

Server-side Programming with Cosmos DB



David Tucker

TECHNICAL ARCHITECT & CTO CONSULTANT

@_davidtucker_ davidtucker.net

Server-side Capabilities

Cosmos DB provides a robust approach for executing code in response to actions taken on the data stored in Cosmos DB. While in some cases these mirror traditional database constructs, they are fundamentally different in implementation and have unique limitations.

Cosmos DB Server-side Concepts

Stored Procedures

Triggers

**User Defined
Functions (UDF's)**

Change Feed



Server-side Execution Environment

Stored procedures, triggers, and UDF's are executed within the database engine

These are supported when using the SQL API

Supports JavaScript

Can be created and managed via the portal and via the SDK



Stored Procedures

Stored procedure must be defined in JavaScript

Executes on a single partition, and it only has access to that partition

Partition key must be provided with the execution request

Supports a transaction model as all statements will be removed if it fails



Triggers

Triggers must be defined in JavaScript

Triggers can be executed either before (pre) **of after (post) data is written**

Pre triggers can handle data transformation and validation

Post triggers can handle aggregation and change notifications

Triggers are not guaranteed to execute, as they have to be specified in a request

Errors in either the pre or post trigger will result in data being rolled back



User Defined Functions

User defined functions must be defined in JavaScript

Enables you to define a custom function that can be leveraged in a query

Enables encapsulation of common logic in query conditions

Change Feed Processing

While all other server-side programming approaches enable execution on the Cosmos DB engine, change feed processing enables you to react to data changes using server-side code outside of the Cosmos DB engine.



Change Feed

Enables you to be notified for any insert and update on your data

Deletes are not directly supported, but you can leverage a soft-delete flag

A change will appear exactly once in the change feed

Reading data from the database will consume throughput

Partition updates will be in order, but between partitions there is no guarantee

Is not supported for the Azure Table API

Change Feed Approaches

Azure Functions

Change Feed Processor

Using Change Feed with Azure Functions

Demo

Creating an Azure Function app for use with change feed notifications

Creating a function utilizing the template for change feed notifications

Verifying Change Feed Capability

Demo

Verifying change feed execution on new data

Reviewing functionality for data deletion and change feed notifications

Cleaning Up
