



sqlbits

SPEAKEASY

# **DISPOSABLE DEVELOPMENT ENVIRONMENTS**

## **WITH AZURE DEVOPS AND AZURE RESOURCE MANAGER**

---

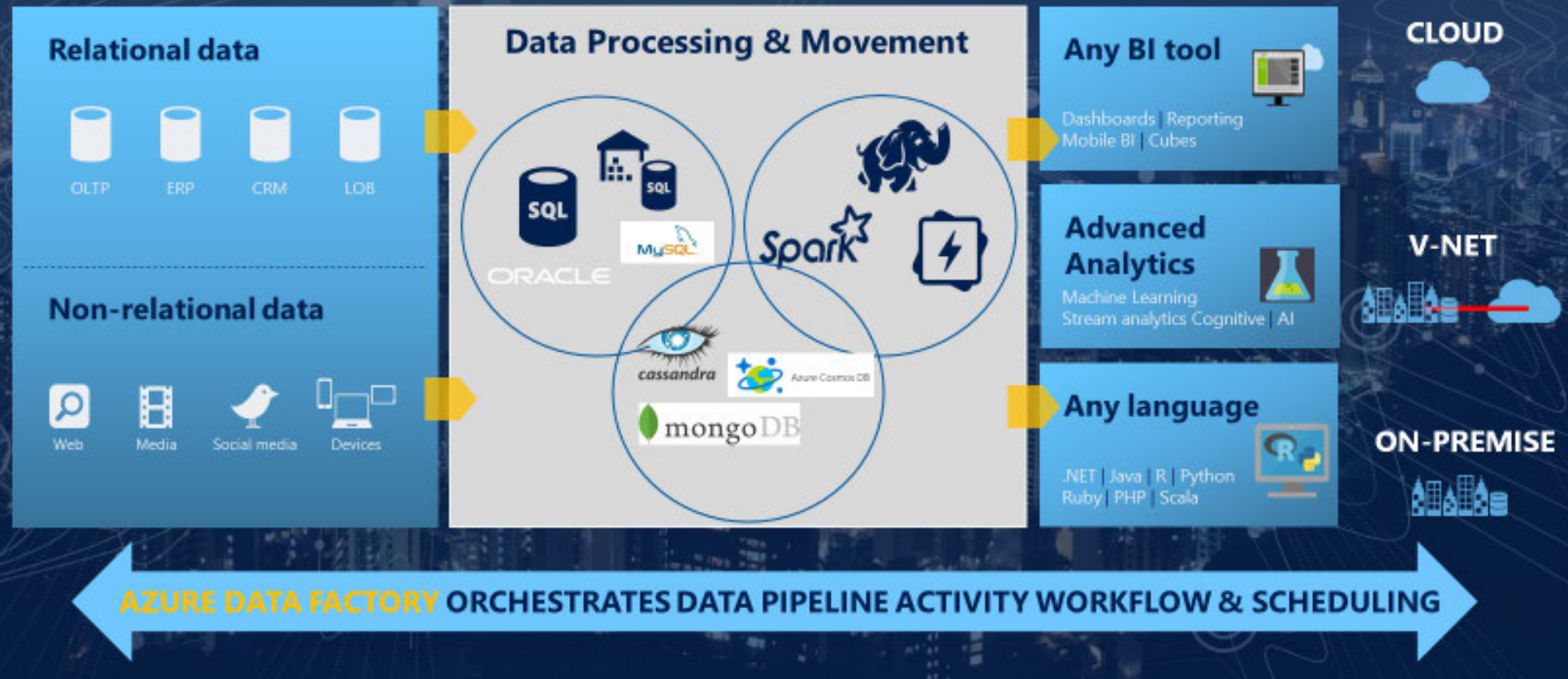
**GAVIN CAMPBELL**

**ARAPAIMA.UK**

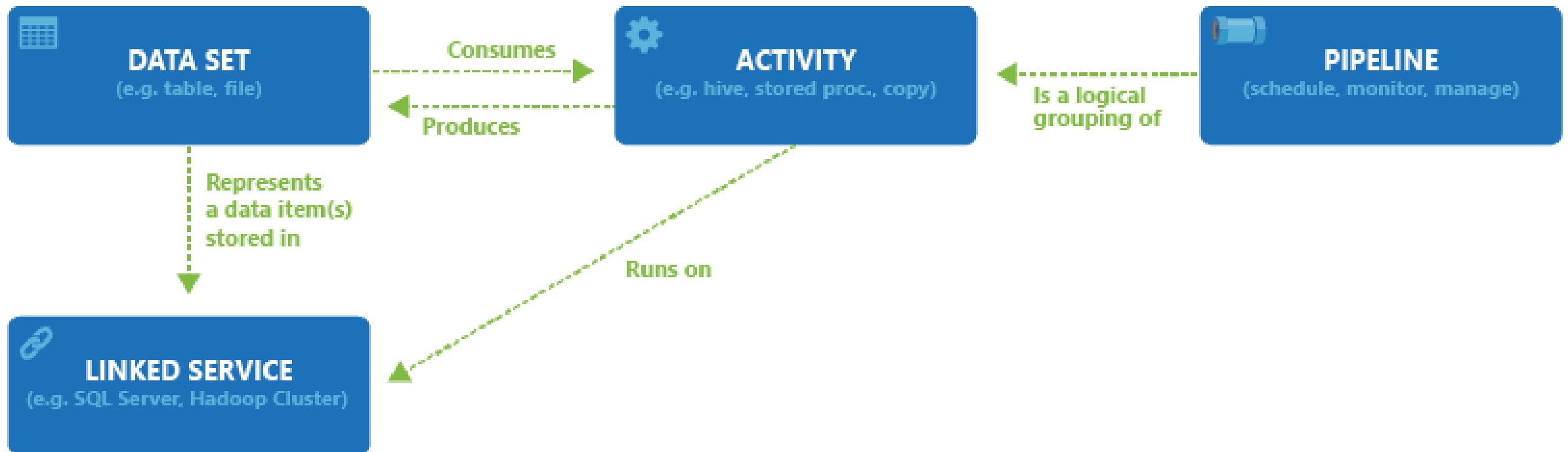


# EVERYTHING YOU EVER WANTED TO KNOW ABOUT DATA FACTORY

## HYBRID DATA INTEGRATION AT SCALE

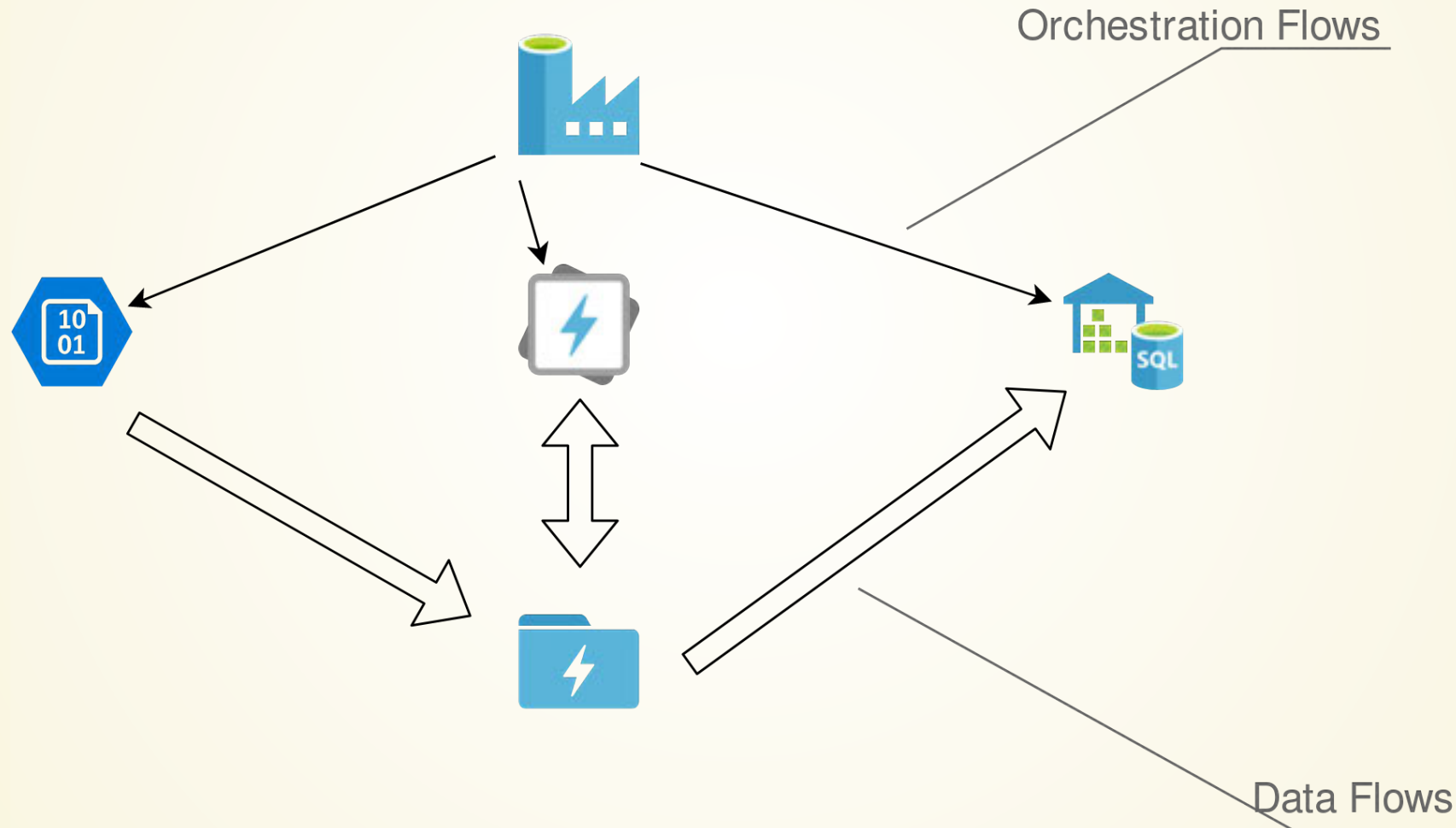


# EVERYTHING YOU EVER WANTED TO KNOW ABOUT DATA FACTORY





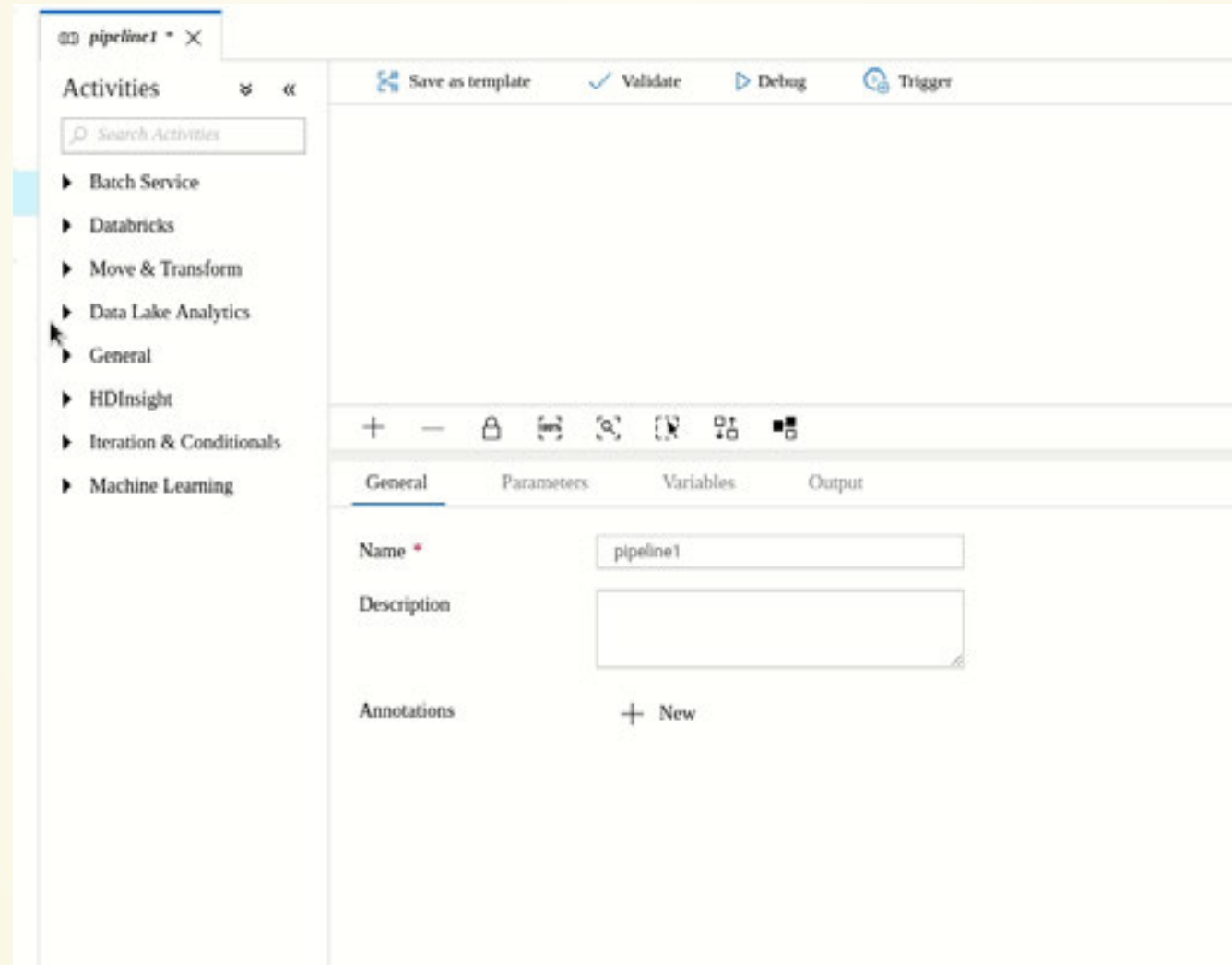
# AN EXAMPLE SCENARIO



# THE PORTAL



# DEVELOPING ADF PIPELINES IN THE PORTAL





ARM Template Editor interface showing a pipeline named `kebabPipeline`.

**Top Bar:** Publish All (4), Validate All, Refresh, Discard All, ARM Template.

**Left Panel:** Connections, Activities (Search Activities), Batch Service, Databricks, Move & Transform, Copy Data, Data Lake Analytics, General, HDInsight, Iteration & Conditionals.

**Right Panel:** Save as template, Validate, Debug, Trigger.

**Pipeline Diagram:**

```
graph LR; A[Copy Data: Copy Sales Data] --> B[U-SQL: USQL ETL]; B --> C[Copy Data: Upload to SQL DW];
```

The diagram illustrates a data pipeline flow: `Copy Data` (Copy Sales Data) → `U-SQL` (USQL ETL) → `Copy Data` (Upload to SQL DW).

*Publish or Publish Not. There is No Save*

↑ Publish All 4

✓ Validate All

↻ Refresh

🗑 Discard All

ARM Template ▾

Import ARM Template

Export ARM Template 📄

«

Connections ✕

kebabPipeline \* ✕

+

1

2

Activities

Search Activities

▶ Batch Service

▶ Databricks

▲ Move & Transform

Copy Data

▶ Data Lake Analytics

▶ General

▶ HDInsight

▶ Iteration & Conditionals

Save as template

✓ Validate

▶ Debug

+ - 🔒 100% 🔍 🖱️ ↕ 🗑

General Parameters Variables Outputs

Name \*

kebabPipeline

Description

Annotations

+ New

10 / 66

# UNFORCED PARAMATERISATION

Custom deployment

Deploy from a custom template

TEMPLATE

Customized template

6 resources

Edit template

Edit parameters

Learn more

BASICS

\* Subscription

Visual Studio Professional

\* Resource group

testdeploy2

Create new

\* Location

West Europe

SETTINGS

Factory Name

kebabulous-adf-prod

\* Azure Blob Storage1\_connection String

\* Azure Data Lake Analytics1\_service Principal Key

Input Files\_properties\_type Properties\_file Name

InputFile1.csv

Input Files\_properties\_type Properties\_folder Path

inbox

Adls Raw Data\_properties\_type Properties\_file Name

11 / 66

# ENTERPRISE SCALE



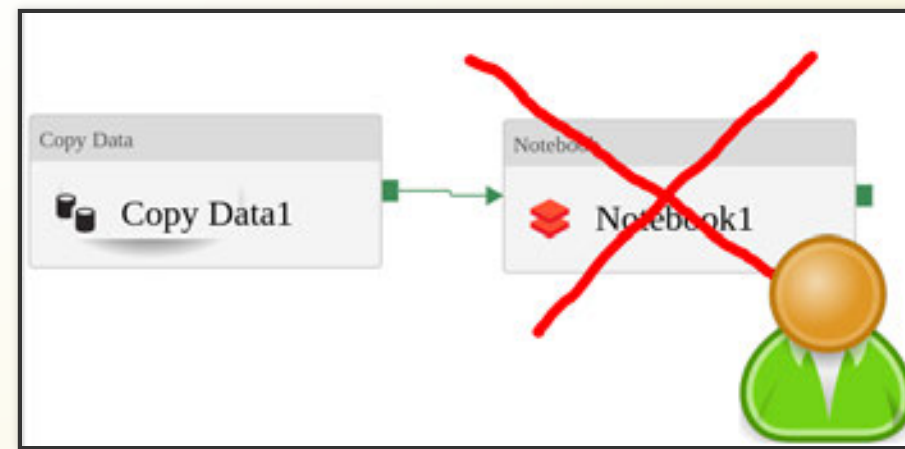
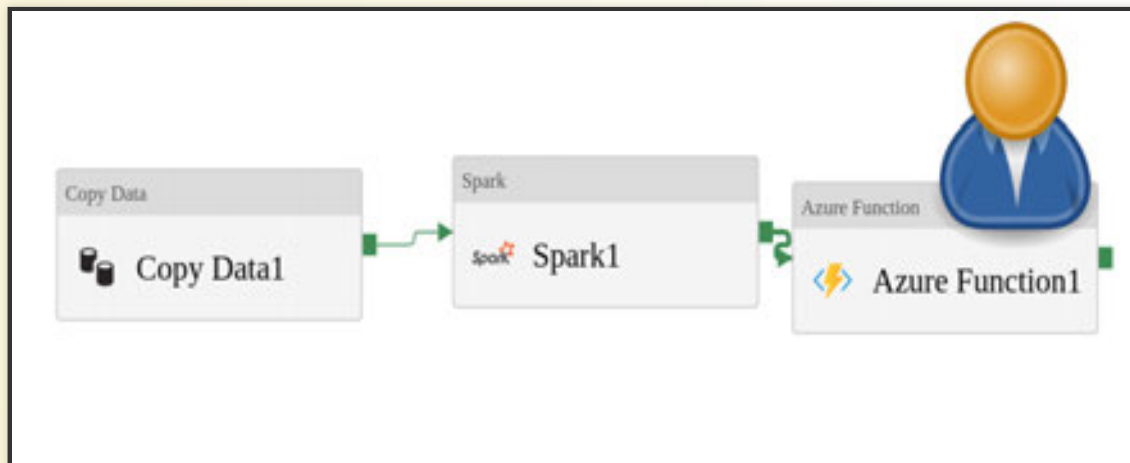
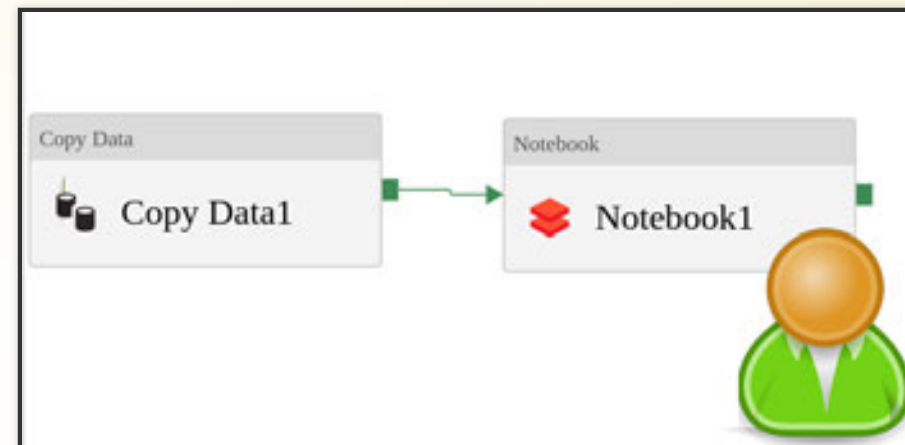
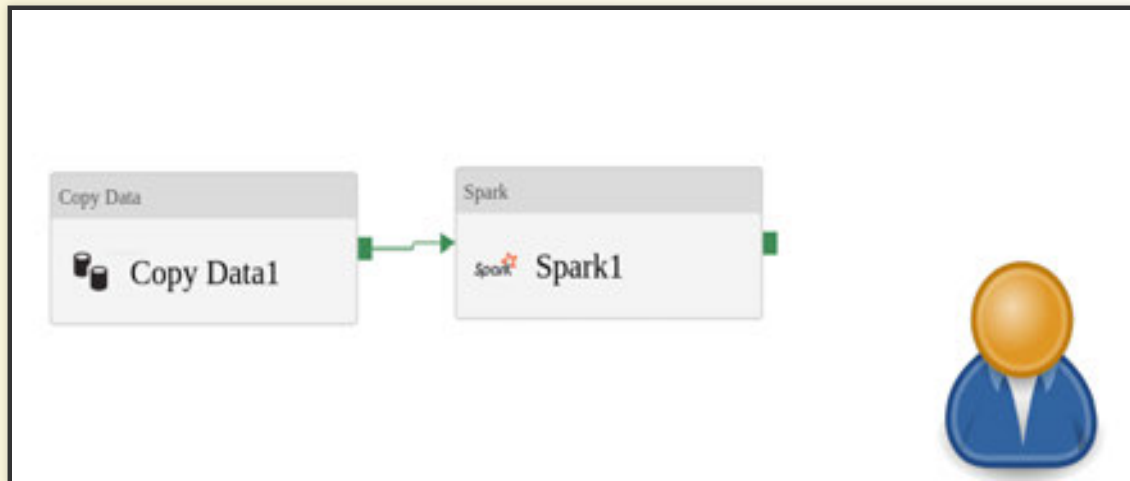
• Hello, is that Swindleham and Leggitt Recruitment Ltd?

• Our Strategic Enterprise Cloud Data Programme is weeks behind schedule and we're in danger of missing the Phase 3a interim milestone.

• We need to quadruple the number of Azure Big Data Development Resources on the team immediately!!



# A TALE OF TWO DEVELOPERS



## WHAT'S MISSING FROM THIS PICTURE?



*Source control is what  
allows us to scale beyond  
one developer.*



**Isaac Wolkerstorfer**

@agnoster

Follow



Replying to @wilshiple

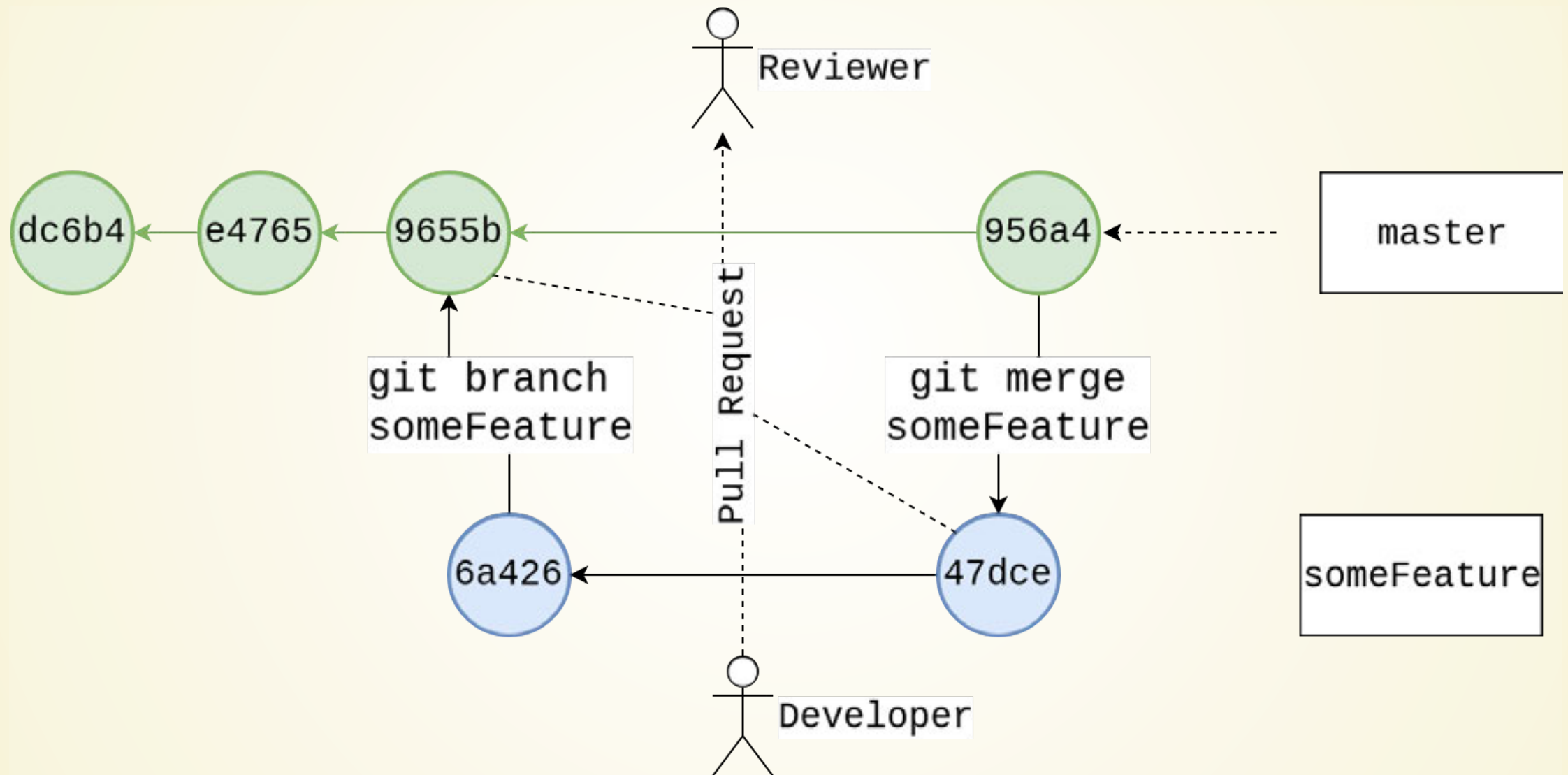
@wilshiple git gets easier once you get the basic idea that branches are homeomorphic endofunctors mapping submanifolds of a Hilbert space.

9:52 PM - 6 Mar 2011

595 Retweets 443 Likes



# GIT - THE ESSENTIALS



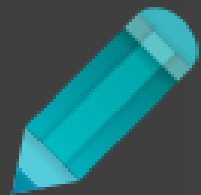


Microsoft Azure

Data Factory



keb



Data Factory



Data Factory

Set up Code Repository



*Filter resources by name*

# FROM THE HORSE'S MOUTH

*Here is the entire lifecycle for continuous integration & delivery that you can use after you enable Azure Repos Git integration in the Data Factory UI:*

1. Set up a development data factory with Azure Repos in which all developers can author Data Factory resources like pipelines, datasets, and so forth.
2. Then developers can modify resources such as pipelines. As they make their modifications, they can select Debug to see how the pipeline runs with the most recent changes.
3. After developers are satisfied with their changes, they can create a pull request from their branch to the master branch (or the collaboration branch) to get their changes reviewed by peers.
4. After changes are in the master branch, they can publish to the development factory by selecting Publish.
5. When the team is ready to promote changes to the test factory and the production factory, they can export the Resource Manager template from the master branch, or from any other branch in case their master branch backs the live development Data Factory.
6. The exported Resource Manager template can be deployed with different parameter files to the test factory and the production factory.

# Sharing the Development Environment



Azure DevOps GIT | master branch | Save All | Publish | Validate All | Refresh | Discard All | ARM Template

### Factory Resources

Filter resources by name

- Pipelines 1
  - \* pipeline2
- Datasets 2
- Templates 0

### Activities

Search Activities

- Batch Service
- Databricks
- Move & Transform
- Data Lake Analytics
- U-SQL
- General
- HDInsight
- Iteration & Conditionals
- Machine Learning

### Copy Data

Copy Data1

1

+ - Lock Copy Paste Zoom Full Screen

### General

Name \* pipeline2

Description

Annotations + New



🔗 master ▾

sqlbits-demo / Type to find a file or folder...

Simple history (d... ▾

Author ▾

From date



To date



✕ Clear

Graph

Commit

Message



991a4694

Updating pipeline: pipeline2



c4c4f95a

Updating pipeline: pipeline2



e0b3302d

Updating pipeline: pipeline2



83e26e11

Adding pipeline: pipeline2



8afad301

Initial commit.

Source explorer

## Project Settings > Policies

### General

Overview

Teams

Security

Notifications

Service hooks

Dashboards

### Boards

Project configuration

Policies for: sqlbits-demo > sqlbits-demo > r



Save changes



Discard changes

### Protect this branch

- Setting a Required policy will enforce the use of pull requests when updating the branch
- Setting a Required policy will prevent branch deletion
- Manage permissions for this branch on the [Security page](#)



#### Require a minimum number of reviewers

Require approval from a specified number of reviewers on pull requests.

Minimum number of reviewers



Allow users to approve their own changes.



Allow completion even if some reviewers vote "Waiting" or "Reject".

kebabulous-adf

Search resources

master branch

Save All

Publish

Validate All

Refresh

Discard All

ARM Template

pipeline2

Activities

Search Activities

Batch Service

Databricks

Move & Transform

Data Lake Analytics

General

HDInsight

Iteration & Conditionals

Machine Learning

Saved

Save as template

Validate

Debug

Trigger

Code

Copy Data

Copy Data1

+ - 🔒 100% 🔍 📏 ↕ 📐

General Parameters Variables Output

Name \*

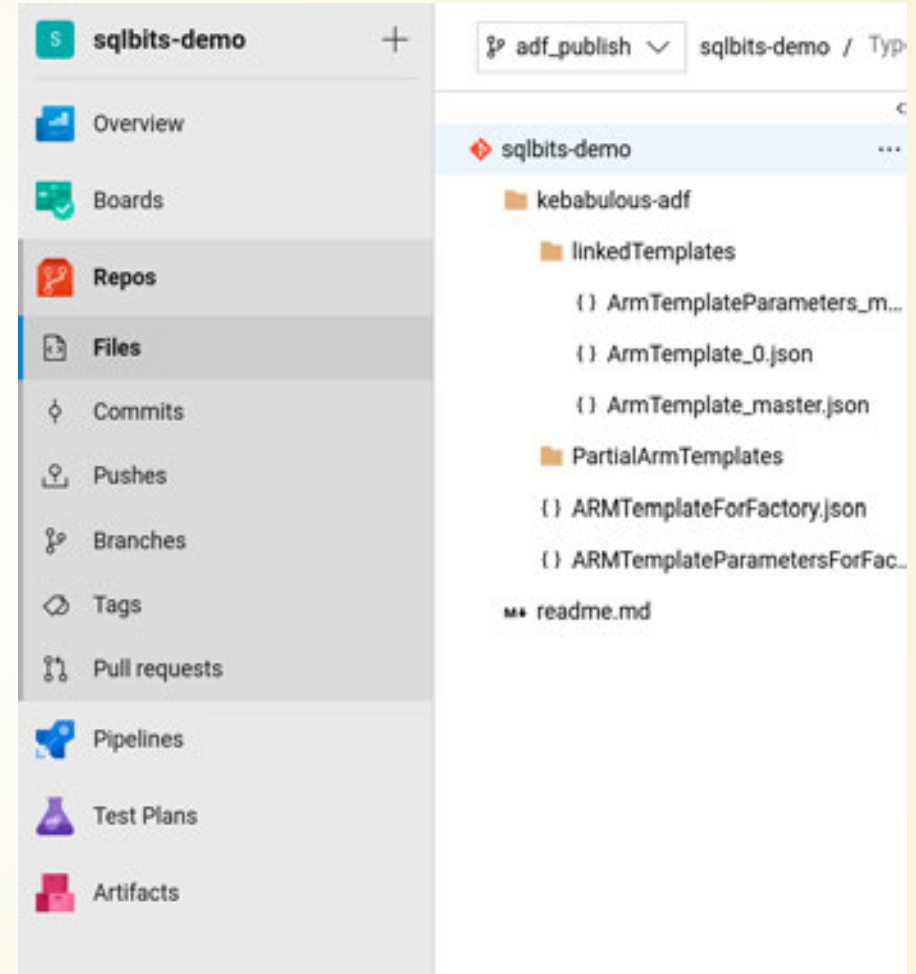
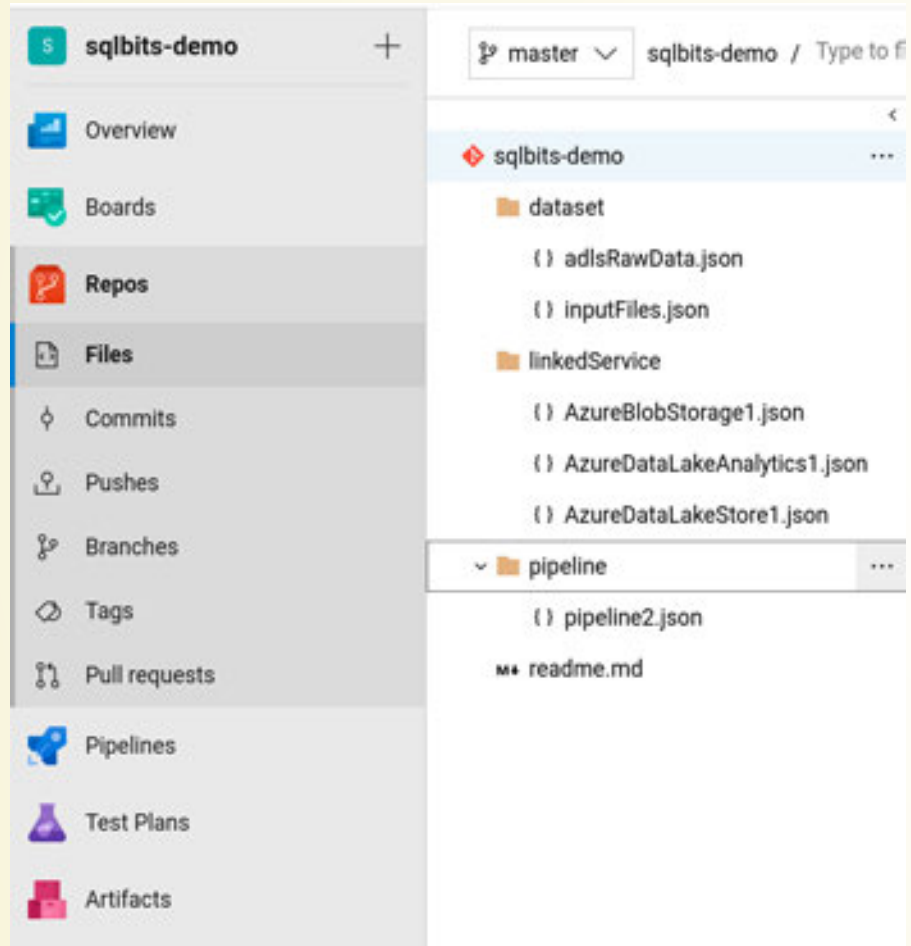
pipeline2

Description

Annotations

+ New

# BEHIND THE SCENES...





*Developing abstractions intended to simplify the use of git source control rarely ends well.*

**WHERE DO WE GO FROM HERE?**



# ARM TEMPLATES

adf\_publish | sqlbits-demo / kebabulous-adf / linkedTemplates / ArmTemplate\_0.json | Fork | Clone

sqlbits-demo

- kebabulous-adf
  - linkedTemplates
    - ArmTemplateParameters\_m...
    - ArmTemplate\_0.json
    - ArmTemplate\_master.json
  - PartialArmTemplates
    - ArmTemplate\_2\_23\_2019\_22...
  - ARMTemplateForFactory.json
  - ARMTemplateParametersForFac...
- readme.md

Contents | History | Compare | Blame | Edit | Rename | Delete | Download

```
71 "variables": {
72   "factoryId": "[concat('Microsoft.DataFactory/factories/', parameters('factoryName'))]"
73 },
74 "resources": [
75   {
76     "name": "[concat(parameters('factoryName'), '/AzureBlobStorage1')]",
77     "type": "Microsoft.DataFactory/factories/linkedServices",
78     "apiVersion": "2018-06-01",
79     "properties": {
80       "annotations": [],
81       "type": "AzureBlobStorage",
82       "typeProperties": {
83         "connectionString": "[parameters('AzureBlobStorage1_connectionString')]"
84       }
85     },
86     "dependsOn": []
87   },
88   {
89     "name": "[concat(parameters('factoryName'), '/AzureDataLakeAnalytics1')]",
90     "type": "Microsoft.DataFactory/factories/linkedServices",
91     "apiVersion": "2018-06-01",
92     "properties": {
93       "annotations": [],
94       "type": "AzureDataLakeAnalytics",
95       "typeProperties": {
96         "accountName": "[parameters('AzureDataLakeAnalytics1_properties_typeProperties_accountName')]",
97         "servicePrincipalId": "[parameters('AzureDataLakeAnalytics1_properties_typeProperties_servicePrincipalId')]",
98         "servicePrincipalKey": {
99           "type": "SecureString",
100           "value": "[parameters('AzureDataLakeAnalytics1_servicePrincipalKey')]"
101         },
102         "tenant": "[parameters('AzureDataLakeAnalytics1_properties_typeProperties_tenant')]",
103         "subscriptionId": "[parameters('AzureDataLakeAnalytics1_properties_typeProperties_subscriptionId')]",
104         "resourceGroupName": "[parameters('AzureDataLakeAnalytics1_properties_typeProperties_resourceGroupName')]"
105       }
106     },
107     "dependsOn": []
108   }
109 ]
```




# ARM TEMPLATES

## Template deployment

*With Resource Manager, you can create a template (in JSON format) that defines the infrastructure and configuration of your Azure solution. By using a template, you can repeatedly deploy your solution throughout its lifecycle and have confidence your resources are deployed in a consistent state.*

# ARM TEMPLATES



## Azure Resource Manager Tools

msazurearmtools.azurearm-vscode-tools Preview

Microsoft | 269,116 | ★★★★★ | Repository | License

Template language support for Azure Resource Manager JSON files.

Disable ▾ Uninstall

[Details](#) [Contributions](#) [Changelog](#)

---

## Azure Resource Manager Tools for Visual Studio Code (Preview)

build passing release v0.4.2

This extension provides language support for Azure Resource Manager deployment templates and template language expressions.

### Features

- JSON outline for easy navigation through large templates
- IntelliSense
  - [Template Language Expression \(TLE\) function names](#)
  - [Parameter references](#)
  - [Variable references](#)
  - [resourceGroup\(\) properties](#)
  - [subscription\(\) properties](#)
  - Properties of references to variables that are objects



# ALL OUR RESOURCES ARE DEFINED IN THE SAME PLACE

```
> <adlsAccountName>
> <dwServerName>
> <adlaAccountName>
> <dataFactoryName>
  name: [parameters('dataFactoryName')]
  type: Microsoft.DataFactory/factories
  apiVersion: 2018-06-01
  location: [resourceGroup().location]
  tags
  > identity
  properties
  > resources
    > <sourceDataLinkedService>
    > <dataLakeStoreLinkedService>
    > <AzureDataLakeAnalyticsLinkedService>
    > <inputFiles>
    > <adlsRawData>
    > <kebabPipeline>
  > <outputs>
```

```

{
  "name": "[parameters('adlsAccountName')]",
  "type": "Microsoft.DataLakeStore/accounts",

  "apiVersion": "2016-11-01",

  "location": "[resourceGroup().location]",
  "scale": null,
  "properties": {},
  "dependsOn": [],
  "resources": [
    {
      "type": "Microsoft.DataLakeStore/accounts/providers/roleAs
      "apiVersion": "2017-05-01",
      "name": "[concat(parameters('adlsAccountName'), '/Microsof
      "dependsOn": [
        "[resourceId('Microsoft.DataLakeStore/accounts', p
      ],
      "properties": {
        "roleDefinitionId": "[variables('readerRoleDefinition')]",
        "principalId": "[reference(concat('Microsoft.DataFactory/f

```

```
"parameters": {
  "storageAccountName": {
    "type": "string",
    "defaultValue": "[concat('kebabstor', uniqueString(resourceGroup()
  },
  "adlsAccountName": {
    "type": "string",
    "defaultValue": "[concat('kebabadls', uniqueString(resourceGroup()
  },
  "adfApplicationId":{
    "type": "string"
  },
  "adfApplicationKey":{
    "type": "securestring"
  },
  "dwServerName": {
    "type": "string",
    "defaultValue": "[concat('kebabDwServer', uniqueString(resourceGro
  },
  "dwTierName":{
    "type": "string",
    "defaultValue": "DW100c"
```

# RESOURCES DEPLOYED TO AZURE

5 items ☐ Show hidden types ⓘ



**NAME** ↑↓

**TYPE** ↑↓



kebabadlacf7gzlrofsylc

Data Lake Analytics



kebabadlscf7gzlrofsylc

Data Lake Storage Gen1



kebabdfcf7gzlrofsylc

Data factory (V2)



kebabDwServercf7gzlrofsylc

SQL server



kebabstorcf7gzlrofsylc

Storage account

*Azure DevOps is so DevOps  
it's even got DevOps in the  
name, and it doesn't get  
much more DevOps than  
that.*

*J. Arthur, Senior DevOps Analyst*





# AZURE DEVOPS

Use all the DevOps services or choose just what you need to complement your existing workflows



## Azure boards

Deliver value to your users faster using proven agile tools to plan, track and discuss work across your teams.

[Learn more >](#)



## Azure pipelines

Build, test and deploy with CI/CD that works with any language, platform and cloud. Connect to GitHub or any other Git provider and deploy continuously.

[Learn more >](#)



## Azure repos

Get unlimited, cloud-hosted private Git repos and collaborate to build better code with pull requests and advanced file management.

[Learn more >](#)



## Azure test plans

Test and ship with confidence using manual and exploratory testing tools.

[Learn more >](#)



## Azure Artifacts

Create, host and share packages with your team, and add artifacts to your CI/CD pipelines with a single click.

[Learn more >](#)

## Extensions Marketplace

Access extensions from Slack to SonarCloud to 1,000 other apps and services – built by the community.

[Learn more >](#)

# THE BUILD DEFINITION

Pipeline  
Build pipeline

Get sources  
sqlbits-azurevm master

Agent job 1  
Run on agent

Azure Deployment:Create Or Update ...  
Azure Resource Group Deployment

Azure CLI - PostDeployment Tasks  
Azure CLI

PowerShell Script - Run Tests  
PowerShell

Publish Test Results \*\*/testResults.x...  
Publish Test Results

Publish Artifact: drop  
Publish Build Artifacts

Azure Resource Group Deployment ⓘ

Task version 2.\* ▾

Display name \*  
Azure Deployment:Create Or Update Resource Group

Azure Details ^

Azure subscription \* ⓘ | Manage

Visual Studio Professional (8a0fa19c-a748-44eb-8333-fa964eb0af32) ▾  
 ⓘ Scoped to subscription "Visual Studio Professional"

Action \* ⓘ  
Create or update resource group

Resource group \* ⓘ  
\$(Build.SourceBranchName)

Location \* ⓘ  
West Europe

# THE BUILD DEFINITION

**Pipeline**  
Build pipeline

**Get sources**  
sqlbits-azurevm master

**Agent job 1**  
Run on agent

**Azure Deployment:Create Or Update ...**  
Azure Resource Group Deployment

**Azure CLI - PostDeployment Tasks**  
Azure CLI

**PowerShell Script - Run Tests**  
PowerShell

**Publish Test Results \*\*/testResults.x...**  
Publish Test Results

**Publish Artifact: drop**  
Publish Build Artifacts

**Azure Resource Group Deployment**

Task version 2.\*

Display name \*  
Azure Deployment:Create Or Update Resource Group

**Azure Details**

Azure subscription \*  
Visual Studio Professional (8a0fa19c-a748-44eb-8333-fa964eb0af32)

Action \*  
Create or update resource group

**Resource group \***  
\$(Build.SourceBranchName)

Location \*  
West Europe



# THE BUILD TRIGGER


Triggers


Options


Retention


History

 Save & queue 

 Discard

 Summary

 Queue




tion

erm

+ Add

+ Add

ompletes

 sqlbits-azurerm


☒ Enable continuous integration



☐ Batch changes while a build is in progress


Branch filters

Type

Branch specification

Include 

 \* 



+ Add

Path filters

+ Add

38 / 66

# CREATING A BRANCH

🔑 master ▾

sqlbits-azurerm / Type to find a file or folder...

❌ failed Fork Clone

sqlbits-azurerm ...

- 📁 infrastructure
- 📄 azure-pipelines.yml
- 📄 README.md

Contents History README

+ New ▾ ⬆ Upload file(s) ⬇ Download as Zip

Name ↑	Last change	Commits	
📁 infrastructure	26 minutes ago	784c431a	Added file tests.p...
📄 azure-pipelines.yml	4 hours ago	133cd178	Set up CI with Az...
📄 README.md	2/15/2019	60be27c7	Initial commit Ga...



# A DEDICATED ENVIRONMENT FOR THIS BRANCH

Home > Resource groups > somefeature

**somefeature**  
Resource group

Search (Ctrl+/,)

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Quickstart

Resource costs

Deployments

Policies

Properties

Logs

+ Add Edit columns Delete resource group Refresh

Subscription ([change](#))  
Visual Studio Professional

Subscription ID  
8a0fa19c-a748-44eb-8333-fa964eb0af32

Tags ([change](#))  
[Click here to add tags](#)

Filter by name... All types All locations

5 items ☐ Show hidden types ⓘ

<input type="checkbox"/>	NAME	TYPE	LOCATION
<input type="checkbox"/>	kebabadlalaawwltolzzp2	Da	
<input type="checkbox"/>	kebabadlsiaawwltolzzp2	Da	
<input type="checkbox"/>	kebabdfllaawwltolzzp2	Da	

# THE TESTS WERE PASSING WHEN THE BRANCH WAS CREATED...

Triggered today at 23:21 for Gavin Campbell  sqlbits-azurerm  somefeature  f70329a

Logs   Summary   **Tests**




✓ Summary

1 Run(s) Completed ( 1 Passed, 0 Failed )

1

Total tests



- 1  Passed
- 0  Failed
- 0  Others

100%

Pass percentage

120ms

Run duration ⓘ

↓ 60ms

 Bug       Link

# DEBUGGING THE DATA FACTORY

The screenshot displays the Azure Data Factory console for a resource group named 'kebabdflaawwltolzzp2'. The left-hand navigation pane shows the hierarchy: Data Factory > Pipelines > kebabPipeline. The main workspace is titled 'kebabPipeline' and contains an 'Activities' list on the left and a configuration panel on the right. The 'Activities' list includes options like Batch Service, Databricks, Move & Transform, Data Lake Analytics, General, HDInsight, Iteration & Conditionals, and Machine Learning. The 'Copy Data' activity is selected, and its configuration panel is open. The configuration panel has tabs for 'General', 'Source', 'Sink', and 'Mapping'. The 'General' tab is active, showing the activity name 'Copy Sales Data' and a 'Name' field with a red asterisk. The 'Copy Data' activity is represented by a blue box with a green arrow pointing to the right, indicating the data flow. A red circle highlights the 'Copy Data' activity in the pipeline canvas.

Azure | Data Factory ▶ kebabdflaawwltolzzp2 Search resources

Data Factory ▼  
Data Factory  
Set up Code Repository

Filter resources by name

Pipelines 1  
kebabPipeline

Datasets 2

kebabPipeline X

Activities Search Activities

Batch Service  
Databricks  
Move & Transform  
Data Lake Analytics  
General  
HDInsight  
Iteration & Conditionals  
Machine Learning

Save as template Validate Debug

Copy Data

Copy Sales Data

+ - Lock 100% Zoom In Zoom Out Reset View

< General Source Sink Mapping

Name \* Copy Sales Data

# COMPLETING THE FEATURE

Azure DevOps

arapaima2 / sqlbits-demo / Repos / Pull requests / sqlbits-azurearm

Search

sqlbits-demo

Overview

Boards

Repos

Files

Commits

Pushes

Branches

Tags

Pull requests

Pipelines

Test Plans

Project settings

somefeature into master

Title \*

My fantastic new feature

Add label

Description

I added a fantastic new feature

Markdown supported.

**B** *I* @ #

I added a fantastic new feature

Reviewers

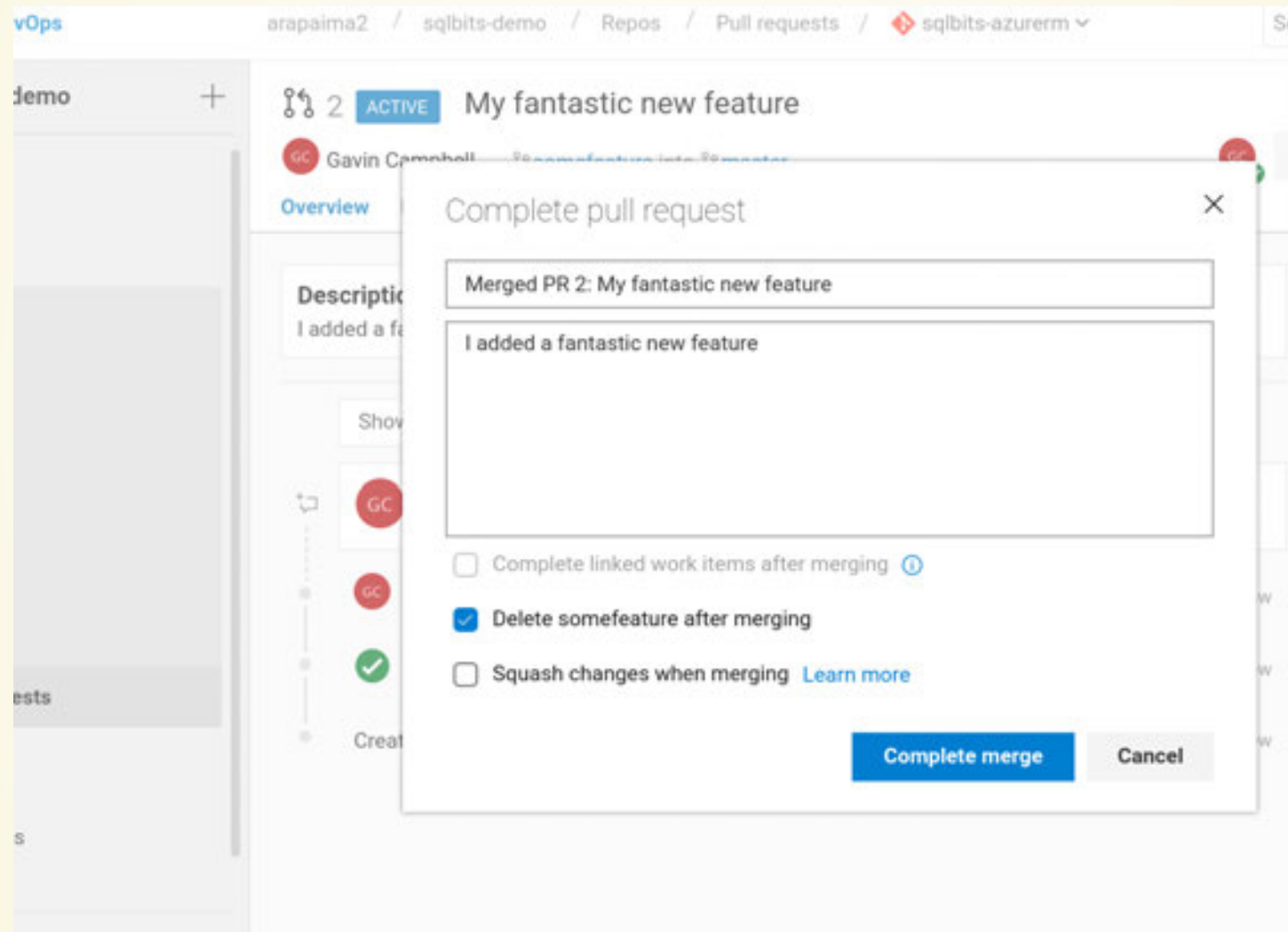
Search users and groups to add as reviewers

Work Items

Search work items by ID or title

Create

# MERGING THE FEATURE








# SERVICE HOOKS

arapaima2 / sqlbits-demo / Settings

Search



Project Settings > Service hooks

▼ General

Overview





Teams

Security

Notifications

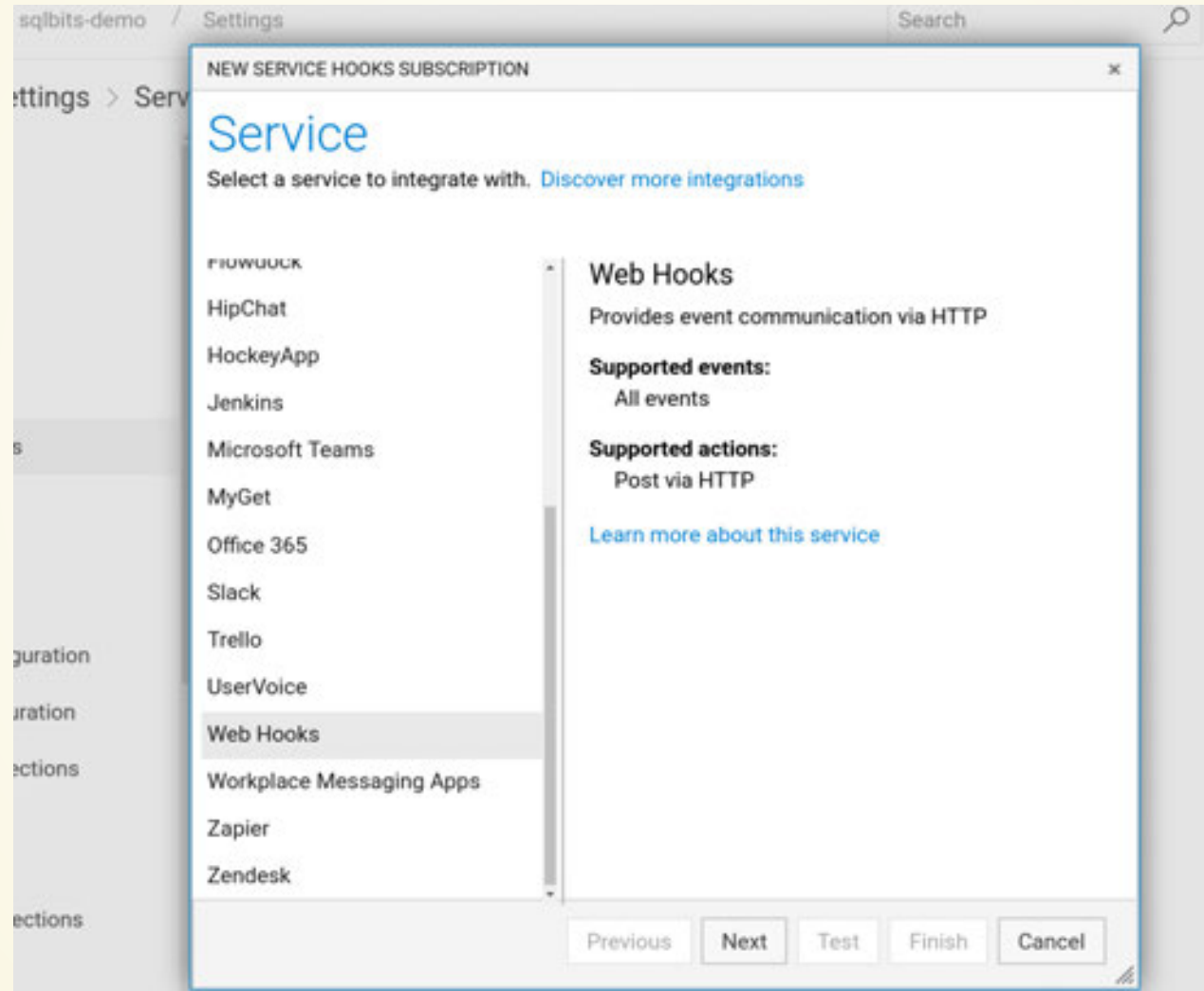
Service Hooks

Integrate with your favorite services by notifying them when events happen in your project.

 |  |  |  | History

Consumer ↑      Event ↑

# SERVICE HOOKS



# SERVICE HOOKS

NEW SERVICE HOOKS SUBSCRIPTION

Trigger

Select an event to trigger on and configure any filters.

Trigger on this type of event

Pull request merge attempted

Remember that selected events are visible to users of the target service, even if they don't have permission to view the related artifact.

FILTERS

Repository

sqlbits-azurem

optional

✓

Target branch

master

optional

✓

Merge result

Merge Successful

optional

✓

Requested by a member of group:

[Any]

optional

Reviewer includes group:

[Any]

optional

Previous

Next

Test

Finish

Cancel

# SERVICE HOOKS

NEW SERVICE HOOKS SUBSCRIPTION

Action

Select and configure the action to perform.

Perform this action

Post via HTTP

This action posts a JSON object representation of the event to the specified URL. Secure, HTTPS endpoints are recommended due to the potential for private data in the event payload. [Learn More](#)

SETTINGS

URL ? required  

https://s2events.azure-automation.net/webhooks?token=pkW8l ✓

☐ Accept untrusted SSL certificates ?

Basic authentication username ? optional

Basic authentication password ? optional

HTTP headers ? optional

Previous

Next

Test

Finish

Cancel

# SERVICE HOOKS

NEW SERVICE HOOKS SUBSCRIPTION

Action

Select and configure the action to perform.

Perform this action

Post via HTTP

This action posts a JSON object representation of the event to the specified URL. Secure, HTTPS endpoints are recommended due to the potential for private data in the event payload. [Learn More](#)

SETTINGS

URL ⓘ required

https://s2events.azure-automation.net/webhooks?token=pkW8l ✓

☐ Accept untrusted SSL certificates ⓘ

Basic authentication username ⓘ optional

Basic authentication password ⓘ optional

HTTP headers ⓘ optional

Previous

Next

Test

Finish

Cancel



# SAMPLE PAYLOAD

TEST NOTIFICATION

Web Hooks (Post via HTTP)


Summary Request Response Event

```
4d40-c903-45e2-872e-0462c7748079/pullRequests/1/statuses"
  }
}
},
"resourceVersion": "1.0-preview.1",
"resourceContainers": {
  "collection": {
    "id": "c12d0eb8-e382-443b-9f9c-c52cba5014c2"
  },
  "account": {
    "id": "f844ec47-a9db-4511-8281-8b63f4eaf94e"
  },
  "project": {
    "id": "be9b3917-87e6-42a4-a549-2bc06a7a878f"
  }
},
"createdDate": "2019-02-28T21:35:09.2200743Z"
}
```

Close

# AZURE AUTOMATION


Home > vsts-automation - Runbooks > destroy-resourcegroup > Add Webhook > Create a new webhook


 **Add Webhook** ×

Start a runbook via a simple HTTP POST to a URL

Webhook  
Create new webhook >

Parameters and run settings  
Configure parameters and run settings >

 **Create a new webhook** □ ×



For security, after creating a webhook its URL can't be viewed. Make sure to copy it before pressing "OK", and to store it securely. [Learn more](#)

\* Name


destroy-resource-group ✓

\* Enabled

Yes


No

\* Expires

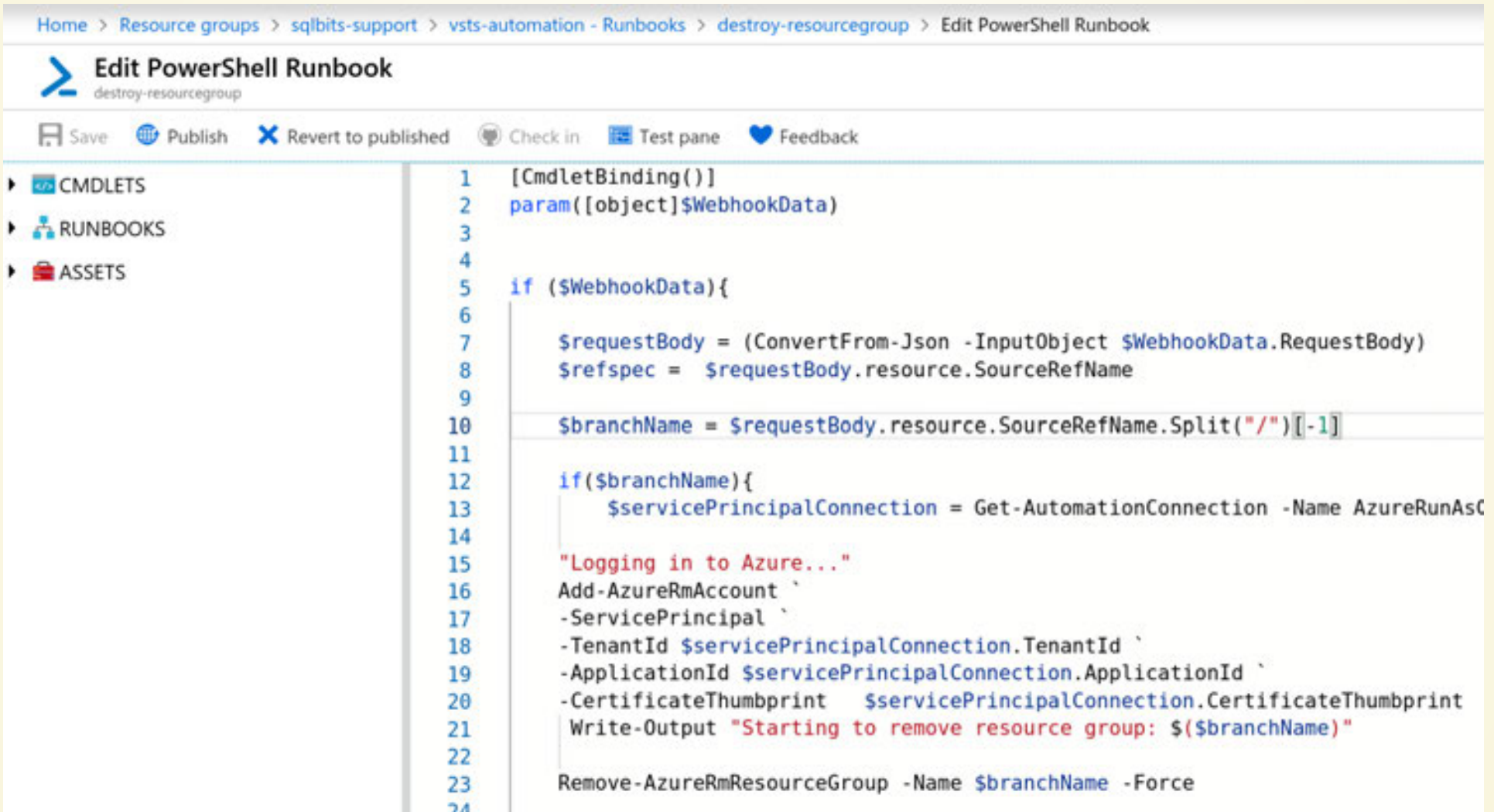
2020-02-11 

18:40:04

URL ⓘ

https://s2events.azure-automation.net/... 

# THE TERMINATOR



The screenshot shows the 'Edit PowerShell Runbook' interface for a runbook named 'destroy-resourcegroup'. The breadcrumb navigation at the top reads: Home > Resource groups > sqlbits-support > vsts-automation - Runbooks > destroy-resourcegroup > Edit PowerShell Runbook. The interface includes a left-hand navigation pane with 'CMDLETS', 'RUNBOOKS', and 'ASSETS'. The main editor area contains a PowerShell script with line numbers 1 through 24. The script defines a cmdlet binding, takes a parameter, and uses an if-statement to check for webhooks. It then extracts the resource group name from the source reference and uses 'Get-AutomationConnection' to retrieve Azure credentials. Finally, it uses 'Remove-AzureRmResourceGroup' to delete the resource group.

```
1 [CmdletBinding()]
2 param([object]$WebhookData)
3
4
5 if ($WebhookData){
6
7     $requestBody = (ConvertFrom-Json -InputObject $WebhookData.RequestBody)
8     $refspec = $requestBody.resource.SourceRefName
9
10    $branchName = $requestBody.resource.SourceRefName.Split("/")[-1]
11
12    if($branchName){
13        $servicePrincipalConnection = Get-AutomationConnection -Name AzureRunAsC
14
15        "Logging in to Azure..."
16        Add-AzureRmAccount `
17        -ServicePrincipal `
18        -TenantId $servicePrincipalConnection.TenantId `
19        -ApplicationId $servicePrincipalConnection.ApplicationId `
20        -CertificateThumbprint $servicePrincipalConnection.CertificateThumbprint
21        Write-Output "Starting to remove resource group: $($branchName)"
22
23        Remove-AzureRmResourceGroup -Name $branchName -Force
24    }
```

# COMPLETING THE PULL REQUEST...



2

COMPLETED

## My fantastic new feature



Gavin Campbell



`somefeature` into `master`

Overview

Files

Updates

Commits

Gavin Campbell completed the pull request on 2/25/2019

Cherry-pick

Revert

# ...TRIGGERS THE RUNBOOK...

The screenshot shows the Azure Automation console for a Runbook named 'destroy-resourcegroup'. The breadcrumb navigation at the top reads: Home > vsts-automation - Runbooks > destroy-resourcegroup. The Runbook title 'destroy-resourcegroup' is displayed with a blue chevron icon and the word 'Runbook' below it. A search bar with the placeholder 'Search (Ctrl+ /)' is present. The left-hand navigation pane includes links for Overview (selected), Activity log, Tags, Diagnose and solve problems, Resources, Jobs, Schedules, Webhooks, and Runbook settings. The right-hand pane contains a toolbar with 'Start', 'View', and 'Edit' buttons. Below the toolbar, the 'Location' is 'West Europe', the 'Subscription ID' is '8a0fa19c-a748-44eb-8333-fa...', and the 'Runbook type' is 'PowerShell Runbook'. There is a link to 'Tags (change)' and a link to 'Click here to add tags'. At the bottom, the 'Recent Jobs' section shows a single job with the status 'Running'.

Home > vsts-automation - Runbooks > destroy-resourcegroup

**destroy-resourcegroup**  
Runbook

Search (Ctrl+ /)

Start View Edit

Location  
West Europe

Subscription ID  
8a0fa19c-a748-44eb-8333-fa...

Runbook type  
PowerShell Runbook

Tags (change)  
[Click here to add tags](#)

Recent Jobs

STATUS
Running



# ...WHICH DELETES THE RESOURCE GROUP

The screenshot shows the Azure portal interface for a resource group named 'somefeature'. The breadcrumb navigation at the top reads 'Home > Resource groups > somefeature'. The left sidebar contains navigation links: Overview (selected), Activity log, Access control (IAM), Tags, Events, Settings, Quickstart, Resource costs, Deployments, Policies, and Properties. The main content area has a top bar with '+ Add', 'Edit columns', and 'Delete resource group' buttons. Below this, an orange banner with a warning icon and the text 'Deleting' is displayed. The details section shows the subscription as 'Visual Studio Professional' with a link to 'change', and the subscription ID as '8a0fa19c-a748-44eb-8333-fa964eb0af32'. It also shows tags with a link to 'change' and a link to 'Click here to add tags'. At the bottom, there is a filter bar with 'Filter by name...' and 'All types' dropdowns. Below the filter, it shows '1 items' and a checkbox for 'Show hidden types'. A table with one item is visible, showing a resource named 'kebabDwServerlaawwltoIzzp2' with a SQL icon.

Home > Resource groups > somefeature

**somefeature**  
Resource group

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Quickstart

Resource costs

Deployments

Policies

Properties

+ Add Edit columns Delete resource group

**Deleting**

Subscription ([change](#))  
Visual Studio Professional

Subscription ID  
8a0fa19c-a748-44eb-8333-fa964eb0af32

Tags ([change](#))  
[Click here to add tags](#)





Filter by name... All types

1 items ☐ Show hidden types ⓘ

<input type="checkbox"/> NAME ↕
<input type="checkbox"/> <a href="#">kebabDwServerlaawwltoIzzp2</a>






# WE ALSO BUILD AND DEPLOY THE MASTER BRANCH...


arapaima2 / sqlbits-demo / Pipelines / Builds / sqlbits-demo-CI / #27 Search

 **#27: Merged PR 2: My fantastic new feature**  
Triggered today at 19:04 for Gavin Campbell  sqlbits-azurerm  master  4061f09

**Logs** Summary Tests


**Agent job 1 Job**  
Pool: [Hosted VS2017](#) · Agent: Hosted Agent

-  Initialize Agent · **succeeded**
-  Initialize job · **succeeded**
-  Checkout · **succeeded**
-  Azure Deployment:Create Or Update Resource Group · **succeeded**
-  Azure CLI - PostDeployment Tasks · **succeeded**

 PowerShell Script - Run Tests

```
nuget 2.8.5.208 https://onege... NuGet provider for
```

# THE "MASTER" RESOURCE GROUP

 **master**  
Resource group

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Quickstart

Resource costs

Deployments

Policies

Properties

Locks

Automation script

Monitoring

Insights (preview)

+ Add

≡ Edit columns

🗑 Delete resource group

🔄 Refresh

Subscription ([change](#)) : [Visual Studio Professional](#)

Subscription ID : 8a0fa19c-a748-44eb-8333-fa964eb0af32


Tags ([change](#)) : [Click here to add tags](#)


All types


5 items


☐ Show hidden types ⓘ


☐ NAME ↑↓

☐  kebabadlahtlscr5hfd67y

☐  kebabadlshtlscr5hfd67y

☐  kebabdfhtlscr5hfd67y




☐  kebabDwServerhtlscr5hfd67y

☐  kebabstorhtlscr5hfd67y

57 / 66

# ...AND RUN OUR TESTS...

## ✓ #27: Merged PR 2: My fantastic new feature

Triggered mon at 19:04 for Gavin Campbell  sqlbits-azurerm  master  4061f09

Logs Summary Tests

### Agent job 1 Job

Pool: [Hosted VS2017](#) · Agent: Hosted Agent


✓ Initialize Agent · succeeded


✓ Prepare job · succeeded


✓ Initialize job · succeeded


# ...AND SAVE THE BUILD ARTEFACTS


Agent job 1  
Run on agent

 Azure Deployment:Create Or Update ...  
Azure Resource Group Deployment

 Azure CLI - PostDeployment Tasks  
Azure CLI

 PowerShell Script - Run Tests  
PowerShell

 Publish Test Results \*\*/testResults.x...  
Publish Test Results

 Publish Artifact: drop  
Publish Build Artifacts

Azure Pipelines/TFS

Control Options ^

☒ Enabled

☐ Continue on error

Timeout \* ⓘ

0

Run this task ⓘ

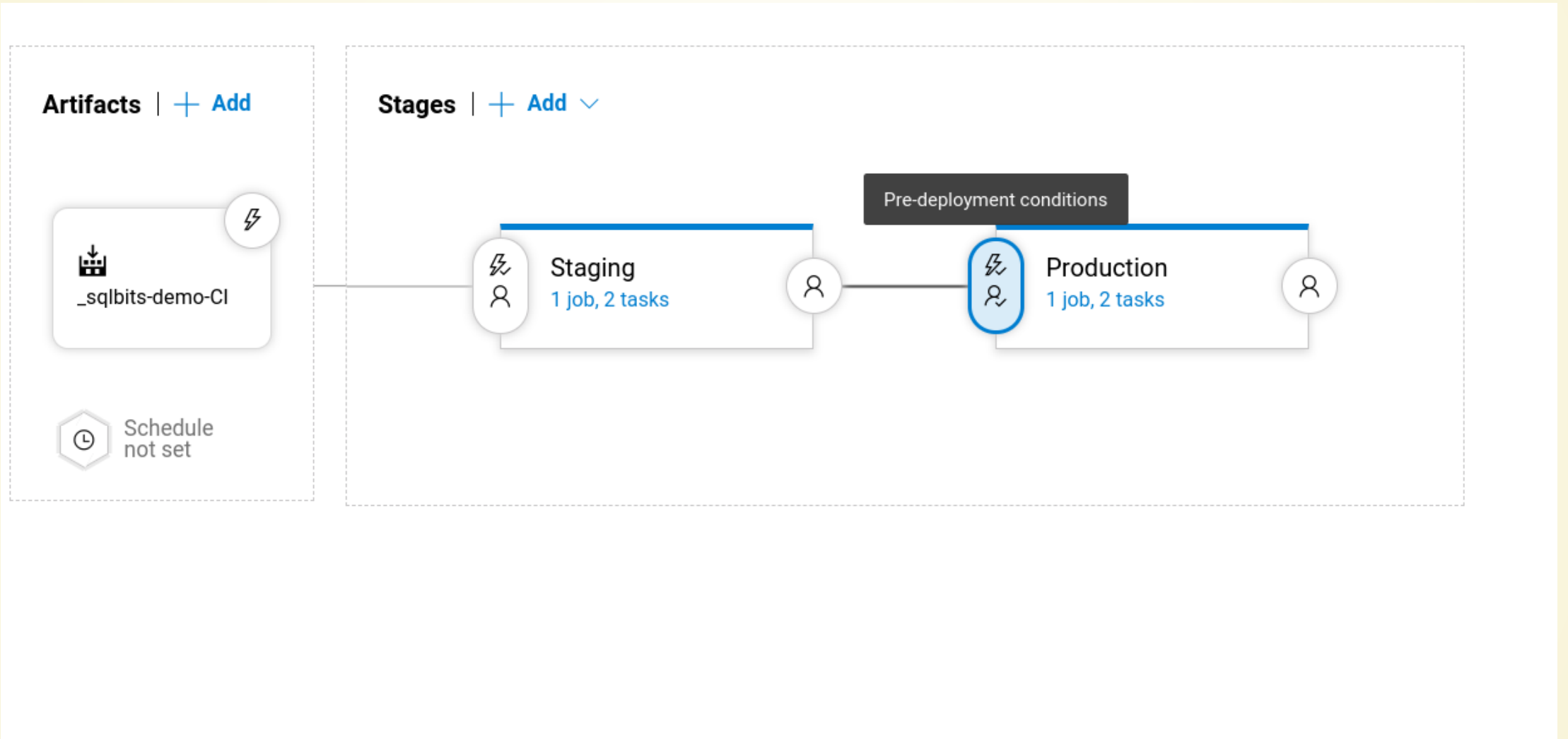
Custom conditions

Custom condition ⓘ

and(succeeded(), eq(variables['Build.SourceBranch'], 'refs/heads/master'))

Output Variables v

# RELEASE MANAGEMENT





# RELEASE TO STAGING

All pipelines > New release pipeline

Save + Release View releases ...

Pipeline Tasks Variables Retention Options History

**Staging**  
Deployment process

**Agent job**  
Run on agent

**Azure Deployment: Create Or Update Resource Group act...**  
Azure Resource Group Deployment

**Azure CLI - Post Deployment Tasks**  
Azure CLI

Create or update resource group

Resource group \*  
kebabulous-staging

Location \*  
West Europe

Template ^

Template location \*  
Linked artifact

Template \*  
\$(System.DefaultWorkingDirectory)/\_sqibits-demo-CI/drop/kebab-rm-template.json

Template parameters

Override template parameters  
-storageAccountName kebabulousstaging -adfsAccountName kebabulousstaging  
-adfsAccountName kebabulousstaging -adfApplicationId -adfApplicationKey  
-dwServerName kebabulousstaging -dwServerAdminLogin "kebabinator"

# SUPPLYING ACTUAL PARAMETER VALUES

×

Override template parameters

Name	Value
storageAccountName	kebabulousstaging ⓘ
adlsAccountName	kebabulousstagingadls
adlaAccountName	kebabulousstagingadla
adfApplicationId	
adfApplicationKey	
dwServerName	kebabulousstagingdw
dwServerAdminLogin	"kebabinator"
dwServerAdminPassword	\$(dbPassword)
dwDbName	"kebabDw"
dwTierName	"DW100c"
dataFactoryName	kebabulousstagingadf

OK Cancel

# HANG ON A MINUTE...

es

Retention

Options

History

Production

1 job, 2 tasks

### Pre-deployment conditions

Production

⚙️ Triggers

Define the trigger that will start deployment to this stage

👤 Pre-deployment approvals

Select the users who can approve or reject deployments to this stage

☒ Enabled

➔ Gates

Define gates to evaluate before the deployment. [Learn more](#)

☐ Disabled

⚙️ Deployment queue settings

Define behavior when multiple releases are queued for deployment

Number of parallel deployments ⓘ

☒ Specific ☐ Unlimited

Maximum number of parallel deployments

1


# RELEASE TO PRODUCTION


All pipelines > New release

Pipeline Tasks Variables

**Production**  
Deployment process

**Agent job**  
Run on agent

 **Azure Deployment: Create or Update**  
Azure Resource Group Deployment

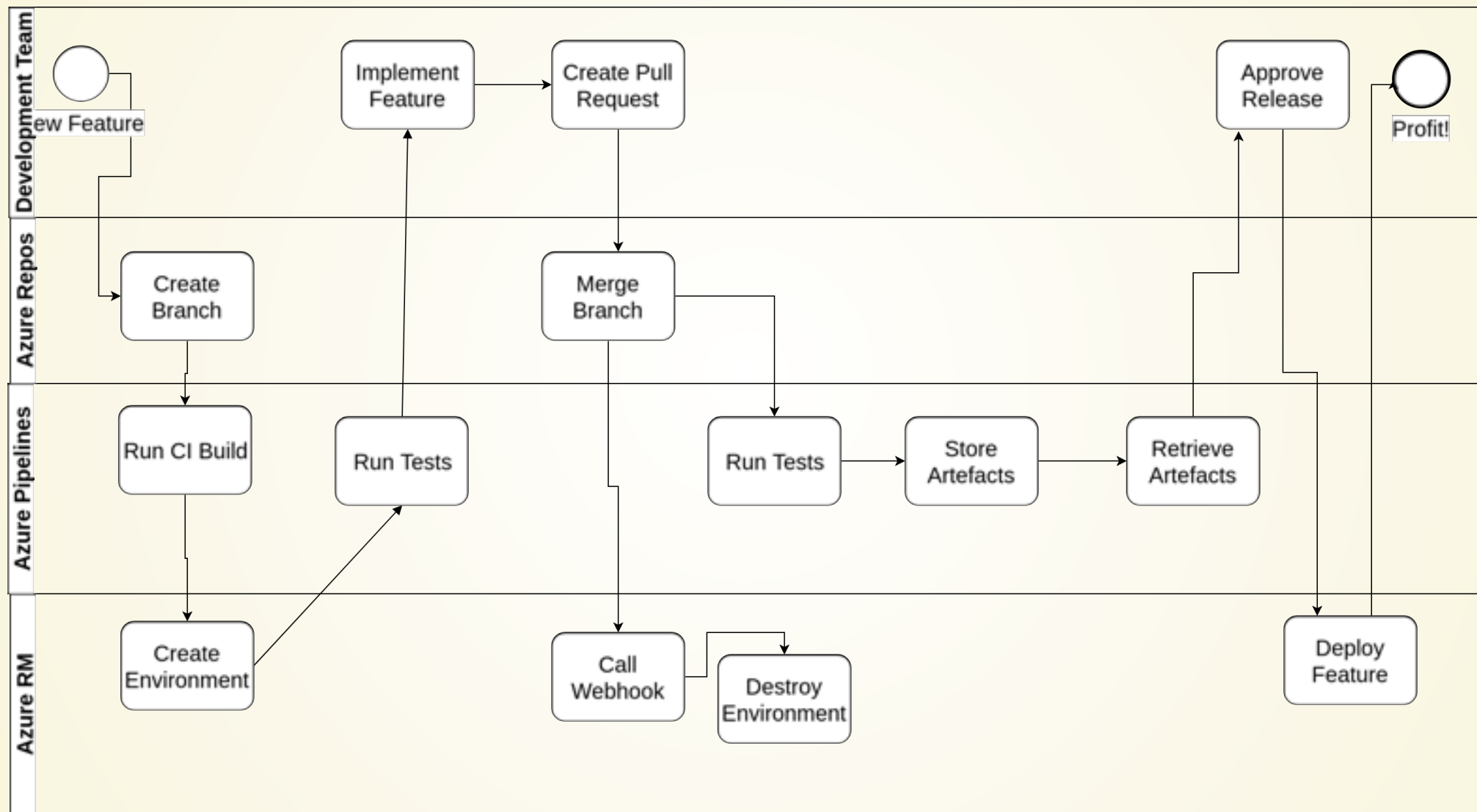
 **Azure CLI - Post Deployment**  
Azure CLI

### Override template parameters

Name	Value
storageAccountName	kebabulous
adlsAccountName	kebabulousadls ⓘ
adlaAccountName	kebabulousadla
adfApplicationId	
adfApplicationKey	
dwServerName	kebabulousdw
dwServerAdminLogin	"kebabulator"
dwServerAdminPassword	\$(dbPassword)
dwDbName	"kebabDw"
dwTierName	"DW1000c"
dataFactoryName	kebabulousadf

OK Cancel

# SUMMARY



# AUDIENCE PARTICIPATION...