WHITE PAPER

Accelerating Cost-effective Start-up Growth

How Digital-native Startups Leverage Enterprise-grade Capabilities of Azure Cosmos DB to Scale Up

By Stephen Catanzano, Senior Analyst

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Executive Summary

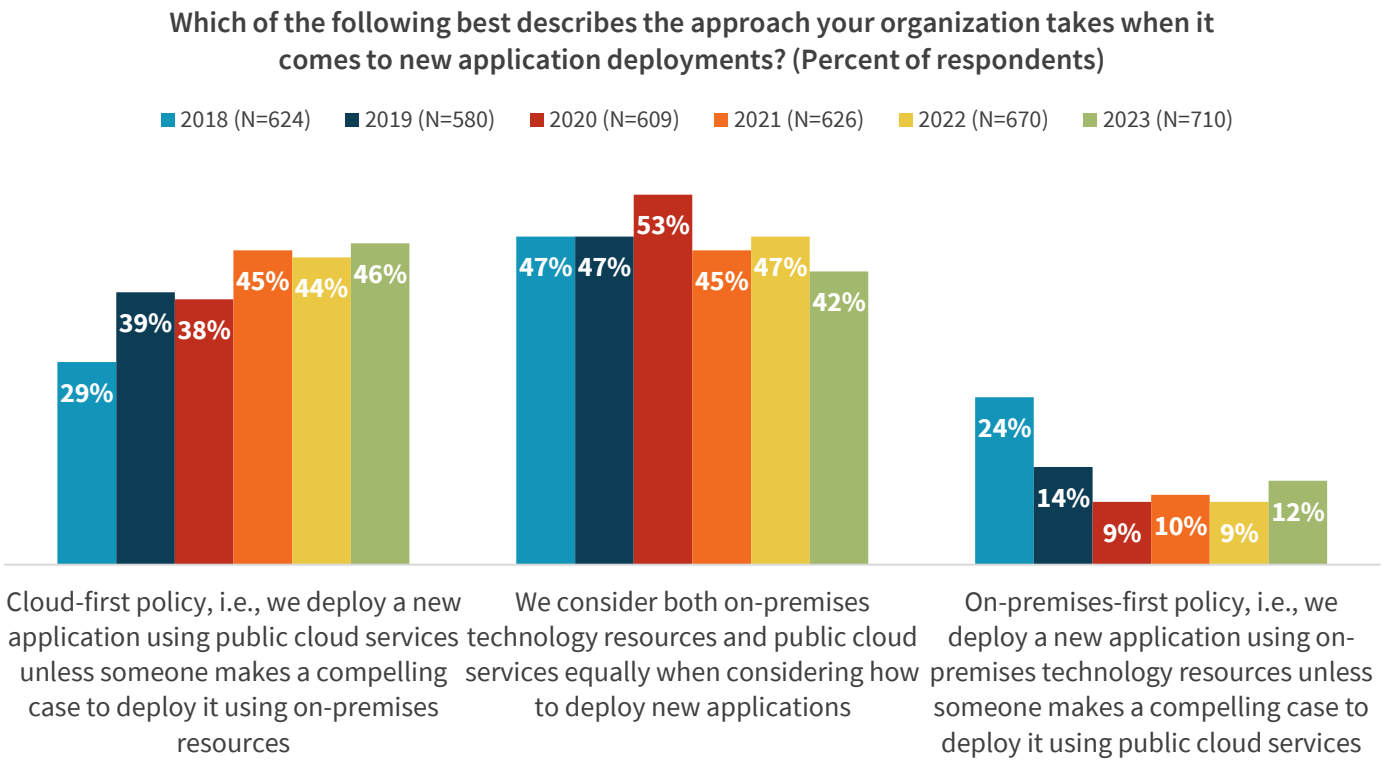
Startups are turning to Microsoft Azure to develop and deploy their applications and leverage enterprise-grade capabilities. The Azure cloud offers cost-effective scale, security, global services, guaranteed performance, and availability to empower startups from concept to their final phase as large-scale global operations. This white paper explores how Azure enables a new generation of digital-native startups to prepare for hyper-growth. These startups can access Azure's leading enterprise-grade technology, features, and capabilities, which would not be available to these smaller companies if it were not for the cloud. Traditionally this tech was only accessible to huge enterprises. Still, public cloud service offerings have changed the game by making tech available to all.

By acquiring this technology on a pay-as-you-grow model on Azure, startups get enterprise technology from day one and can cost-effectively scale up as they grow. At the core of the application efforts at many of these startups is Azure Cosmos DB, Microsoft's fully managed and serverless distributed database for modern app development, which supports NoSQL and relational workloads in a single database. Azure Cosmos DB amplifies the flexibility and scale-up needed by startups with the ability to pivot, expand, and become dynamic organizations.

Startups Lead Technology Innovation

Leveraging cloud capabilities is at the core of today's startups, and organizations overwhelmingly have a buying preference for cloud-based solutions. As shown in Figure 1, 46% of respondents to a recent research survey by TechTarget's Enterprise Strategy Group (ESG) described their 2023 strategy for new applications as being cloud-first, and another 42% said they would consider cloud or an on-premises solution equally.[1] Building cloud-native applications is crucial for startups.

Figure 1. Startups Are Increasingly Adopting a Cloud-first Policy



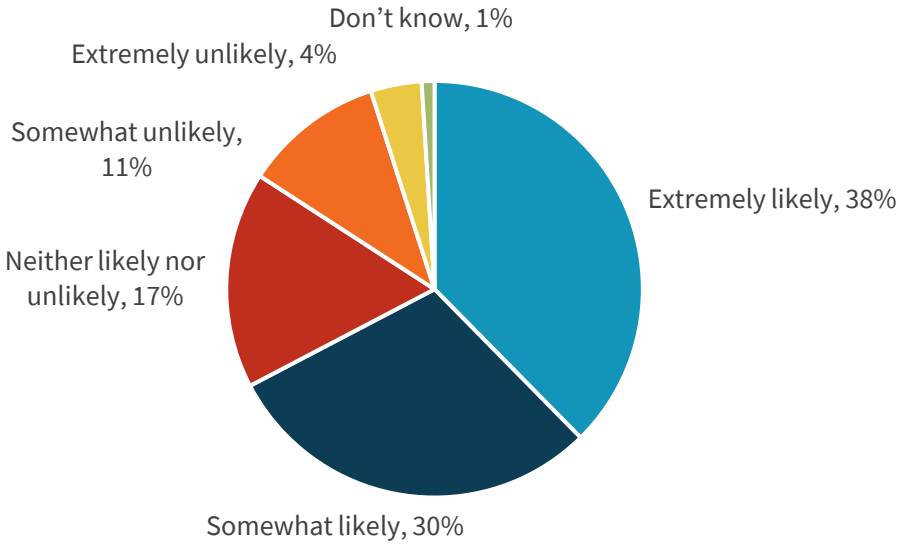
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

[1] Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey*, November 2022.

According to ESG research, 68% of organizations said they would likely consider a startup vendor for technology purchases over the next 12-18 months.[2] But it's also important to consider that organizations look for more enterprise-grade solutions as budgets contract. Working on Azure and leveraging Azure technology may create a competitive advantage for startups.

Figure 2. Startups Still Favored in Uncertain Times

Given the current macroeconomic climate, how likely would your organization be to consider a startup vendor for technology purchases over the next 12-18 months? (Percent of respondents, N=742)



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Azure Cosmos DB for Application Development

The right database is at the core of application development and data management. Azure Cosmos DB helps startups build apps fast with a cost-effective and scalable distributed database. Modern life is app-centric, with business and personal life reliant on applications. For businesses, innovation is brought to life through apps as they find new ways to remain competitive and ensure business continuity during uncertain times.

Azure Cosmos DB is designed to manage high volumes of data from many disparate sources and dynamic schema to handle lots of different types of data with consistent scalability, availability, and elasticity to meet the requirements of modern application developers. Azure Cosmos DB provides the horizontal scalability of NoSQL systems and the ACID transaction compliance and relational data modeling of relational databases. As a distributed database with automatic and instant scalability, and SLA-backed guarantees, Azure Cosmos DB empowers developers with the following:

- Faster time to market with simplified app development: New applications are brought to market faster with support for familiar database engines such as open source PostgreSQL, MongoDB, Apache Cassandra, and more. Using Azure Synapse Link, organizations can gain insight into real-time data with no-ETL analytics.
- Fully managed database and cost-effectiveness: Azure Cosmos DB is a fully managed Azure service that saves time and money with serverless and automatic scaling; free options to match TCO (total cost of ownership) needs; and end-to-end database management.

[2] Source: Enterprise Strategy Group Complete Survey Results, *2023 Technology Spending Intentions Survey*, November 2023.

- Business-critical readiness: Azure Cosmos DB provides guaranteed application performance at any scale with continuous backup, up to 99.999% availability, and enterprise-level security for every application.
- Speed at scale: Azure Cosmos DB delivers SLA-backed speed and throughput for NoSQL workloads, fast data access, and instant elasticity for applications of any size or scale.

Azure: Enterprise Value for Startups

One mistake many startups make is focusing on meeting their near-term goals and not thinking about the long-term plan for their cloud-native applications or how they will build trust with their future customers, achieve cost-effective scale-up, and more. Typically, when you're looking to create a large-scale, globally distributed application, it's accompanied by many factors that start-ups should consider right from the beginning. Enterprise Strategy Group interviewed several startups using Azure to learn what their essential considerations were when working with Azure in order to prepare for long-term success.

Consumption-based pricing models – We found this to be a consistent requirement from very cost-conscious startups as they build their technology, prototypes, and go-to-market plans. To manage their burn rate (monthly cash spent), expenses must scale with consumption and revenue. These are some of the ways startups we spoke with use Azure to control costs:

- Free tiers: Azure offers free tiers for developing and testing applications with small workloads, making it free to start development. This includes the option to use Azure Cosmos DB with the first 1,000 RU/s and 25 GB storage for free each month.
- Serverless: Applications operating a serverless framework enable startups to run low-traffic, bursty workloads at a minimal cost. With a serverless model, organizations pay only for consumed resources, with no minimum.
- Autoscale: Startups can run applications using the CPU and memory needed for steady-state operations and leverage autoscale to scale resources up and down as required to meet demands, while keeping costs low. This eliminates the need to size a server for peak demand and prepare for unexpected demand.
- Reserve capacity: As technology needs become more predictable, startups can save up to 65% on database operations with a one- or three-year provisioned throughput reserved capacity commitment.

Enterprise-grade technology – Startups discussed the importance of using the same technology as large enterprises. They felt that if they weren't building on Azure, they wouldn't have access to the same technologies used by many of their future customers with whom they want to build trust. Startups access a full suite of Microsoft solutions, with SLAs and guaranteed performance, APIs and SDKs for development with Azure solutions, and an extensive ecosystem of partner technologies. This includes Azure Cosmos DB as a unique and versatile database offering both NoSQL and relational database capabilities.

Other important considerations were Azure's extensive security, compliance, and governance features to help organizations as startups and throughout their growth. Startups felt this gave them a significant advantage when building and scaling their business, enabling them to use the skills they already have and the tools they already know. Microsoft Azure delivers on the promise of enterprise-class performance, reliability, and support.

Trusted partner – Startups found that working with Microsoft Azure and Azure Cosmos DB has tangible and intangible benefits. Some tangible benefits include its programs for startups, its ability to scale on demand cost-effectively, and other services and technology designed for effective operations. These are in addition to a large ecosystem of on-demand

technology ready for use as the business scales up. The intangible can be equally as important. Building on Azure creates trust with future customers, especially ones who also trust Microsoft and Azure for their infrastructure and services.

Many startups began with Azure and joined the Azure Founders Program. The program helps startups build enterprise-scale applications, combining financial, technical, and knowledge resources to enable startups to move from ideas to scale quickly. Some of the key aspects of the program include:

- Financial assistance: Azure credits are given to startups, ranging from an initial $1,000 and scaling up to $150,000 as organizations scale up on Azure. There is no outside financing required for a startup to begin its development on Azure.
- Productivity & development tools: Startups are given free access to powerful development and productivity tools, including GitHub and Microsoft 365.
- Mentorship: Startups receive mentorship guidance from business leaders and technical experts.
- Partner offers: Many Microsoft partners provide helpful technical and business solutions to startups through the Microsoft network.

We heard from startups that leveraging enterprise-grade technology with the ability to buy the technology on a pay-as-you-go basis, along with scale-up and scale-down capabilities to manage cost and growth, were important considerations in their decision to choose Azure and Azure Cosmos DB. Additional top criteria included the ease of use and versatility the startups found with Azure Cosmos DB as a combined NoSQL and relational database. All of this, bundled with a founders program designed to help startups build and grow gradually, is a winning combination for startups.

Startups and Growing Businesses Benefit from Enterprise-level Features

Startups and other rapidly growing businesses have joined Azure to leverage enterprise features, which provide organizations the ability to scale up quickly as they build their businesses. Often, Azure Cosmos DB is at the core of the business. Enterprise Strategy Group interviewed staff at the following companies utilizing Azure and Azure Cosmos DB to understand the value they realized as they started and scaled their companies.

Rx.Health

Rx.Health is an automated clinical care coordination platform built on Azure technology. The platform was created by a group of visionary clinicians and technologists who came together to solve multiple healthcare issues requiring scalability, security, and increased patient care access. The idea was to create a solution to monitor and engage patients outside the hospital walls in order to manage their diseases better in chronic and episodical care and to provide it as automated messaging specifically created for the required care. They began four years ago and are achieving transformational success, having touched more than 1.8M patients in the last 12 months and expanding rapidly. Enterprise Strategy Group interviewed Sarthak Kakkar, the chief solutions architect, and Shashank Garg, the chief data scientist, to learn about RX.Health.

> **Knowledge is power, especially for patients and their clinical care teams dealing with common illnesses. Azure helped us cost-effectively go from startup to scale, where we can now put the latest health and wellness information in the hands of patients and caregivers, which is the key to helping them get well and stay well.**
>
> Sarthak Kakkar, Chief Solutions Architect, Rx.Health

As a startup, Rx.Health turned to Microsoft Azure as the foundational platform for its digital health unification solution to leverage enterprise-grade technology and prepare for the growth they are experiencing today. The company initially started a digital app formulary and then expanded to become a content development platform with more than 500 automated clinical care pathways available to the company's health plan, life science, and health system customers.

From the beginning, the team worked with Azure Cosmos DB and Azure native tools to create a blueprint for growth. Rx.Health knew that Azure would meet their immediate and long-term requirements. These requirements include scalability, availability, security, and compliance while managing costs as they scale the business. The company created a digital engine, the Rx.Health platform, to combine all the digital assets for a given patient, including access to the patient's electronic health record (EHR). It supports that functionality with a module used to simultaneously engage with large patient populations for universal health information, plus a host of related solutions. The digital engine delivers four solutions: Front Door, Clinical Navigation, Monitoring at Home, and Decentralized Trials.

How Azure and Azure Cosmos DB Have Helped

- Rx.Health platform uses Azure Cosmos DB as the primary transactional database due to its ability to scale rapidly, high availability, inbuilt security features for HIPAA and HITRUST compliance, data encryption, and flexible schema.
- RX.Health matches general patient data with corresponding EHR data to create a complete profile for each patient in an integration layer in Azure. That layer corresponds with the data access layer provided by Azure App Service, a fully managed platform that simplifies building and scaling apps.
- Data from multiple disparate sources such as EHR, claims data, remote patient monitoring data, and patient engagement data is stored in a combination of Azure Cosmos DB for MongoDB and Microsoft SQL Server. The entire data store ultimately rests in Azure to facilitate AI modeling to help predict specific clinical outcomes. With Docker on Azure deployed on App Service, the team gains the flexibility to support multiple container types and optimize costs.

Some additional enterprise-grade capabilities helped Rx.Health grow:

- Autoscale: This creates a highly efficient process, with fewer patient dropouts and high patient satisfaction. Azure Cosmos DB autoscales depending on the load, which helped Rx.Health scale and cost-manage a 23x increase in database interactions over the prior year.
- Serverless: Rx.Health transitioned to serverless in the past year and utilized Azure functions, API gateways, and Azure Bus to drive overall backend and communication. Serverless reduces costs and enhances scale.
- Replication: Encrypted data replicas can be made available in new Azure regions in a few clicks.
- Network security, data encryption, and data redundancy: Azure Cosmos DB is easy to configure to meet all the security standards, including network security, data encryption, and data redundancy. Azure Cosmos DB comes with inbuilt data encryption at rest and in transit by default. In the healthcare industry, ensuring data security and privacy is one of the biggest challenges, and with Azure, Rx.Health customers didn't have to spend additional resources to manage HIPAA and HITRUST compliance.
- Flexible schema: Azure Cosmos DB also provides Rx.Health with the ability to maintain a flexible schema to easily ingest data from various sources, including EHRs, remote patient monitoring, platform event data, patient engagement data, and more. Different systems have varying schemas, and Azure Cosmos DB enables quick adjustment to the schema to accommodate any new data stream.

The Postage

The Postage is a digital-estate startup that enables users to securely organize critical information, estate plans, and digital assets in one place. They provide peace of mind through information security and life-planning services, enabling users to protect their wealth and wisdom today and for future generations. As with most startups, the goal was to move quickly with a small team, delivering a highly interactive and secure solution. The Postage wanted to benefit from enterprise functionality but needed a way to achieve this as a startup with a limited budget and technical resources. They met their startup and long-term requirements using Azure Cloud with Azure Cosmos DB.

The Postage started as a direct-to-consumer business but always knew there were vast opportunities with adjacent industries, such as insurance, healthcare, and wealth management. While they never anticipated that the banking industry would be the perfect fit as their beachhead, they were able to expand quickly and drive exponential growth through these partnerships.

Due to its work on Azure, The Postage team was able to start small and adapt quickly to enable them to bring on financial institutions as partners. Because of their enterprise-level functionality, they had the credibility they needed to win these financial institution partners and achieve their goals. This strategy will help them as they scale, raise capital, and more.

Enterprise Strategy Group interviewed Emily Cisek, CEO, and Ken Myers, CTO, to gain insight from The Postage about working with Azure. The Postage manages its data using Azure Cosmos DB as a best-in-class solution on par with those historically only available to enterprises. With the ability to run structured logs, drill into errors, and mask confidential errors, Azure Cosmos DB has provided The Postage with the data management tools that have enabled them to grow and evolve. Azure Cosmos DB is at the core of The Postage's technology and business operations. Other Azure technologies used by The Postage include Azure SQL, Azure Storage, API Management, App Services, and DevOps to create web and mobile applications.

As a startup, The Postage needed a solution with no upfront capital costs that scaled spending as it brought in revenue to have a manageable cost-to-revenue ratio.

> **The key to our success was growing quickly and cost-efficiently with enterprise-level capabilities from the beginning with Azure.**
>
> Emily Cisek, CEO, The Postage

Scale with cost management – Autoscale for Azure Cosmos DB gave The Postage the power to purchase CPU capacity at a steady-state level, flex when bursts of traffic or significant events happened, and only pay for the actual capacity consumed. This was critical for a startup managing every penny, and The Postage described this as a huge selling point for any startup to choose Azure.

Security – The Postage deals with personal records, making security very important. Nearly every service can be locked down using API keys provided by Azure and IP filtering. API Management allows control to throttle requests and block attacks from getting to app services. The Postage reduces the risk of outages by spreading resources across different regions as needed. Azure Storage is used to isolate data, making it very hard for a significant data breach to occur. Organizations can use the built-in Azure portal to manage this efficiently without needing a dedicated systems administrator.

Expansion – The Postage has helped thousands of families with their planning services and has retained customers at a rate of more than 96%. With Azure infrastructure, The Postage can roll out new services to partners exceptionally quickly, which helps to drive revenue and growth.

Azure helped The Postage to create trust with its clients, which enabled the company to grow its customer base and cost-effectively scale its business.

Zero Friction

Zero Friction is a Belgian startup that solves a challenge in the energy sector with a unique software-as-a-service (SaaS)-based approach. Zero Friction manages metering and billing to help heating suppliers, building managers, and service providers interact more transparently with customers and provide metered billing and insights.

Using Azure Cosmos DB and other Azure services, Zero Friction created a platform with limitless scale, predictability, and performance with two apps. One helps heat suppliers convert metered building data into individual invoices for tenants, and the other helps the end-user tenants understand their energy consumption and make payments. Every night, district heat suppliers transmit data to one of Zero Friction's metering endpoints for processing. The system calculates energy consumption, invoices clients, and stores the data in Azure Cosmos DB.

Enterprise Strategy Group interviewed Yoni Nijs, who started the Company in 2018 with two other founders. The team had experience in the energy and utility sector and knew there was an opportunity to create a solution to address the existing inefficiency related to managing energy costs in multiunit buildings with centralized energy systems.

Using the flexible architecture of Azure, Zero Friction designed its app for heat suppliers in .NET Core with an architecture built on microservices. The app uses Azure Service Bus to enable communication between the microservices and billing, metering, and master data workflows, which run on top of virtual machine scale sets within Azure Service Fabric, which in turn is linked to load balancers.

The customer-facing portal is a serverless app that can scale to accommodate significant spikes in traffic when customers sign in to pay their heat bills. The portal runs on the .NET web app, Blazor, which enables Zero Friction to code using C# instead of JavaScript. The portal is connected to other Azure microservices that synchronize all the APIs to the serverless Azure Cosmos DB instance. This allows Zero Friction to link or integrate the portal into legacy billing systems.

As a startup with the need for enterprise-level capabilities but at a startup budget, Zero Friction was able to leverage Azure's pay-as-you-grow model and founder support to help it build and scale quickly. Zero Friction leveraged the following capabilities and programs on Azure:

> **As a startup, we utilized as many programs as possible and saw 75% operational savings, which helped us scale efficiently.**
>
> Yoni Nijs, Founder, Zero Friction

Cost-effective Scale and Growth – Zero Friction has scaled to more than 12,000 end users in just a few years. Some of the Microsoft Azure Cosmos DB features that helped it achieve success include:

- Autoscale: This enabled Zero Friction as a startup to manage costs and prepare for CPU and memory usage fluctuations. Meter readings, invoice creation, and other processes happen in intervals; autoscale is usage-based and helps keep costs under control.
- Reserved instances: These help to reduce costs of infrastructure for term-based commitments as Zero Friction grows and its needs are predictable.
- Serverless: Zero Friction uses this function to reduce costs by utilizing servers on a PAYG basis with no committed server cost.
- NoSQL database: This is another benefit of Azure Cosmos DB that Zero Friction built its apps on. Because NoSQL databases are schema-less, Zero Friction can continuously adapt the database for the changing needs of its

customers. By using Azure Cosmos DB, Zero Friction can perform upgrades and schema-less changes without any downtime.

- Predictable pricing of Azure Cosmos DB: This enables Zero Friction to know upfront how much storage will be required to support a client and how many invoices the system will create, making price forecasting easier.

Simplicity – Zero Friction found Azure Cosmos DB fast to set up and easy to use, with less management overhead. This resulted in a reduced time to market for its initial prototype and ongoing management. As a startup with limited resources, this was critical. Zero Friction also found it simple to set up new infrastructure and add new geographies.

Founders support – Zero Friction joined the Azure Founders Program and initially received $25,000 in Azure credits, which helped them to build their prototype. As Zero Friction reached new milestones, these credits grew to $150,000. Monthly meetings with the Azure team also supported the Zero Friction team on many aspects of building their technology and business, which they found invaluable and continue to use today.

Zero Friction has benefited from enterprise-level capabilities, purchased on a SaaS pay-as-you-grow model, with unparalleled founders support from Azure to create their energy market solution. The company believes it has seen 75% operational cost savings by utilizing all Azure has to offer a startup.

The Bigger Truth

Startups and enterprise businesses creating data-intensive applications seek the right cloud partner. From interviewing Azure Cosmos DB startups, Enterprise Strategy Group (ESG) quickly learned that startups are able to utilize Azure enterprise-grade cloud services offered on a PAYG basis, which provides startups with flexibility and the ability to scale while keeping costs in check.

In a recent research survey, ESG found that 43% of respondents said that a benefit of leveraging public clouds to support data initiatives was faster application deployment. Another 40% cited faster time to value for new projects.[3] This survey supports what we heard from startups as their technical and business relationship with Azure accelerated deployments and time to value.

We live in a data-driven world with expectations that using data for decision-making and as a competitive edge for companies will only accelerate in the coming years. Consider that the number of data sources in a company has dramatically increased, including business systems, e-commerce applications, IoT systems, and cross-referenced data sets. These are all structured and unstructured data sources. Conversely, we see exponential growth in the number of people using data for business and consumer decision-making.

Now, consider the challenges of application developers in this new data-driven world. To succeed, they need to build applications with flexibility, cost-effective scale, and trust with their future customers. Enterprise Strategy Group believes Azure and Azure Cosmos DB can provide startups with the right technical and business tools they need to succeed. We strongly recommend that startups consider what Azure and Azure Cosmos DB have to offer.

[3] Source: Enterprise Strategy Group Research Report, *Cloud Analytics Trends*, March 2022.

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www.esg-global.com

contact@esg-global.com

508.482.0188