



Azure Cosmos DB - Newsletter (September 2018)

Azure Cosmos DB is the industry's first globally-distributed, multi-model database service

Twitter on Cosmos DB

Rafael Luque @rafael_luque · 2h
I was never a Microsoft fan, but [@cosmosdb](#) and project Natick are remarkable achievements natick.research.microsoft.com

Adam S. Goldberg @TheRealAdamG · 2h
It's not hyperbole to call Azure CosmosDB the greatest database of all time.
lnkd.in/enHeY_U
5:55 PM · 26 Sep 2018

Jack Vaughan at TT @JackVaughanTT · 33m
With **Cosmos DB**, developers can build global cloud systems that auto-replicate elastically at scale, Scott Guthrie told the MSNite legions bit.ly/2OeljPm



1 0 0 0

Yevhen Bobrov @yevhen · 1h
Wow, they plan to make TLA+ specs behind **CosmosDB** to be publicly available!



Azure Cosmos DB @AzureCosmosDB
[Video] Foundations of #Azure #CosmosDB - #MultiMaster w/ Dr. Leslie Lamport
goo.gl/rxYfHh #MSIgnite #MSIgnite2018

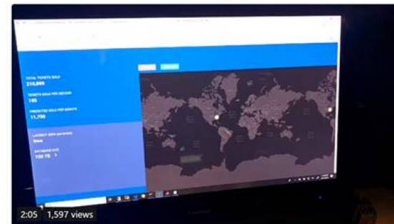
Tyler Ayers @tyler_words · 11h
Azure **Cosmos DB** is just awesome technology, clear and simple: [#cosmosdb](#)
clouddb.infoworld.com/article/324580...

@DynamicWebPaige @DynamicWebPaige · 300k · [Following](#) · [#MSIgnite](#)

🌟🌍 [@AzureCosmosDB](#) scaling to over 1 million transactions per minute, across 20 regions globally, with less than 10ms latency!

Ticket sales for a [@Beyonce](#) concert? 😊
Gotta have multi-master. 😍

[@markrussinovich](#) #MSIgnite



Grant Fritchey @GFritchey · 13m
Hey everyone,

[#SQLServer](#) DBAs, if you're not already exploring and trying to understand things like [#CosmosDB](#), containers, servers as code, and all the other modern technologies, you are turning into a dinosaur.



Brett Thomas @the_quark · 3h
Replying to [@bernardgolden](#)
CosmosDB is amazing.

Clément Prévost @PrevostClemToun · 11h
Azure **Cosmos DB** is poking at Google cloud spanner with a unicorn. Where is AWS in this fight?



A technical overview of Azure Cosmos DB
Azure Cosmos DB is Microsoft's globally distributed, horizontally partitioned, multi-model database service. The service is designed to allow customers to elasticall...
azure.microsoft.com

Aidan Finn @aefinn · [Following](#)

Want to kill [@Ticketmaster](#)? Build your ticketing system on [#Azure](#) with Cosmos DB. No more waiting for 3 hours to be told the concert is sold out!





Thomas Weiss @thomasweiss_io · 19h

Holy Moly, **Cosmos DB** multi-master replication is faaaast

Customers on Cosmos DB



"Cosmos DB has delivered a high-performance worldwide platform for our global reputation system. With a click of a button we can rapidly deploy regions worldwide to deliver excellent response time to our customers and partners. The Cosmos DB Cassandra API eliminated major engineering efforts during migration of our services as we were able to integrate with very minimum change. Our largest service is slated to migrate with the launch of Cassandra API support."

Michael Shavell, Technical Director / Architect at Symantec



"Cosmos DB continues to provide us the scale and performance needed across many regions in making our Crestron XiO Cloud successful. Support for multi-master write will be a huge plus moving forward."

Krushna Samanta, Senior Manager Software Products & Enterprise Solutions, Crestron



"At Liberty Mutual, we are always looking for new ways to engage with our customers and personalize their web experience. To do this, we needed to approach data modeling differently. We had a mix of hierarchical and transitive relationship patterns and data normalization was only taking us so far. Modeling our data as a graph enabled us to address our needs, and Azure Cosmos DB enabled us to deliver this solution quicker, and in a cloud managed environment that's enterprise-ready, scalable and highly performant. The Cosmos DB Change Feed API helped us simplify synchronization with existing Systems of Record, allowing us to focus on building customer-centric capabilities rather than infrastructure and operational concerns."

Arvin Suresh, Architect, Liberty Mutual Insurance



"Azure Cosmos DB has allowed us to develop our smart environment use cases for our Digital Vault through the power of Gremlin API and flexible data shape management. We have implemented graph database with our uniform building metadata representation and taken advantage of the added security, high availability and global scale that Cosmos DB provides."

Dr. Youngchoon Park, VP, Platform and Data Science.



"We used MongoDB aggregation pipeline and when Cosmos DB offered that, it enabled Cosmos DB as an amazing option for us. We see tremendous potential for Cosmos DB in our products"

Phil Christensen, Senior Vice President for Reality Modeling & Cloud Services, Bentley Systems



"The low latency geo-replicated nature of the Multi-Master feature is critical to RemoteSpark users by allowing them to connect to their local Azure Cosmos DB database, facilitating a common session between remote front-line workers and an expert. They can communicate via video/audio call, share documents, and view interactive IoT enabled holograms even though each user is connected to a different Azure Data Center. This enables remote workers to connect to experts anywhere in the world without worrying which is the best data center to connect to for optimum performance."

Ryan Groom, CTO, Kognitive Spark



"Our secret weapon is Azure Cosmos DB. Reliability plays a key role in our mission-critical systems, which require predictable, lightning-fast performance and SLAs of at least 99.99 percent uptime. I'm very glad that we are using Azure Cosmos DB. Thanks to this solution, we are more productive. It's a fast scale up and scale down; we can concentrate on creating real business value."

Jonas Granlund, Cloud Architect, Elkjøp



"We consider Azure Cosmos DB Graph API a major financial win for us. We get Azure Cosmos DB Graph API for about 2 percent of the price of our previous solution. We use Azure Cosmos DB elastic scaling to accommodate that load without having to pay for maximum capacity 24/7," says Boon. "We simply scale up for the duration of the import, whether that takes 10 seconds or two minutes, and then instantly scale back down."

Darren Boon, Development Manager, Diply



"Cosmos DB combines schema free document database with SQL syntax and Change Feed streaming capabilities, all under strict SLA. This is great! This substantially simplified our architecture and enabled us to meet all our core requirements."

Frantisek Kaduk, Principal Software Engineer, Skype



"Azure Cosmos DB is an amazing technology. The biggest benefit for us is that we can have one database for anonymous data that is replicated worldwide into all regions that are relevant for us, in a consistency model that perfectly fits our needs. It's key that Azure Cosmos DB is naturally built into the Azure core infrastructure, and we can build on its high availability and replication, offering software to all our customers at the same time."

Thomas Gossler, Lead Architect, Digital Ecosystem Platform, Siemens Healthineers



"ServiceLink/FNF provides digital mortgage services to some of the largest lenders in the country, and EXOS is the name of our Azure based digital platform that serves as the underpinning for various mortgage products we offer in the market. As part of the EXOS platform, for the customer facing mobile component and all the data that we leverage to run real-time algorithms, we had to choose a database with extreme low latency and high scalability to provide a sub second response to the end user. Our Uber like Vendor mobile app and the Consumer mobile app leverages micro-service based architecture to run complex algorithms and present data to the mobile users in less than a second, and Cosmos DB is at the core of this architecture. Our end user response times have come down from around 6-8 seconds prior to leveraging Cosmos DB to less than 1 second, and our TCO has come down significantly since we started leveraging Cosmos DB."

Kiran Vattem, EVP, Chief Digital and Technology Officer, ServiceLink



"Cosmos DB helps us to scale out our digital integration scenarios with a tremendously reduced need of actually 'caring' about the resource and with a high degree of flexibility of API & data models."

Kai Walter, Lead IT Solution Architect, ZEISS Group



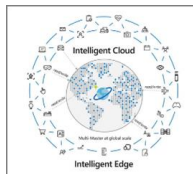
"When our customers are in the thick of doing their work, they need the right content at that moment. Our customers can look up details on recent law changes far more easily with Azure Search and Azure Cosmos DB. We refreshed our Nextens platform with Azure Cosmos DB graph and improved the quality of the relationships between all our content types, including tax laws, news, and jurisprudence. Our customers can look up details on recent law changes far more easily with Azure Search and Azure Cosmos DB graph."

Michael Goedhart, Senior Director of Technology, Nextens

Cosmos DB Ignite 2018 Announcements



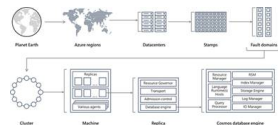
All Azure Cosmos DB Announcements are HERE!



At Microsoft Ignite, [Azure Cosmos DB](#) had a number of amazing announcements. The new Cosmos DB capabilities announced at Ignite 2018 is a crucial step towards enabling anyone to easily build globally distributed apps for the [Intelligent-Cloud-Intelligent Edge](#) era.

To read about all Cosmos DB announcements at Ignite, go [here](#).

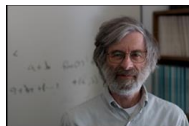
Azure Cosmos DB: Pushing the frontier of globally distributed databases



With Azure Cosmos DB, we have harvested decades of distributed systems research, married with rigorous engineering and operationalized it at massive scale that you can learn more about in our technical blog.

To read about how Cosmos DB pushes the frontier of globally distributed databases, go [here](#).

High-level TLA+ specifications for the five consistency levels offered by Azure Cosmos DB



Describing the consistency levels in English is prone to errors due to the ambiguity of natural language and generalizations involved. In this document, we use [TLA+ specification language](#) to specify the consistency guarantees precisely. TLA+ is a tool for specifying distributed algorithms/protocols mathematically and model checking them for correctness. The Cosmos DB engineering team heavily relies on TLA+ for specifying distributed algorithms and protocols mathematically and model checking them for correctness to verify the design decisions and address the corner cases induced by concurrency and faults. [Here](#) is a recent video interview of Dr. Leslie Lamport describing the application of TLA+ in Cosmos DB.

To view the TLA+/PlusCal specification of the general model of Cosmos DB, go [here](#).

General Availability of Multi-master is HERE!



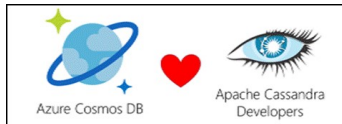
We are happy to announce the [general availability of multi-master at global scale](#). This enables unprecedented write scalability and availability with multi-master replication. With **Cosmos DB's multi-master replication protocol every region becomes writable** (in addition to being readable). With multi-master, you get **Unlimited and elastic write scalability, all around the world, 99.999% write availability, all around the world, guaranteed low write latency at the 99th**



percentile, all around the world, unlimited endpoint scalability, all around the world, multiple well-defined consistency models to choose from, intuitive and flexible programming model for conflict management, multi-master capabilities for all APIs and data models. Azure Cosmos DB's multi-master replication protocol automatically applies to all APIs the service already exposes. You can continue to use your favorite open source software (OSS) API and toolchain, and now you get multi-master and all capabilities that come with it for your OSS-based apps. **For the first time, you can build multi-master MongoDB, multi-master Gremlin (graph) apps within seconds. One of the fastest growing features since the announcement (with thousands of users signed up and onboarding)!**

[Read more about multi-master replication here.](#)

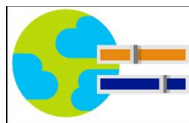
General Availability of Cassandra API is HERE!



We are excited to announce **general availability of Cassandra API**. By providing wire protocol level compatibility with the Apache Cassandra, Cosmos DB ensures you can continue using your existing application and OSS tools with little to no code changes and gives you the flexibility to run your Cassandra apps fully managed with no vendor lock-in while still leveraging a robust database platform natively designed for the cloud.

[Read more about Azure Cosmos DB Cassandra API here.](#)

5x lower minimum entry point for database-level provisioned throughput offer!



We are happy to announce **5x lower minimum entry point for database-level provisioned throughput**. In addition to being able to provision throughput for a Cosmos DB container (which could be a collection, a table or a graph – depending on the data model and API you are using) either programmatically or via Azure portal. Now, you can also configure throughput on your Cosmos DB database. [Provisioning throughput on a Cosmos DB database](#), allows you to share the throughput among all the containers that belong to that database. This allows you to “pool” the provisioned throughput across a set of containers within a Cosmos DB database. In fact, within a given Cosmos DB database, you can mix and match containers which “share” the throughput among themselves as well as specific containers which have been assigned dedicated throughput. By provisioning throughput at different granularities (e.g., containers and databases), you can now better optimize your costs based on your workloads’ characteristics.

If your container or a database are distributed across multiple regions, then the throughput you configure on the container or the database is guaranteed to be made available across all regions. Now it becomes even **5x less expensive** to start with the database level offer.

[Read more about provisioning throughput at database level here.](#)

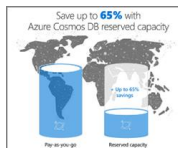
Even stronger SLAs!



We are proud to announce **even stronger SLAs for Cosmos DB**. Cosmos DB is the only database service in the market which offers comprehensive five 9 SLAs encompassing consistency, latency, throughput and availability. Starting today, we are updating our SLA page – with five nines write availability (in addition to five nines read availability) for multi-regional databases and a single digit millisecond write latency at the 99th percentile anywhere in the world.

[Read our latest SLA page here.](#)

General Availability of Reserved Capacity is HERE!



Azure Cosmos DB reserved capacity is now generally available for customers worldwide, effective today. Reserved capacity enables you to reserve provisioned throughput in Cosmos DB on a one-or three-year term and provide up to **65% cost savings** versus pay-as-you-go prices. Azure Cosmos DB reserved capacity gives you price predictability and helps improve your budgeting and forecasting.

Read more about reserved capacity and the cost savings you can achieve in [here](#).

General Availability of new Azure Cosmos DB JavaScript 2.0 is HERE!



We are happy to announce the general availability of the [version 2.0 of the JavaScript SDK](#), with completely redesigned object model, added support for promises and completely redesigned the object model to make it easier to interact with and perform operations against Cosmos DB. With the new SDK, you can create a new database, container, and add an item to it, all in 10 lines of code or less! The Azure Cosmos DB JavaScript SDK is open source, and our team is planning to do all development in the open. To that end, we will be logging issues, tracking feedback, and accepting PR's in GitHub.

[Read more and try the samples with the new SDK here.](#)

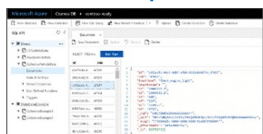
Try Cosmos DB For Free is 1 Month Free NOW!



You can now try Azure Cosmos DB for free for an entire month! This trial allows you to evaluate Azure Cosmos DB's capabilities for free for 30 days, including creating a database with up to 25 containers (collections) and up to 10,000 Request Units (RU)/second of throughput, no Azure subscription or credit required. Get started with [Try Azure Cosmos DB](#). Azure Cosmos DB is also included in the [Azure free account](#), which includes 400 RU/s for 12 months.

[Read more about it here.](#)

Cosmos Explorer is simply Cosmic!



[Cosmos Explorer](#) provides a full-screen standalone web-based version of the popular Azure Cosmos DB Data Explorer. With Cosmos Explorer, you can access your database accounts and containers, run queries, and view results, all with the full-screen real estate. You can also share temporary access to authorized peers, without the need for them to have subscription or Portal access.

[Read more about it here.](#)

New UX for creating accounts in the Portal



We've updated the Azure Cosmos DB account creation experience in the Portal. Now, you can take advantage of the full screen when creating new Azure Cosmos DB accounts. [Read more about it here](#) and try it yourself.

Cosmic Recommendations are now in the Portal

The Azure Cosmos DB Portal can now show you alerts, recommendations, and messages for your account. To see them, navigate to the **Overview** tab and view

Notifications		
All Alerts Recommendations Messages		
TYPE	DESCRIPTION	UPDATED AT
★	We noticed many entries in collection Items of database ToDo with partition key /itemId set to (null). Check your code that sets partition key values to ensure good distribution. Open in Data Explorer.	9/19/2018 3:12 PM ...

the **Notifications** section. For example, the recommendation example here suggests that many values of the partition key property in a collection are null and should be reviewed to ensure a good distribution. [Read more about it here](#)

Cosmos DB sessions at Microsoft Ignite

You can watch Azure Cosmos DB sessions on [Microsoft Ignite 2018 YouTube channel](#)

Azure Cosmos DB @

Microsoft Ignite



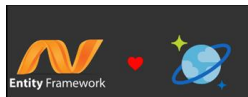
Type	Code	Title	Date	Time
Workshop	PRE25	Develop serverless applications using Azure Functions, Cosmos DB and more	9/23/18	9:00pm - 5:00pm
Theater	THR2054	Multi-master at global scale with Azure Cosmos DB	9/24/18	12:45pm - 1:05pm
Breakout	BRK3158	Technical overview of Azure Cosmos DB	9/25/18	9:00am - 10:15am
Breakout	BRK3159	Event driven architecture with Azure Functions and Azure Cosmos DB	9/25/18	2:15pm - 3:30pm
Theater	THR2053	Common data problems solved with graphs using Azure Cosmos DB Gremlin API	9/25/18	2:50pm - 3:10pm
Breakout	BRK2184	Azure Cosmos DB for enterprise: Security, compliance, and GDPR	9/26/18	9:00am - 9:45am
Breakout	BRK3321	Building Microsoft first-party modern cloud services with Azure Cosmos DB	9/26/18	10:45am - 12:00am
Community	THR3100	Migrate MongoDB apps to Azure Cosmos DB	9/26/18	11:55am - 12:15pm
Theater	THR2055	Building massively scalable IoT data pipelines with Azure Cosmos DB	9/26/18	1:40pm - 2:00pm
Breakout	BRK3184	Modeling data and best practices for the Azure Cosmos DB SQL API	9/26/18	2:00pm - 2:45pm
Breakout	BRK3160	How to migrate existing MongoDB and Cassandra apps to Azure Cosmos DB	9/26/18	4:00pm - 5:15pm
Community	THR2162	Building a turnkey mobile application using Cosmos DB, Azure Functions, and PowerApps	9/26/18	5:05pm - 5:25pm
Breakout	BRK4019	Advanced Azure Cosmos DB: Design patterns, tips, and tricks	9/27/18	10:45am - 12:00pm
Breakout	BRK3183	Traversing Scalable Graphs with Azure Cosmos DB's Gremlin API	9/27/18	2:00pm - 2:45pm
Breakout	BRK4018	Lambda architecture simplified with Azure Cosmos DB and Azure Databricks	9/28/18	12:30pm - 1:45pm

Cosmos DB Threat Detection – Preview



Advanced Threat Detection and Protection for Azure Cosmos DB is a new built-in security offering powered by Azure Security Center. It allows customers to respond to potential security threats on their Cosmos DB accounts without the need to be a security expert. Azure Cosmos DB Advanced Threat Protection learns and profiles Cosmos DB account activities using anomaly detection and behavioral analytics (UEBA) techniques, leveraging Azure Security Center threat intelligence signals. Customers receive alerts upon detection of anomalous Cosmos DB account activities indicating unusual and potentially harmful attempts to access or exploit their Cosmos DB accounts.

Entity Framework Core Provider for Cosmos DB – Preview



The first preview for [Entity Framework Core provider for Cosmos DB](#) is now available on Nuget for download. Read community blog posts from [Christian Nagel](#) and [Thiago Passos](#) about their experiences using it.

Community Blogs on Cosmos DB

September 2018

- [ASP.NET Core Identity with Cosmos DB \(MongoDB\) Part1: Database Configuration](#)
- [Azure Cosmos DB database for Data Science](#)
- [Azure Cosmos DB Tutorial : From SQL to NoSQL - Part 1 of 5](#)
- [A Serverless ToDo List](#)
- [Announcing Entity Framework Core 2.2 Preview 2 and the preview of the Cosmos DB provider and spatial extensions for EF Core](#)
- [Building REST APIs on Top of Azure Cosmos DB Using Azure Functions](#)
- [Cosmos DB change feed processor – leases and work balancing strategy](#)
- [Cosmos DB Emulators can also run in the Cloud](#)
- [Cosmos DB PowerShell Module](#)
- [Cosmos DB Fluent Pagination with Cosmonaut](#)
- [Cosmos DB change feed processor 2.1 released \(monitoring enhancements\)](#)
- [Data Migration: Azure Blob Storage to Azure Cosmos DB using Azure Data Factory](#)
- [Getting Started: EF Core + Cosmos DB](#)
- [Logging your application's Cosmos DB activity in Application Insights](#)
- [Migrate SQL Table To Cosmos DB Using Cosmos DB Data Migrating Tool](#)

- [Shape Cosmos DB Output with JMESPath](#)
- [Single Page Application With Blazor And Cosmos DB](#)
- [Structured streaming with Azure Databricks from IoT Hub to Cosmos DB](#)
- [Solving The Cloud Native Microservice Autonomy Problem: Implementing Search With Cosmos DB Graph and Azure Search \(Part 1\)](#)
- [Testing your Cosmos DB C# code and automating it with AppVeyor](#)
- [Twitter Sentiment Analysis With Azure Stream Analytics And Cosmos DB](#)
- [Quick Start With Azure Cosmos DB - Day One](#)
- [Quick Start With Azure Cosmos DB - Day Two](#)
- [Quick Start With Azure Cosmos DB - Day Three](#)
- [Zero to 60 with Azure Cosmos DB](#)

August 2018

- [Angular 6 Application With Cosmos DB And Web API 2](#)
- [Azure Cosmos DB For Your Budget Conscious Projects: Creating a Repository to Store Multiple Entities in One Collection using the MongoDB API](#)
- [Azure Cosmos DB + Functions Cookbook—Connection modes](#)
- [Azure Cosmos DB reference solution: Visualizing real-time data analysis with change feed](#)
- [Azure Tips and Tricks 152 - Get the Record Count in Cosmos DB](#)
- [Budget App Part 2: Building the Proof of Concept with Plaid and Cosmos DB](#)
- [Building and Integrating LUIS-enabled Chatbots with Slack, using Azure Bot Service, Bot Builder SDK, and Cosmos DB](#)
- [Cosmos DB change feed monitoring](#)
- [Cosmos DB change feed monitoring - MSDN](#)
- [Demystifying the Multi-Model Capabilities in Azure Cosmos DB](#)
- [Experience Using Azure Cosmos DB in a Commercial Project](#)
- [Exposing Cosmos DB change feed from ASP.NET Core](#)
- [\(HITCH\) HIKER'S GUIDE TO THE COSMOS \(DB\)](#)
- [First Look: Cosmos DB SQL Provider in Entity Framework Core \(Part 1\)](#)
- [First Look: Cosmos DB SQL Provider for Entity Framework Core With Azure Functions \(Part 2\)](#)
- [Getting started with Cosmos DB SQL Provider for Entity Framework Core](#)
- [Life Beyond Distributed Transactions: An Apostate's Implementation w/ Cosmos DB - Document Example](#)
- [Life Beyond Distributed Transactions: An Apostate's Implementation w/ Cosmos DB - Dispatching Example](#)
- [Modern Serverless Development Part 2 – Data Repository with Cosmos DB and Azure Storage](#)
- [Paging Results with Cosmos DB](#)
- [Planet-scale event sourcing with Azure Cosmos DB | Planet-scale event sourcing with Azure Cosmos DB](#)

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