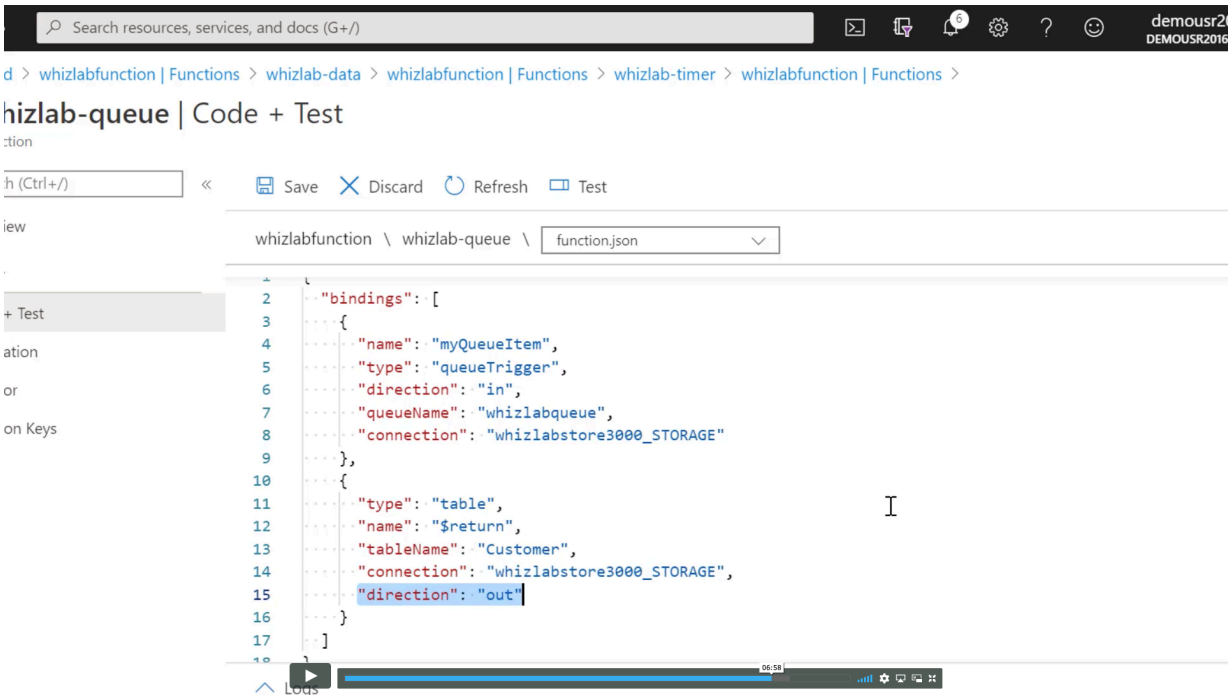
2020.07.12 Whizlabs Microsoft Azure Exam AZ-204 Certification

https://www.whizlabs.com/learn/course/microsoft-azure-az-204
Originally started on Saturday, July 11th, 2020

IMPORTANT: This exam uses C# for all examples

Azure Functions



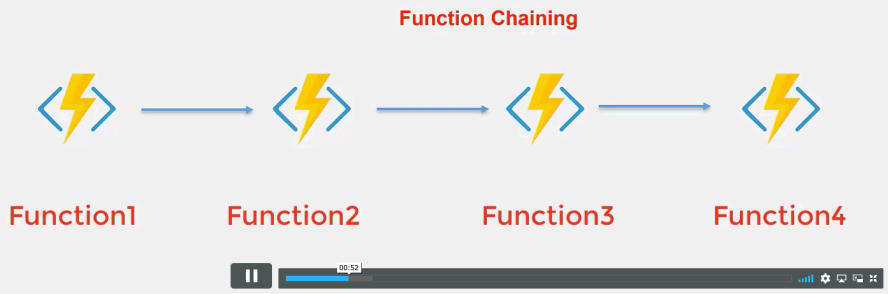
Note that we have “$return” in this example because our trigger is going to return a JSON object that should be written to the Customer table/

Lab – Azure Durable Functions

Understanding Azure Durable Functions

What are Azure Durable Functions

- This is an extension of Azure Functions.
- This allows you to write stateful functions.



Lab – Azure Durable Functions

Understanding Azure Durable Functions

What are Azure Durable Functions

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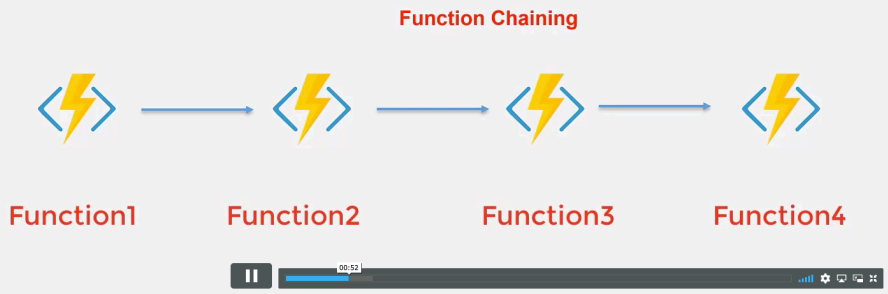
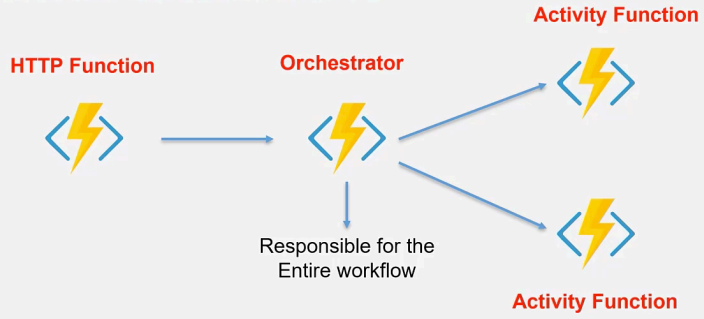


Lab – Azure Durable Functions

Understanding Azure Durable Functions

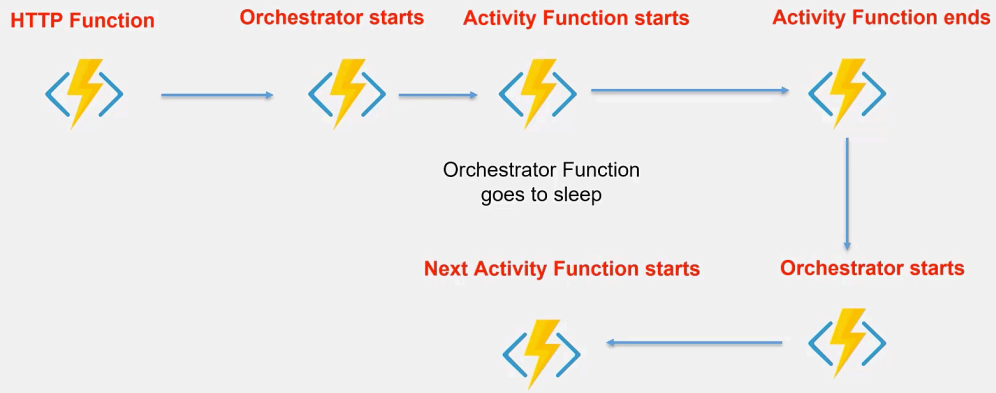
What are Azure Durable Functions

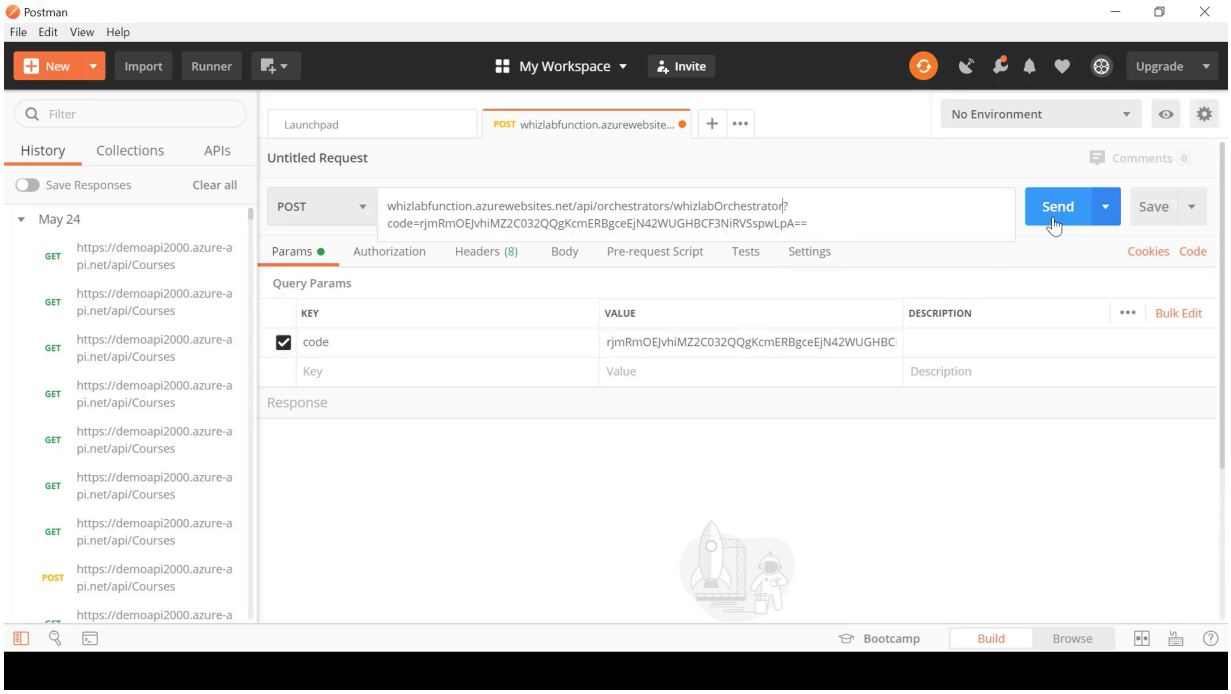


Lab – Azure Durable Functions

Understanding Azure Durable Functions

What are Azure Durable Functions





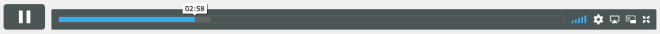
Azure CosmosDB

Lab – Creating a Cosmos DB Account

Working with the SQL API

Choosing the right partition key

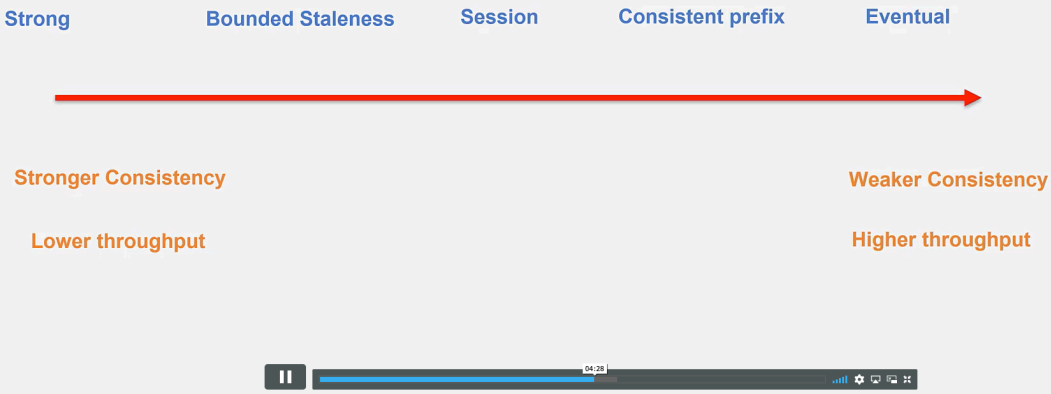
- The partition keys should be chosen in such a way that read operations minimize cross-partition look ups.
- The partition keys should be chosen in such a way that write operations are evenly distributed across different partition key values.
- Also the partition key must be a field present when querying for the data in the database.
- Also note that each item in a container in a database contains an item ID. This is unique within a logical partition. The combination of the partition key and the item ID helps to create the item's index which helps to uniquely identify the item.



Azure Cosmos DB

Understanding consistency levels

Knowing more on consistency levels

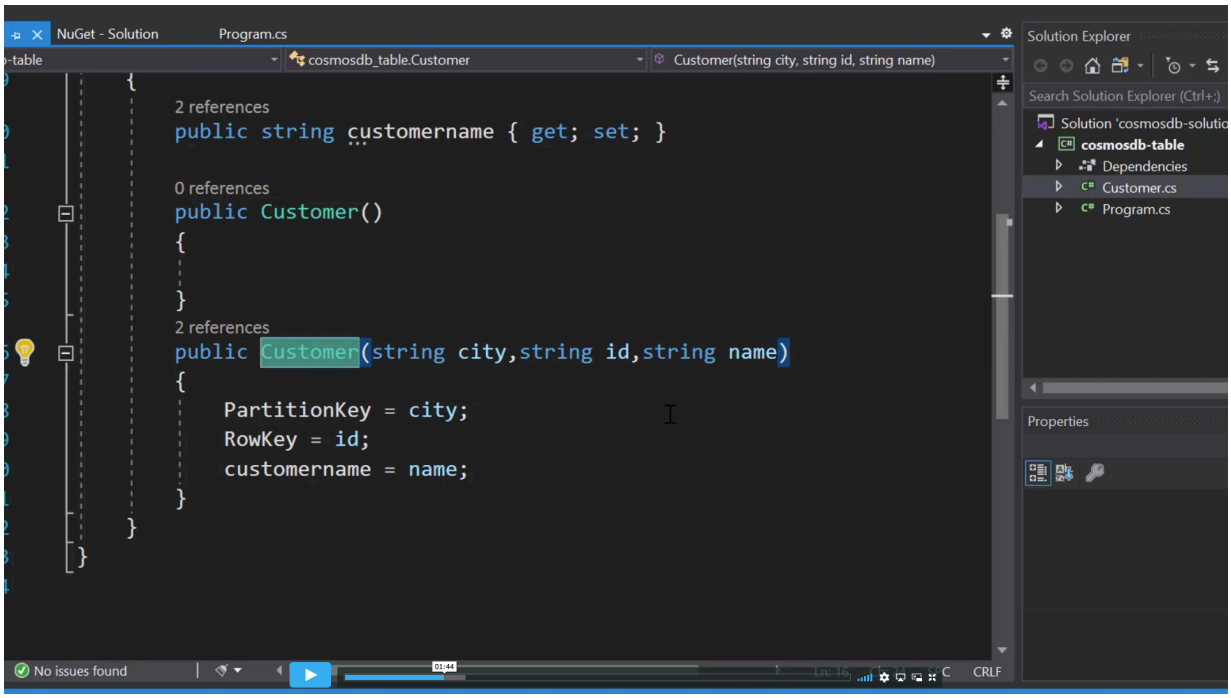


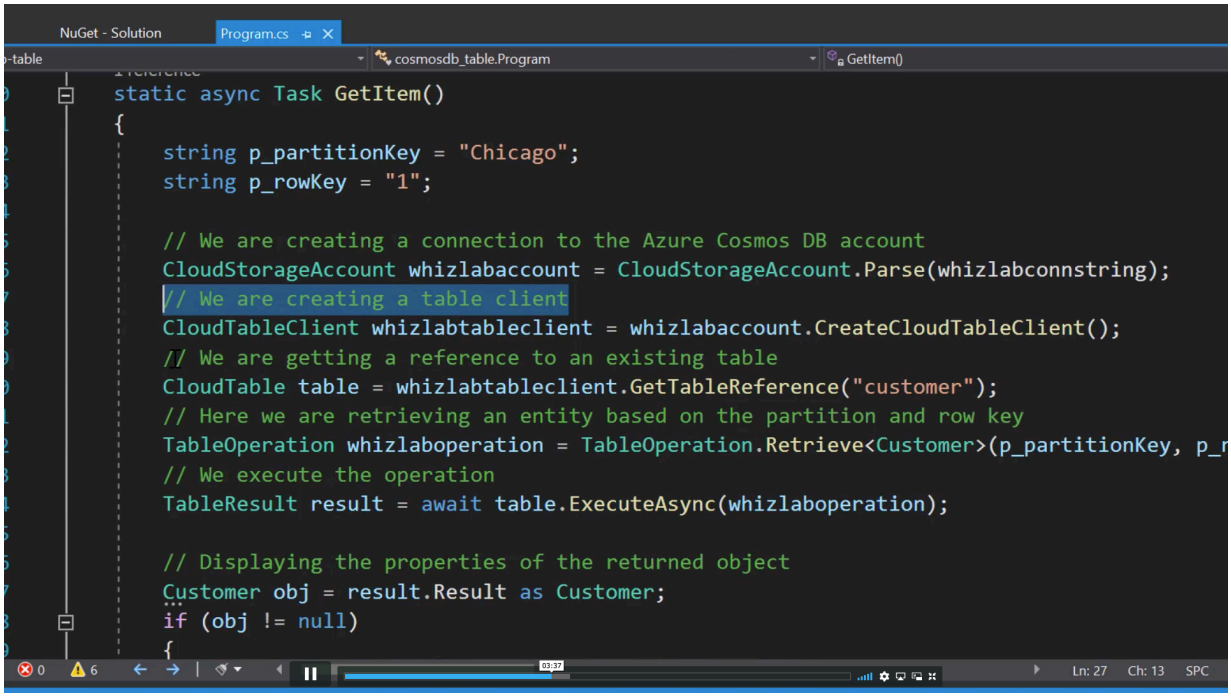
Azure Cosmos DB

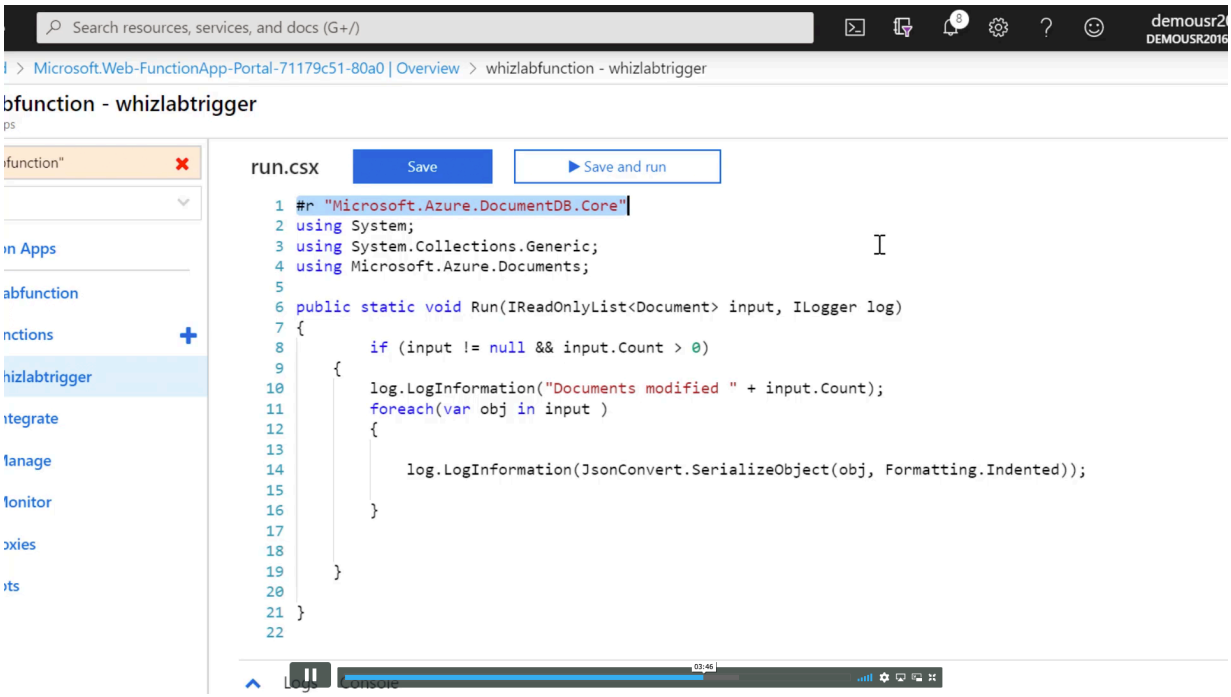
Understanding consistency levels

Knowing more on consistency levels

- **Bounded staleness** – Here the reads can lag behind the writes by at most "K" versions of an item or by "T" time interval.
- **Session** – Here within a single client session, the reads are guaranteed to honor the consistent-prefix, monotonic reads, monotonic writes, read-your-writes, and write-follows-reads guarantees
- **Consistent prefix** – Here the updates will be seen after a gap, but the client will never see out of order writes.


NuGet - Solution
Program.cs
cosmosdb_table.Customer
Customer(string city, string id, string name)
2 references
public string customername { get; set; }
0 references
public Customer()
{
}
2 references
public Customer(string city,string id,string name)
{
PartitionKey = city;
RowKey = id;
customername = name;
}
}
}
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'cosmosdb-solutio
cosmosdb-table
Dependencies
Customer.cs
Program.cs
Properties
No issues found
CRLF


NuGet - Solution
Program.cs
cosmosdb_table.Program
GetItem()
static async Task GetItem()
{
string p_partitionKey = "Chicago";
string p_rowKey = "1";
// We are creating a connection to the Azure Cosmos DB account
CloudStorageAccount whizlabaccount = CloudStorageAccount.Parse(whizlabconnstring);
// We are creating a table client
CloudTableClient whizlabtableclient = whizlabaccount.CreateCloudTableClient();
// We are getting a reference to an existing table
CloudTable table = whizlabtableclient.GetTableReference("customer");
// Here we are retrieving an entity based on the partition and row key
TableOperation whizlaboperation = TableOperation.Retrieve<Customer>(p_partitionKey, p_r
// We execute the operation
TableResult result = await table.ExecuteAsync(whizlaboperation);
// Displaying the properties of the returned object
Customer obj = result.Result as Customer;
if (obj != null)
{
Ln: 27
Ch: 13
SPC



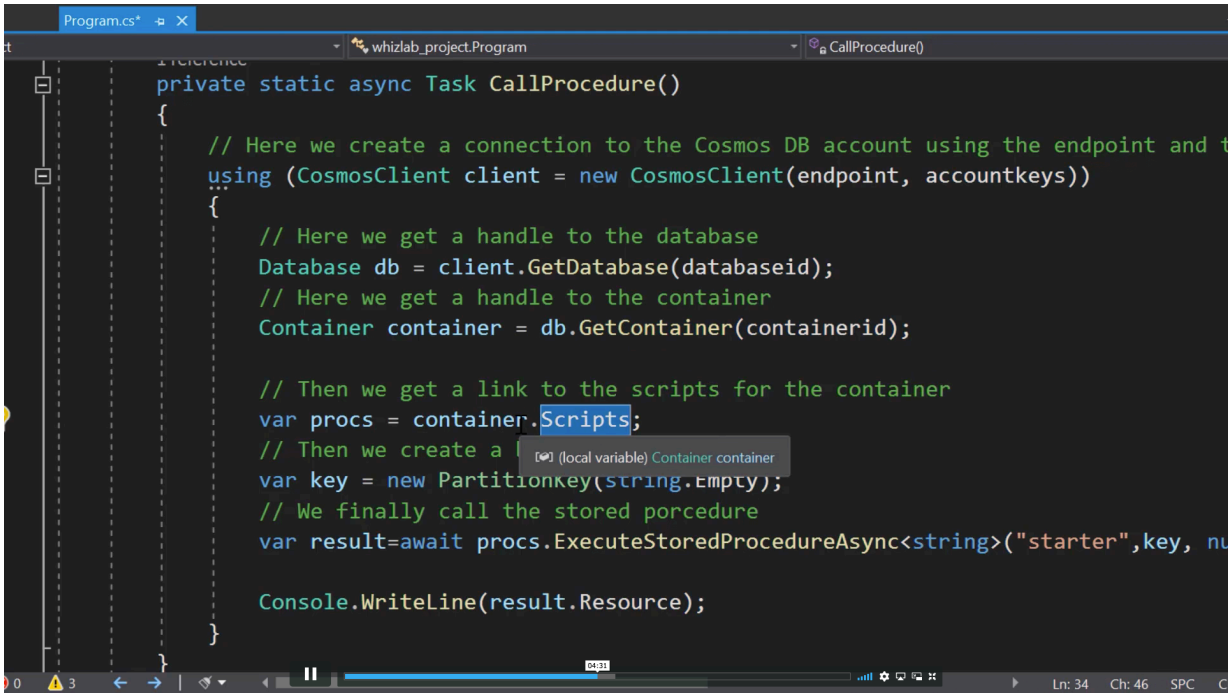
Lab – Azure Cosmos DB

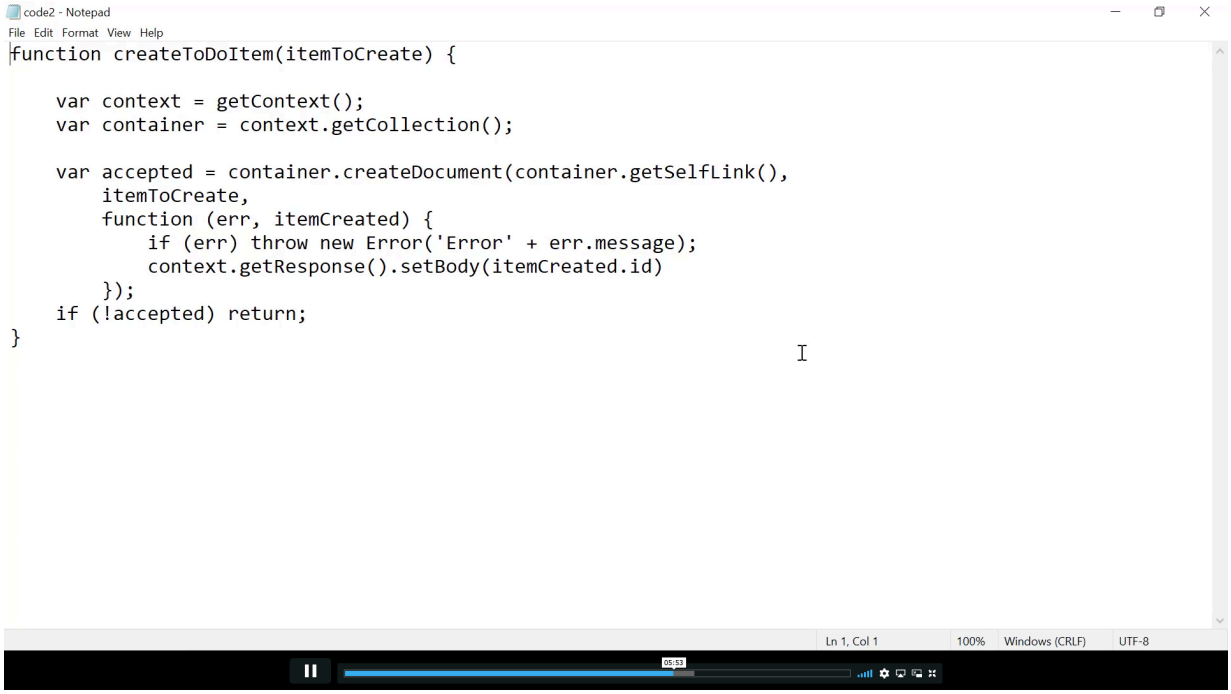
Working with stored procedures

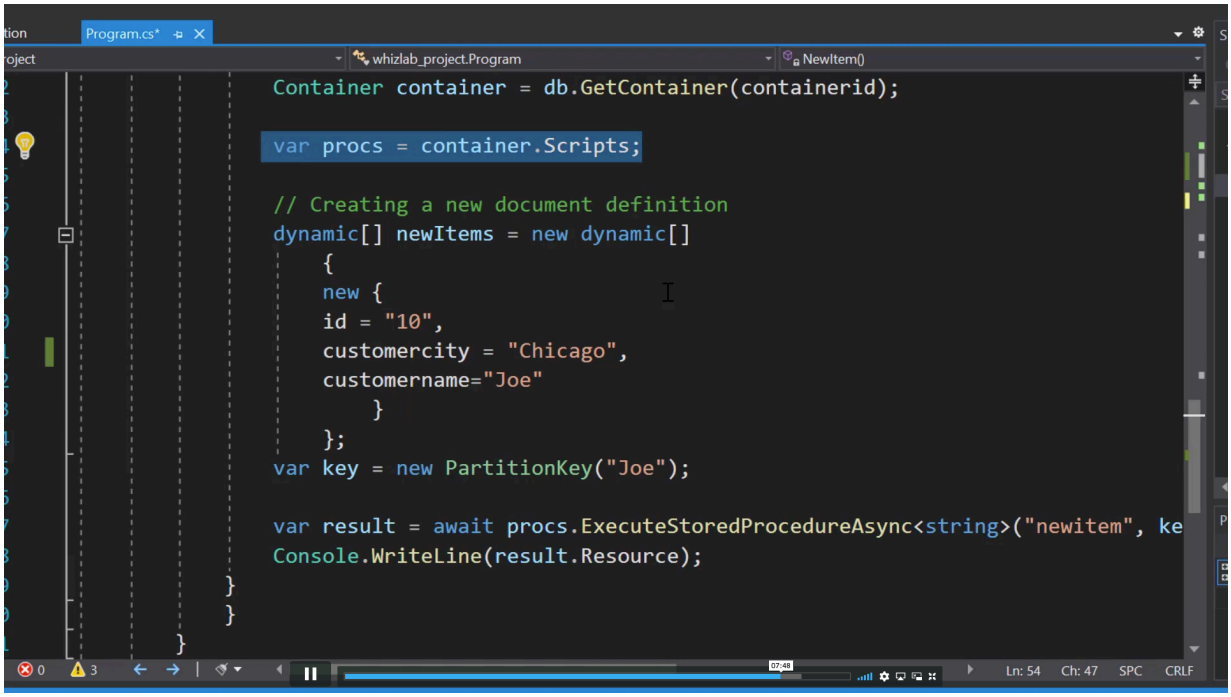
A quick understanding on stored procedures

- A stored procedure can be used to perform an operation on a Cosmos DB collection.
- Instead of performing that operation directly from a program, you can invoke a stored procedure to carry out the operation.
- The stored procedure in Cosmos DB is written in JavaScript.
- The stored procedure is registered and executed against a collection and runs as a single transaction.


code1 - Notepad
File Edit Format View Help
function HelloWorld() {
var context = getContext();
var response = context.getResponse();
response.setBody("Hello, World");
}
Ln 4, Col 42
100%
Windows (CRLF)
UTF-8


Program.cs*
whizlab_project.Program
CallProcedure()
private static async Task CallProcedure()
{
// Here we create a connection to the Cosmos DB account using the endpoint and t
using (CosmosClient client = new CosmosClient(endpoint, accountkeys))
{
// Here we get a handle to the database
Database db = client.GetDatabase(databaseid);
// Here we get a handle to the container
Container container = db.GetContainer(containerid);
// Then we get a link to the scripts for the container
var procs = container.Scripts;
(local variable) Container container
// Then we create a
var key = new PartitionKey(string.Empty);
// We finally call the stored porcedure
var result=await procs.ExecuteStoredProcedureAsync<string>("starter",key, nu
Console.WriteLine(result.Resource);
}
}
Ln: 34
Ch: 46
SPC


code2 - Notepad
File Edit Format View Help
function createToDoItem(itemToCreate) {
var context = getContext();
var container = context.getCollection();
var accepted = container.createDocument(container.getSelfLink(),
itemToCreate,
function (err, itemCreated) {
if (err) throw new Error('Error' + err.message);
context.getResponse().setBody(itemCreated.id)
});
if (!accepted) return;
}
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

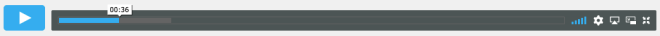

Program.cs*
whizlab_project.Program
NewItem()
Container container = db.GetContainer(containerid);
var procs = container.Scripts;
// Creating a new document definition
dynamic[] newItems = new dynamic[]
{
new {
id = "10",
customercity = "Chicago",
customername="Joe"
}
};
var key = new PartitionKey("Joe");
var result = await procs.ExecuteStoredProcedureAsync<string>("newitem", ke
Console.WriteLine(result.Resource);
}
}
}
Ln: 54
Ch: 47
SPC
CRLF

Lab – Azure Cosmos DB

Working with Triggers

A quick understanding on the triggers feature

- Triggers allow you to perform an action either before or after an operation occurs on the Cosmos DB collection.
- The operation can include the creation, deletion and replacement of a document.
- The triggers are written in JavaScript.
- You can create both pre-triggers and post-triggers.



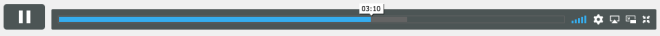
Azure Storage Accounts

Azure storage accounts

Understanding Azure storage accounts

Quick understanding on the different services in storage accounts

- **General Purpose v2 account – Blob service**
- This is used for storing objects on the cloud.
- This is used for storing large amounts of unstructured data.
- If your application has a need to store data such as images, video or audio files, log files , then consider using the Blob service.

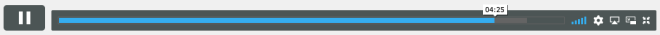


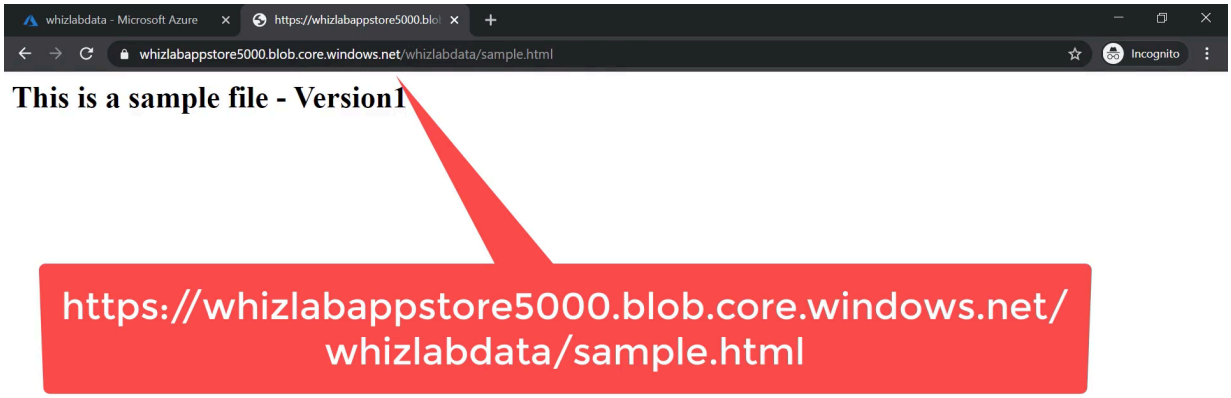
Azure storage accounts

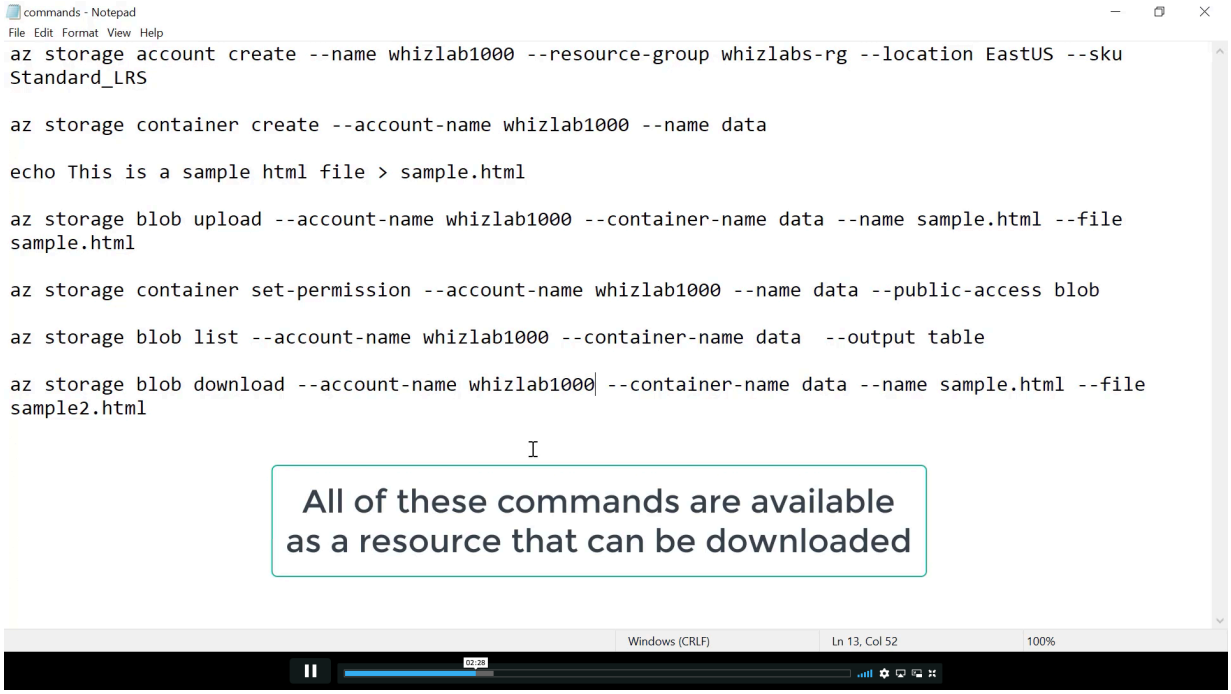
Understanding Azure storage accounts

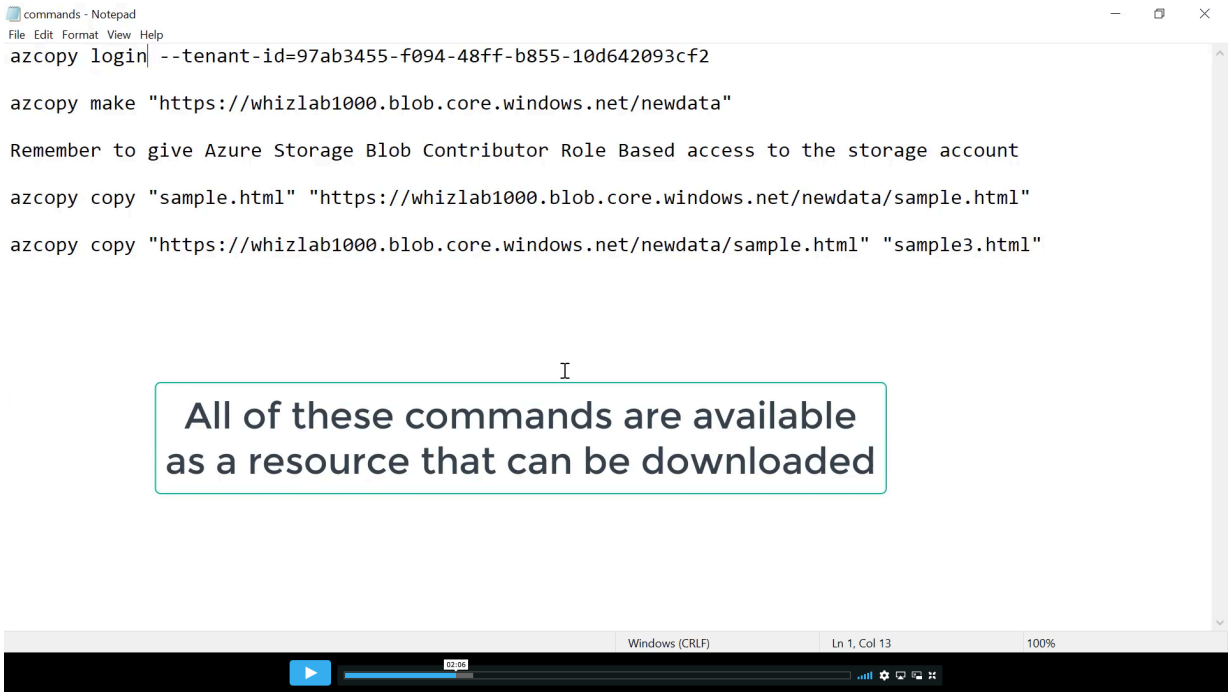
Quick understanding on the different services in storage accounts

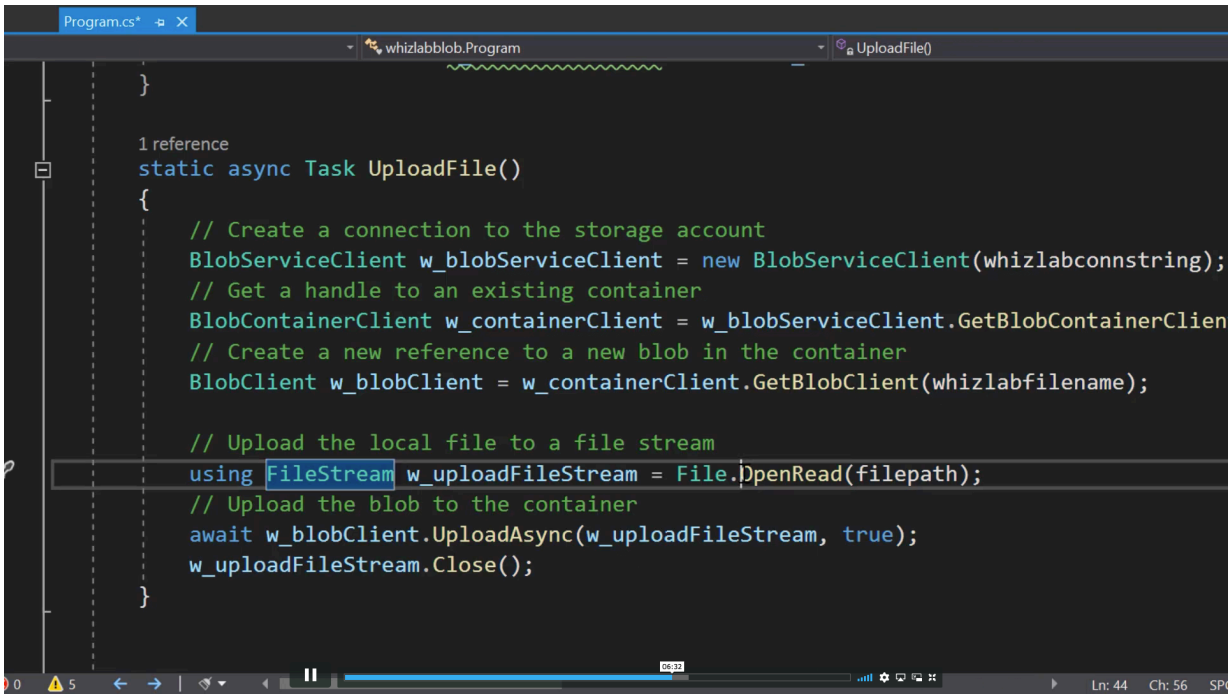
- **General Purpose v2 account – Table service**
- This is a service that can be used to store structured NoSQL data in the cloud.
- It's ideal for storage accessed by web applications.
- It's ideal for datasets that don't require complex joins, foreign keys or stored procedures.






commands - Notepad
File Edit Format View Help
az storage account create --name whizlab1000 --resource-group whizlabs-rg --location EastUS --sku Standard_LRS
az storage container create --account-name whizlab1000 --name data
echo This is a sample html file > sample.html
az storage blob upload --account-name whizlab1000 --container-name data --name sample.html --file sample.html
az storage container set-permission --account-name whizlab1000 --name data --public-access blob
az storage blob list --account-name whizlab1000 --container-name data --output table
az storage blob download --account-name whizlab1000 --container-name data --name sample.html --file sample2.html
All of these commands are available as a resource that can be downloaded
Windows (CRLF)
Ln 13, Col 52
100%
02:28


commands - Notepad
File Edit Format View Help
azcopy login --tenant-id=97ab3455-f094-48ff-b855-10d642093cf2
azcopy make "https://whizlab1000.blob.core.windows.net/newdata"
Remember to give Azure Storage Blob Contributor Role Based access to the storage account
azcopy copy "sample.html" "https://whizlab1000.blob.core.windows.net/newdata/sample.html"
azcopy copy "https://whizlab1000.blob.core.windows.net/newdata/sample.html" "sample3.html"
All of these commands are available as a resource that can be downloaded
Windows (CRLF)
Ln 1, Col 13
100%
02:06



Implement Azure Security - Implement secure cloud solution

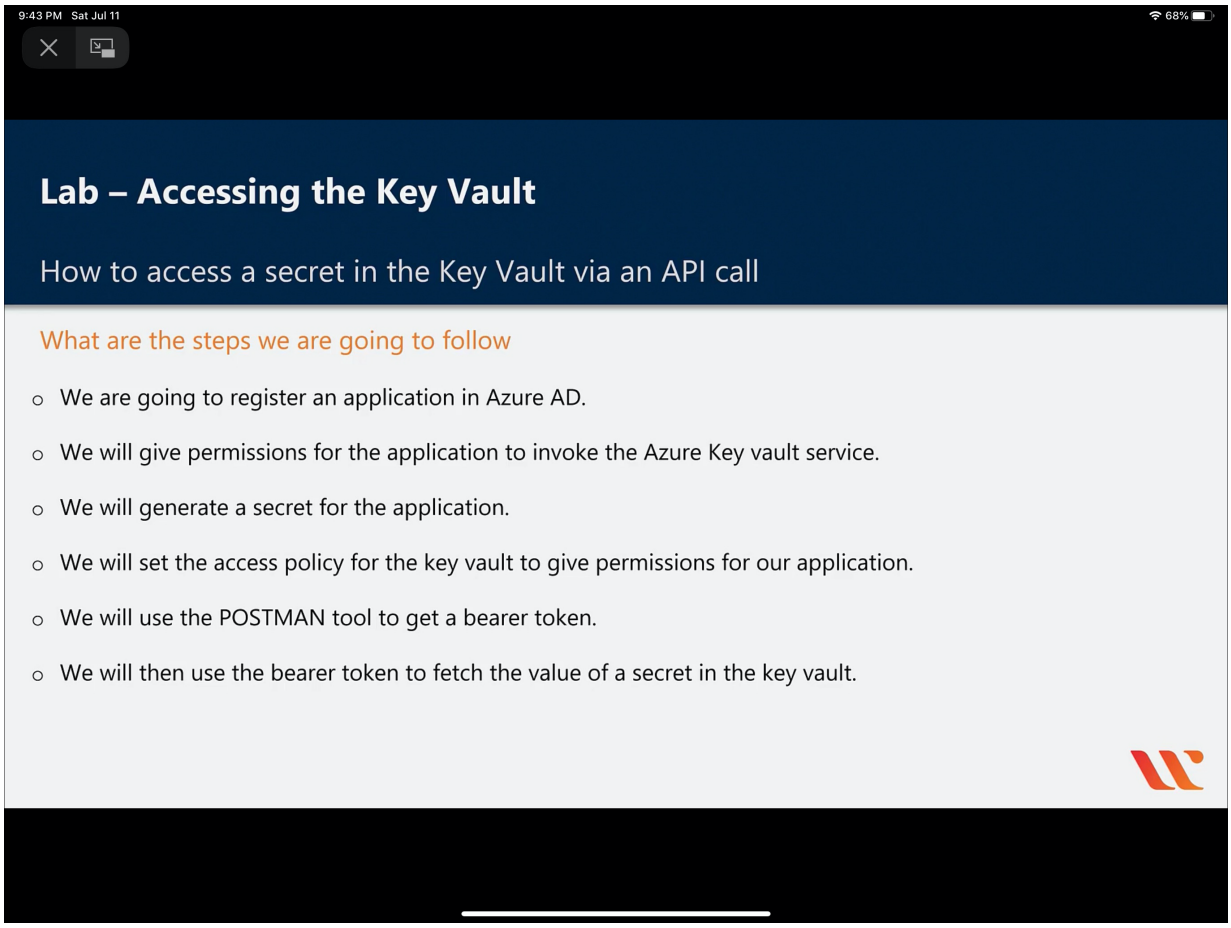
Lab – Accessing a secret - .Net

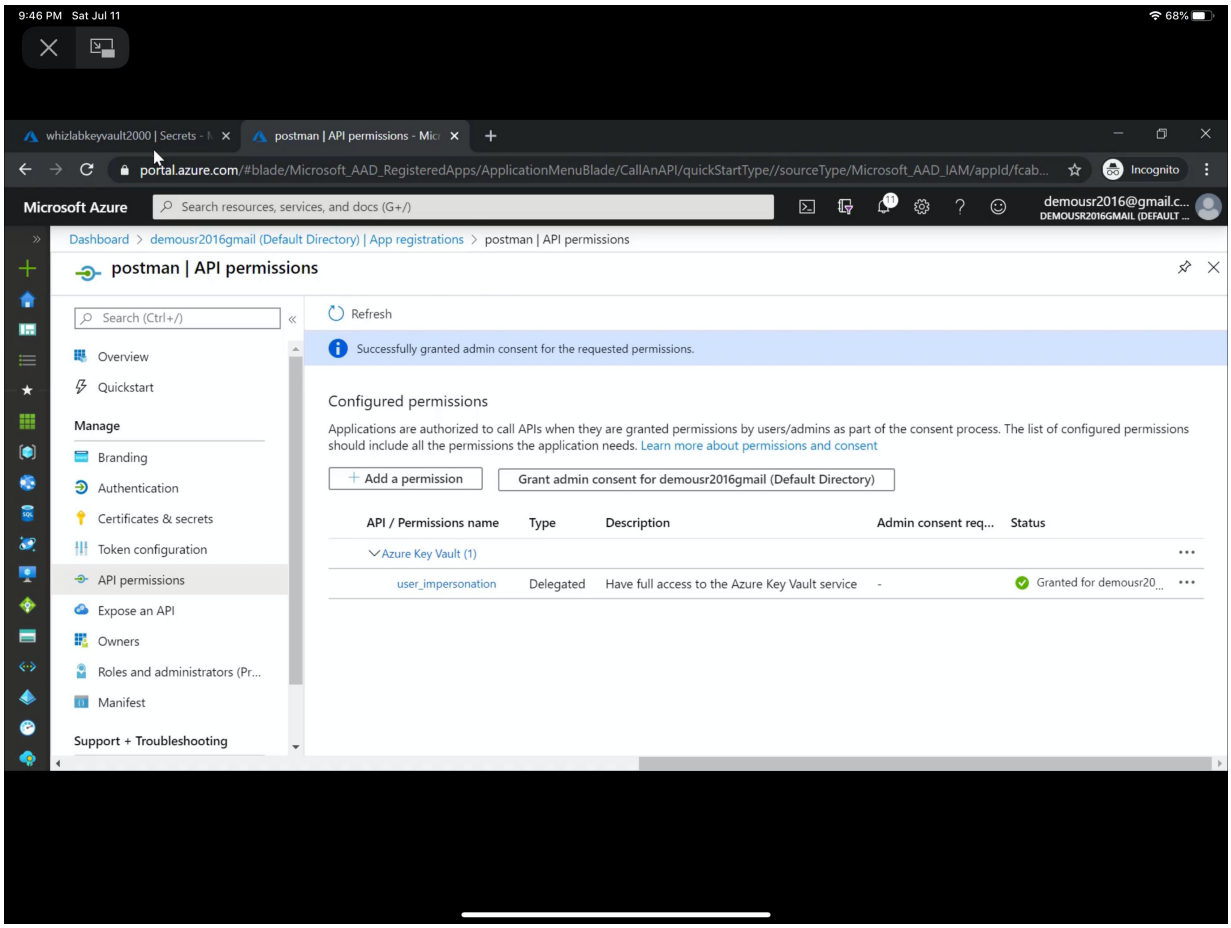
How to use a .Net program to access a secret

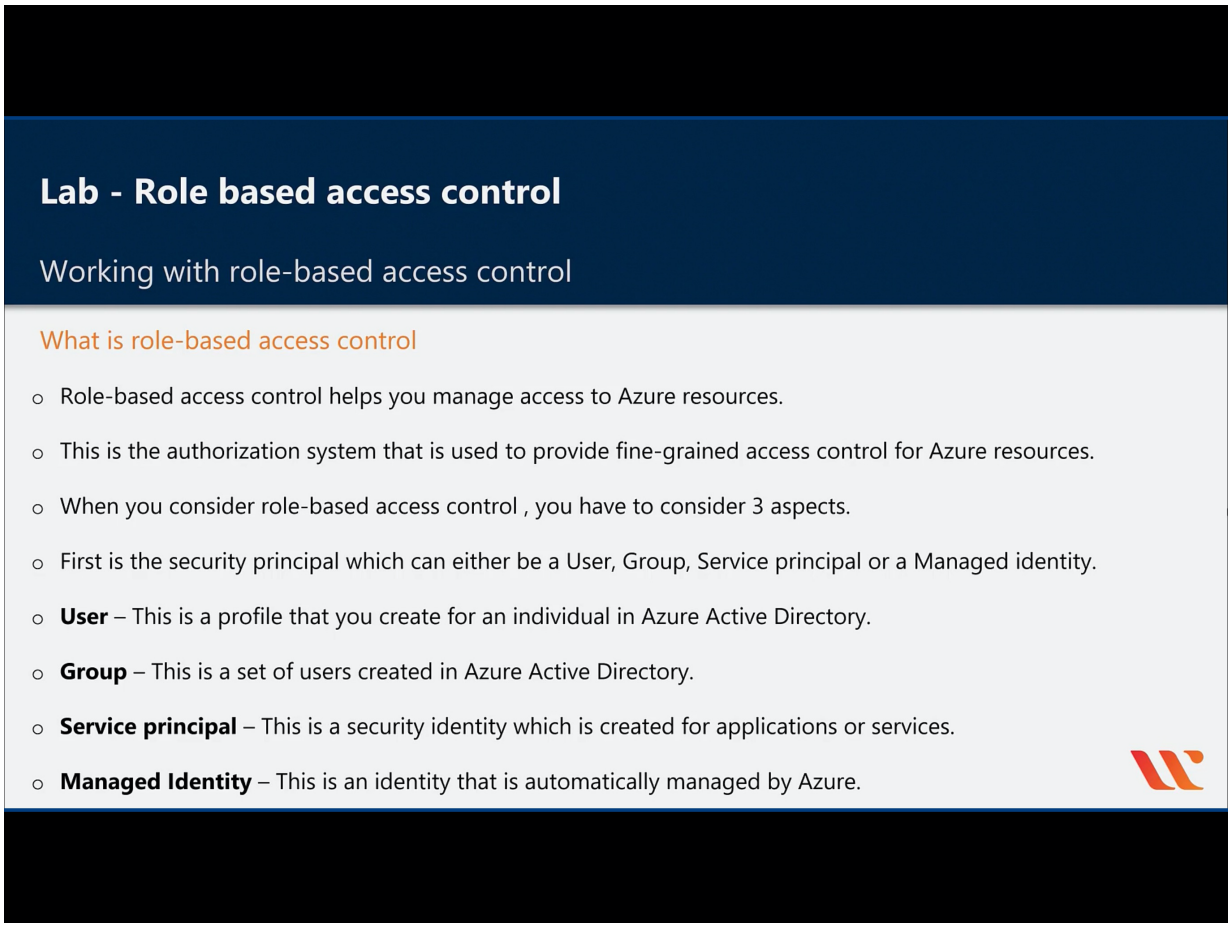
What are the steps we are going to follow

- We are going to create a service principal.
- We are then going to take the values of the service principal and define environment variables on our client system.
- We will then set the access policy for the key vault to give access for the service principal to secrets in the key vault.
- We will then use a .Net program to access the value of the secret.


*commands - Notepad
File Edit Format View Help
az ad sp create-for-rbac -n whizlabapplication --skip-assignment
Define the following environment variables first
AZURE_CLIENT_ID="38ab1ada-1c41-4bc6-af9e-440db377a2d8"
AZURE_CLIENT_SECRET="cae68966-471e-4714-bc0d-3168cb3d3c3a"
AZURE_TENANT_ID="97ab3455-f094-48ff-b855-10d642093cf2"
az keyvault set-policy --name whizlabkeyvault2000 --spn "38ab1ada-1c41-4bc6-af9e-440db377a2d8" --
secret-permissions backup delete get list set
Ln 1, Col 47
100%
Windows (CRLF)
UTF-8


9:43 PM Sat Jul 11
68%
Lab – Accessing the Key Vault
How to access a secret in the Key Vault via an API call
What are the steps we are going to follow
We are going to register an application in Azure AD.
We will give permissions for the application to invoke the Azure Key vault service.
We will generate a secret for the application.
We will set the access policy for the key vault to give permissions for our application.
We will use the POSTMAN tool to get a bearer token.
We will then use the bearer token to fetch the value of a secret in the key vault.


9:46 PM Sat Jul 11
68%
whizlabkeyvault2000 | Secrets -
postman | API permissions - Mic
portal.azure.com/#blade/Microsoft_AAD_RegisteredApps/ApplicationMenuBlade/CallAnAPI/quickStartType//sourceType/Microsoft_AAD_IAM/appId/fcab...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > demousr2016gmail (Default Directory) | App registrations > postman | API permissions
postman | API permissions
Search (Ctrl+/)
Overview
Quickstart
Manage
Branding
Authentication
Certificates & secrets
Token configuration
API permissions
Expose an API
Owners
Roles and administrators (Pr...
Manifest
Support + Troubleshooting
Refresh
Successfully granted admin consent for the requested permissions.
Configured permissions
Applications are authorized to call APIs when they are granted permissions by users/admins as part of the consent process. The list of configured permissions should include all the permissions the application needs. Learn more about permissions and consent
+ Add a permission
Grant admin consent for demousr2016gmail (Default Directory)
API / Permissions name
Type
Description
Admin consent req...
Status
Azure Key Vault (1)
user_impersonation
Delegated
Have full access to the Azure Key Vault service
-
Granted for demousr20...



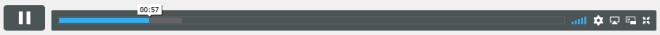
Connect to and consume Azure services and third-party services

Lab – Azure Service Bus Queue

Understanding the Message properties

The properties of a message in the Service Bus

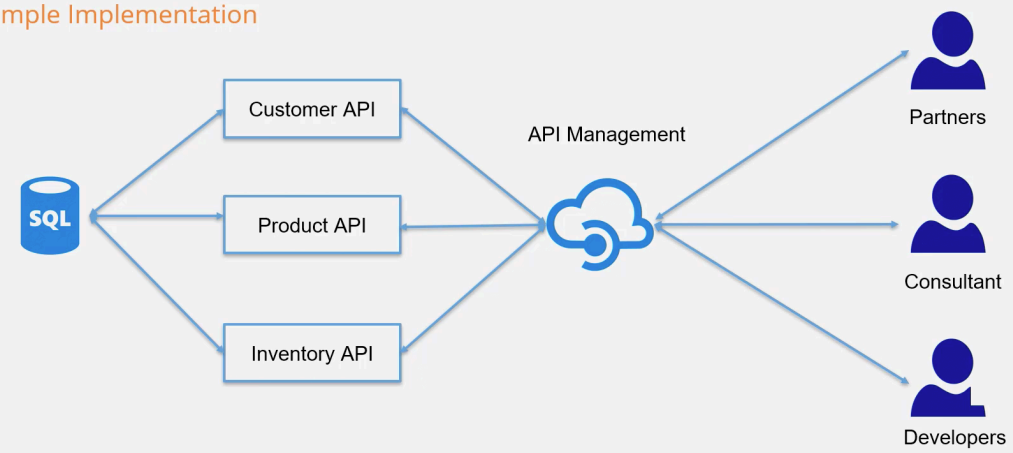
- Each message that is sent to the Service Bus consists of three elements.
- One is the body of the message that is in binary format.
- Next is the broker properties that are defined by the system.
- Next is the user properties that can be set by the publisher of the message.



Azure API Management

Introduction

Simple Implementation

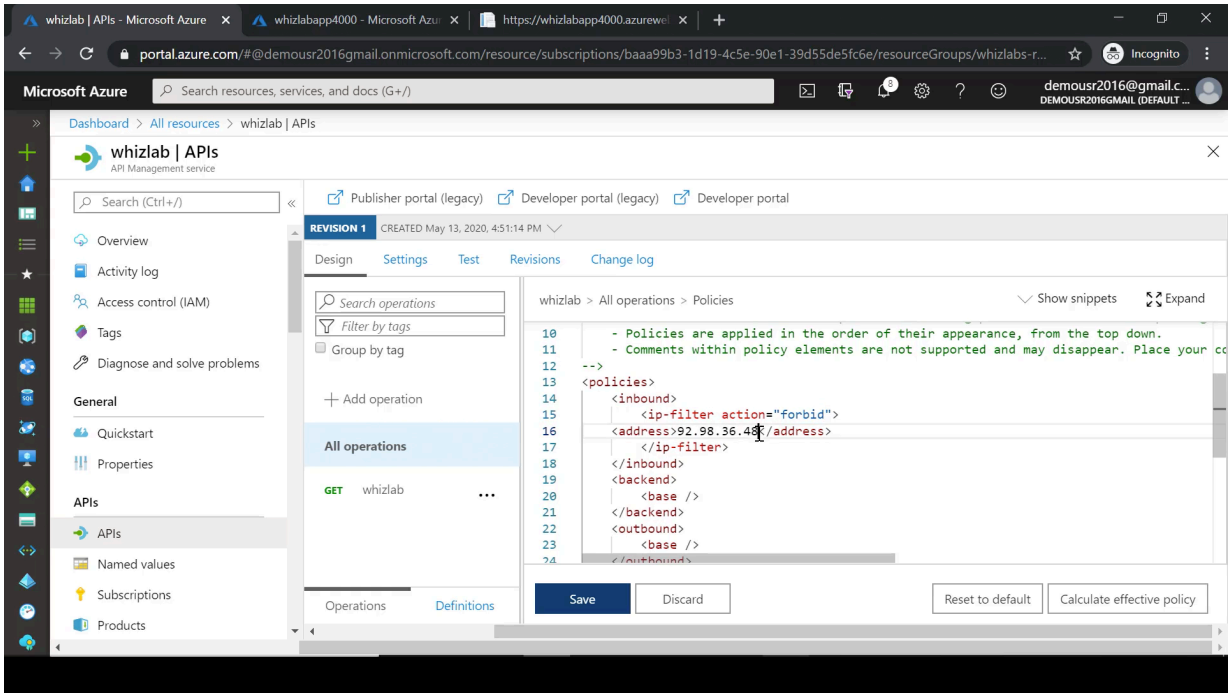


Azure API Management

Introduction

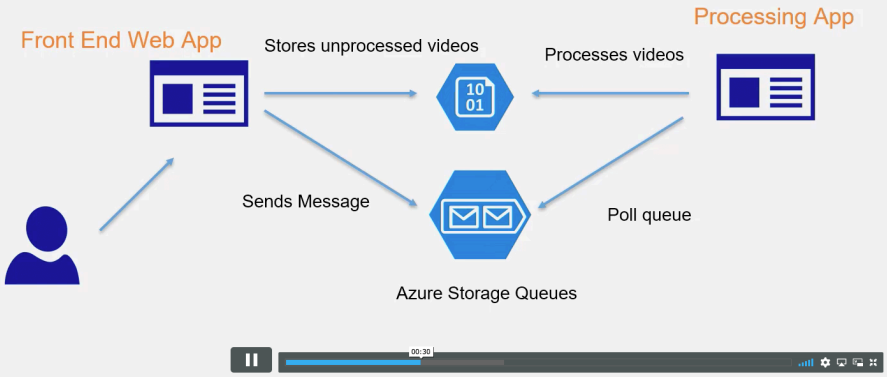
The different elements

- API Gateway.
- Used to route requests to your backend API.
- Can cache backend responses.
- Enforce usage quotas and rate limits.
- Verify API credentials such as API keys.



Azure Storage

Queues



Azure Storage

Queues

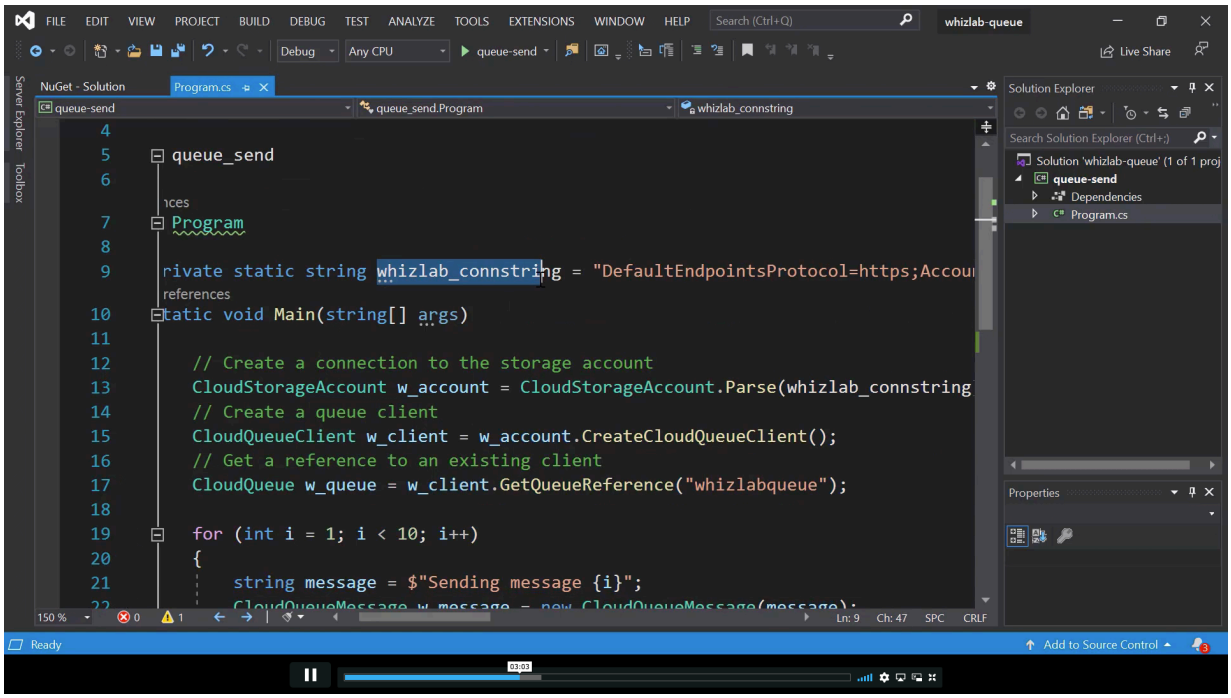
Differences

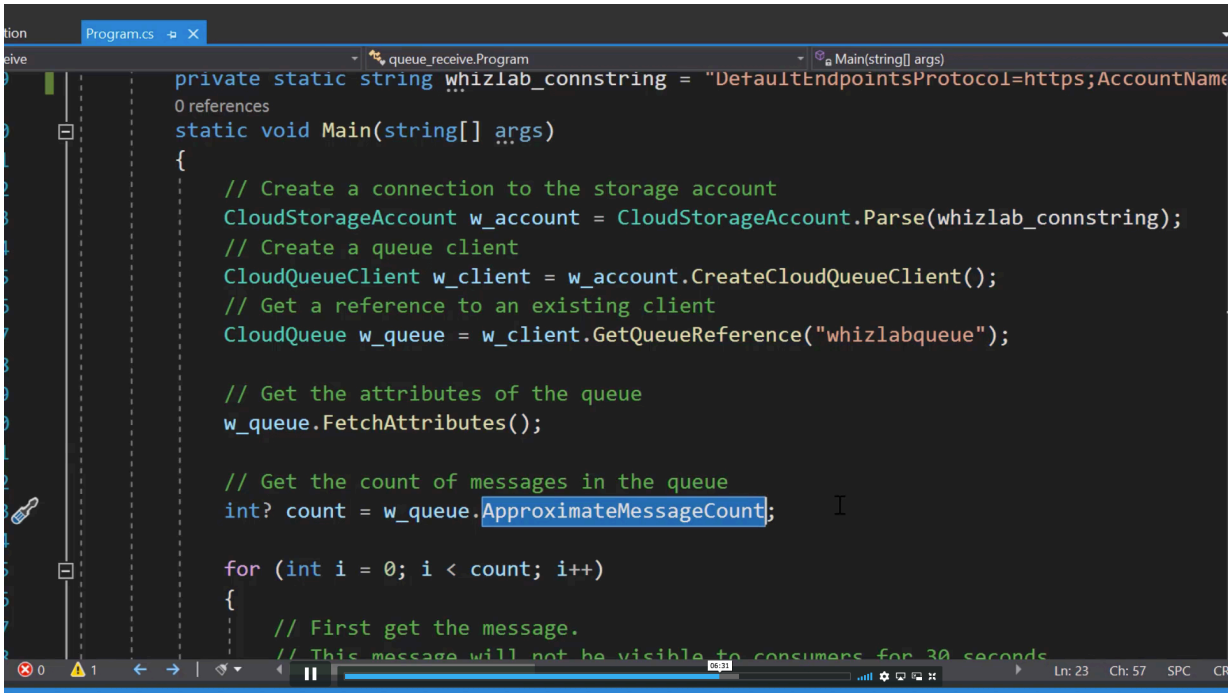
Azure Storage Queues

- Storage of more than 80GB worth of messages
- Track progress for processing a message inside of the queue
- Server side logs of all of the transactions

Azure Service Bus Queues

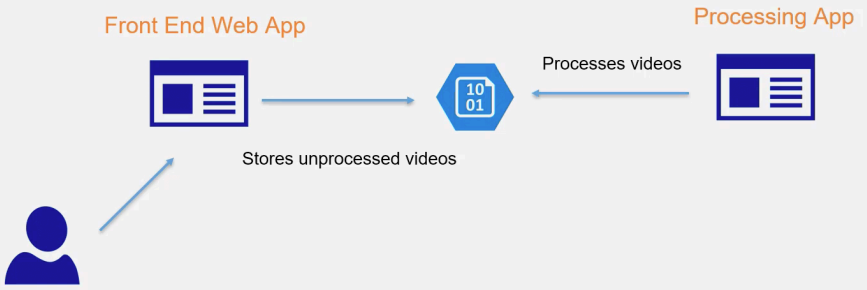
- First-in-first-out ordered delivery
- Support automatic duplicate detection
- Publish and consume batches of messages


FILE EDIT VIEW PROJECT BUILD DEBUG TEST ANALYZE TOOLS EXTENSIONS WINDOW HELP
whizlab-queue
Debug
Any CPU
queue-send
Live Share
NuGet - Solution
Program.cs
queue-send
queue_send.Program
whizlab_connstring
Solution Explorer
Solution 'whizlab-queue' (1 of 1 proj
queue-send
Dependencies
Program.cs
Properties
queue_send
Program
private static string whizlab_connstring = "DefaultEndpointsProtocol=https;Accou
0 references
static void Main(string[] args)
// Create a connection to the storage account
CloudStorageAccount w_account = CloudStorageAccount.Parse(whizlab_connstring
// Create a queue client
CloudQueueClient w_client = w_account.CreateCloudQueueClient();
// Get a reference to an existing client
CloudQueue w_queue = w_client.GetQueueReference("whizlabqueue");
for (int i = 1; i < 10; i++)
{
string message = $"Sending message {i}";
150 %
Ln: 9
Ch: 47
SPC
CRLF
Ready
Add to Source Control


Program.cs
queue_receive.Program
Main(string[] args)
private static string whizlab_connstring = "DefaultEndpointsProtocol=https;AccountName
0 references
static void Main(string[] args)
{
// Create a connection to the storage account
CloudStorageAccount w_account = CloudStorageAccount.Parse(whizlab_connstring);
// Create a queue client
CloudQueueClient w_client = w_account.CreateCloudQueueClient();
// Get a reference to an existing client
CloudQueue w_queue = w_client.GetQueueReference("whizlabqueue");
// Get the attributes of the queue
w_queue.FetchAttributes();
// Get the count of messages in the queue
int? count = w_queue.ApproximateMessageCount;
for (int i = 0; i < count; i++)
{
// First get the message.
Ln: 23
Ch: 57
SPC

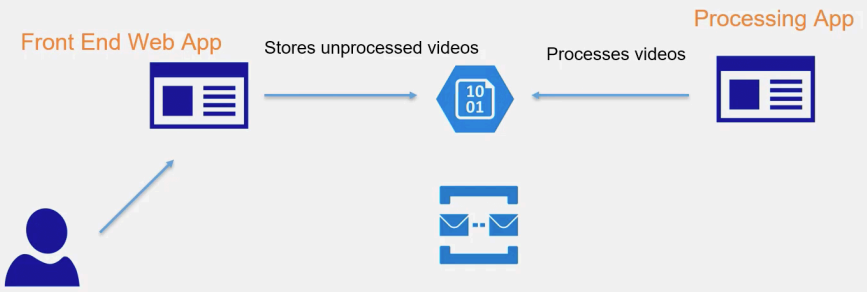
Azure Service Bus

What's the purpose?



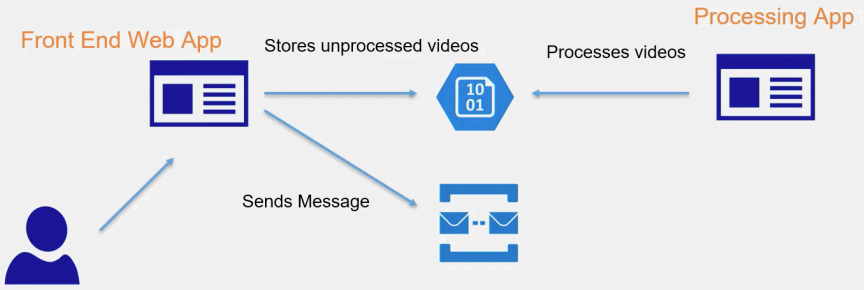
Azure Service Bus

What's the purpose?



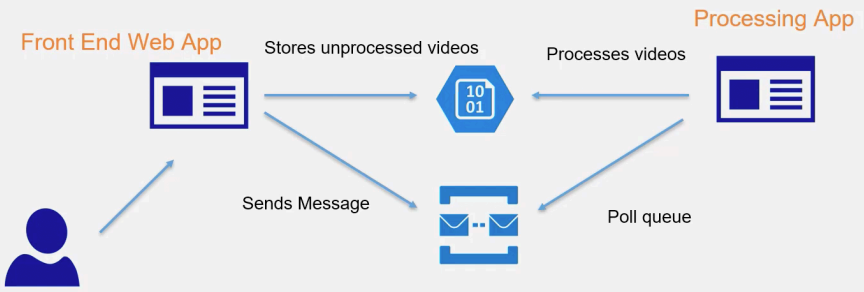
Azure Service Bus

What's the purpose?



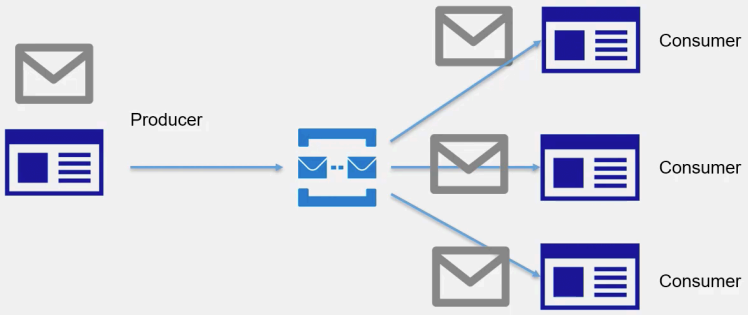
Azure Service Bus

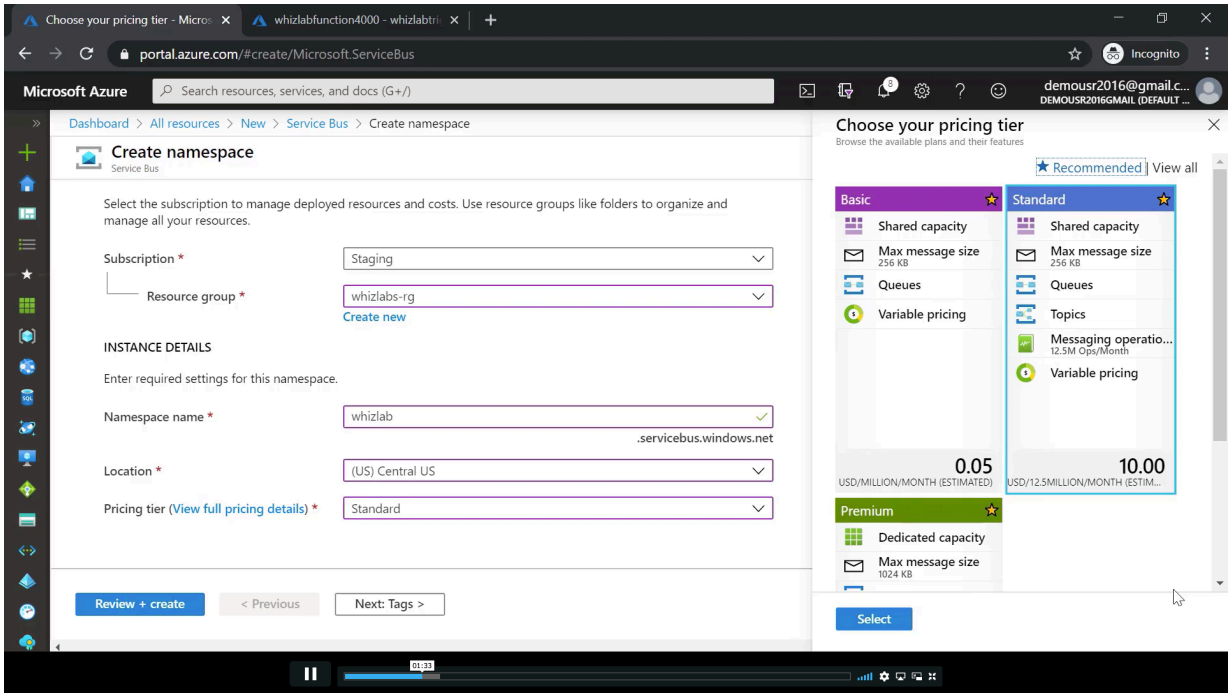
What's the purpose?

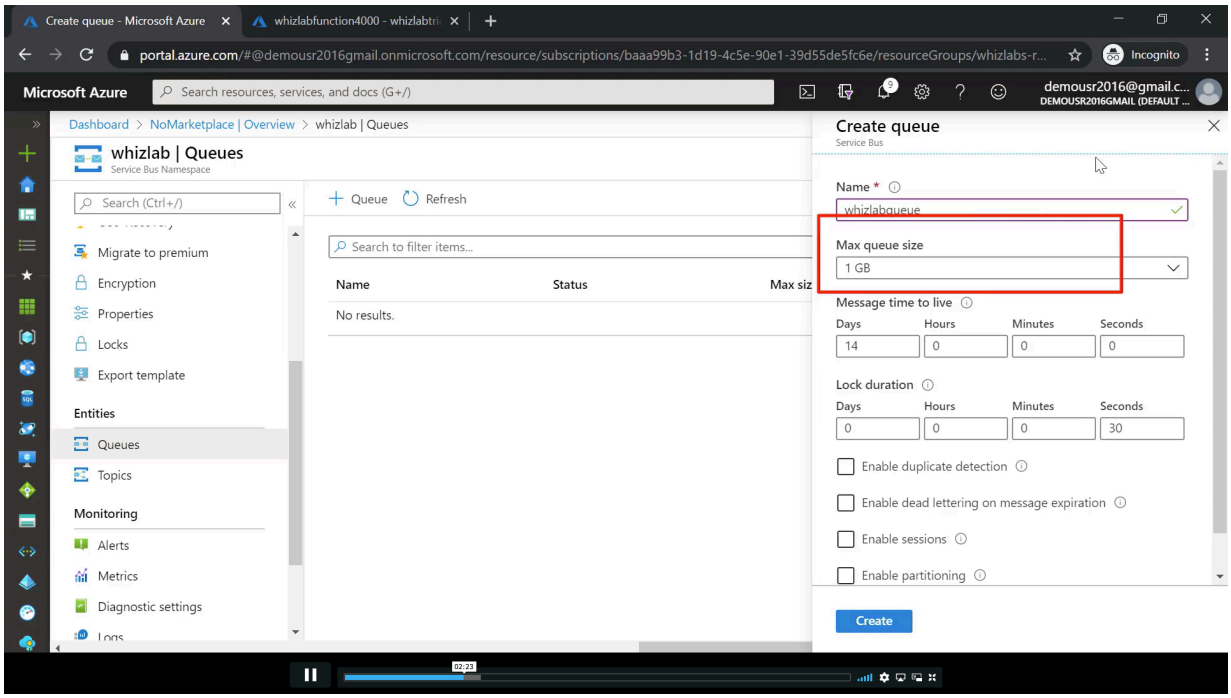


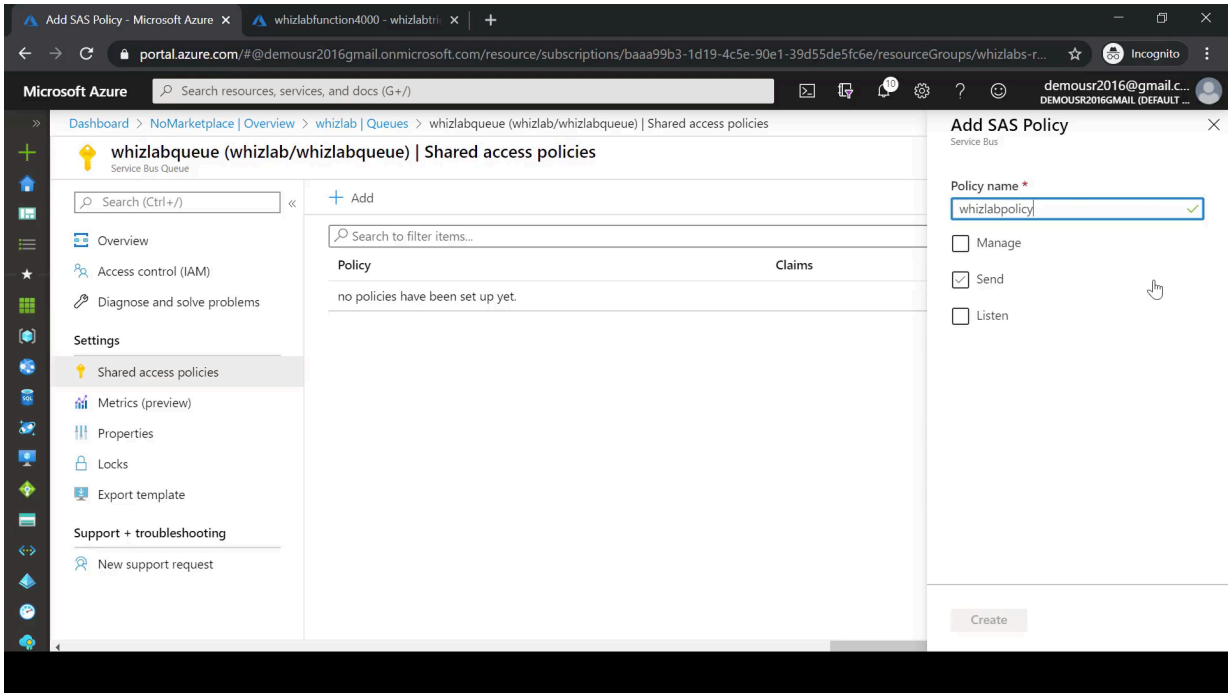
Azure Service Bus

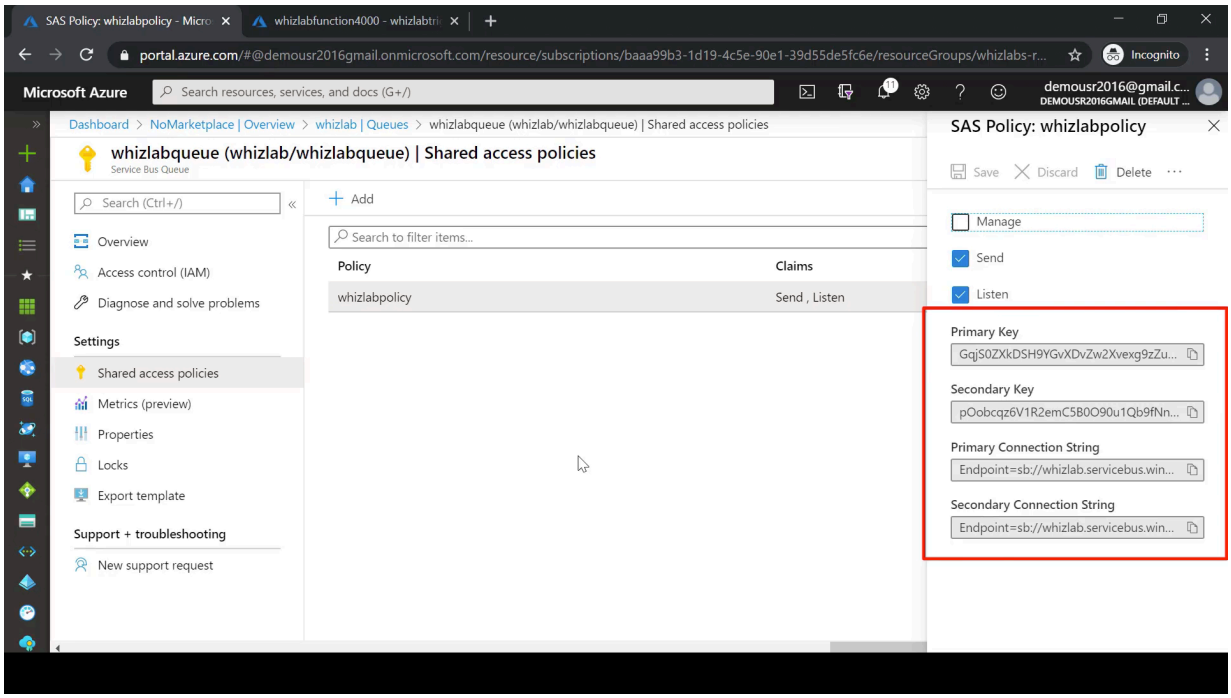
Topic

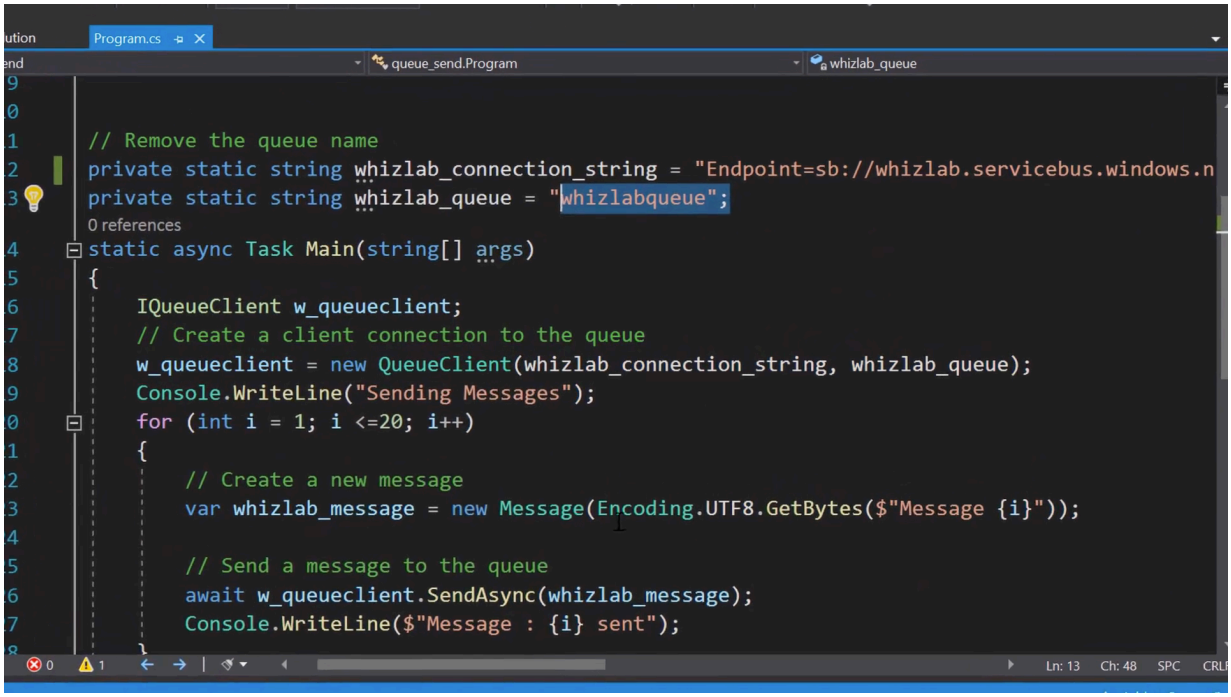


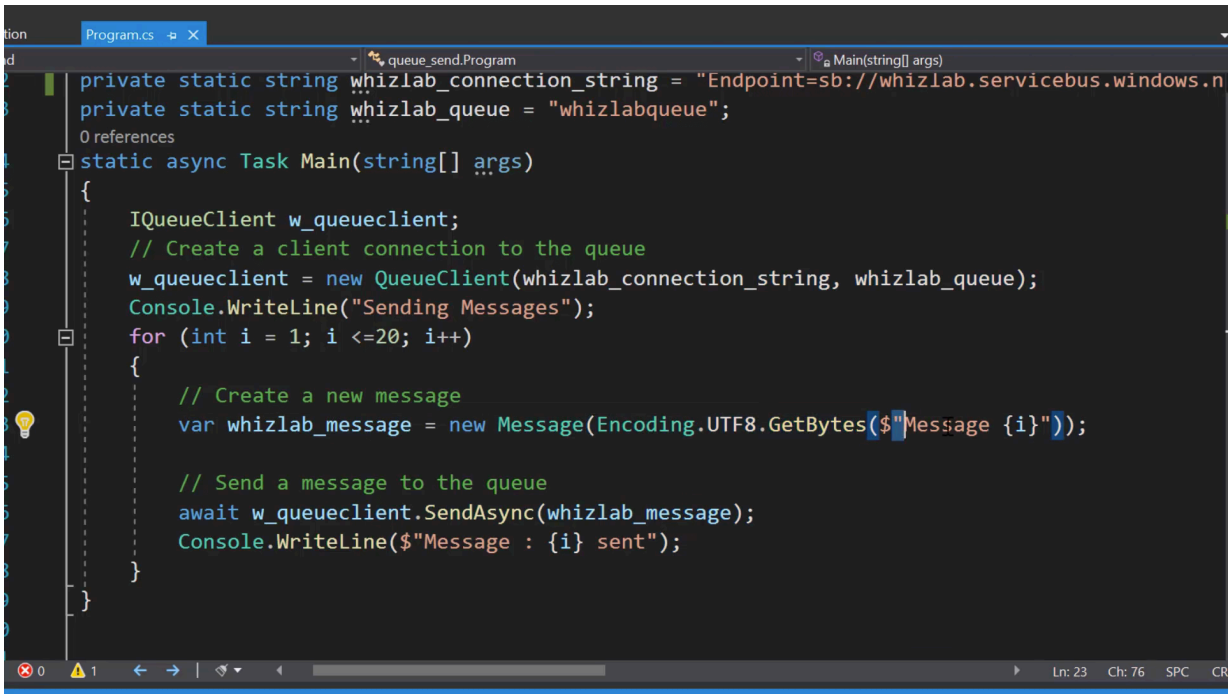


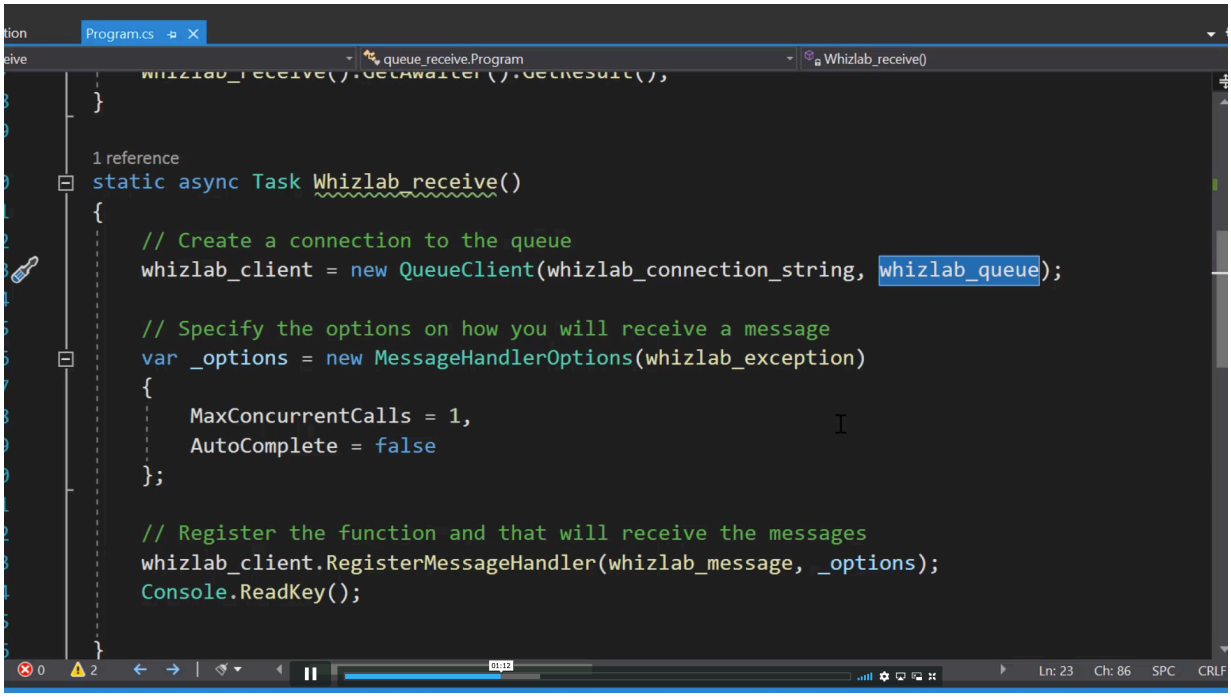

Create queue - Microsoft Azure
whizlabfunction4000 - whizlabtri
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourceGroups/whizlabs-r...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > NoMarketplace | Overview > whizlab | Queues
whizlab | Queues
Service Bus Namespace
Search (Ctrl+/)
Queue
Refresh
Search to filter items...
Name
Status
Max siz
No results.
Migrate to premium
Encryption
Properties
Locks
Export template
Entities
Queues
Topics
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Create queue
Service Bus
Name *
whizlabqueue
Max queue size
1 GB
Message time to live
Days
Hours
Minutes
Seconds
14
0
0
0
Lock duration
Days
Hours
Minutes
Seconds
0
0
0
30
Enable duplicate detection
Enable dead lettering on message expiration
Enable sessions
Enable partitioning
Create
02:23

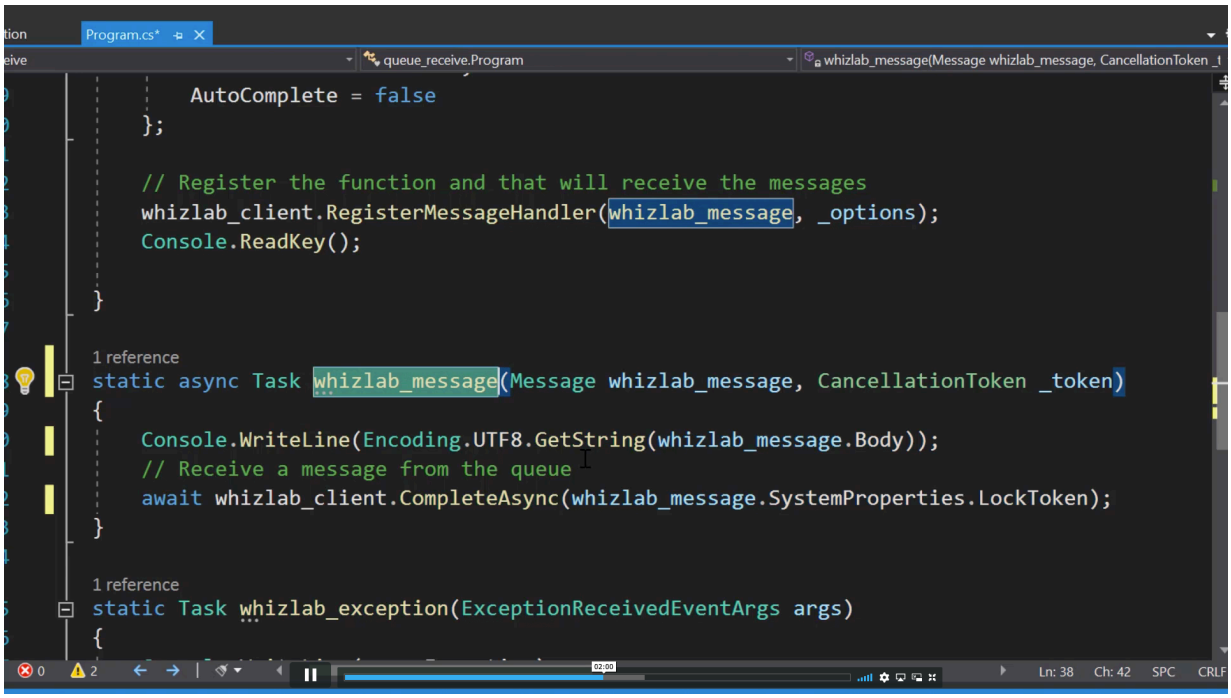

Add SAS Policy - Microsoft Azure
whizlabfunction4000 - whizlabtri
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourceGroups/whizlabs-r...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > NoMarketplace | Overview > whizlab | Queues > whizlabqueue (whizlab/whizlabqueue) | Shared access policies
whizlabqueue (whizlab/whizlabqueue) | Shared access policies
Service Bus Queue
Search (Ctrl+/)
Add
Search to filter items...
Policy
Claims
no policies have been set up yet.
Overview
Access control (IAM)
Diagnose and solve problems
Settings
Shared access policies
Metrics (preview)
Properties
Locks
Export template
Support + troubleshooting
New support request
Add SAS Policy
Service Bus
Policy name *
whizlabpolicy
Manage
Send
Listen
Create

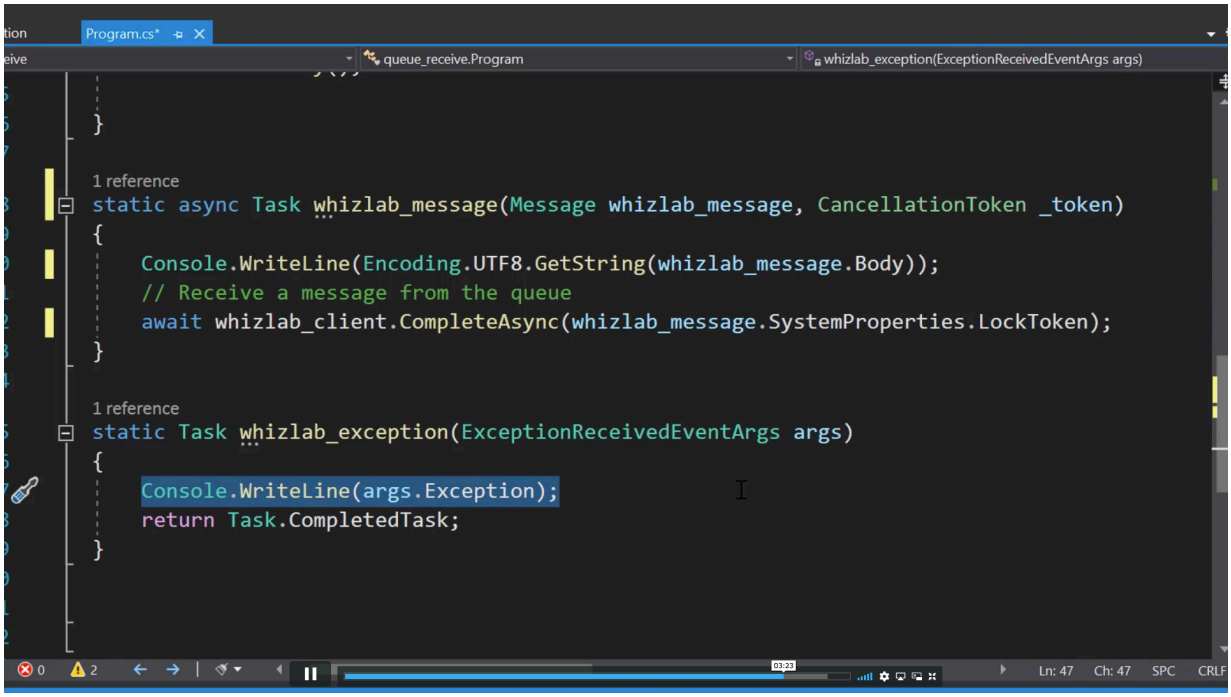

SAS Policy: whizlabpolicy - Micro
whizlabfunction4000 - whizlabtri
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourceGroups/whizlabs-r...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > NoMarketplace | Overview > whizlab | Queues > whizlabqueue (whizlab/whizlabqueue) | Shared access policies
whizlabqueue (whizlab/whizlabqueue) | Shared access policies
Service Bus Queue
Search (Ctrl+/)
Overview
Access control (IAM)
Diagnose and solve problems
Settings
Shared access policies
Metrics (preview)
Properties
Locks
Export template
Support + troubleshooting
New support request
Add
Search to filter items...
Policy
Claims
whizlabpolicy
Send , Listen
SAS Policy: whizlabpolicy
Save
Discard
Delete
Manage
Send
Listen
Primary Key
GqjS0ZXkDSH9YGvXDvZw2Xvexg9zZu...
Secondary Key
pOobcqz6V1R2emC5B0O90u1Qb9fNn...
Primary Connection String
Endpoint=sb://whizlab.servicebus.win...
Secondary Connection String
Endpoint=sb://whizlab.servicebus.win...


Program.cs
queue_send.Program
whizlab_queue
// Remove the queue name
private static string whizlab_connection_string = "Endpoint=sb://whizlab.servicebus.windows.n
private static string whizlab_queue = "whizlabqueue";
0 references
static async Task Main(string[] args)
{
IQueueClient w_queueclient;
// Create a client connection to the queue
w_queueclient = new QueueClient(whizlab_connection_string, whizlab_queue);
Console.WriteLine("Sending Messages");
for (int i = 1; i <=20; i++)
{
// Create a new message
var whizlab_message = new Message(Encoding.UTF8.GetBytes($"Message {i}"));
// Send a message to the queue
await w_queueclient.SendAsync(whizlab_message);
Console.WriteLine($"Message : {i} sent");
Ln: 13
Ch: 48
SPC


Program.cs
queue_send.Program
Main(string[] args)
private static string whizlab_connection_string = "Endpoint=sb://whizlab.servicebus.windows.n
private static string whizlab_queue = "whizlabqueue";
0 references
static async Task Main(string[] args)
{
IQueueClient w_queueclient;
// Create a client connection to the queue
w_queueclient = new QueueClient(whizlab_connection_string, whizlab_queue);
Console.WriteLine("Sending Messages");
for (int i = 1; i <=20; i++)
{
// Create a new message
var whizlab_message = new Message(Encoding.UTF8.GetBytes($"Message {i}"));
// Send a message to the queue
await w_queueclient.SendAsync(whizlab_message);
Console.WriteLine($"Message : {i} sent");
}
}
Ln: 23
Ch: 76
SPC


Program.cs
queue_receive.Program
Whizlab_receive()
}
1 reference
static async Task Whizlab_receive()
{
// Create a connection to the queue
whizlab_client = new QueueClient(whizlab_connection_string, whizlab_queue);
// Specify the options on how you will receive a message
var _options = new MessageHandlerOptions(whizlab_exception)
{
MaxConcurrentCalls = 1,
AutoComplete = false
};
// Register the function and that will receive the messages
whizlab_client.RegisterMessageHandler(whizlab_message, _options);
Console.ReadKey();
}
Ln: 23
Ch: 86
SPC
CRLF


Program.cs*
queue_receive.Program
whizlab_message(Message whizlab_message, CancellationToken _t
AutoComplete = false
};
// Register the function and that will receive the messages
whizlab_client.RegisterMessageHandler(whizlab_message, _options);
Console.ReadKey();
}
1 reference
static async Task whizlab_message(Message whizlab_message, CancellationToken _token)
{
Console.WriteLine(Encoding.UTF8.GetString(whizlab_message.Body));
// Receive a message from the queue
await whizlab_client.CompleteAsync(whizlab_message.SystemProperties.LockToken);
}
1 reference
static Task whizlab_exception(ExceptionReceivedEventArgs args)
{
Ln: 38
Ch: 42
SPC
CRLF


Program.cs*
queue_receive.Program
whizlab_exception(ExceptionReceivedEventArgs args)
}
1 reference
static async Task whizlab_message(Message whizlab_message, CancellationToken _token)
{
Console.WriteLine(Encoding.UTF8.GetString(whizlab_message.Body));
// Receive a message from the queue
await whizlab_client.CompleteAsync(whizlab_message.SystemProperties.LockToken);
}
1 reference
static Task whizlab_exception(ExceptionReceivedEventArgs args)
{
Console.WriteLine(args.Exception);
return Task.CompletedTask;
}
Ln: 47
Ch: 47
SPC
CRLF

Lab – Azure Service Bus Queue

Understanding the Message properties

The properties of a message in the Service Bus

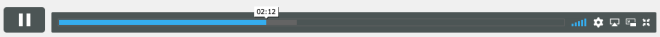
- Some of the system-defined broker properties are
- **ContentType** – This describes the payload of the message. An example is application/json.
- **MessageId** – This is an application-defined value that uniquely identifies the message and the payload.
- **CorrelationId** – This is used when a message is being replied to, based on the MessageId.
- **ReplyTo** – This is used to express a reply path to the receiver of the message.
- **SequenceNumber** – This is a 64-bit integer assigned to the message.

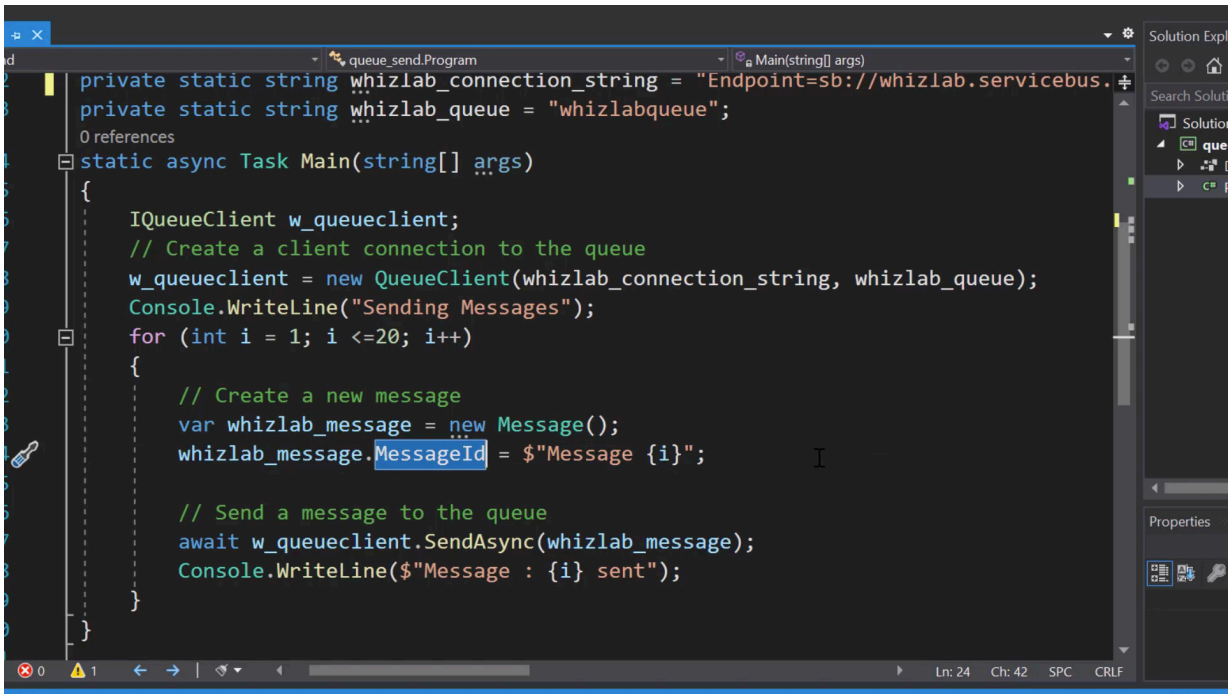
Lab – Azure Service Bus Queue

Understanding the Message properties

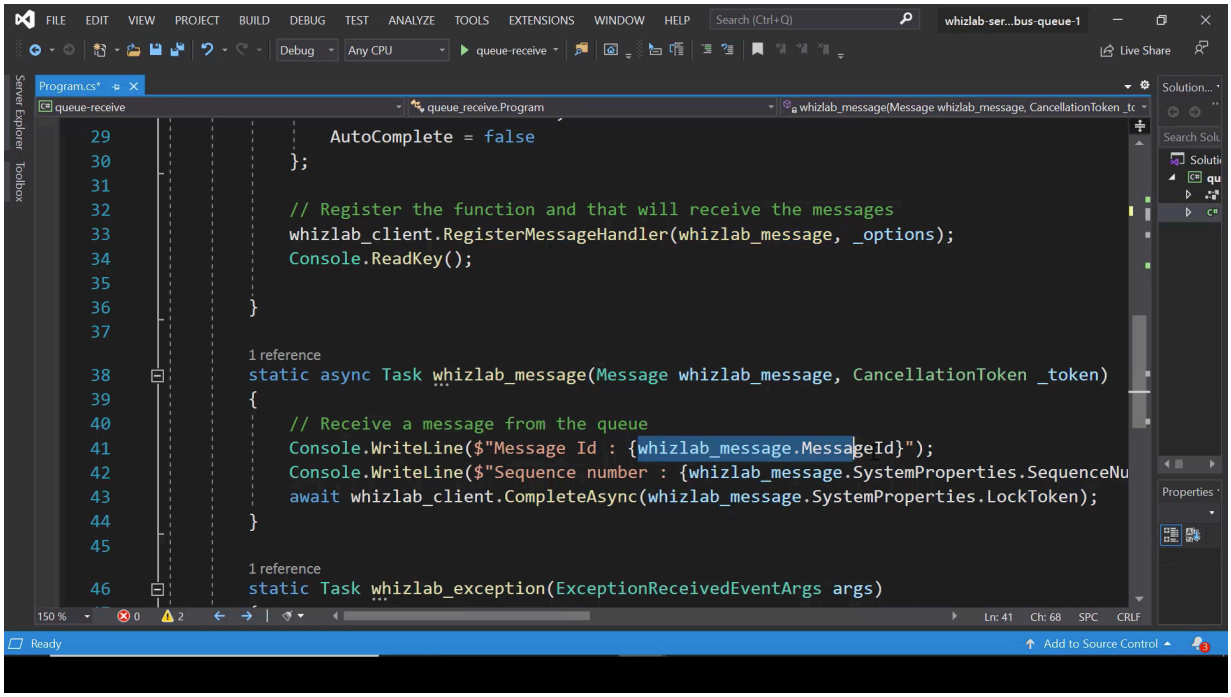
The properties of a message in the Service Bus

- Some of the system-defined broker properties are
- **TimeToLive** – This is used to specify a duration after which the message would expire.
- **SessionId** – This can be used for session based applications.
- **LockToken** – This is used to reference the lock that is held by the broker in the peek-lock receive mode.

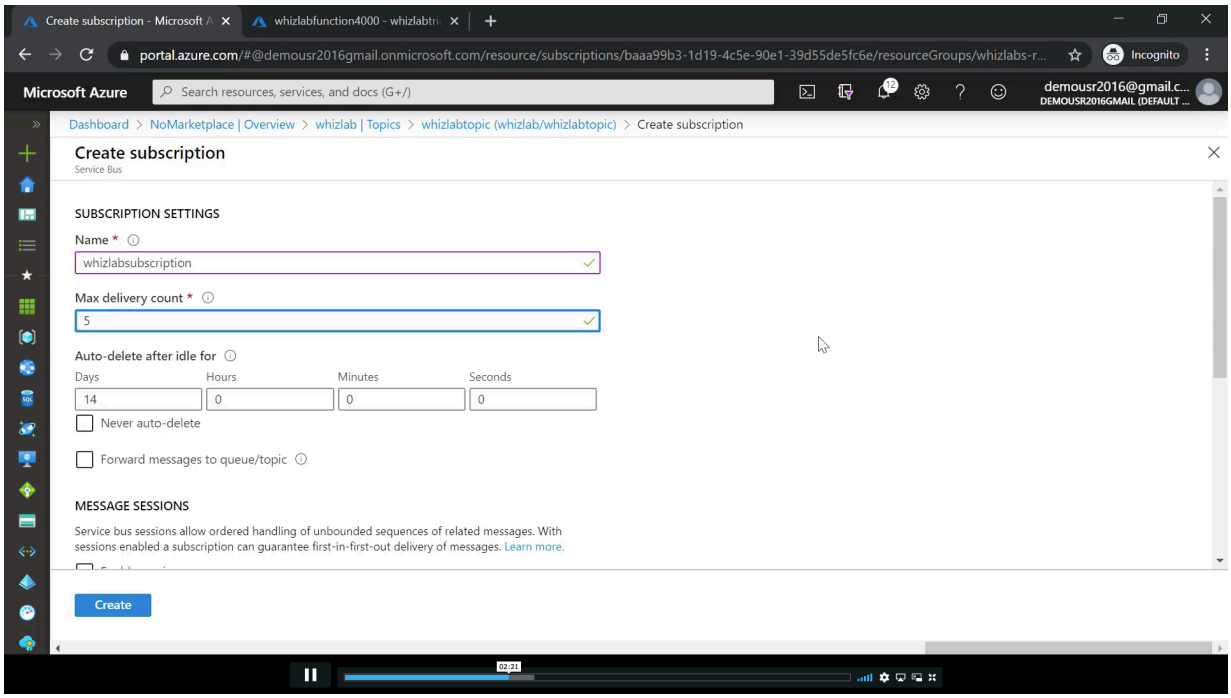


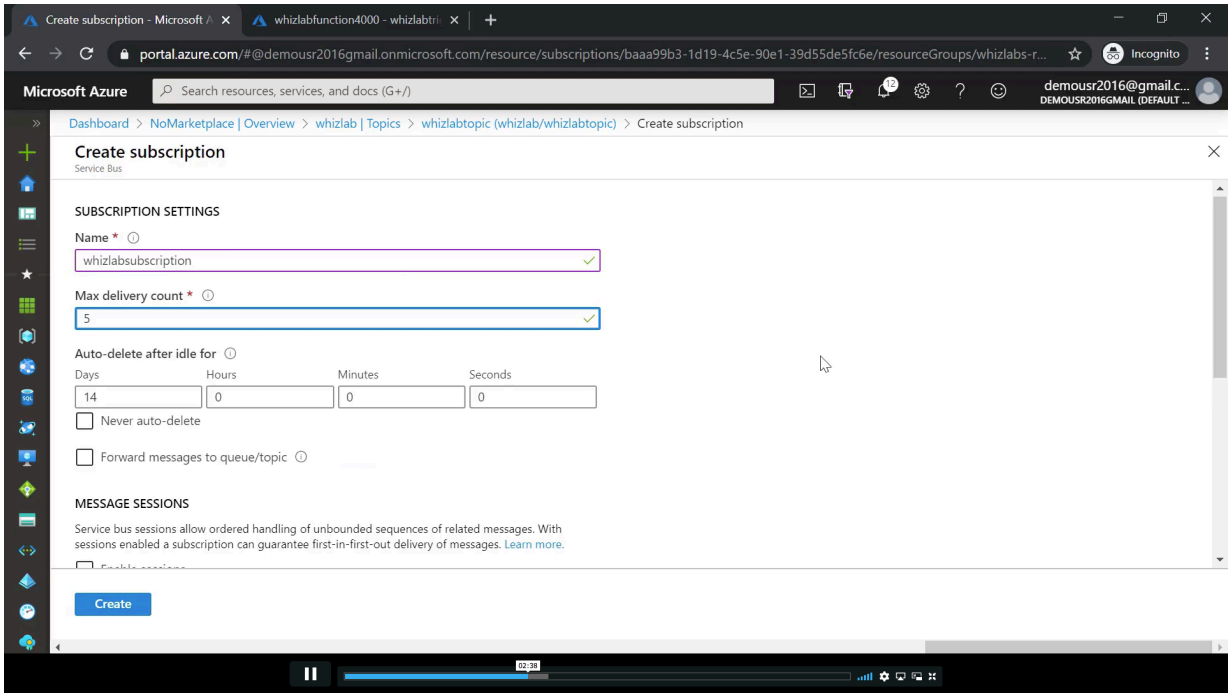


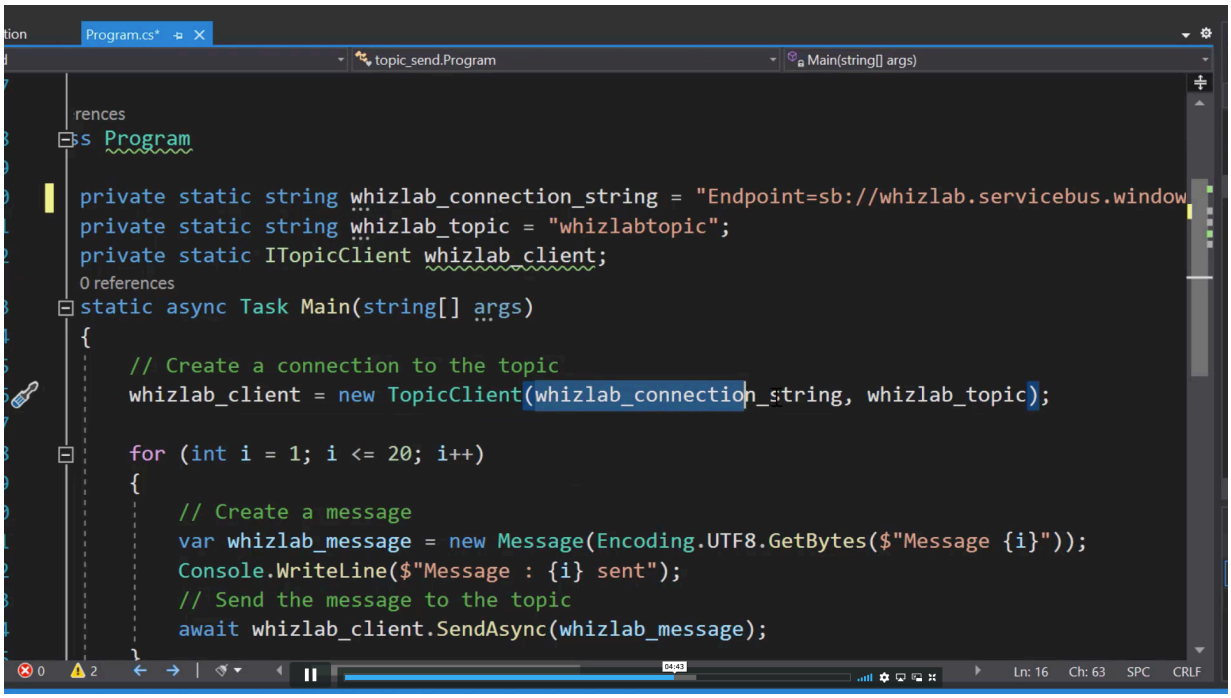
```
private static string whizlab_connection_string = "Endpoint=sb://whizlab.servicebus.
private static string whizlab_queue = "whizlabqueue";
0 references
static async Task Main(string[] args)
{
    IQueueClient w_queueclient;
    // Create a client connection to the queue
    w_queueclient = new QueueClient(whizlab_connection_string, whizlab_queue);
    Console.WriteLine("Sending Messages");
    for (int i = 1; i <=20; i++)
    {
        // Create a new message
        var whizlab_message = new Message();
        whizlab_message.MessageId = $"Message {i}";

        // Send a message to the queue
        await w_queueclient.SendAsync(whizlab_message);
        Console.WriteLine($"Message : {i} sent");
    }
}
```

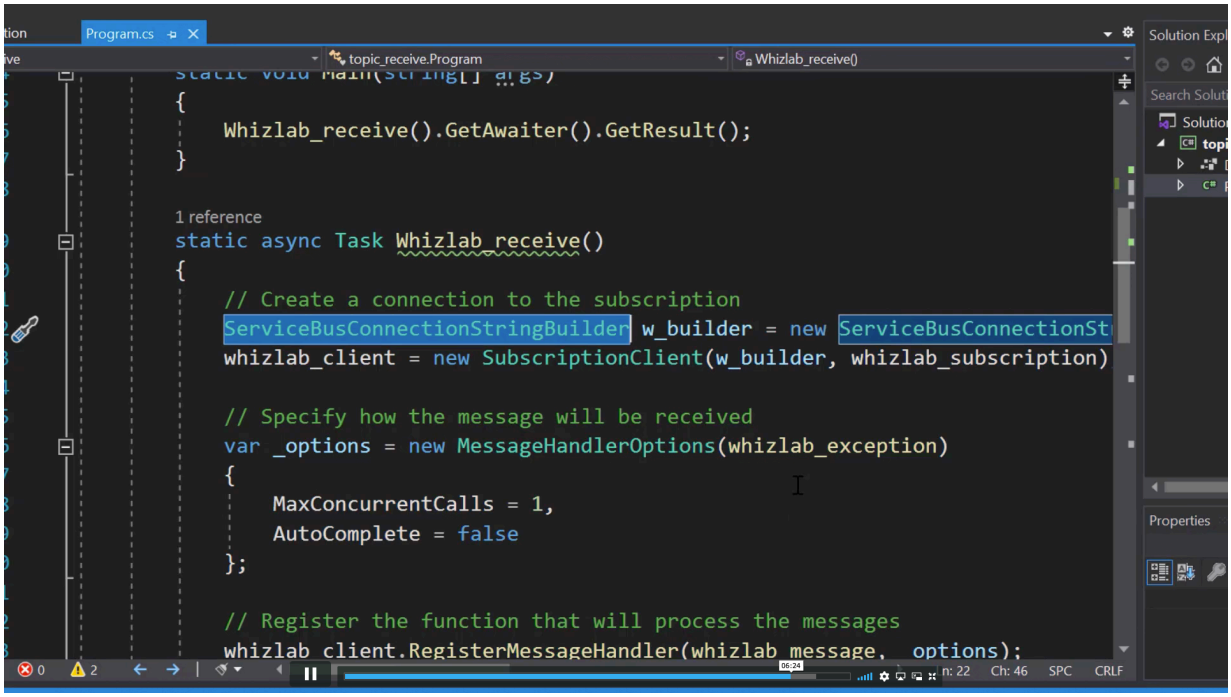


```
            AutoComplete = false
        };

        // Register the function and that will receive the messages
        whizlab_client.RegisterMessageHandler(whizlab_message, _options);
        Console.ReadKey();


    }

1 reference
static async Task whizlab_message(Message whizlab_message, CancellationToken _token)
{
    // Receive a message from the queue
    Console.WriteLine($"Message Id : {whizlab_message.MessageId}");
    Console.WriteLine($"Sequence number : {whizlab_message.SystemProperties.SequenceNu
    await whizlab_client.CompleteAsync(whizlab_message.SystemProperties.LockToken);
}

1 reference
static Task whizlab_exception(ExceptionReceivedEventArgs args)
```


Create subscription - Microsoft A
whizlabfunction4000 - whizlabtri
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourceGroups/whizlabs-r...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > NoMarketplace | Overview > whizlab | Topics > whizlabtopic (whizlab/whizlabtopic) > Create subscription
Create subscription
Service Bus
SUBSCRIPTION SETTINGS
Name *
whizlabsubscription
Max delivery count *
5
Auto-delete after idle for
Days
Hours
Minutes
Seconds
14
0
0
0
Never auto-delete
Forward messages to queue/topic
MESSAGE SESSIONS
Service bus sessions allow ordered handling of unbounded sequences of related messages. With sessions enabled a subscription can guarantee first-in-first-out delivery of messages. Learn more.
Create
02:21


Create subscription - Microsoft A
whizlabfunction4000 - whizlabtri
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourceGroups/whizlabs-r...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > NoMarketplace | Overview > whizlab | Topics > whizlabtopic (whizlab/whizlabtopic) > Create subscription
Create subscription
Service Bus
SUBSCRIPTION SETTINGS
Name *
whizlabsubscription
Max delivery count *
5
Auto-delete after idle for
Days
Hours
Minutes
Seconds
14
0
0
0
Never auto-delete
Forward messages to queue/topic
MESSAGE SESSIONS
Service bus sessions allow ordered handling of unbounded sequences of related messages. With sessions enabled a subscription can guarantee first-in-first-out delivery of messages. Learn more.
Create
02:38


Program.cs*
topic_send.Program
Main(string[] args)
rences
ss Program
private static string whizlab_connection_string = "Endpoint=sb://whizlab.servicebus.window
private static string whizlab_topic = "whizlabtopic";
private static ITopicClient whizlab_client;
0 references
static async Task Main(string[] args)
{
// Create a connection to the topic
whizlab_client = new TopicClient(whizlab_connection_string, whizlab_topic);
for (int i = 1; i <= 20; i++)
{
// Create a message
var whizlab_message = new Message(Encoding.UTF8.GetBytes($"Message {i}"));
Console.WriteLine($"Message : {i} sent");
// Send the message to the topic
await whizlab_client.SendAsync(whizlab_message);
Ln: 16
Ch: 63
SPC
CRLF

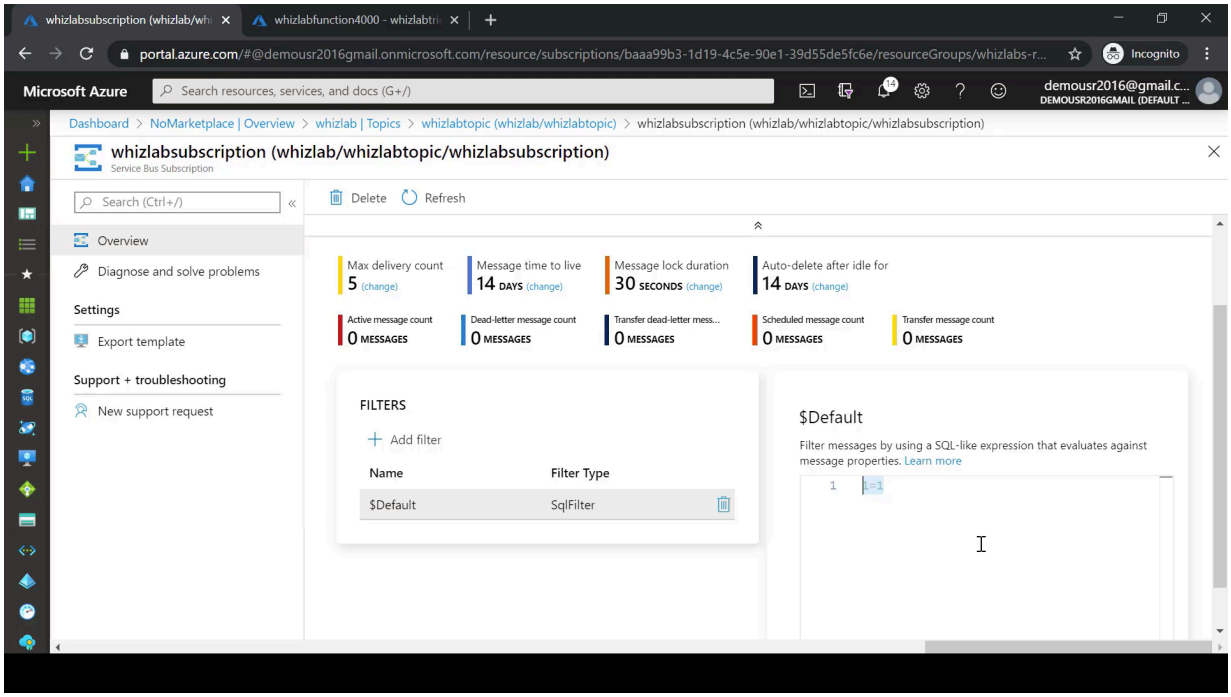

Program.cs
topic_receive.Program
Whizlab_receive()
Whizlab_receive().GetAwaiter().GetResult();
1 reference
static async Task Whizlab_receive()
{
// Create a connection to the subscription
ServiceBusConnectionStringBuilder w_builder = new ServiceBusConnectionSt
whizlab_client = new SubscriptionClient(w_builder, whizlab_subscription)
// Specify how the message will be received
var _options = new MessageHandlerOptions(whizlab_exception)
{
MaxConcurrentCalls = 1,
AutoComplete = false
};
// Register the function that will process the messages
whizlab_client.RegisterMessageHandler(whizlab_message, options);
Ch: 46
SPC
CRLF
Solution Expl
Search Soluti
Properties

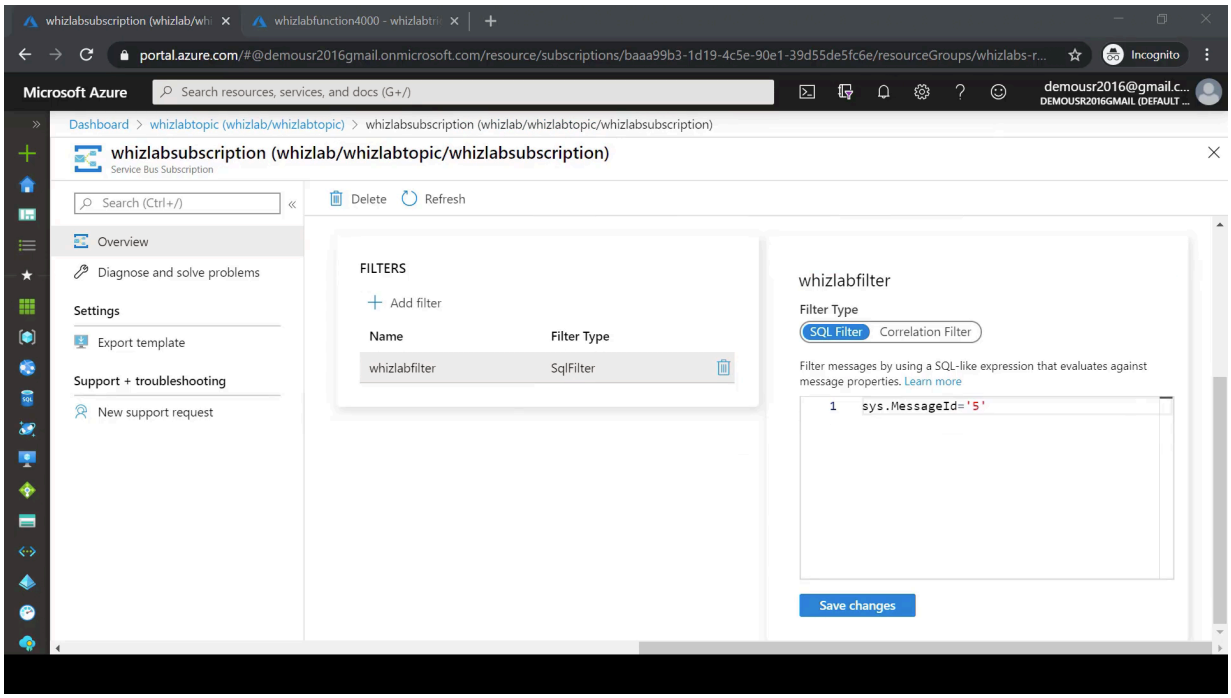
Lab – Azure Service Bus Topic

Working with Azure Service Bus topics filters

What are Service Bus topic filters

- Here a subscriber can choose to define which messages they want to receive.
- You can define a filter condition to specify which messages that need to be received.
- There are three types of filter conditions
- **Boolean filters** – This can be a TrueFilter or FalseFilter. Here the subscriber can receive all of the messages if the filter is mentioned as TrueFilter.
- **SQL Filters** – Here you can define SqlFilter to define what type of messages to receive.
- **Correlation Filters** – Here you can compare against the CorrelationId property or other user and system defined properties.

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whizlabfunction4000 - whizlabtri
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Service Bus Subscription
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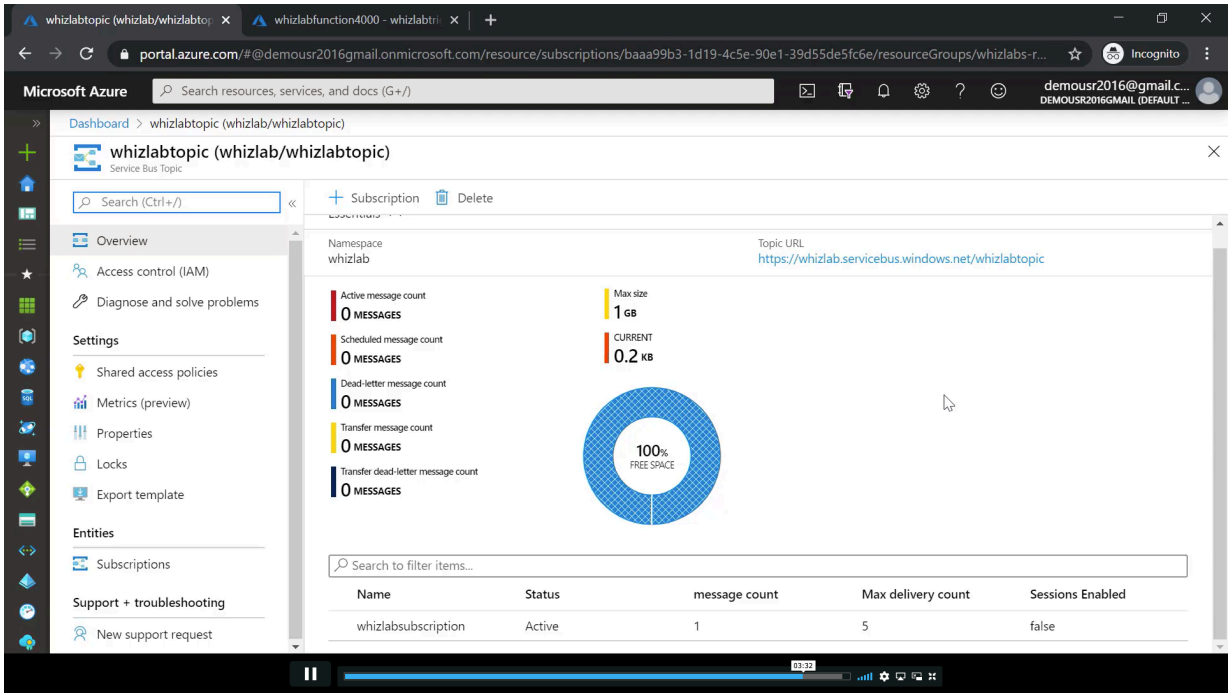
Overview
Diagnose and solve problems
Settings
Export template
Support + troubleshooting
New support request
FILTERS
Add filter
Name
Filter Type
whizlabfilter
SqlFilter
whizlabfilter
Filter Type
SQL Filter
Correlation Filter
Filter messages by using a SQL-like expression that evaluates against message properties. Learn more
1 sys.MessageId='5'
Save changes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Diagnose and solve problems
Settings
Shared access policies
Metrics (preview)
Properties
Locks
Export template
Entities
Subscriptions
Support + troubleshooting
New support request
Namespace
whizlab
Topic URL
https://whizlab.servicebus.windows.net/whizlabtopic
Active message count
0 MESSAGES
Scheduled message count
0 MESSAGES
Dead-letter message count
0 MESSAGES
Transfer message count
0 MESSAGES
Transfer dead-letter message count
0 MESSAGES
Max size
1 GB
CURRENT
0.2 KB
100%
FREE SPACE
Search to filter items...
Name
Status
message count
Max delivery count
Sessions Enabled
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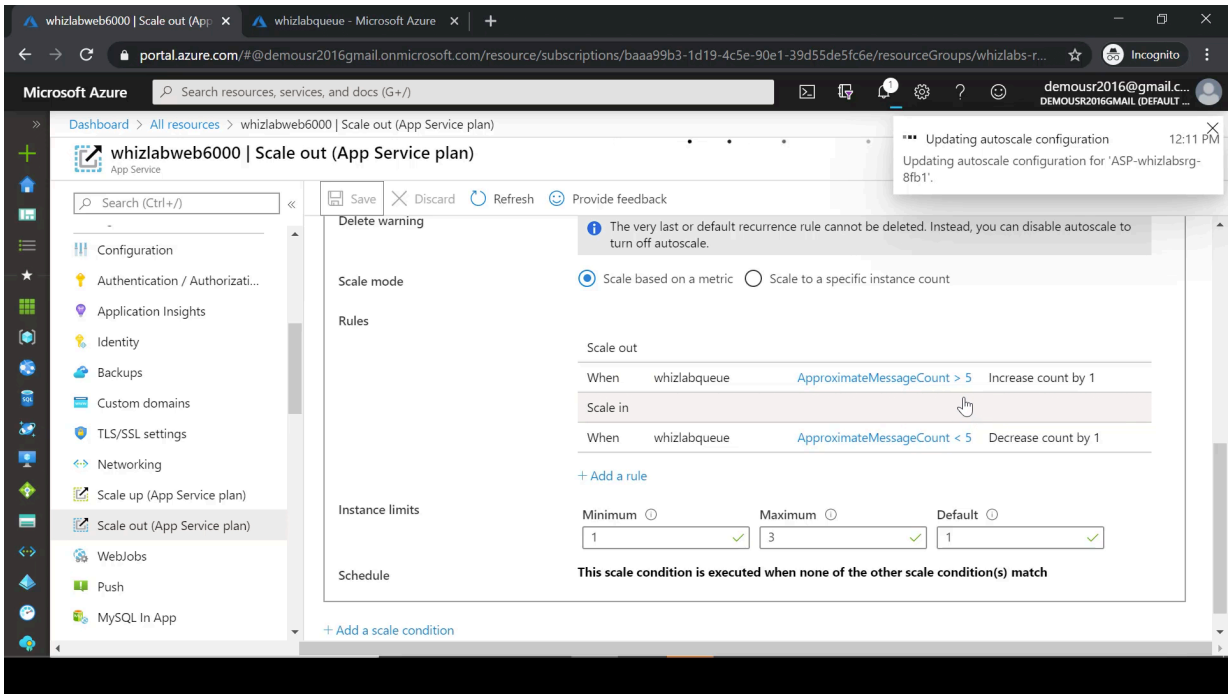
Active
1
5
false
03:32



Lab – Azure Event Grid

Working with Azure Event Grid

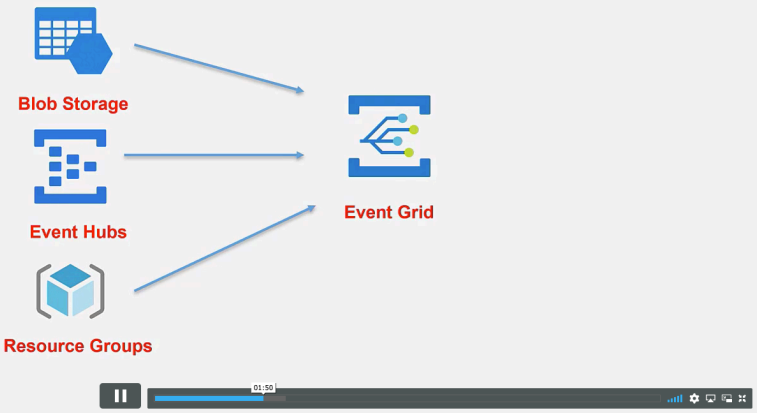
What is the Event Grid Service

- You can take advantage of the Event Grid Service to listen to events emitted by Azure services.
- You can subscribe to the various events published by Azure services.
- You can then define an Event Handler that can be used to process the event.
- You can also define your own custom events.
- This service is a highly available service because it is spread across multiple fault domains and availability zones in every region.

Lab – Azure Event Grid

Working with Azure Event Grid

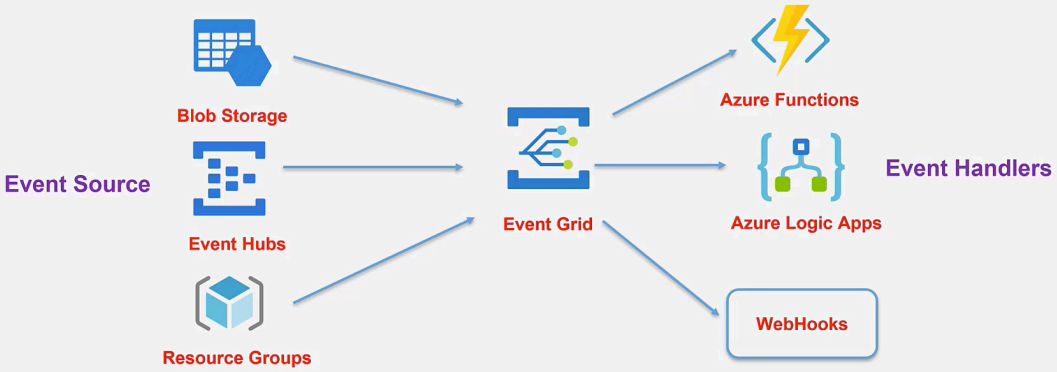
What is the Event Grid Service



Lab – Azure Event Grid

Working with Azure Event Grid

What is the Event Grid Service



Lab – Azure Event Grid

Working with Azure Event Grid

What is the Event Grid Service

- The five important concepts when it comes to the Azure Event Grid
- **Events** – This describes what happened.
- **Event sources** – This is the place where the event took place.
- **Topics** – This is the endpoint where publishers send events.
- **Event subscriptions** – This is the endpoint to route events to handlers.
- **Event handlers** – The application or service that will receive the event.

Lab – Azure Event Grid

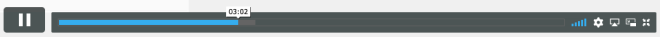
Working with Azure Event Grid

The Event Grid Schema

- The Event Grid schema that is common for all events

```
[
  {
    "topic": string,
    "subject": string,
    "id": string,
    "eventType": string,
    "eventTime": string,
    "data":{
      object-unique-to-each-publisher
    },
    "dataVersion": string,
    "metadataVersion": string
  }
]
```

Reference - https://docs.microsoft.com/en-us/azure/event-grid/event-schema

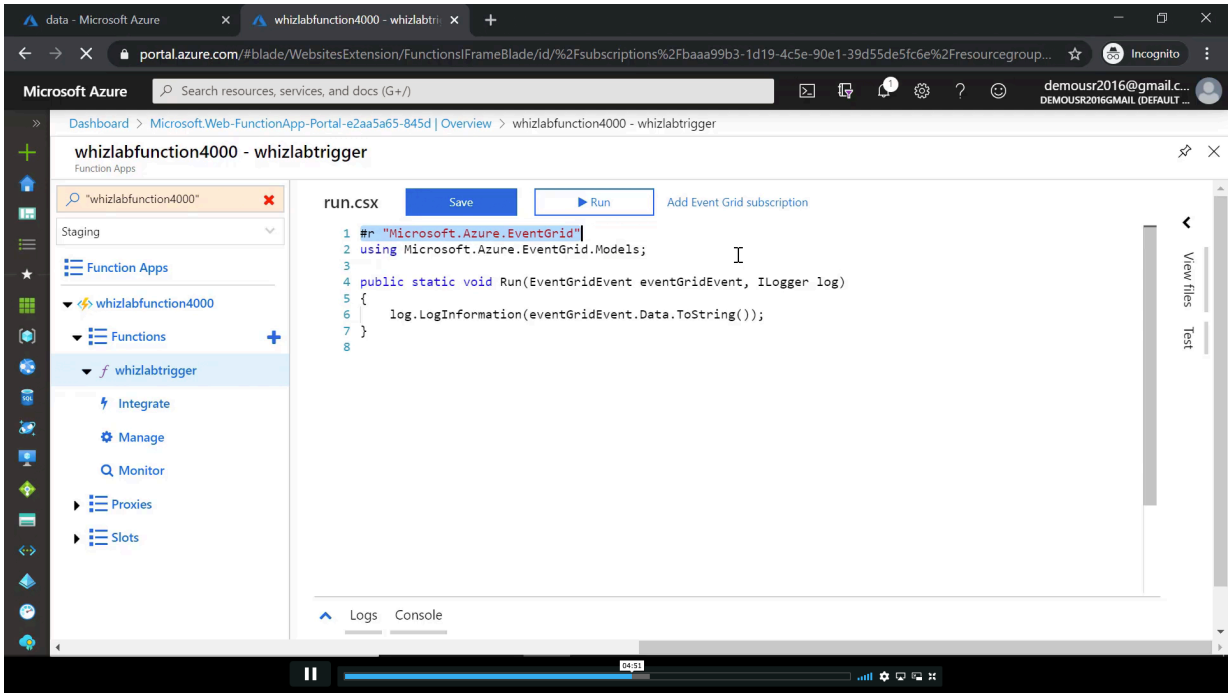


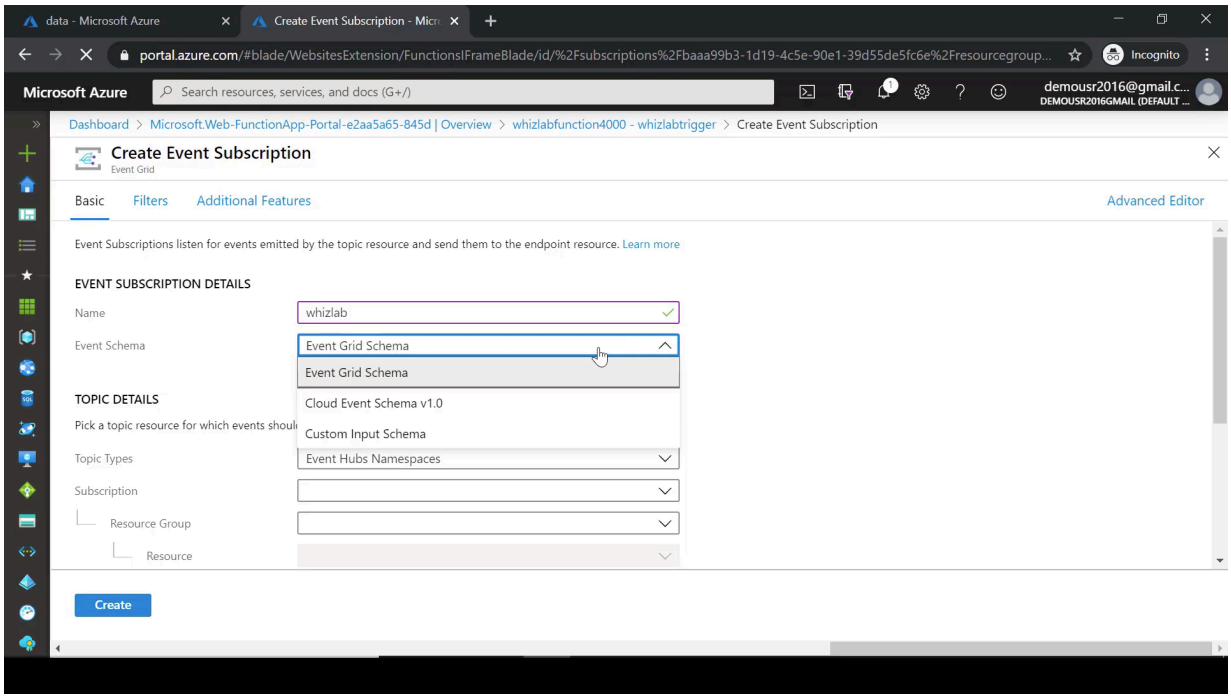
Lab – Azure Event Grid

Working with Azure Event Grid

What are we going to do in our lab

- We are going to create an Azure Function based on the Event Grid trigger.
- We will make the Azure Function subscribe to the events emitted by a storage account.
- We will perform an action on the storage account.

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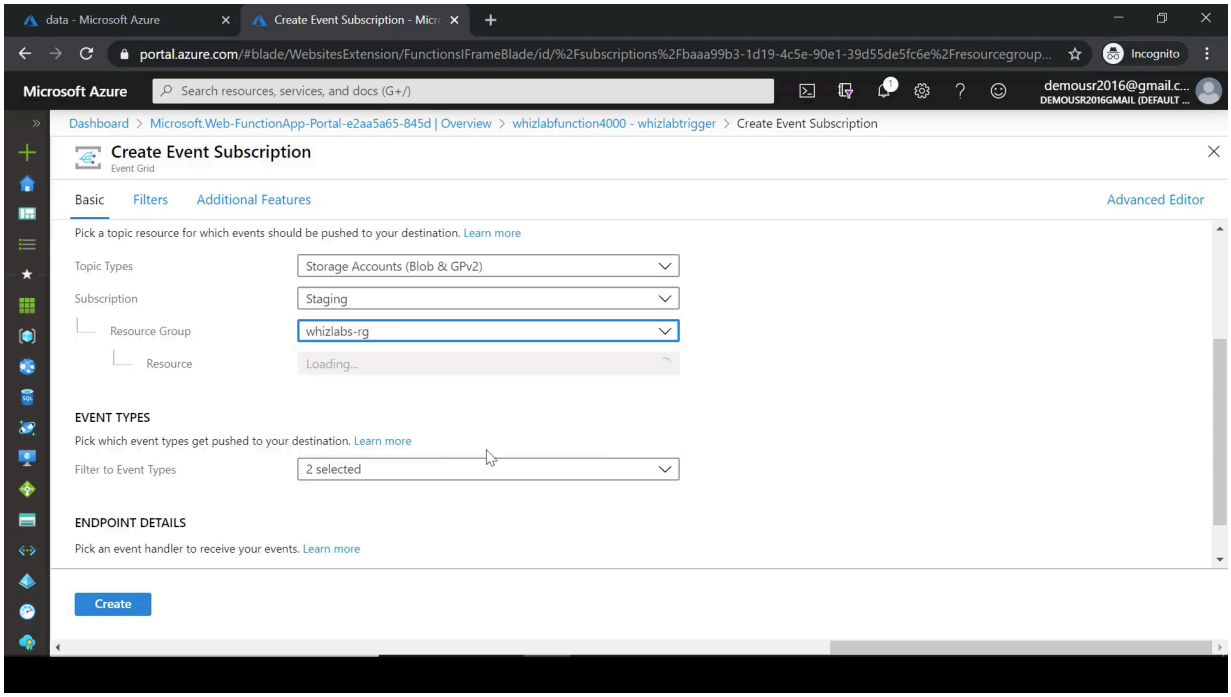
Create Event Subscription
Event Grid
Basic
Filters
Additional Features
Advanced Editor
Event Subscriptions listen for events emitted by the topic resource and send them to the endpoint resource. Learn more
EVENT SUBSCRIPTION DETAILS
Name
whizlab
Event Schema
Event Grid Schema
Event Grid Schema
Cloud Event Schema v1.0
Custom Input Schema
TOPIC DETAILS
Pick a topic resource for which events shoul
Topic Types
Event Hubs Namespaces
Subscription
Resource Group
Resource
Create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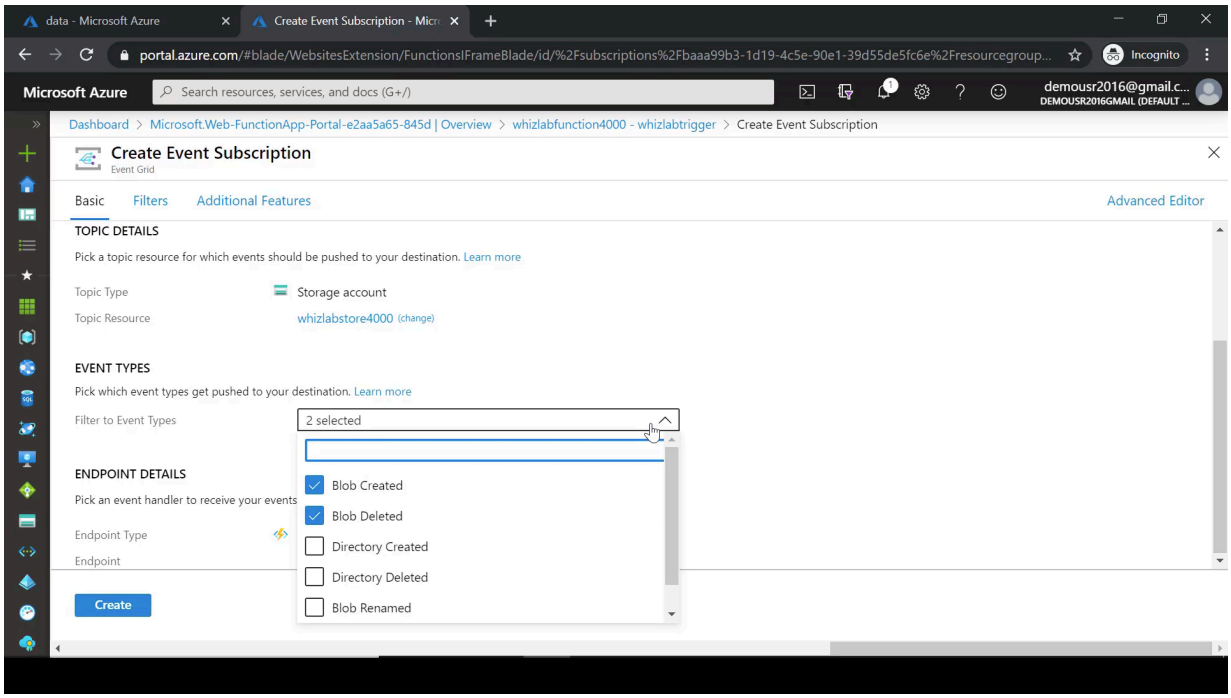
Create Event Subscription
Event Grid
Basic
Filters
Additional Features
Advanced Editor
Pick a topic resource for which events should be pushed to your destination. Learn more
Topic Types
Storage Accounts (Blob & GPv2)
Subscription
Staging
Resource Group
whizlabs-rg
Resource
Loading...
EVENT TYPES
Pick which event types get pushed to your destination. Learn more
Filter to Event Types
2 selected
ENDPOINT DETAILS
Pick an event handler to receive your events. Learn more
Create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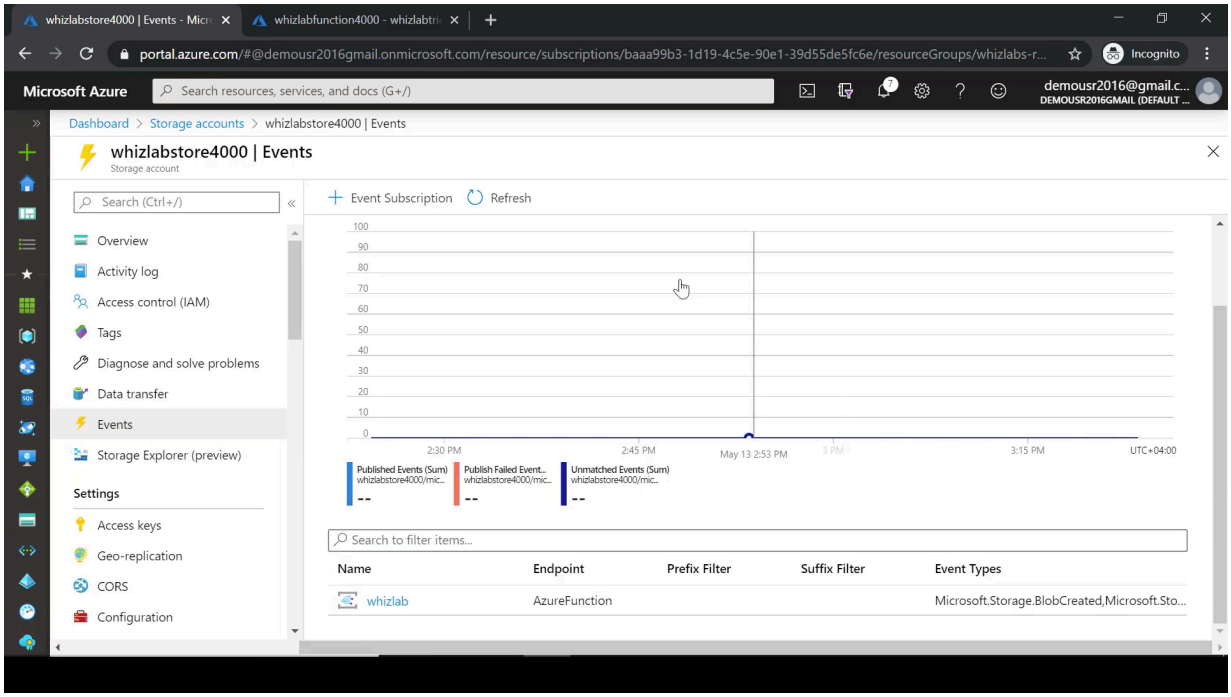
Create Event Subscription
Event Grid
Basic
Filters
Additional Features
Advanced Editor
TOPIC DETAILS
Pick a topic resource for which events should be pushed to your destination. Learn more
Topic Type
Storage account
Topic Resource
whizlabstore4000 (change)
EVENT TYPES
Pick which event types get pushed to your destination. Learn more
Filter to Event Types
2 selected
Blob Created
Blob Deleted
Directory Created
Directory Deleted
Blob Renamed
ENDPOINT DETAILS
Pick an event handler to receive your events
Endpoint Type
Endpoint
Create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Storage account
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Event Subscription
Refresh
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Data transfer
Events
Storage Explorer (preview)
Settings
Access keys
Geo-replication
CORS
Configuration
100
90
80
70
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50
40
30
20
10
0
2:30 PM
2:45 PM
May 13 2:53 PM
3 PM
3:15 PM
UTC+04:00
Published Events (Sum)
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Publish Failed Event...
whizlabstore4000/mic...
--
Unmatched Events (Sum)
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Search to filter items...
Name
Endpoint
Prefix Filter
Suffix Filter
Event Types
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AzureFunction
Microsoft.Storage.BlobCreated,Microsoft.Sto...

Lab – Azure Event Hubs

Working with Azure Event Hubs

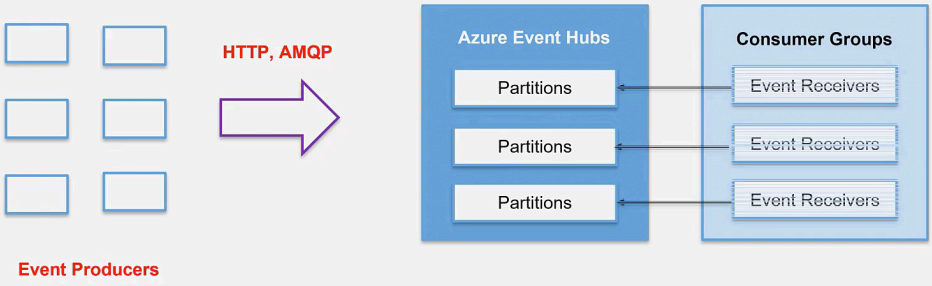
What are Event Hubs

- This is a big data streaming platform and event ingestion service.
- This service can be used to receive and process millions of events per second.
- The data that is sent to the Event Hub can then be transformed and stored in other data stores for data processing.
- Some of the areas where you can use Event Hubs , is for Anomaly detection, Application logging, clickstreams, telemetry processing.

Lab – Azure Event Hubs

Working with Azure Event Hubs

What are the main components of Event Hubs



Lab – Azure Event Hubs

Working with Azure Event Hubs

What are the main components of Event Hubs

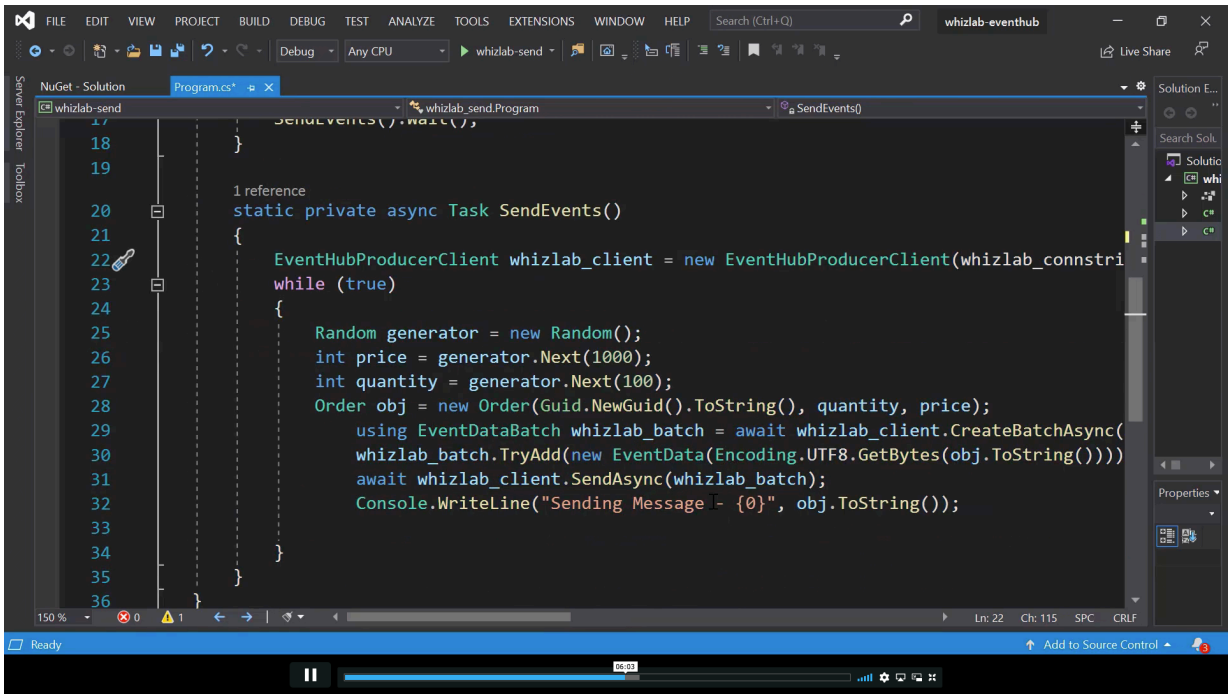
- **Event producers** – This is the entity that is used to send data to the event hub.
- **Partition** – Here each consumer reads a specific subset, or partition of the message stream.
- **Consumer groups** – This is a view of the entire event hub.
- **Throughput units** – This controls the capacity of the event hub.
- **Event receivers** – This is an entity that reads event data from the event hub.

Lab – Azure Event Hubs

Working with Azure Event Hubs

What are the main components of Event Hubs

- **Throughput units –** These are pre-purchases units of capacity. One throughput unit gives you
- Ingress – Up to 1 MB per second or 1000 events per second.
- Egress - Up to 2 MB per second or 4096 events per second.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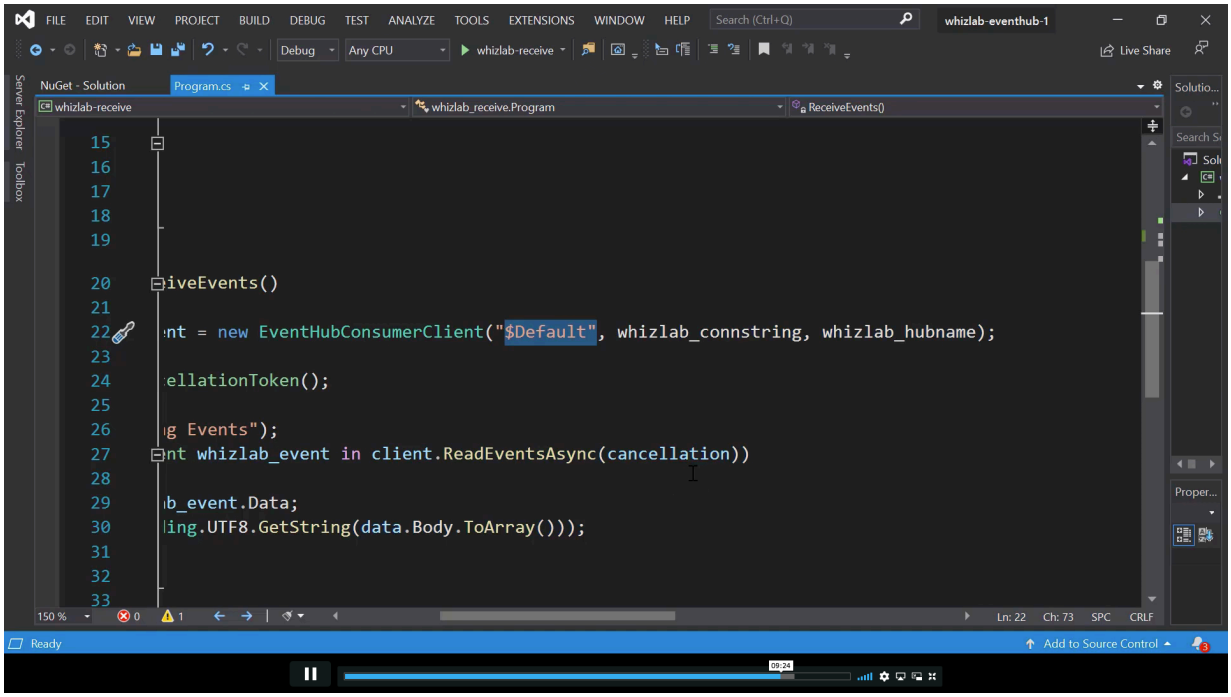
whizlab-eventhub
Debug
Any CPU
whizlab-send
Live Share
NuGet - Solution
Program.cs*
whizlab-send
whizlab_send.Program
SendEvents()
1 reference
static private async Task SendEvents()
{
EventHubProducerClient whizlab_client = new EventHubProducerClient(whizlab_connstri
while (true)
{
Random generator = new Random();
int price = generator.Next(1000);
int quantity = generator.Next(100);
Order obj = new Order(Guid.NewGuid().ToString(), quantity, price);
using EventDataBatch whizlab_batch = await whizlab_client.CreateBatchAsync(
whizlab_batch.TryAdd(new EventData(Encoding.UTF8.GetBytes(obj.ToString())))
await whizlab_client.SendAsync(whizlab_batch);
Console.WriteLine("Sending Message - {0}", obj.ToString());
}
}
}
Ln: 22 Ch: 115 SPC CRLF
Ready
Add to Source Control
06:03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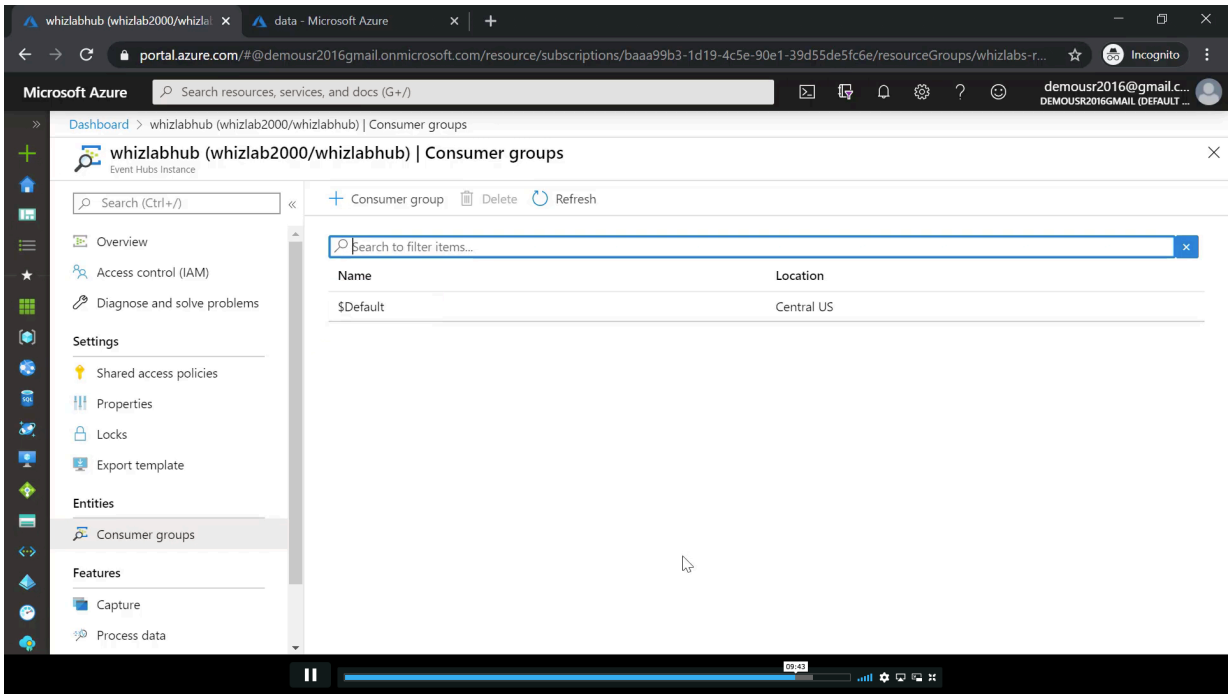
NuGet - Solution
Program.cs
whizlab-receive
whizlab_receive.Program
ReceiveEvents()
iveEvents()
nt = new EventHubConsumerClient("$Default", whizlab_connstring, whizlab_hubname);
ellationToken();
g Events");
nt whizlab_event in client.ReadEventsAsync(cancellation))
b_event.Data;
ing.UTF8.GetString(data.Body.ToArray()));
Ln: 22 Ch: 73 SPC CRLF
Ready
Add to Source Control
09:24


whizlabhub (whizlab2000/whizlabhub) | Consumer groups
Event Hubs Instance
Consumer group
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Refresh
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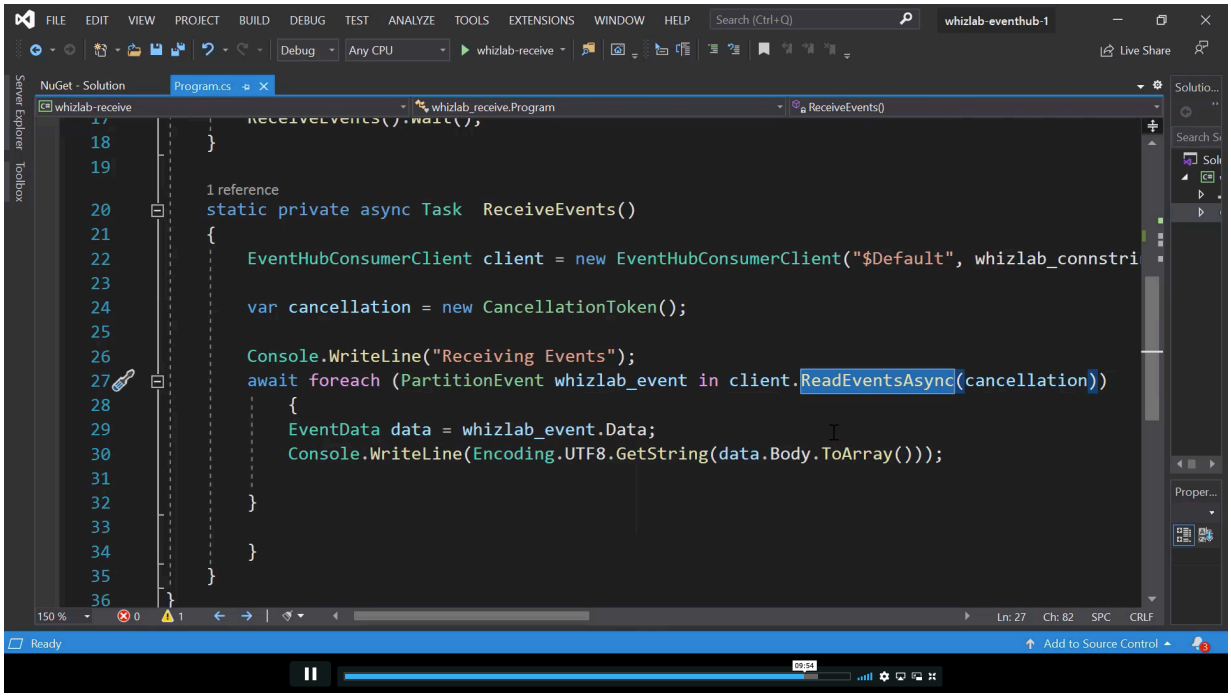
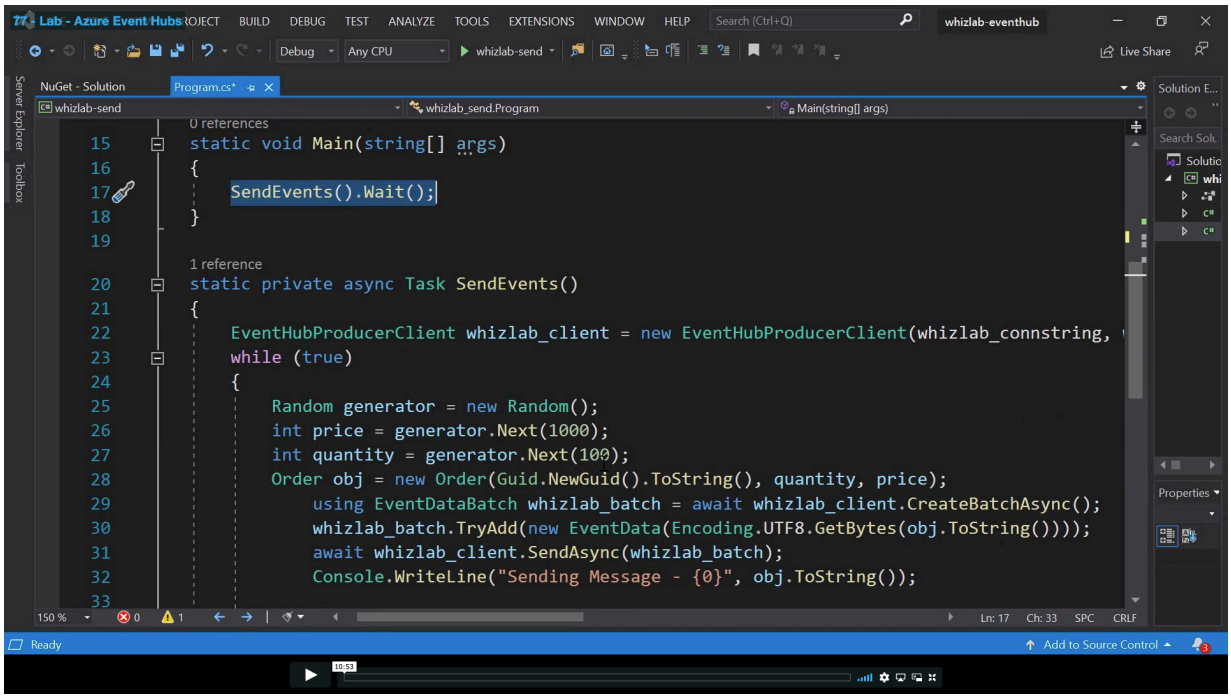
Shared access policies
Properties
Locks
Export template
Entities
Consumer groups
Features
Capture
Process data

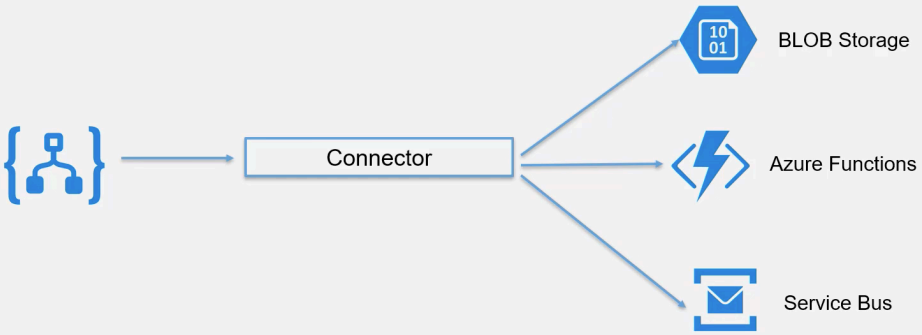

1 reference
static private async Task ReceiveEvents()
{
EventHubConsumerClient client = new EventHubConsumerClient("$Default", whizlab_connstri
var cancellation = new CancellationToken();
Console.WriteLine("Receiving Events");
await foreach (PartitionEvent whizlab_event in client.ReadEventsAsync(cancellation))
{
EventData data = whizlab_event.Data;
Console.WriteLine(Encoding.UTF8.GetString(data.Body.ToArray()));
}
}
}
Ready



Azure Logic Apps

Introduction

Parts

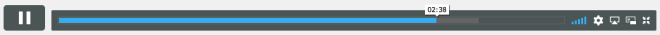


Azure Logic Apps

Introduction

Parts

- **Triggers** – Some of the connectors like Azure BLOB storage have the facility to trigger the Azure Logic App
- Example - If an object is placed in Azure BLOB storage, it will trigger an Azure Logic App Workflow.
- Each trigger to the Azure Logic App will create a new instance of the Workflow.

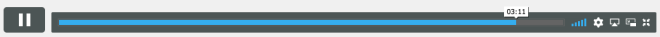


Azure Logic Apps

Introduction

Parts

- **Action** – What to do when an event is triggered.
- Do you want to send an email to the IT administrator on the event?
- Do you want to call an Azure Function?

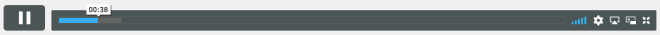


Lab – Azure Logic Apps

Lab – Azure Logic Apps

What are Azure Logic Apps

- This is a cloud service that helps you schedule, automate and orchestrate tasks , business processes and workflows.
- It helps you integrate applications, data, systems and services across your enterprise.
- This workflow system is completely serverless.
- This service has integration with other Azure services and third party services as well.



Lab – Azure Logic Apps

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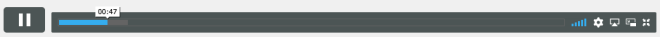
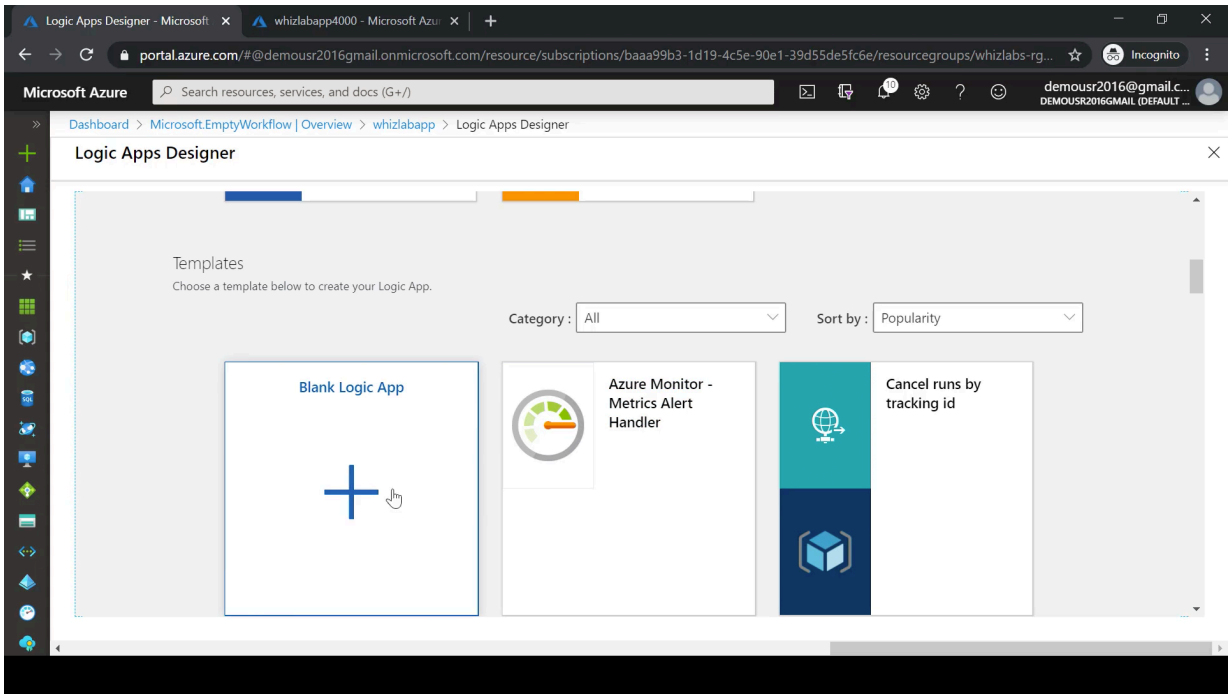
- It helps you integrate applications, data, systems and services across your enterprise.
- This workflow system is completely serverless.
- This service has integration with other Azure services and third party services as well.
- With Azure Logic Apps , you get a visual designer to help you design the workflow.

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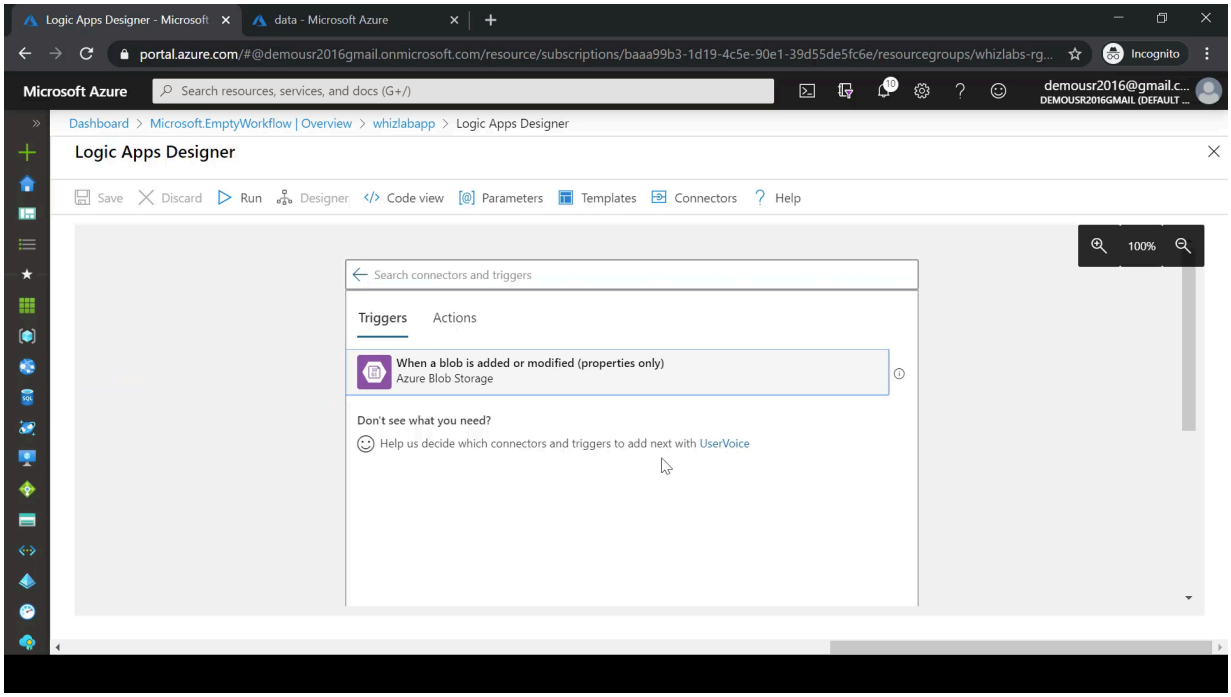
Logic Apps Designer
Templates
Choose a template below to create your Logic App.
Category : All
Sort by : Popularity
Blank Logic App
Azure Monitor - Metrics Alert Handler
Cancel runs by tracking id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Dashboard > Microsoft.EmptyWorkflow | Overview > whizlabapp > Logic Apps Designer
Logic Apps Designer
Save
Discard
Run
Designer
Code view
Parameters
Templates
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Help
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Search connectors and triggers
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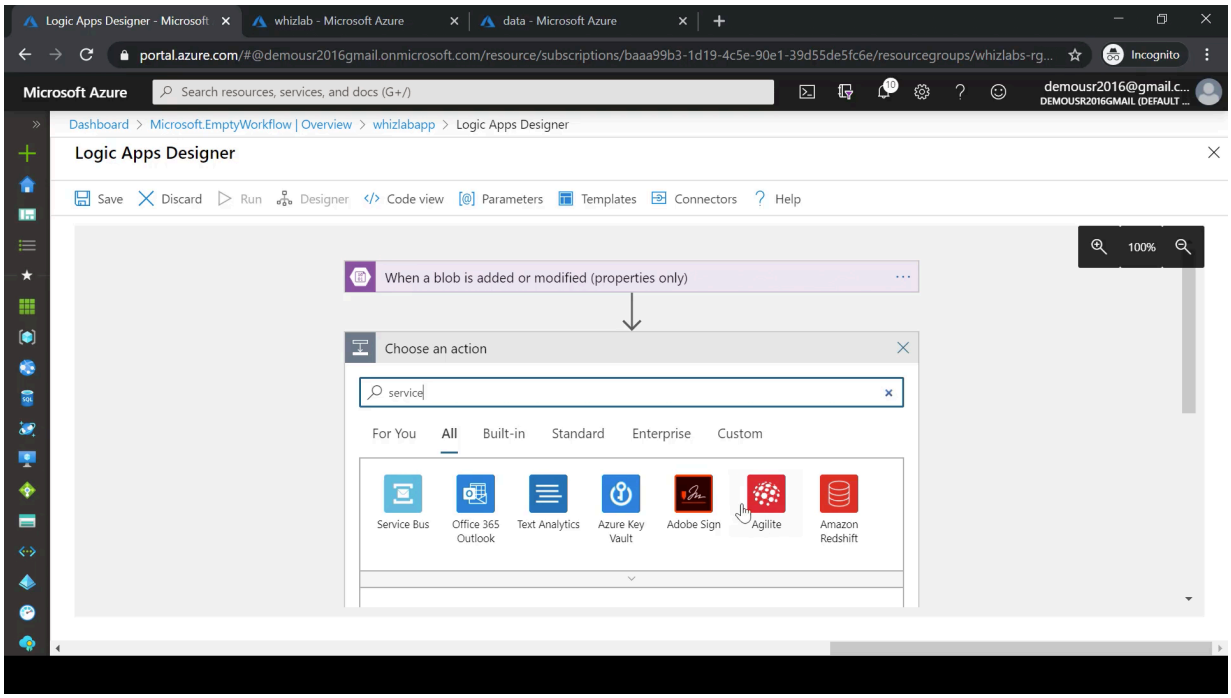
Actions
When a blob is added or modified (properties only)
Azure Blob Storage
Don't see what you need?
Help us decide which connectors and triggers to add next with UserVoice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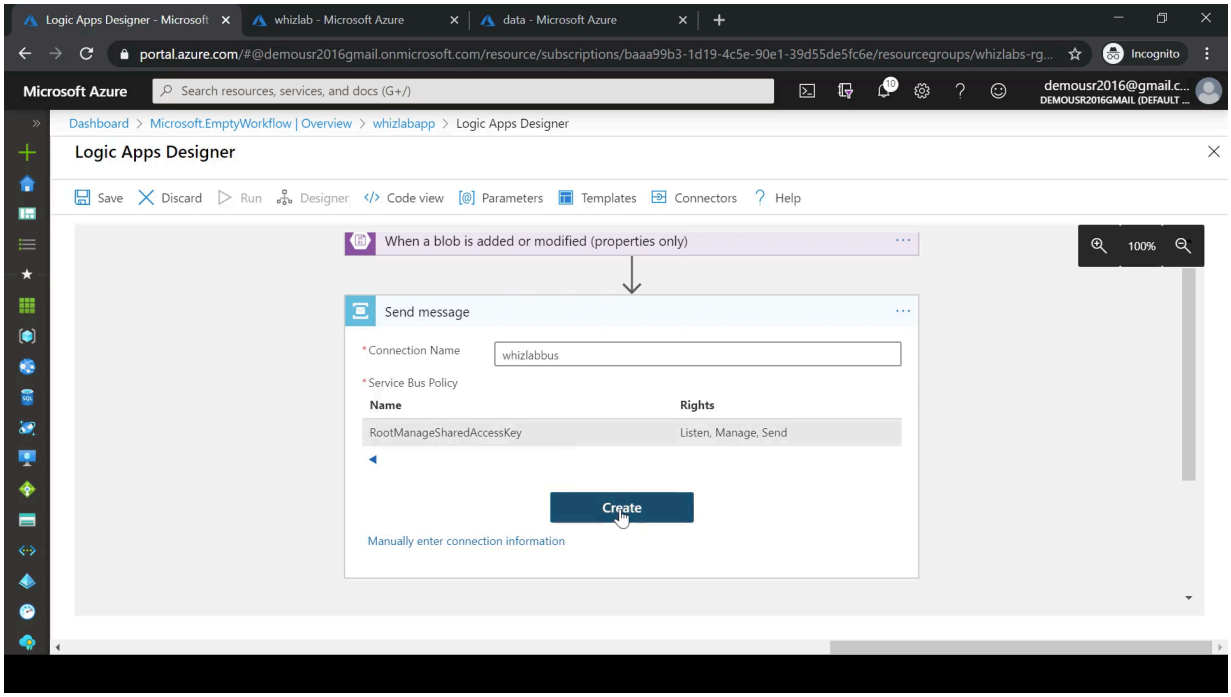
whizlab - Microsoft Azure
data - Microsoft Azure
portal.azure.com/#@demousr2016gmail.onmicrosoft.com/resource/subscriptions/baaa99b3-1d19-4c5e-90e1-39d55de5fc6e/resourcegroups/whizlabs-rg...
Incognito
Microsoft Azure
Search resources, services, and docs (G+/)
demousr2016@gmail.c...
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > Microsoft.EmptyWorkflow | Overview > whizlabapp > Logic Apps Designer
Logic Apps Designer
Save
Discard
Run
Designer
Code view
Parameters
Templates
Connectors
Help
100%
When a blob is added or modified (properties only)
Choose an action
service
For You
All
Built-in
Standard
Enterprise
Custom
Service Bus
Office 365 Outlook
Text Analytics
Azure Key Vault
Adobe Sign
Agilite
Amazon Redshift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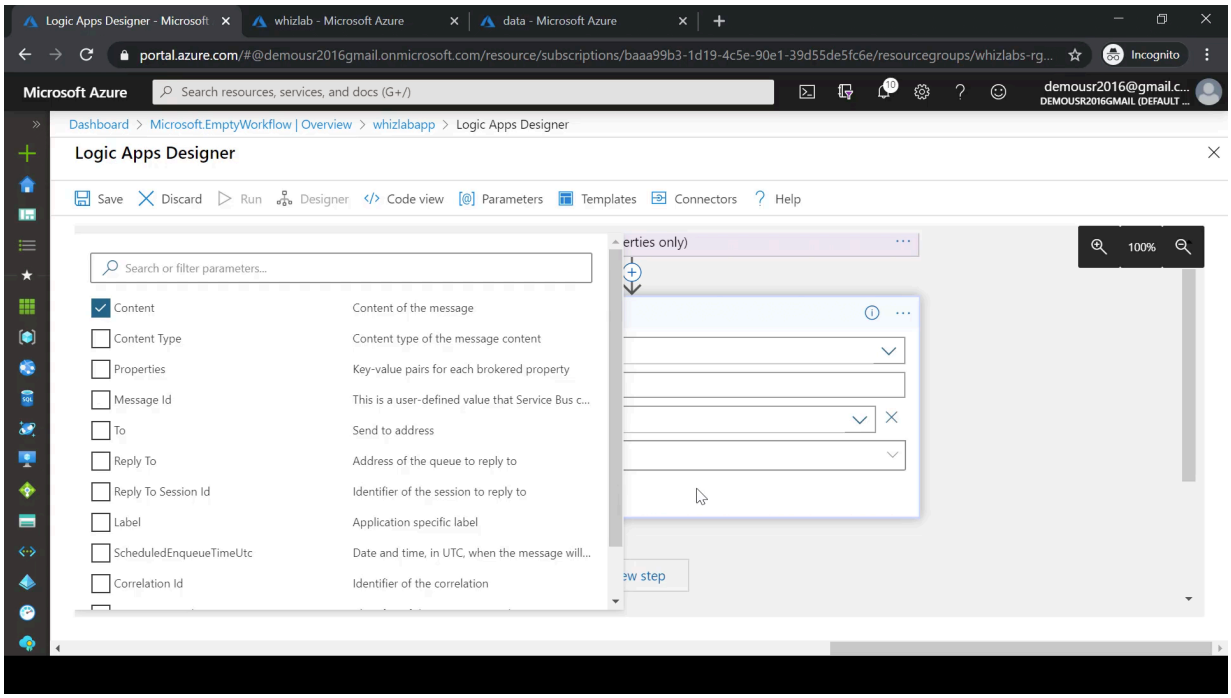
Dashboard > Microsoft.EmptyWorkflow | Overview > whizlabapp > Logic Apps Designer
Logic Apps Designer
Save
Discard
Run
Designer
Code view
Parameters
Templates
Connectors
Help
100%
When a blob is added or modified (properties only)
Send message
*Connection Name
whizlabbus
*Service Bus Policy
Name
Rights
RootManageSharedAccessKey
Listen, Manage, Send
Create
Manually enter connection information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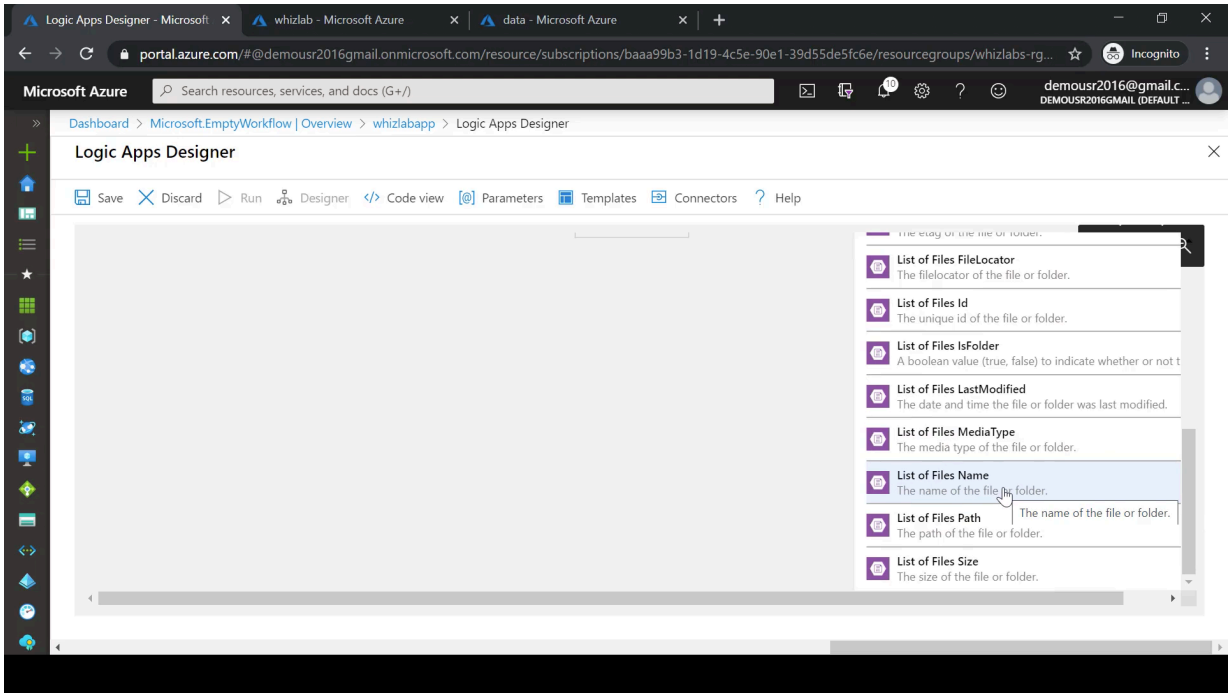
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > Microsoft.EmptyWorkflow | Overview > whizlabapp > Logic Apps Designer
Logic Apps Designer
Save
Discard
Run
Designer
Code view
Parameters
Templates
Connectors
Help
Search or filter parameters...
Content
Content of the message
Content Type
Content type of the message content
Properties
Key-value pairs for each brokered property
Message Id
This is a user-defined value that Service Bus c...
To
Send to address
Reply To
Address of the queue to reply to
Reply To Session Id
Identifier of the session to reply to
Label
Application specific label
ScheduledEnqueueTimeUtc
Date and time, in UTC, when the message will...
Correlation Id
Identifier of the correlation
100%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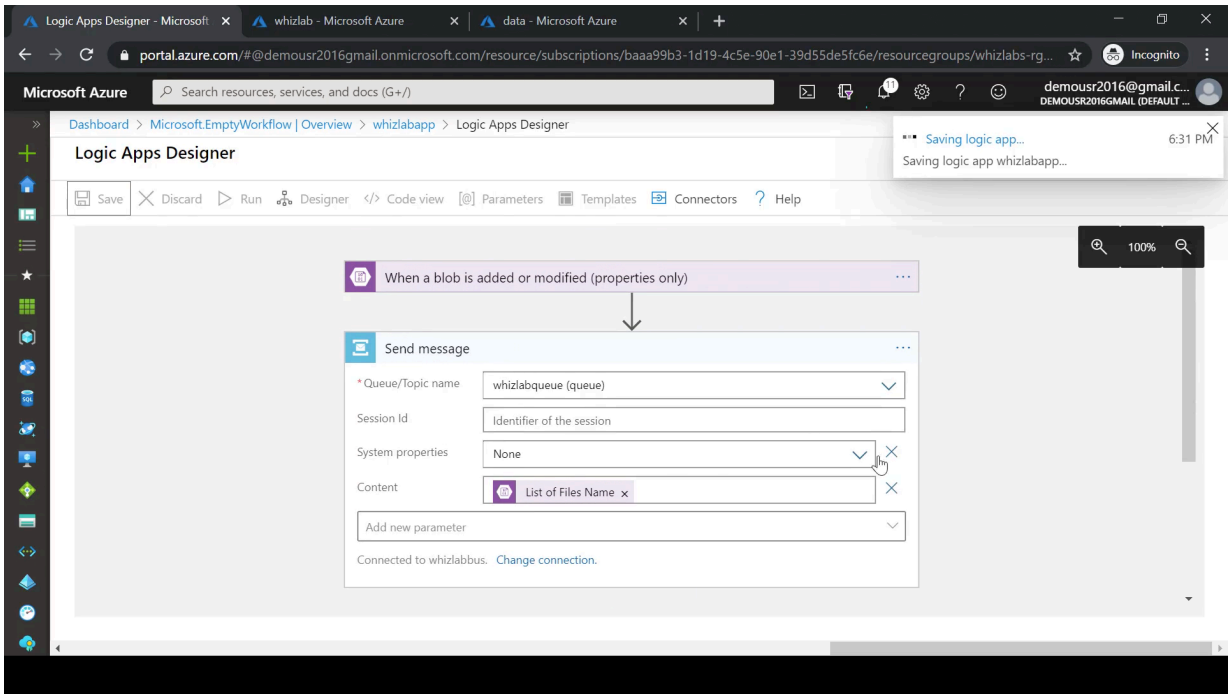
DEMOUSR2016GMAIL (DEFAULT ...
Dashboard > Microsoft.EmptyWorkflow | Overview > whizlabapp > Logic Apps Designer
Logic Apps Designer
Save
Discard
Run
Designer
Code view
Parameters
Templates
Connectors
Help
List of Files FileLocator
The filelocator of the file or folder.
List of Files Id
The unique id of the file or folder.
List of Files IsFolder
A boolean value (true, false) to indicate whether or not t
List of Files LastModified
The date and time the file or folder was last modified.
List of Files MediaType
The media type of the file or folder.
List of Files Name
The name of the file or folder.
List of Files Path
The path of the file or folder.
List of Files Size
The size of the file or folder.
The name of the file or folder.

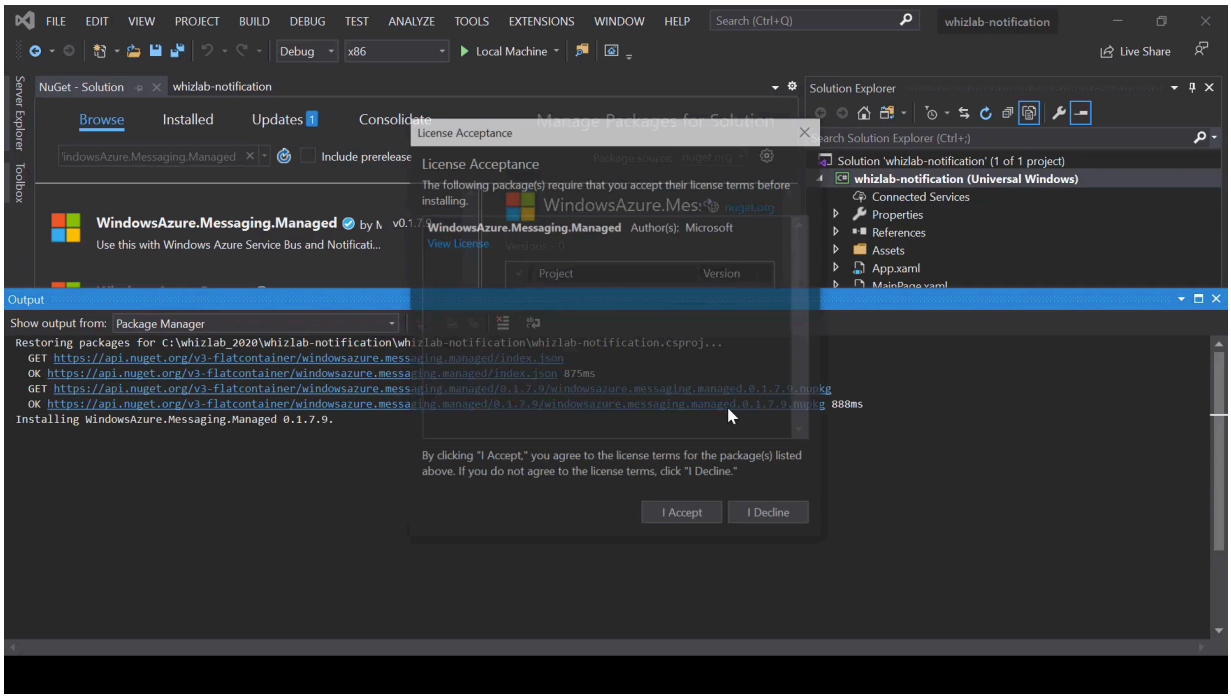


Lab – Azure Notification Hubs

How to work with Azure Notification Hubs

What are notification hubs and what we are going to do in our lab

- Azure Notification Hubs can be used to enable and send notifications to multiple platforms – iOS, Android, Windows etc.
- We are going to create an Azure Notification Hub.


FILE EDIT VIEW PROJECT BUILD DEBUG TEST ANALYZE TOOLS EXTENSIONS WINDOW HELP
Search (Ctrl+Q)
whizlab-notification
Debug
x86
Local Machine
Live Share
NuGet - Solution
whizlab-notification
Browse
Installed
Updates 1
Consolidate
Include prerelease
WindowsAzure.Messaging.Managed
Use this with Windows Azure Service Bus and Notificati...
Solution Explorer
Solution 'whizlab-notification' (1 of 1 project)
whizlab-notification (Universal Windows)
Connected Services
Properties
References
Assets
App.xaml
License Acceptance
The following package(s) require that you accept their license terms before installing.
WindowsAzure.Messaging.Managed Author(s): Microsoft
View License
By clicking "I Accept," you agree to the license terms for the package(s) listed above. If you do not agree to the license terms, click "I Decline."
I Accept
I Decline
Output
Show output from: Package Manager
Restoring packages for C:\whizlab_2020\whizlab-notification\whizlab-notification\whizlab-notification.csproj...
GET https://api.nuget.org/v3-flatcontainer/windowsazure.messaging.managed/index.json
OK https://api.nuget.org/v3-flatcontainer/windowsazure.messaging.managed/index.json 875ms
GET https://api.nuget.org/v3-flatcontainer/windowsazure.messaging.managed/0.1.7.9/windowsazure.messaging.managed.0.1.7.9.nupkg
OK https://api.nuget.org/v3-flatcontainer/windowsazure.messaging.managed/0.1.7.9/windowsazure.messaging.managed.0.1.7.9.nupkg 888ms
Installing WindowsAzure.Messaging.Managed 0.1.7.9.