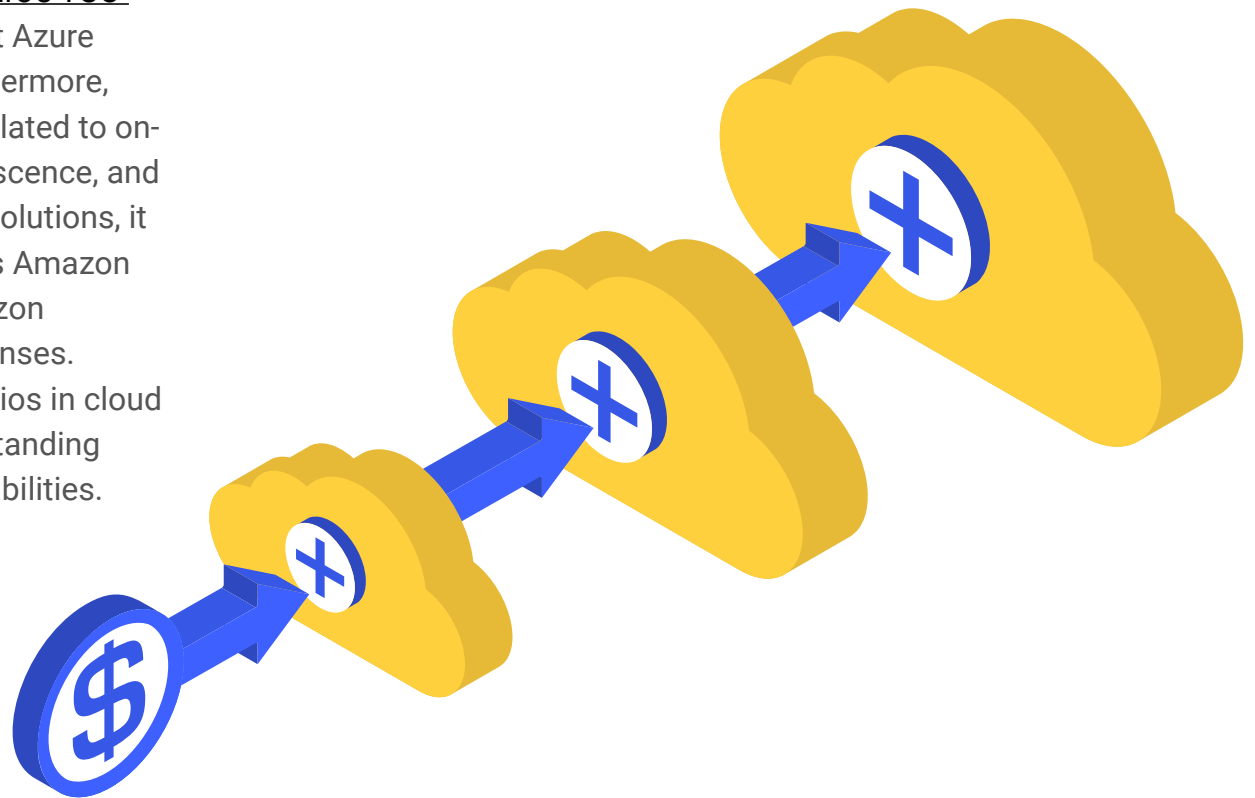
Built-In Intelligence

Azure SQL Server includes a wide range of intelligent capabilities, such as machine learning and adaptive technologies, that are guaranteed to benefit your organization. Microsoft continually improves upon Azure AI to make it easy for users to deploy and manage AI functions directly from their applications.

Azure Cognitive Services allows organizations to build applications with custom capabilities like vision, speech, language, and search. For example, Anomaly Detector identifies unusual patterns or rare events in your database activities to detect irregularities in your processing and ensure high data accuracy. Azure also now supports intelligent performance features, which provide deep, actionable insights and performance recommendations to optimize your data structure. For example, intelligent query processing, such as approximate counts and interleaved execution, improve the performance of existing workloads with minimal efforts on your end. This allows your IT team to focus on core business objectives and high-level optimization efforts instead of getting bogged down with performance tuning.
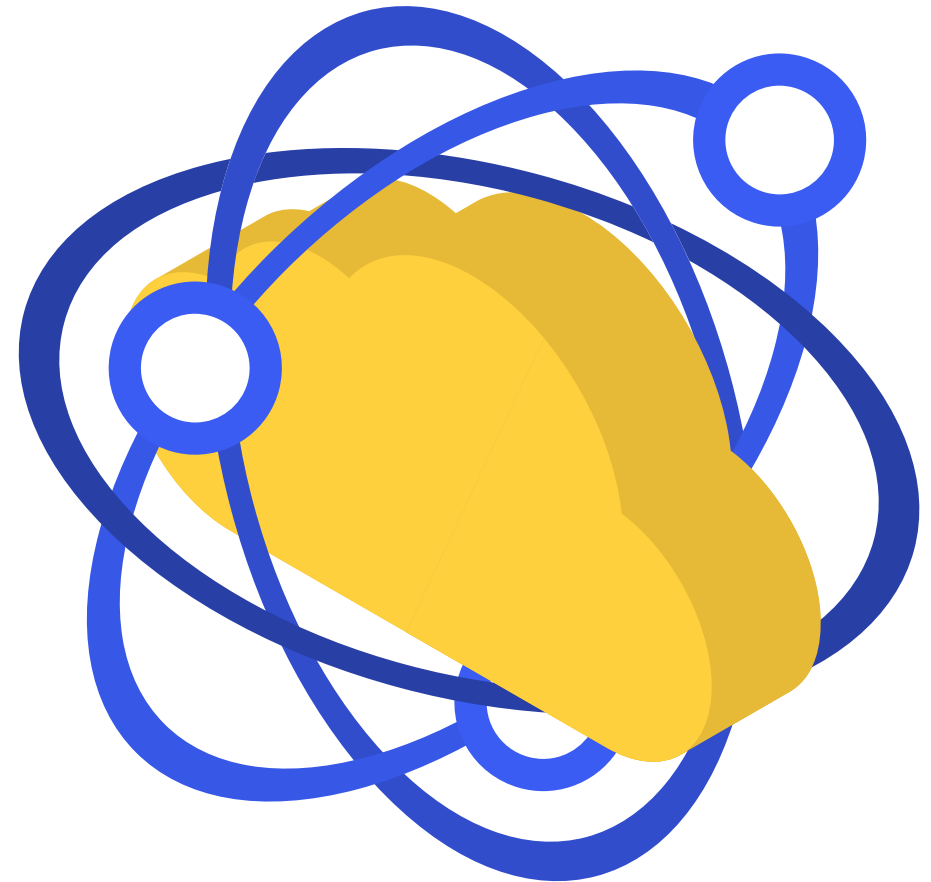
Azure Machine Learning allows organizations to build and train machine learning models to improve business processes. This feature can be used for deep, supervised, and unsupervised learning. Many organizations looking to take advantage of Azure Machine Learning typically work with outsourced software developers that specialize in artificial intelligence and are able to build and deploy models tailored to their business needs.

Overall, cloud-based computing is much better suited for business intelligence tools. There are countless other intelligence features included in Azure SQL Server that are not included within this section but could prove instrumental for your organization.
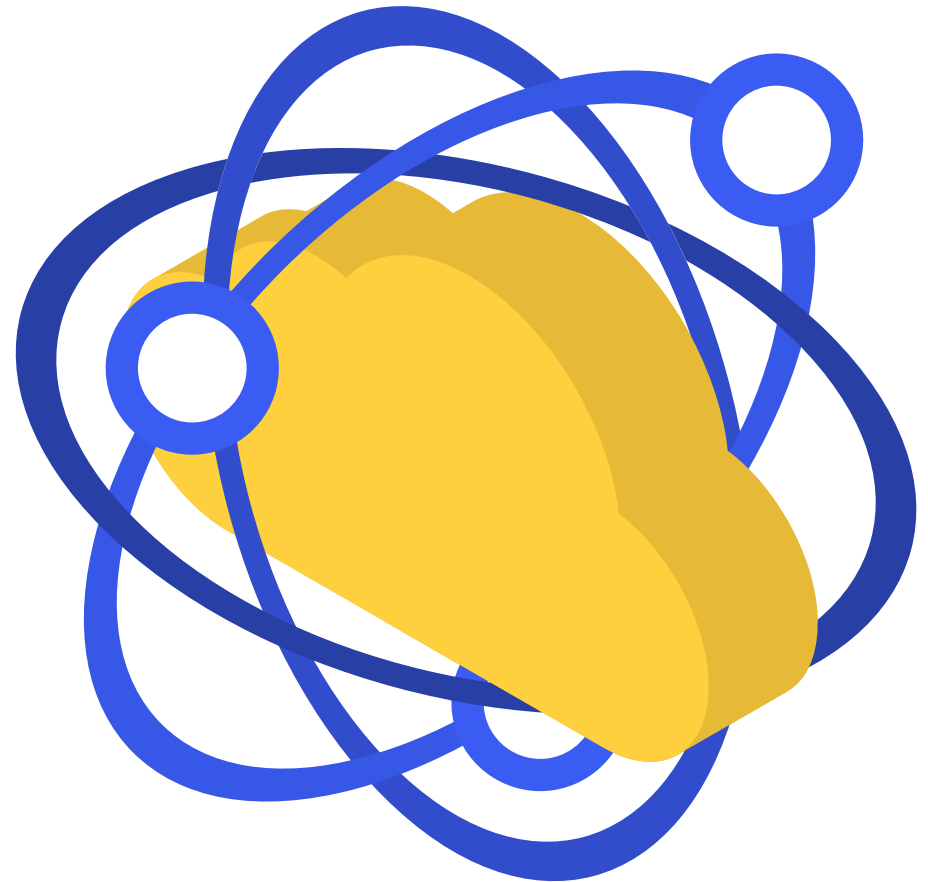
Data Security

Data security is typically the primary concern for organizations considering a migration from an on-premise solution to a cloud platform. Given the open-source nature of cloud computing, many organizations worry that they are exposing themselves to hacking. However, these concerns are largely unfounded, particularly when it comes to Azure SQL Server, which has proven to be more secure than its on-premise alternative.

Azure's Active Directory, a multi-tenant directory system and identity management service, offers a full suite of security measures including device registration, multi-factor authentication, and role-based access control. These services ensure that only the most qualified people have access to your confidential information.

Even though the network is shared, Microsoft has several mechanisms in place to ensure customers' data remains segregated and secure. The customer networks are segregated from both each other and from management networks in order to prevent targeted attacks and confidential data loss.

Furthermore, security controls are integrated into Azure's firmware and hardware. Microsoft recently announced Project Cerberus: a chip made up of CPU, memory, and programmable input/output that protects against unauthorized access and malicious updates. Microsoft has also recently introduced Advanced Data Security, a unified security package used to monitor, track, detect, and prevent malicious activities. The package includes functionalities that assess your data patterns to identify potential weaknesses in your code. For example, the threat detection feature analyzes your workload and sends alerts if a dangerous action (such as a SQL Injection attack) is found.

Last, but certainly not least, Microsoft has over 3,500 cybersecurity experts who work on your behalf around the clock to identify possible vulnerabilities in Azure and defend against attacks. This team is constantly optimizing the Azure operational security process to protect your infrastructure.

Frictionless Migration

Azure was modeled after Microsoft SQL Server and thus is designed to be highly compatible with on-premise databases to facilitate a frictionless transition. Azure fully supports both MySQL and PostgreSQL, meaning you can preserve the functionality of your pre-existing applications on those systems in the cloud. Organizations can either opt for an online or offline migration, each of which comes with its own set of benefits. For those undertaking the migration internally using an in-house team, offline migrations are typically preferred despite the longer downtimes.

When migrating to Azure, however, most organizations benefit from working with an experienced, Microsoft-certified partner that assesses and manages workloads for optimized performance and can perform a seamless online transition. This is especially true for organizations wishing to migrate hundreds or thousands of applications to the cloud without impacting core business operations. When choosing a partner, make sure you are fully aligned on outcomes and timelines for swift, smooth results and full project transparency.
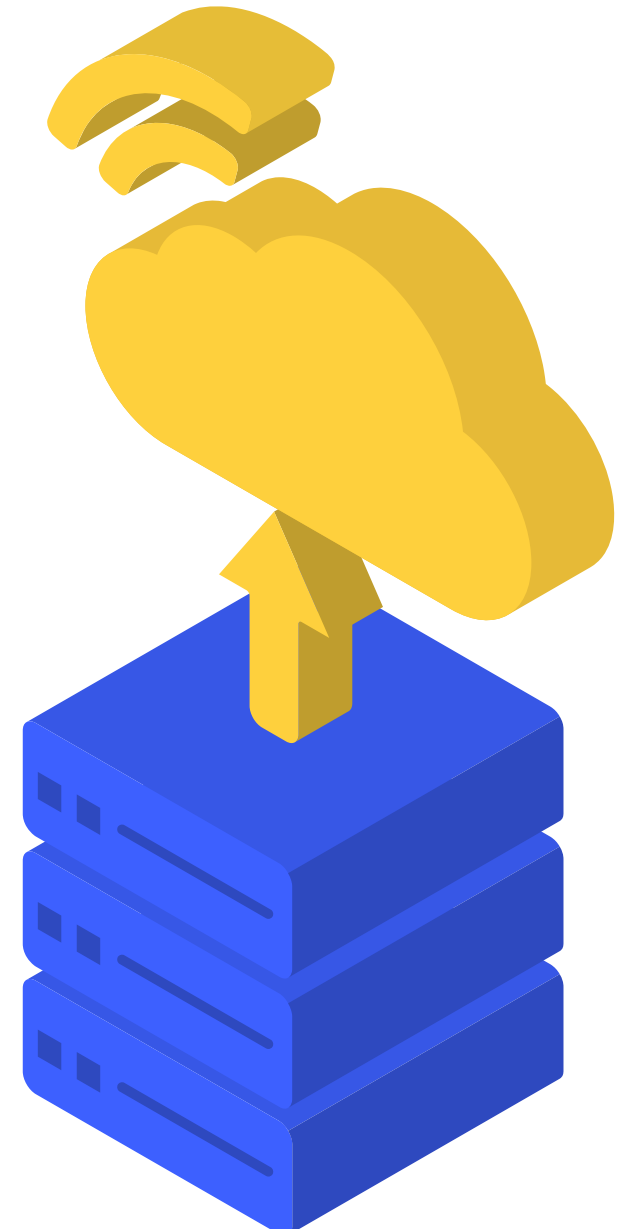
It is important to note that, although Azure SQL Server is the right database choice for most organizations, it is not ideal in all situations. Some features of SQL server are not available in Azure, so you need to carefully determine whether these are critical to your business functions and needs. If so, we recommend a hybrid database infrastructure that combines both on-premise and cloud solutions. To learn more about the benefits of an Azure migration for your organization, request a consultation with one of our Microsoft experts.