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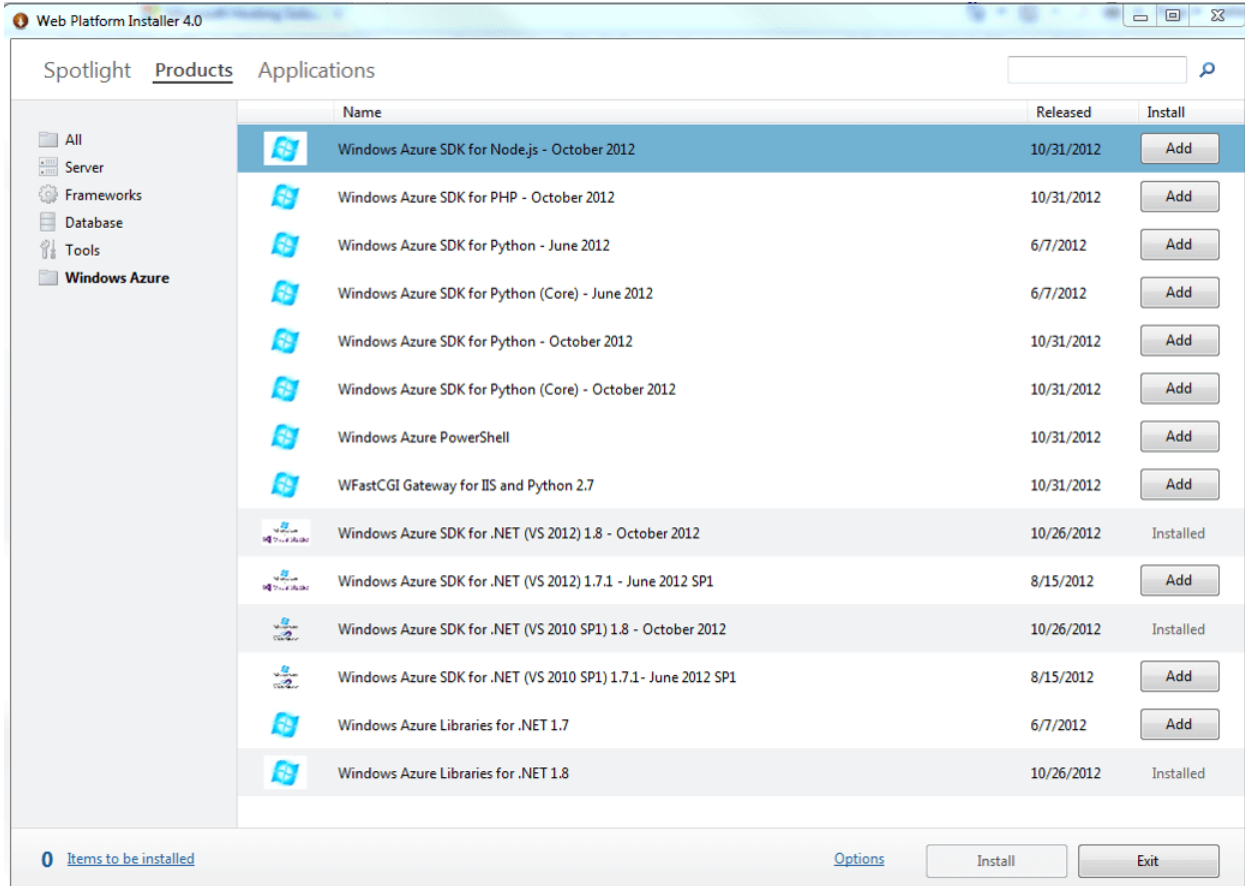
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1 – Setup Development SDKS :

Install Web Platform Installer Extension.

<https://www.microsoft.com/web/downloads/platform.aspx>

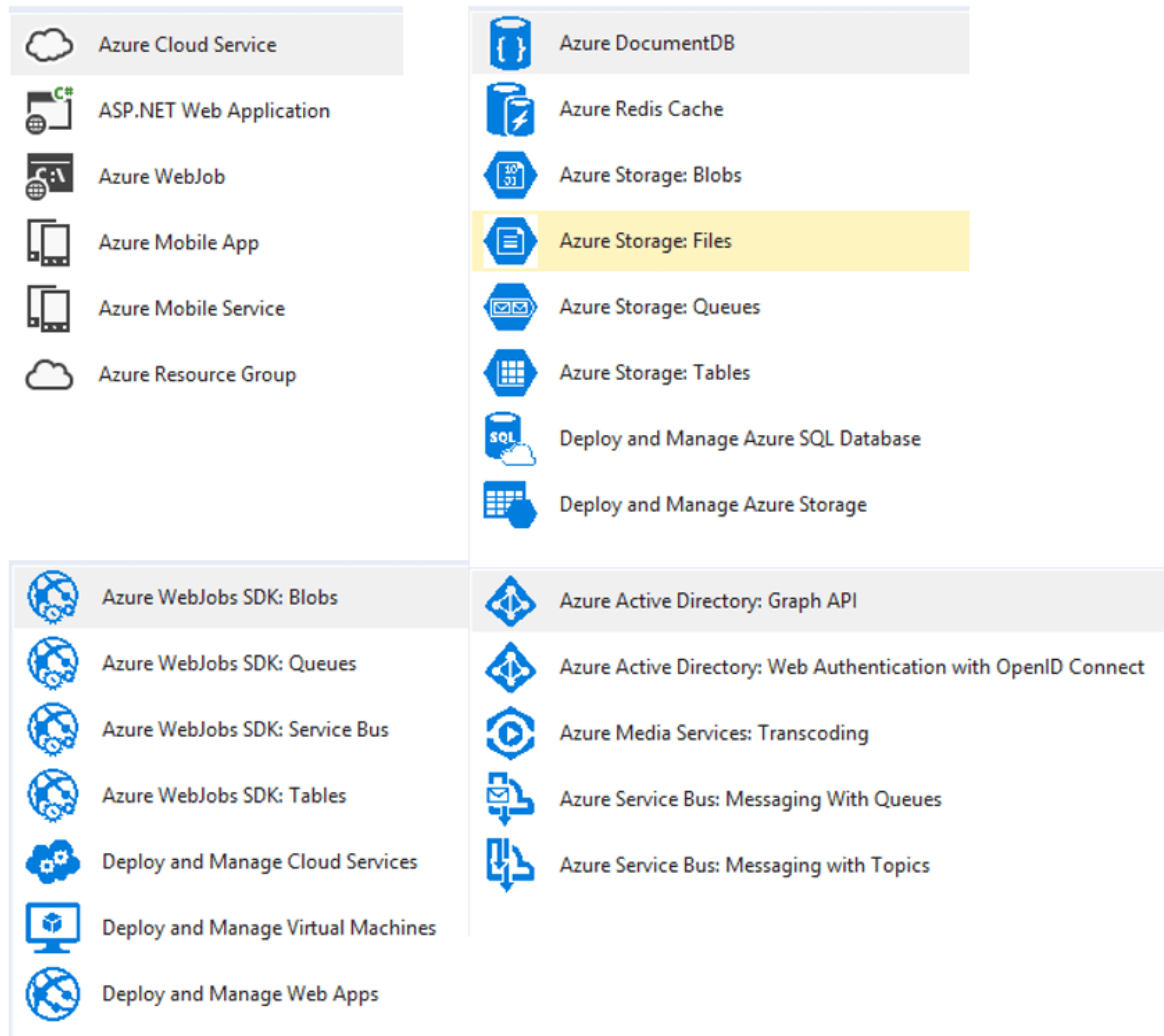
Search for Azure Products in Web Platform Installer and click on the Add button to install.



2 – Use Visual Studio Cloud App Templates :

Once the Azure SDK is installed then the Visual Studio App Templates shown below will be available for building applications.

Visual Studio 2015 App Templates for Azure



Follow the building blocks guide located here to choose components for building the apps.

<http://www.improvecode.com/docs/AzureDemo.pdf>

For building backend WebJobs use the sample code below:

<https://github.com/nadeemhaq/LoanCalculatorDemo>

3 – Setup Azure Bus :

Go to Azure Portal Resource Manager and create a Service Bus.

4 – DevOps Cloud :

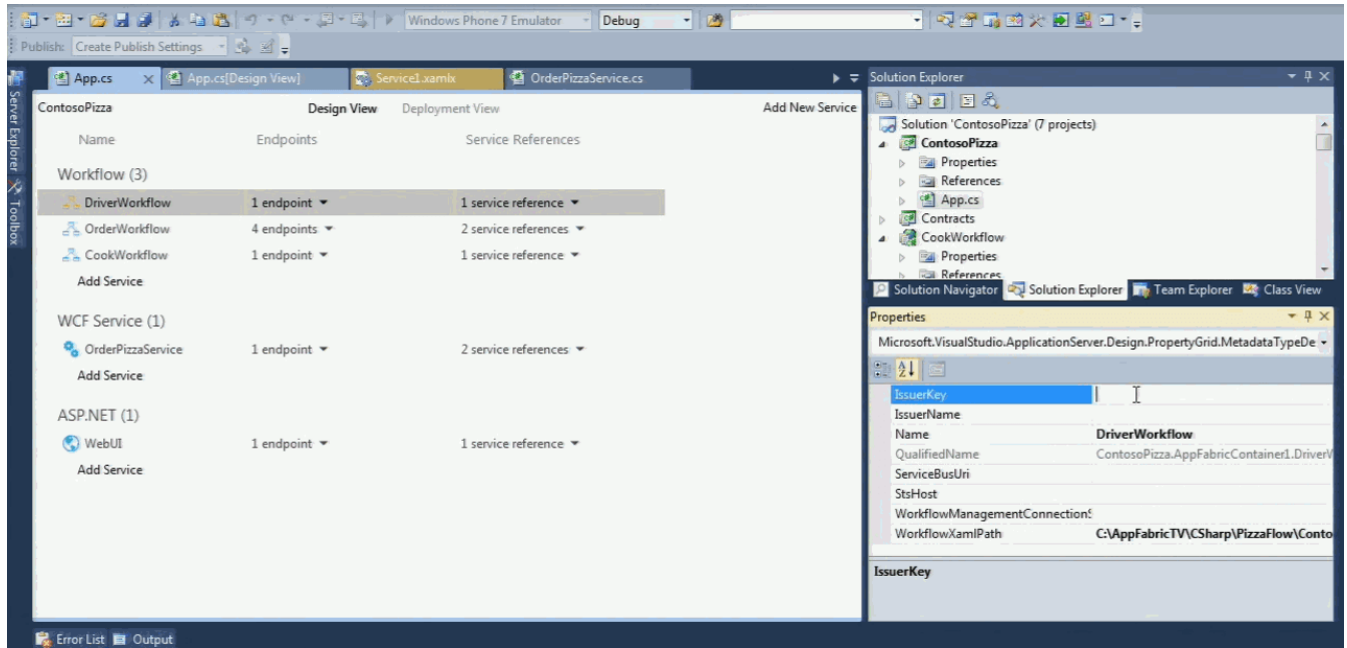
Install TeamCity to do source control of applications in the Cloud. Setup CI CD Pipeline.

The screenshot displays the TeamCity Administration interface for configuring build requirements. The top navigation bar includes 'Projects', 'Changes', 'Agents' (1), and 'Build Queue' (0). The user is logged in as 'Jason Azim' and is in the 'Administration' section. The breadcrumb trail shows 'Administration / <Root project> / Blog'. The main content area is titled 'Build' and contains several sections:

- General Settings**: A sidebar menu with options like 'Version Control Settings', 'Build Steps', 'Triggers', 'Failure Conditions', 'Build Features', 'Dependencies', 'Parameters', 'Agent Requirements', and 'Suggestions'.
- Explicit Requirements**: A section with a description and a '+ Add new requirement' button.
- Agents Compatibility**: A section with a description and two columns: 'Compatible agents (1)' and 'Incompatible agents (0)'. Under 'Compatible agents', there is a 'Default pool (1)' containing the agent 'Maserati'.
- Metadata**: A section at the bottom left stating 'Created 16 hours ago by Jason Azim (view history)'.

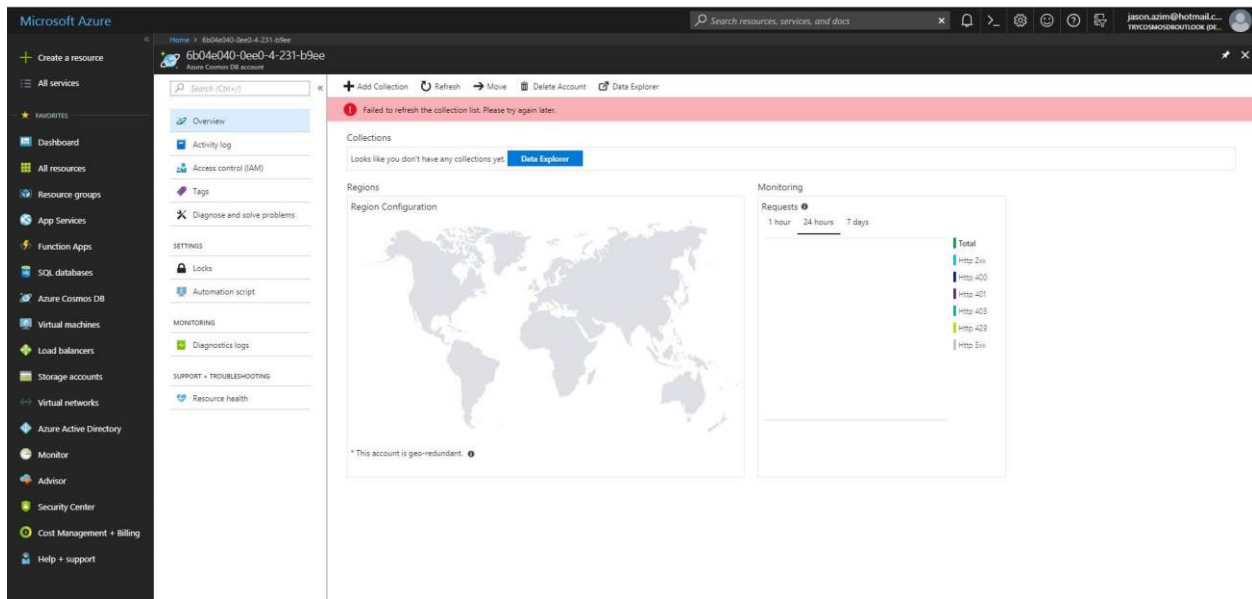
4 – Build Internal Private Buse / Workflow Engine :

Build Windows Workflow Foundation based processing engine to pickup transactions and distribute it for processing to the Cloud and for integration with internal systems. Use the Micorosoft Sample to get started.



5 – Setup CosmoDB :

Configure CosmoDB so it can be used as ContextManager / State Manager for Cloud based APIs. Follow the steps shown below.



The screenshot shows the Microsoft Azure portal interface. The main content area displays the 'Activity log' for a resource named 'Microsoft Azure Sponsorship'. The log shows several operations that have succeeded, including 'ListKeys', 'Readonlykeys', 'Write RoleAssignments', and another 'ListKeys' operation. The operations occurred on Wednesday, June 13, 2018, at various times between 3 and 6 minutes ago. The event category is 'All categories' and 4 items are selected.

| OPERATION NAME | STATUS | TIME | TIME STAMP | SUBSCRIPTION | EVENT INITIATED BY |
|-----------------------|-----------|-----------|----------------|-----------------------------|------------------------------|
| ListKeys | Succeeded | 3 min ago | Wed Jun 13 ... | Microsoft Azure Sponsorship | jason.azim@hotmail.com |
| Readonlykeys | Succeeded | 4 min ago | Wed Jun 13 ... | Microsoft Azure Sponsorship | jason.azim@hotmail.com |
| Write RoleAssignments | Succeeded | 5 min ago | Wed Jun 13 ... | Microsoft Azure Sponsorship | 028ed31f-98d9-4846-ab46-f... |
| ListKeys | Succeeded | 6 min ago | Wed Jun 13 ... | Microsoft Azure Sponsorship | 028ed31f-98d9-4846-ab46-f... |

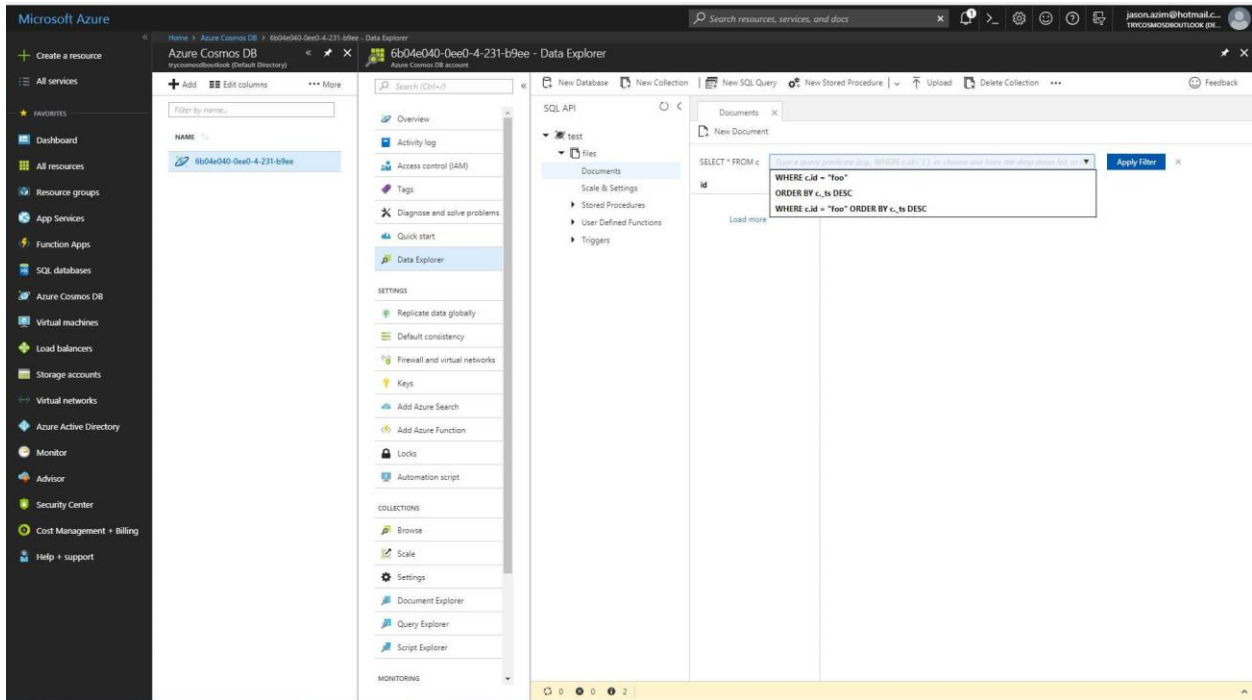
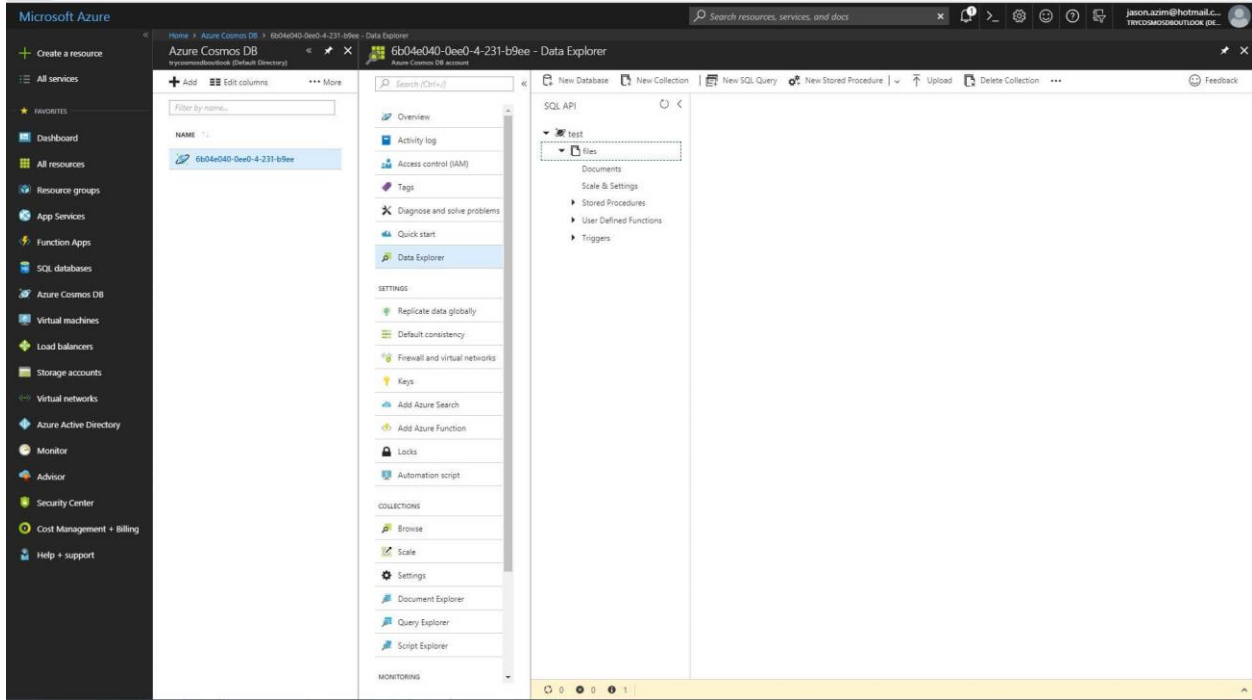
The screenshot shows the configuration page for an Azure Cosmos DB instance. The instance is named '6b04e040-0ee0-4-231-b9ee' and is currently 'Online'. It is configured with 'Read Locations' in Central US and 'Write Locations' in Central US. The instance is part of the 'Microsoft Azure Sponsorship' subscription. The 'Monitoring' section shows a world map for regions and a graph for requests, but no data is currently displayed.

Instance Details:

- Status: Online
- Read Locations: Central US
- Write Locations: Central US
- URI: https://6b04e040-0ee0-4-231-b9ee.documents.azure.com/443/

Monitoring:

- Requests: 0 (1 hour, 24 hours, 7 days)
- Total: No data to display



The screenshot displays the Azure portal interface for configuring an Azure Cosmos DB collection. The left sidebar shows navigation options like 'Dashboard', 'All resources', and 'Azure Cosmos DB'. The main area is titled 'Data Explorer' and shows the 'test' collection. The 'Scale' settings are configured with a fixed throughput of 3000 RU/s. The 'Indexing Policy' is set to 'consistent' and includes several indexes for different data types.

The screenshot shows the 'Stored Procedure Body' configuration for a procedure named 'getUser'. The code is as follows:

```

1 // SAMPLE STORED PROCEDURE
2 function sample(prefix) {
3
4   var collection = getContext().getCollection();
5
6   // Query documents and take 1st item.
7   var isAccepted = collection.queryDocuments(
8     collection.getSelfLink(),
9     'SELECT * FROM root r',
10    function (err, feed, options) {
11      if (err) throw err;
12
13      // Check the feed and if empty, set the body to 'no docs found',
14      // else take 1st element from feed
15      if ((feed || !feed.length) ||
16          !feed[0].feed) {
17        response.setBody('no docs found');
18      }
19      else {
20        var response = getContext().getResponse();
21        var body = { prefix: prefix, feed: feed[0] };
22        response.setBody(JSON.stringify(body));
23      }
24    });
25   if (!isAccepted) throw new Error('The query was not accepted by the server.');
```


The screenshot shows the Azure portal interface for an Azure Cosmos DB database. The left sidebar contains navigation options like 'Dashboard', 'All resources', and 'Data Explorer'. The main area is divided into three panes: a left pane for database management, a middle pane for navigation, and a right pane for code execution. The 'test' database is selected, and the 'Stored Procedures' folder is expanded. A context menu is open over the 'test' folder, showing options like 'New SQL Query', 'New Stored Procedure', 'New UDF', 'New Trigger', and 'Delete Collection'. The 'New Stored Procedure' option is highlighted. The main pane shows the SQL code for a stored procedure named 'getUser'.

```

1 CREATE PROCEDURE getUser
2 {
3     var collection = getContext().getCollection();
4
5     // Query documents and take list item.
6     var isAccepted = collection.queryDocuments(
7         collection.getSelfLink(),
8         "SELECT * FROM root r",
9         function (err, feeds, options) {
10            if (err) throw err;
11
12            // Check the feed and if empty, set the body to 'no docs found',
13            // else take list element from feed
14            if (!feed || !feed.length) {
15                var response = getContext().getResponse();
16                response.setBody("no docs found");
17            }
18            else {
19                var response = getContext().getResponse();
20                var body = { prefix: prefix, feed: feed[0] };
21                response.setBody(JSON.stringify(body));
22            }
23        });
24
25    if (!isAccepted) throw new Error("The query was not accepted by the server.");
26 }
    
```

The screenshot shows the 'Browse' view of the 'test' database in Azure Cosmos DB. The view displays a table with columns for 'COLLECTION ID', 'DATABASE', 'THROUGHPUT (RU/s)', 'STORAGE', and 'EST. HOURLY COST (USD)'. The table shows one collection named 'files' with a throughput of 3000 RU/s, 0 KB of storage, and an estimated hourly cost of 0.24 USD. A 'TOTAL' row is also present, showing the aggregate values for the database.

| COLLECTION ID | DATABASE | THROUGHPUT (RU/s) | STORAGE | EST. HOURLY COST (USD) |
|---------------|----------|-------------------|---------|------------------------|
| files | test | 3000 | 0 KB | 0.24 |
| TOTAL | | 3000 | 0 KB | 0.24 |

* This is NOT your bill. This is an estimated hourly rate for the currently provisioned throughput, and the size of the data stored. The estimate DOES NOT take into account any of the discounts you may be eligible for.

The screenshot displays the Microsoft Azure portal interface. On the left is a navigation sidebar with categories like 'All services', 'FAVORITES', and 'All resources'. The main area is split into three panes. The top-left pane shows the 'Azure Cosmos DB' resource page with a table listing databases. The middle pane is a 'Query Explorer' sidebar with options like 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Quick start', 'Data Explorer', and 'Script Explorer'. The right pane is the 'Query Explorer' main view, featuring a 'Run Query' button, a 'Databases' dropdown menu set to 'test', a 'Collections' dropdown menu set to 'files', and a text area containing the SQL query: `SELECT * FROM c`. A yellow warning banner at the top of the right pane states: 'This blade will be retired soon. Please use Data Explorer going forward.'

Appendix :

Microservices

<http://www.wwwlicious.com/2016/05/11/servicestack-microservices-discovery-routing-3/>

<http://get.apigee.com/>

<https://apigee.com/api-management/>

<https://pivotal.io/platform>

Steeltoe for .NET Microservices

<http://steeltoe.io/>

Pivotal Microservices

<https://pivotal.io/microservices>

Azure Microservices

<https://github.com/dotnet-architecture/eShopOnContainers>

<https://servicestack.net/>

Service Stack Visual Studio Template

<https://github.com/ServiceStack/ServiceStackVS>

Service Stack Visual Studio Gallery

<https://marketplace.visualstudio.com/items?itemName=Mythz.ServiceStackVS>

ServiceStack with RabbitMQ

<https://github.com/ServiceStackApps/EmailContacts>