sqlbits

SPEAKEASY

DISPOSABLE DEVELOPMENT ENVIRONMENTS

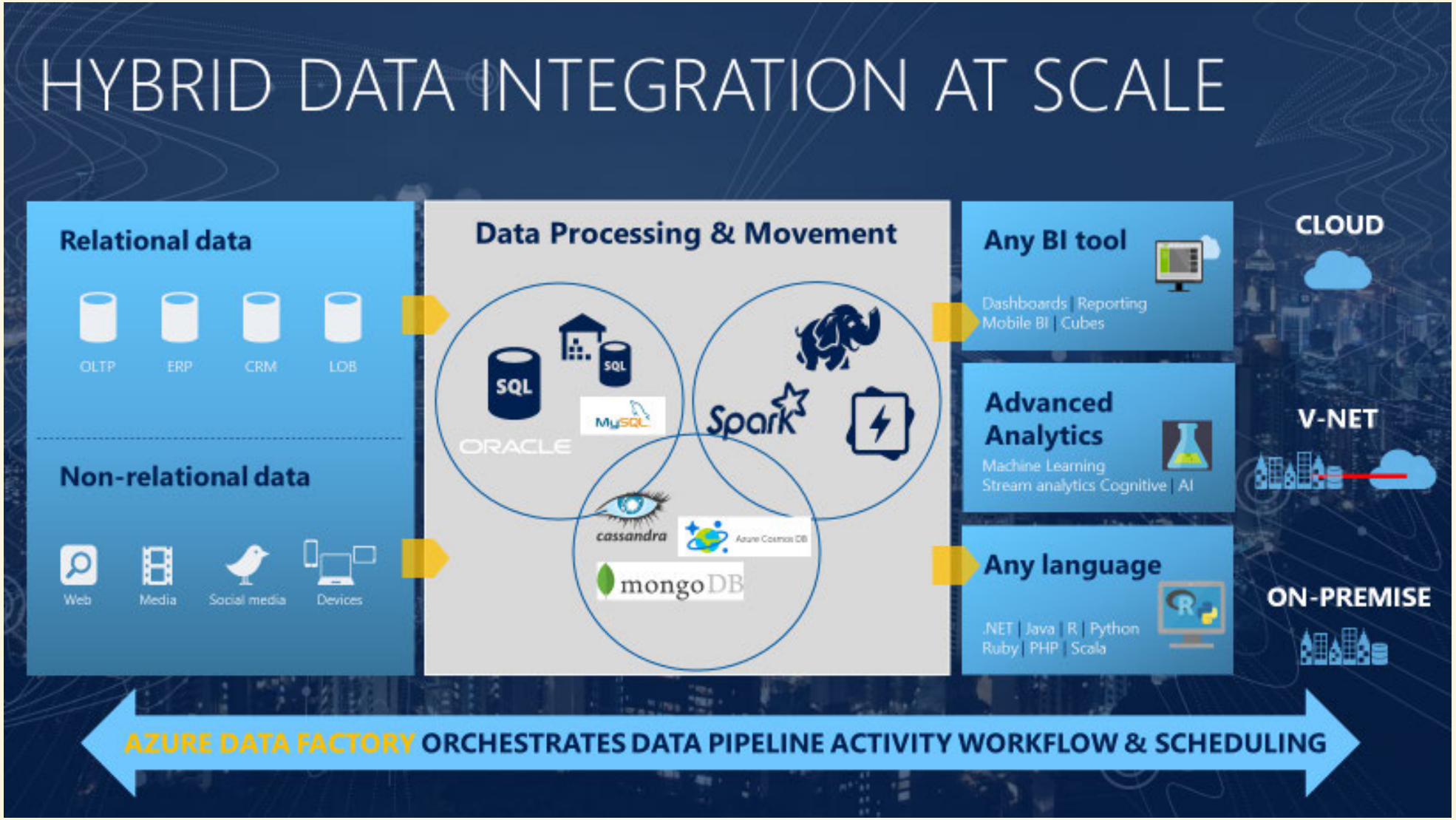
WITH AZURE DEVOPS AND AZURE RESOURCE MANAGER

GAVIN CAMPBELL

ARAPAIMA.UK

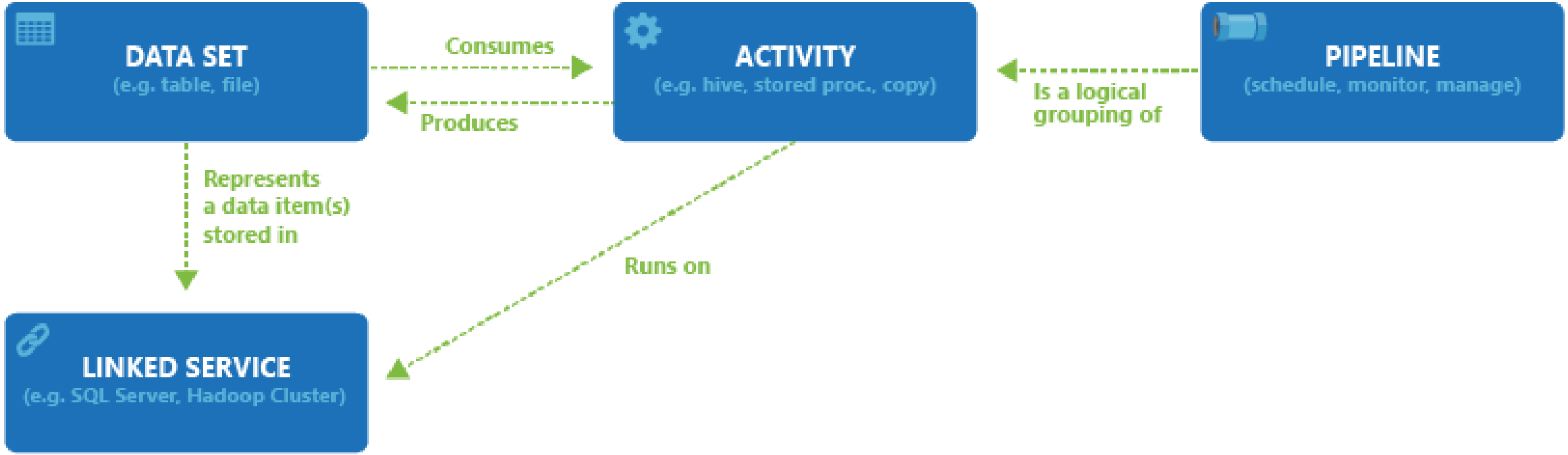
Why are we here...

EVERYTHING YOU EVER WANTED TO KNOW ABOUT DATA FACTORY



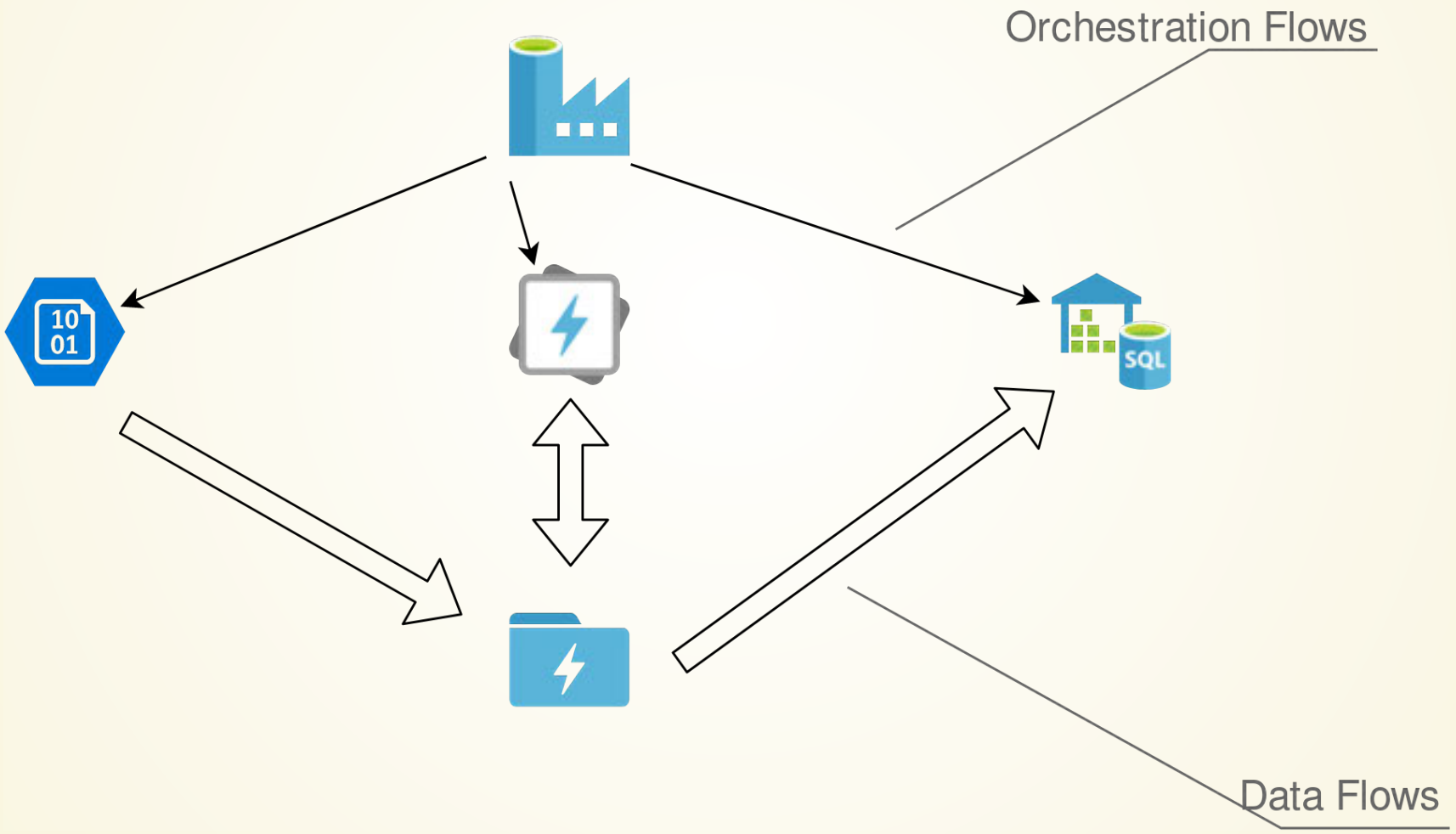
docs.microsoft.com, Introduction to Data Factory

EVERYTHING YOU EVER WANTED TO KNOW ABOUT DATA FACTORY



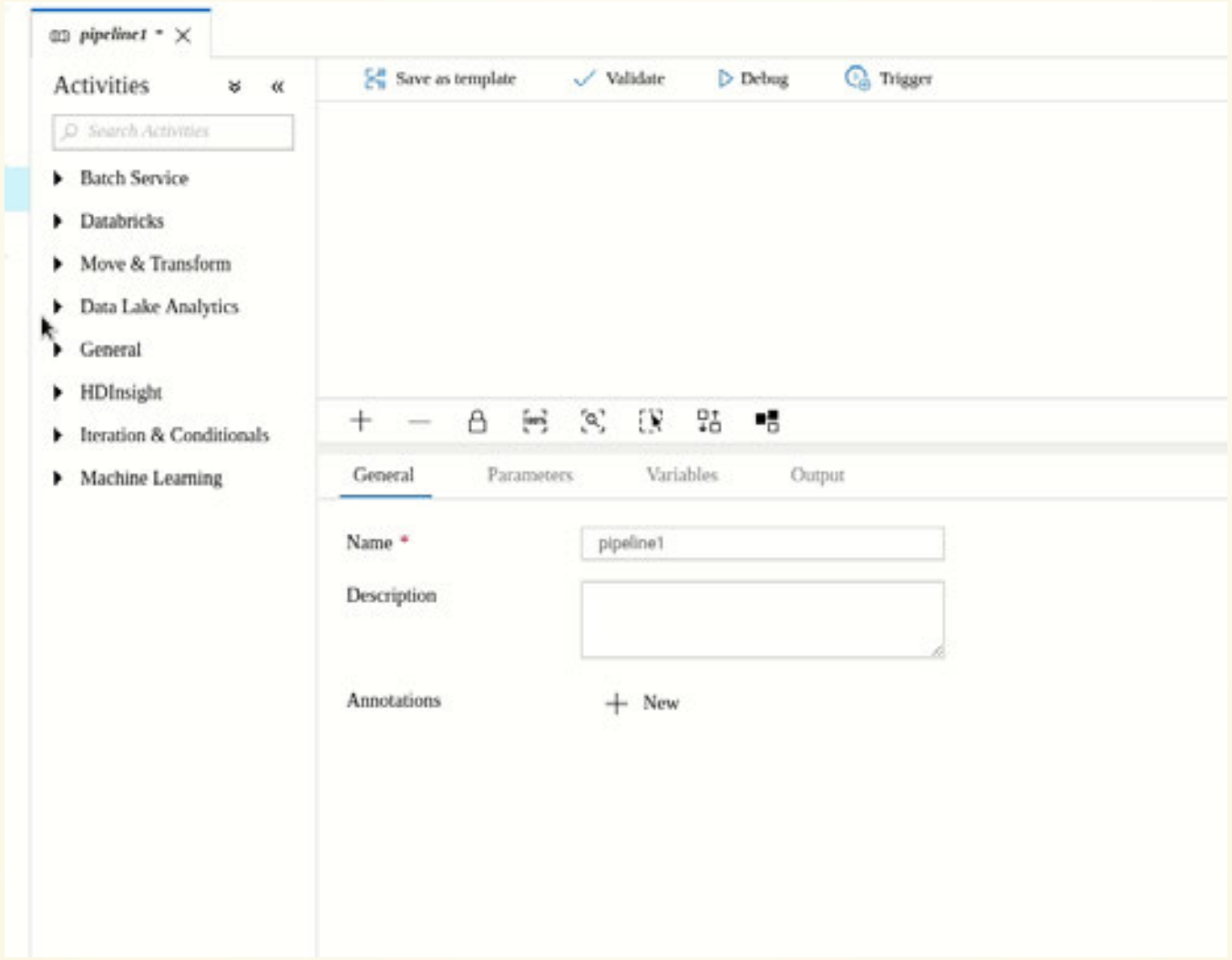
docs.microsoft.com, Introduction to Data Factory

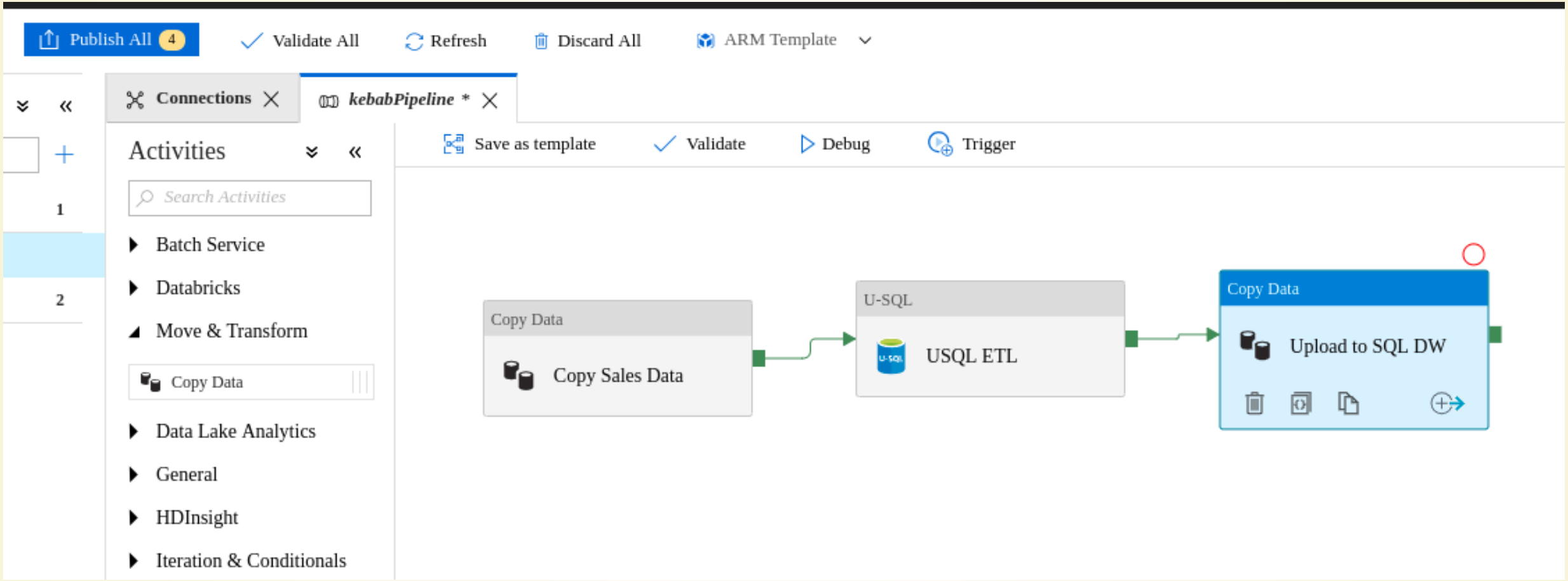
AN EXAMPLE SCENARIO



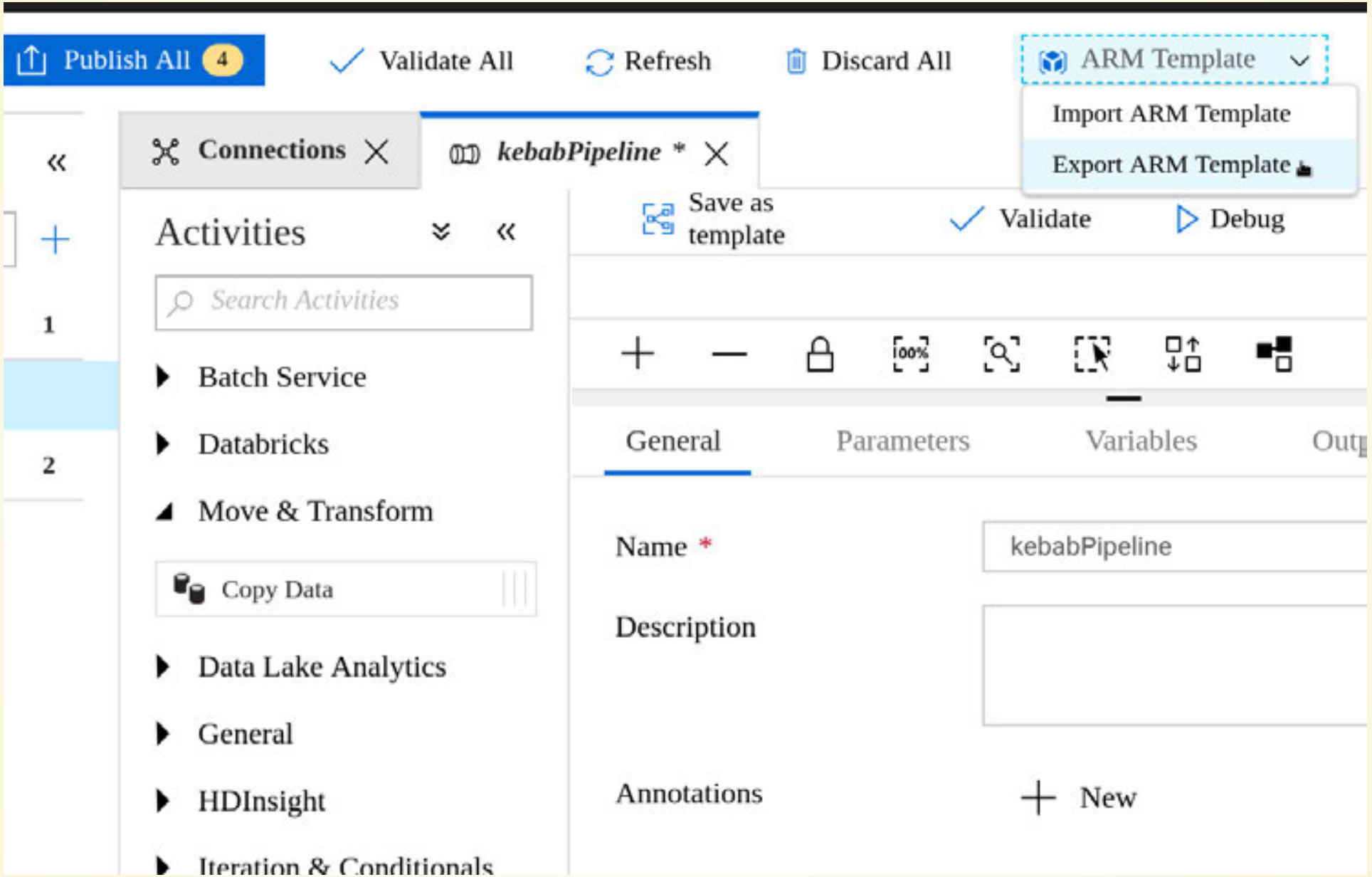
THE PORTAL

DEVELOPING ADF PIPELINES IN THE PORTAL

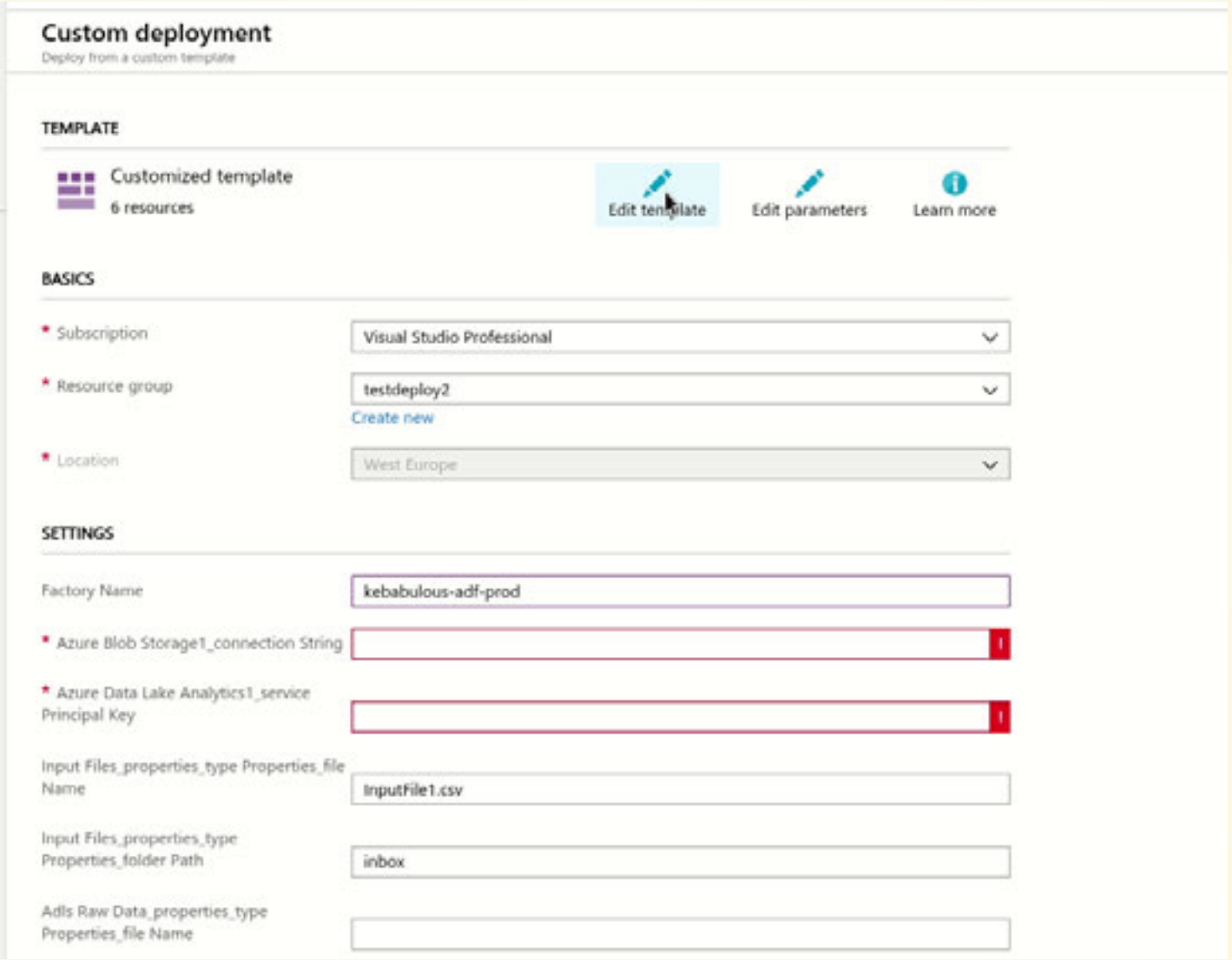




Publish or Publish Not. There is No Save

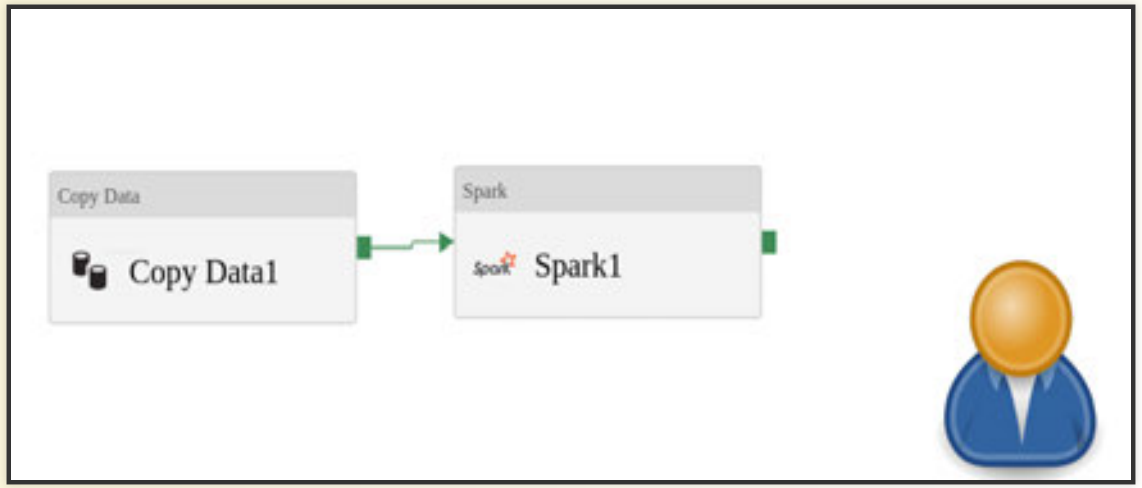

Publish All 4
Validate All
Refresh
Discard All
ARM Template
Import ARM Template
Export ARM Template
Connections
kebabPipeline *
Activities
Search Activities
Batch Service
Databricks
Move & Transform
Copy Data
Data Lake Analytics
General
HDInsight
Iteration & Conditionals
Save as template
Validate
Debug
General
Parameters
Variables
Name *
kebabPipeline
Description
Annotations
New

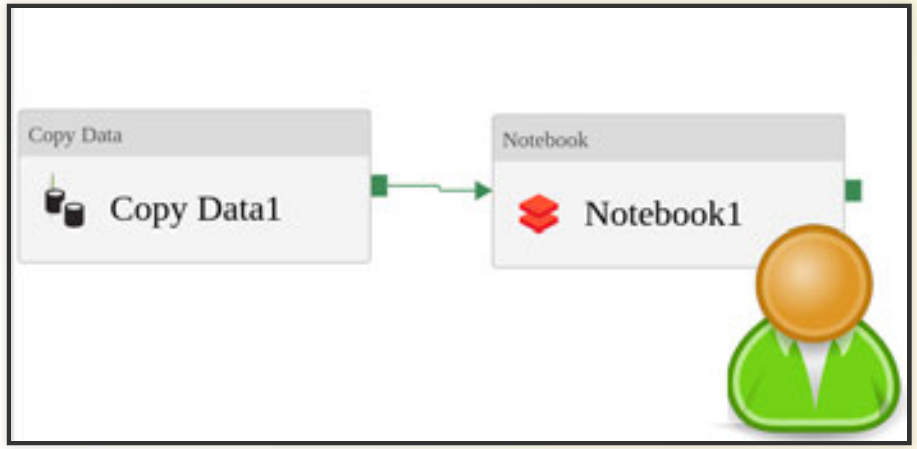
UNFORCED PARAMATERISATION

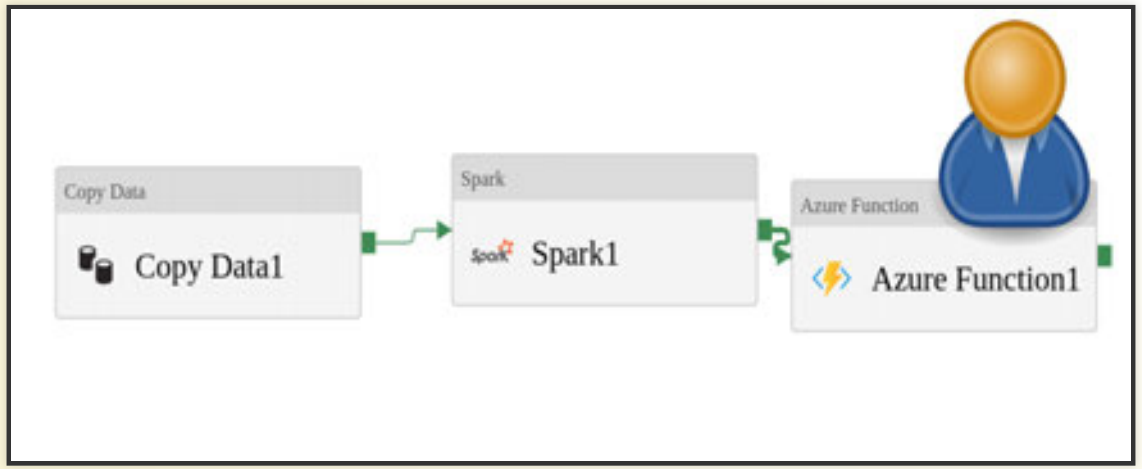


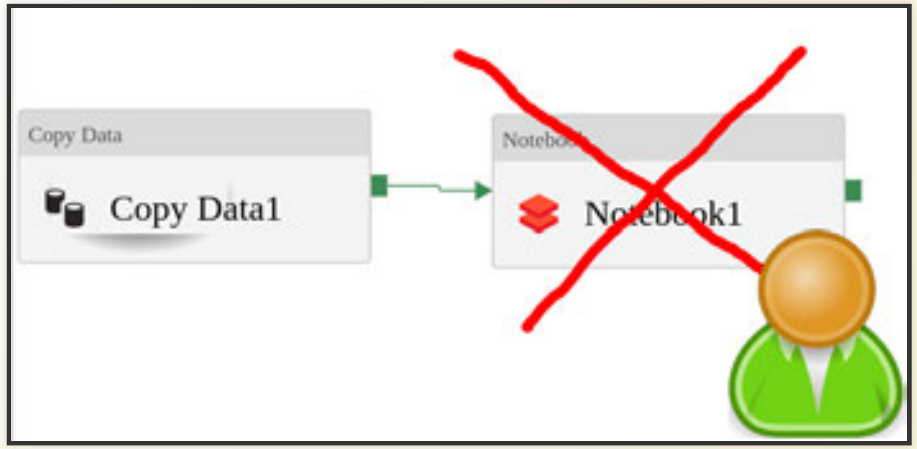
ENTERPRISE SCALE

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

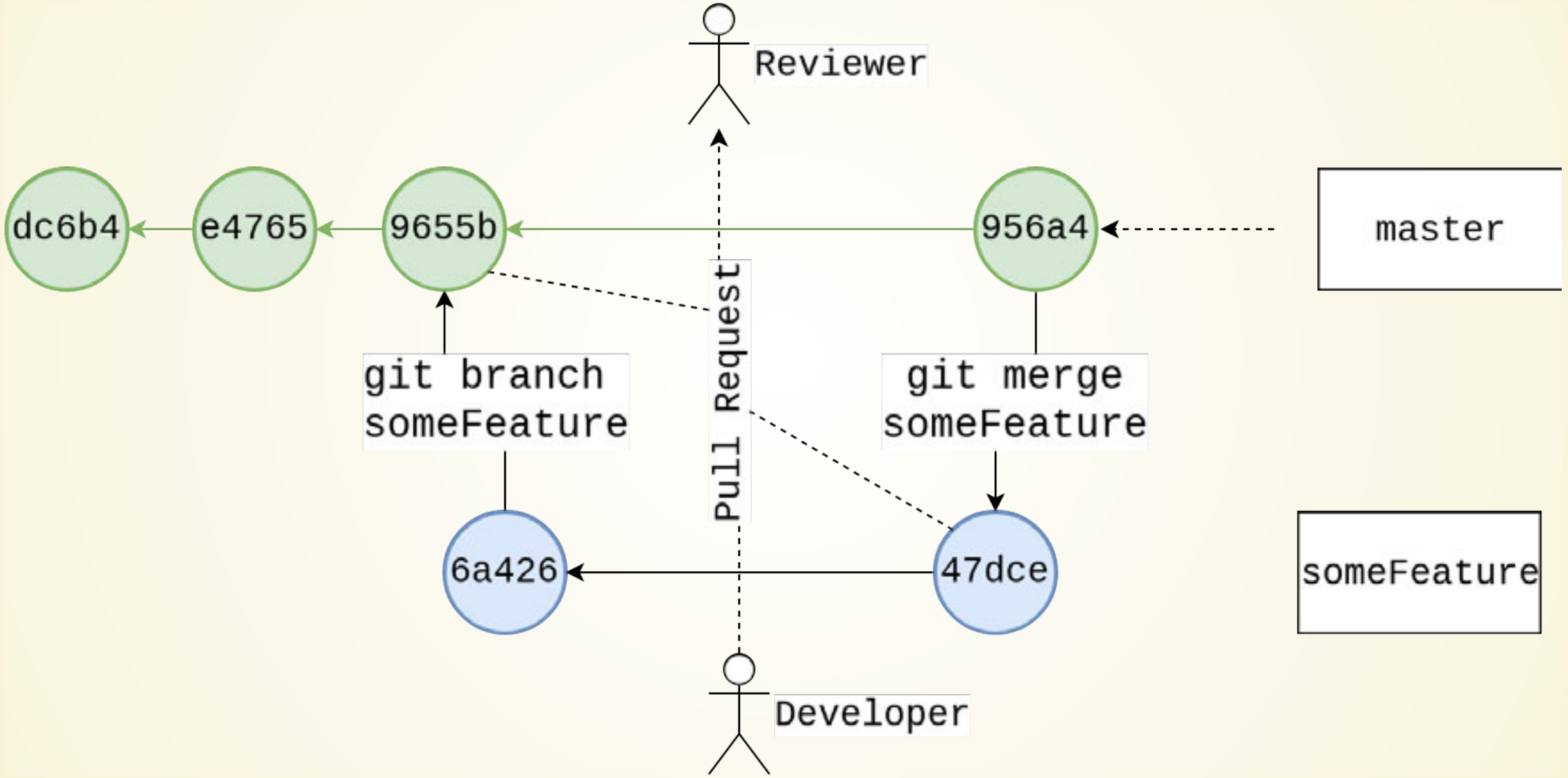
Replying to @wilshipley

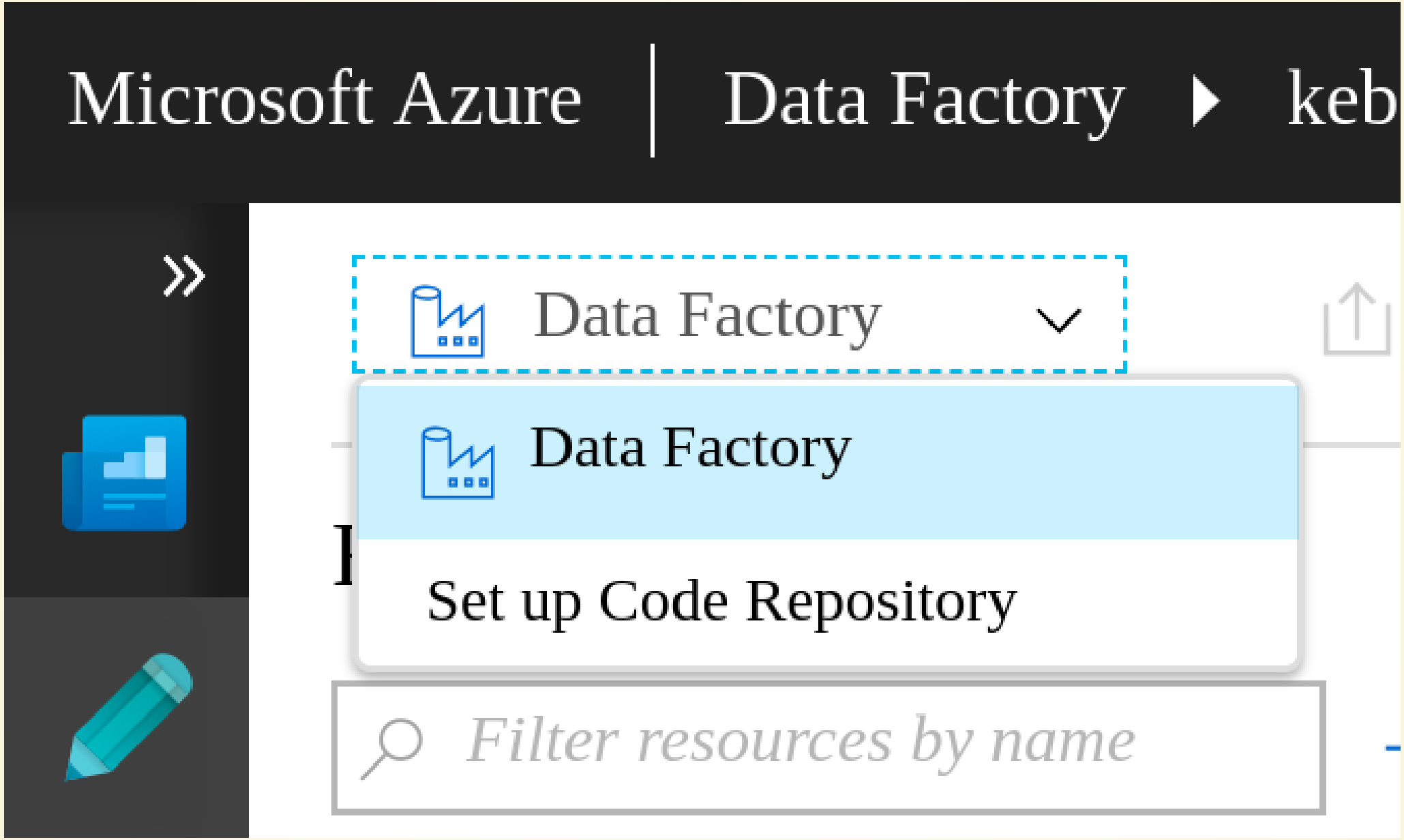
@wilshipley git gets easier once you get the basic idea that branches are homeomorphic endofunctors mapping submanifolds of a Hilbert space.

9:52 PM - 6 Mar 2011

595 Retweets **443** Likes

GIT - THE ESSENTIALS



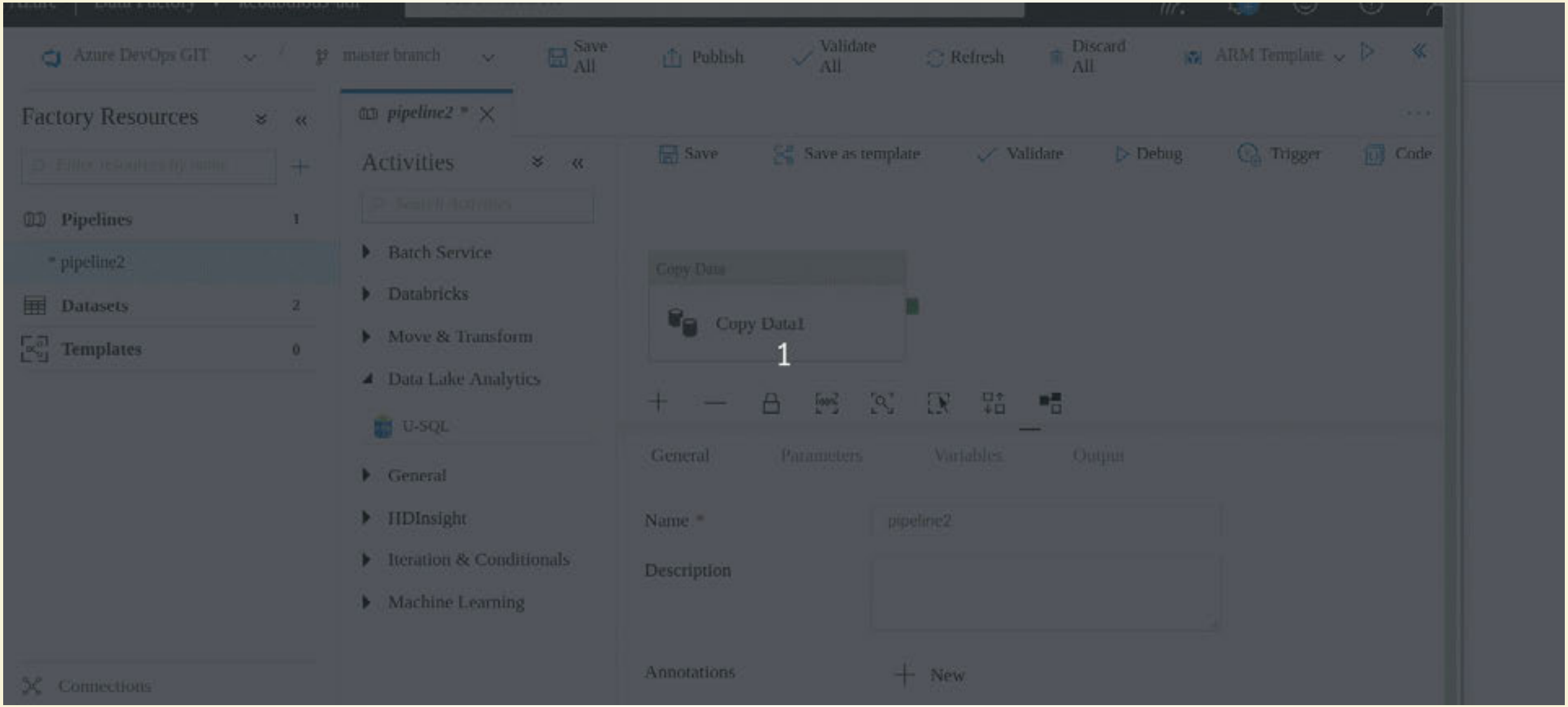

Microsoft Azure
Data Factory
keb
Data Factory
Data Factory
Set up Code Repository
Filter resources by name

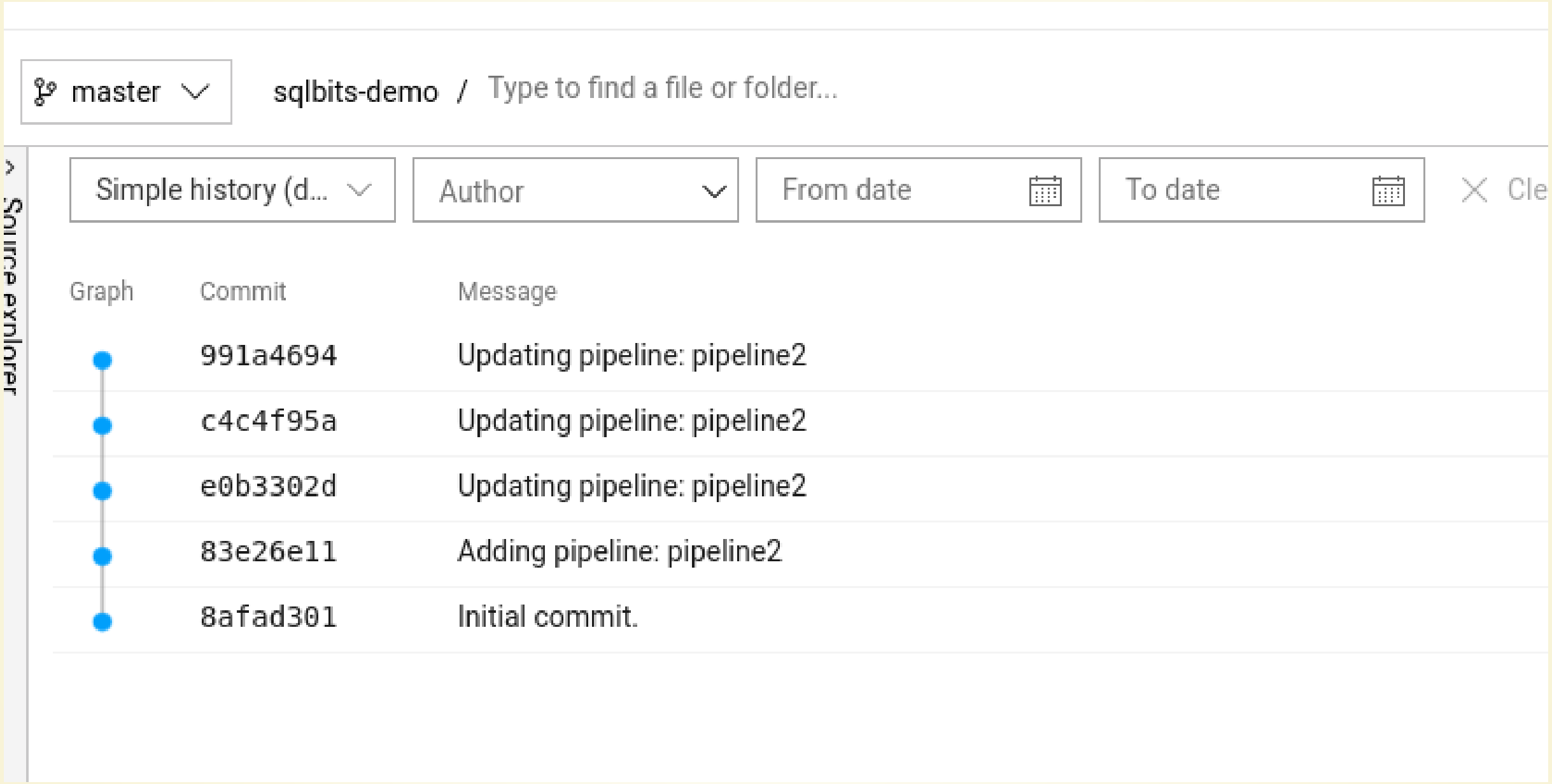
FROM THE HORSE'S MOUTH

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
pipeline2 *
Activities
Save
Save as template
Validate
Debug
Trigger
Code
Pipelines 1
* pipeline2
Datasets 2
Templates 0
Batch Service
Databricks
Move & Transform
Data Lake Analytics
U-SQL
General
HDInsight
Iteration & Conditionals
Machine Learning
Copy Data
Copy Data1
1
General
Parameters
Variables
Output
Name *
pipeline2
Description
Annotations
New
Connections


master
sqlbits-demo / Type to find a file or folder...
Source explorer
Simple history (d...
Author
From date
To date
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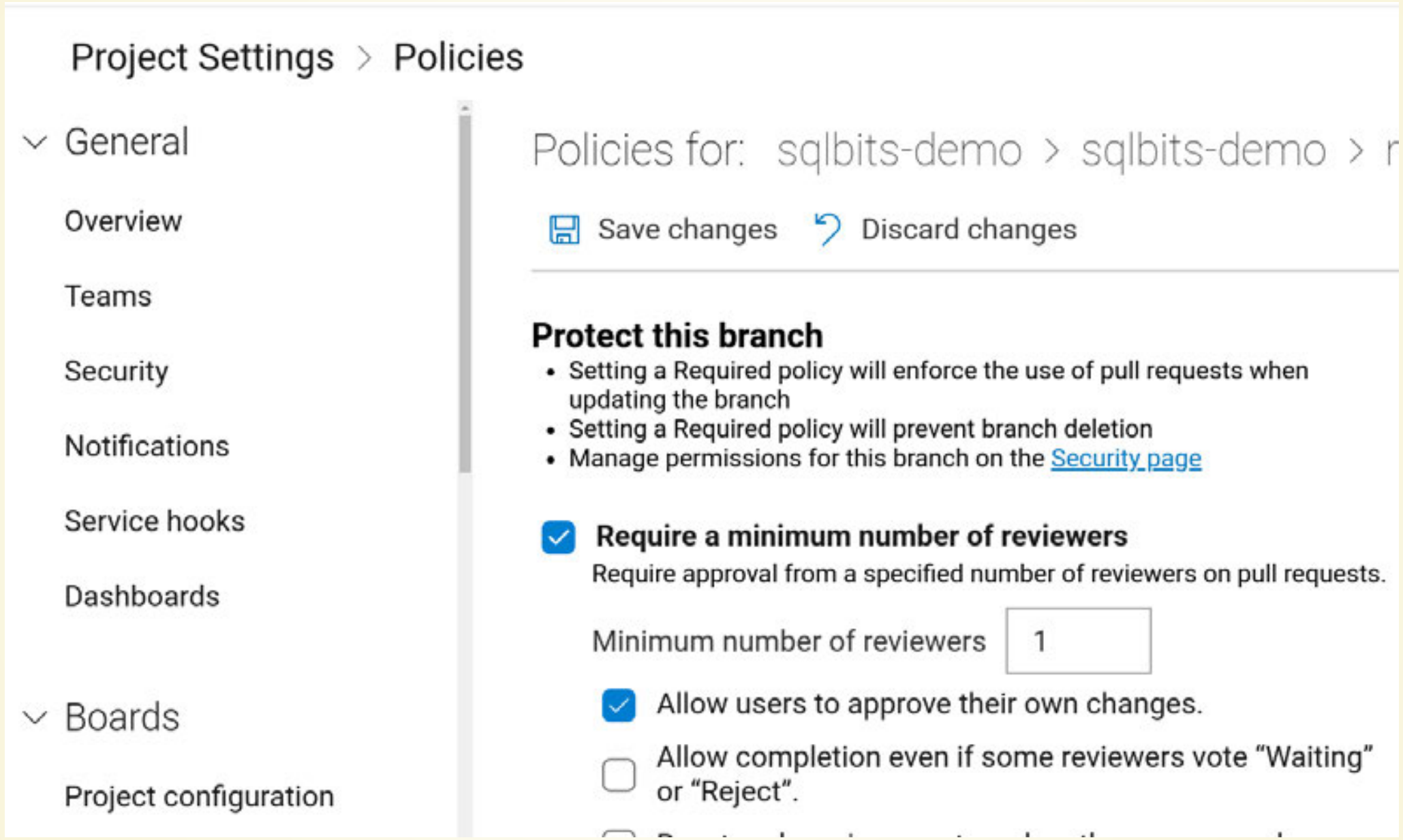
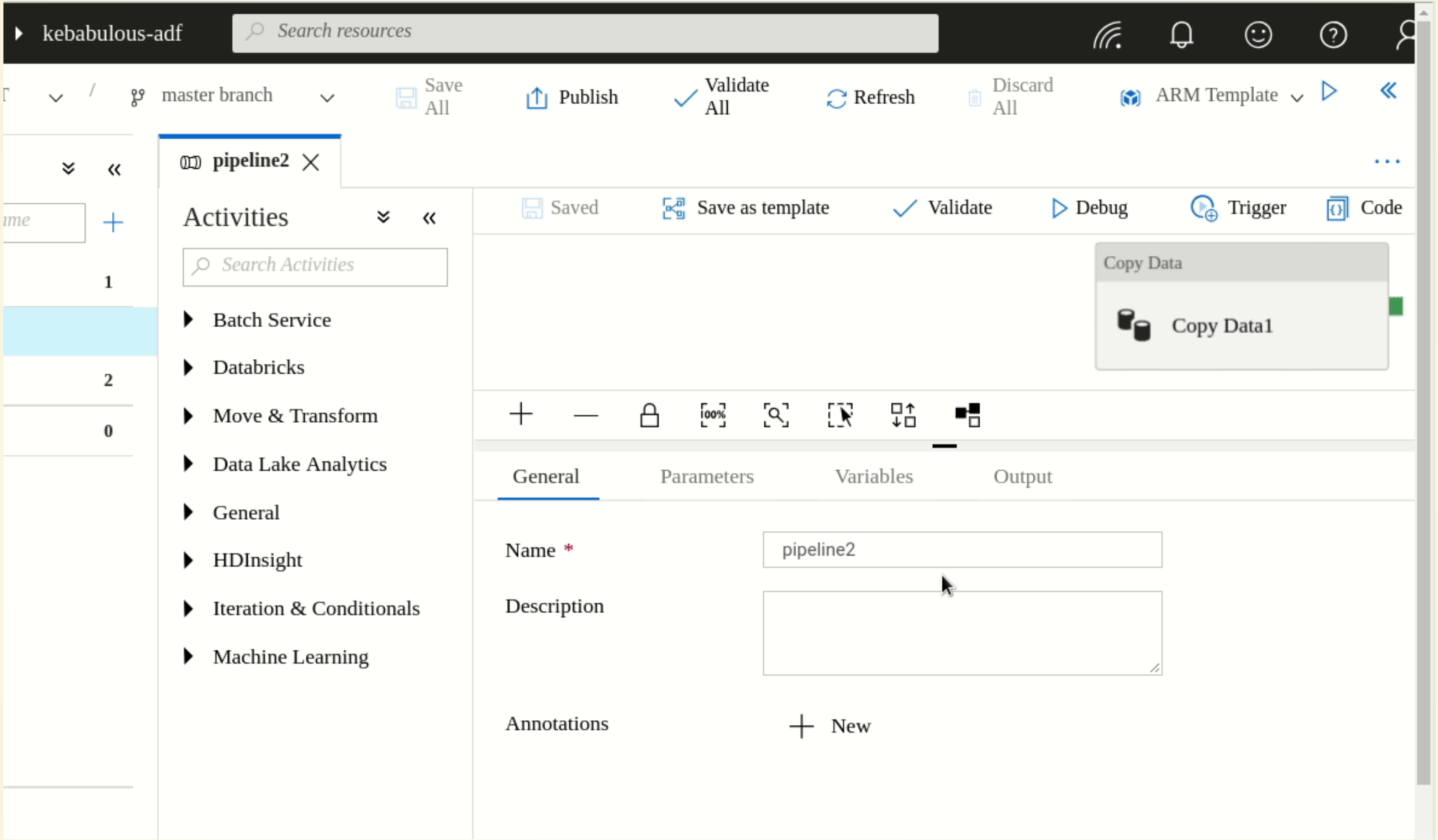
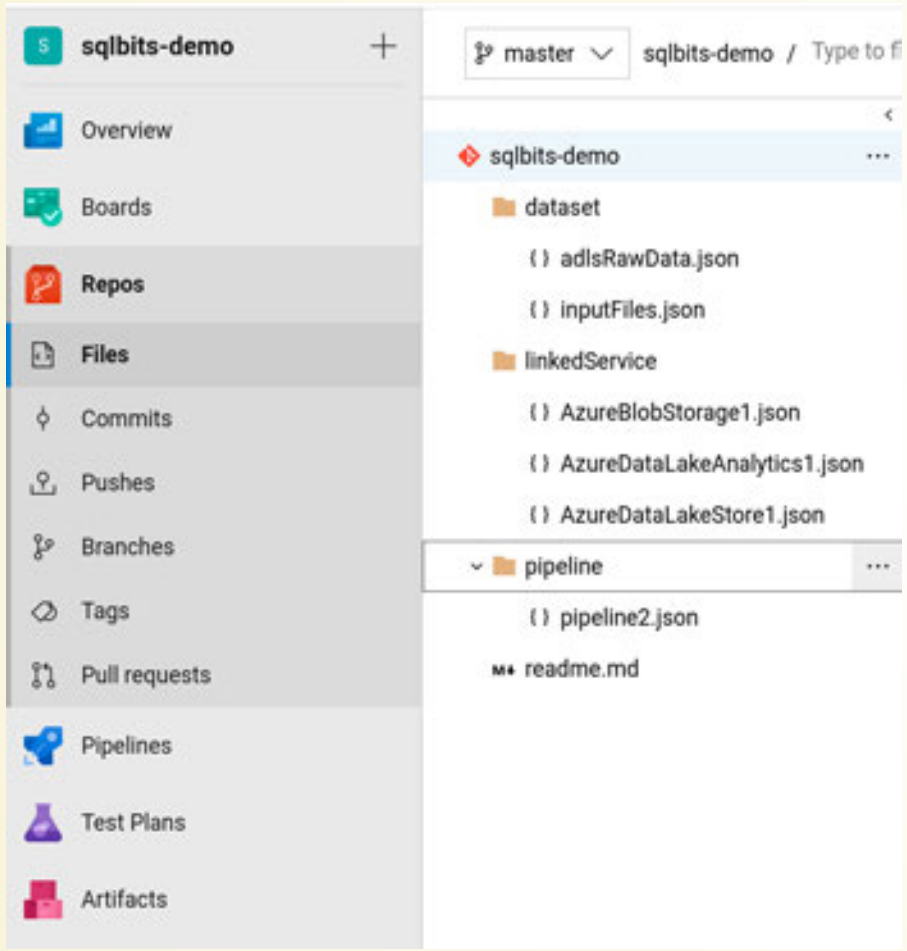
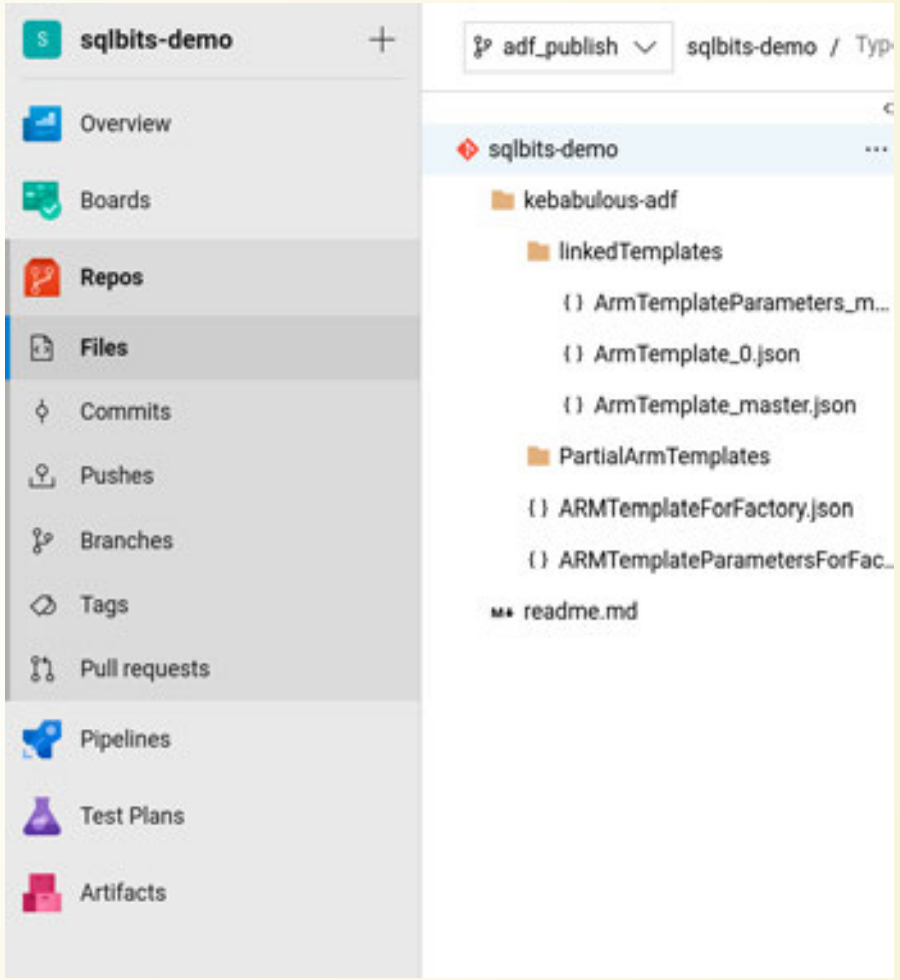
Graph
Commit
Message
991a4694
Updating pipeline: pipeline2
c4c4f95a
Updating pipeline: pipeline2
e0b3302d
Updating pipeline: pipeline2
83e26e11
Adding pipeline: pipeline2
8afad301
Initial commit.


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
1
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
General
Parameters
Variables
Output
Name *
pipeline2
Description
Annotations
New

BEHIND THE SCENES...

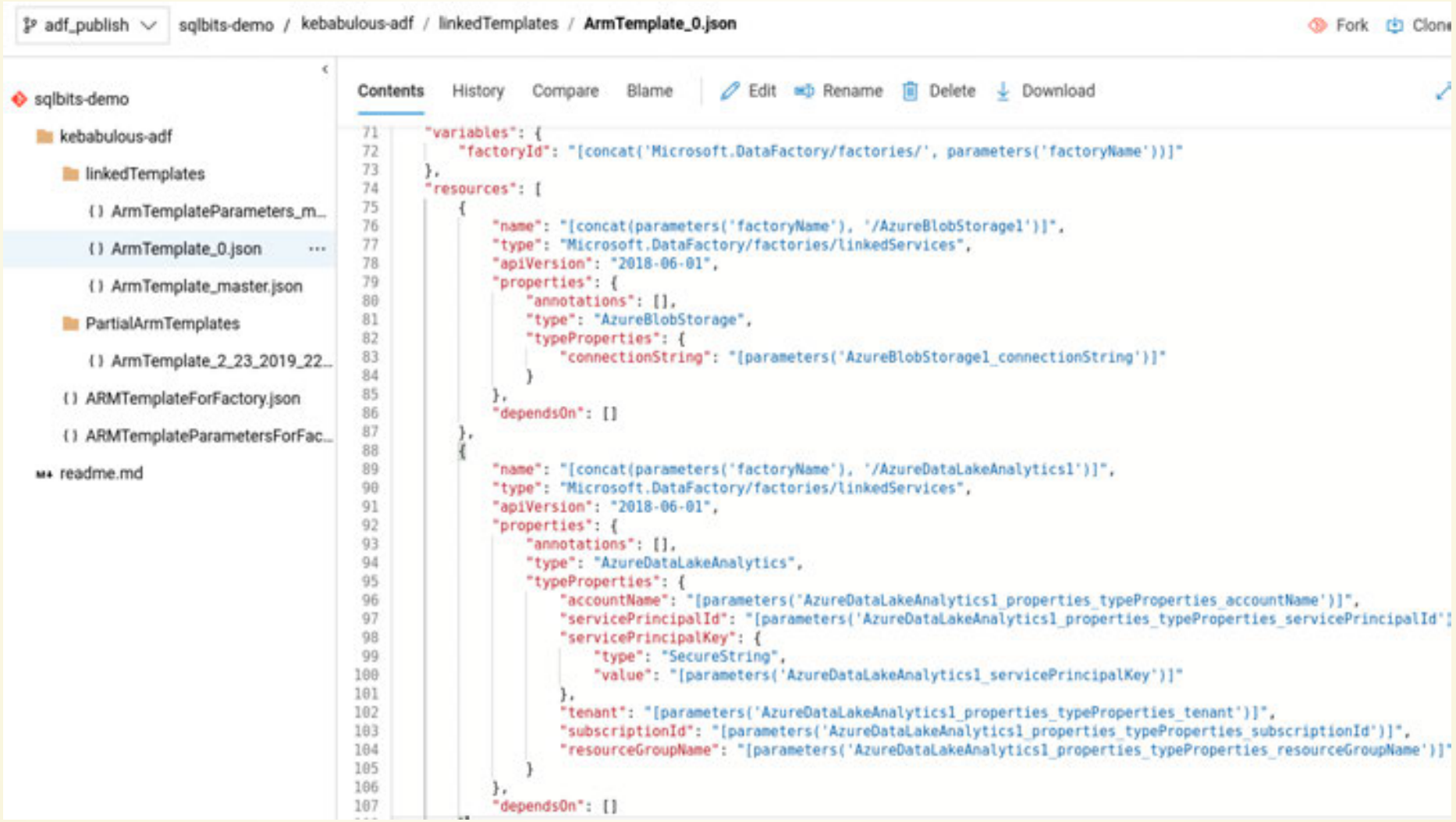




Developing abstractions intended to simplify the use of git source control rarely ends well.

WHERE DO WE GO FROM HERE?

ARM TEMPLATES



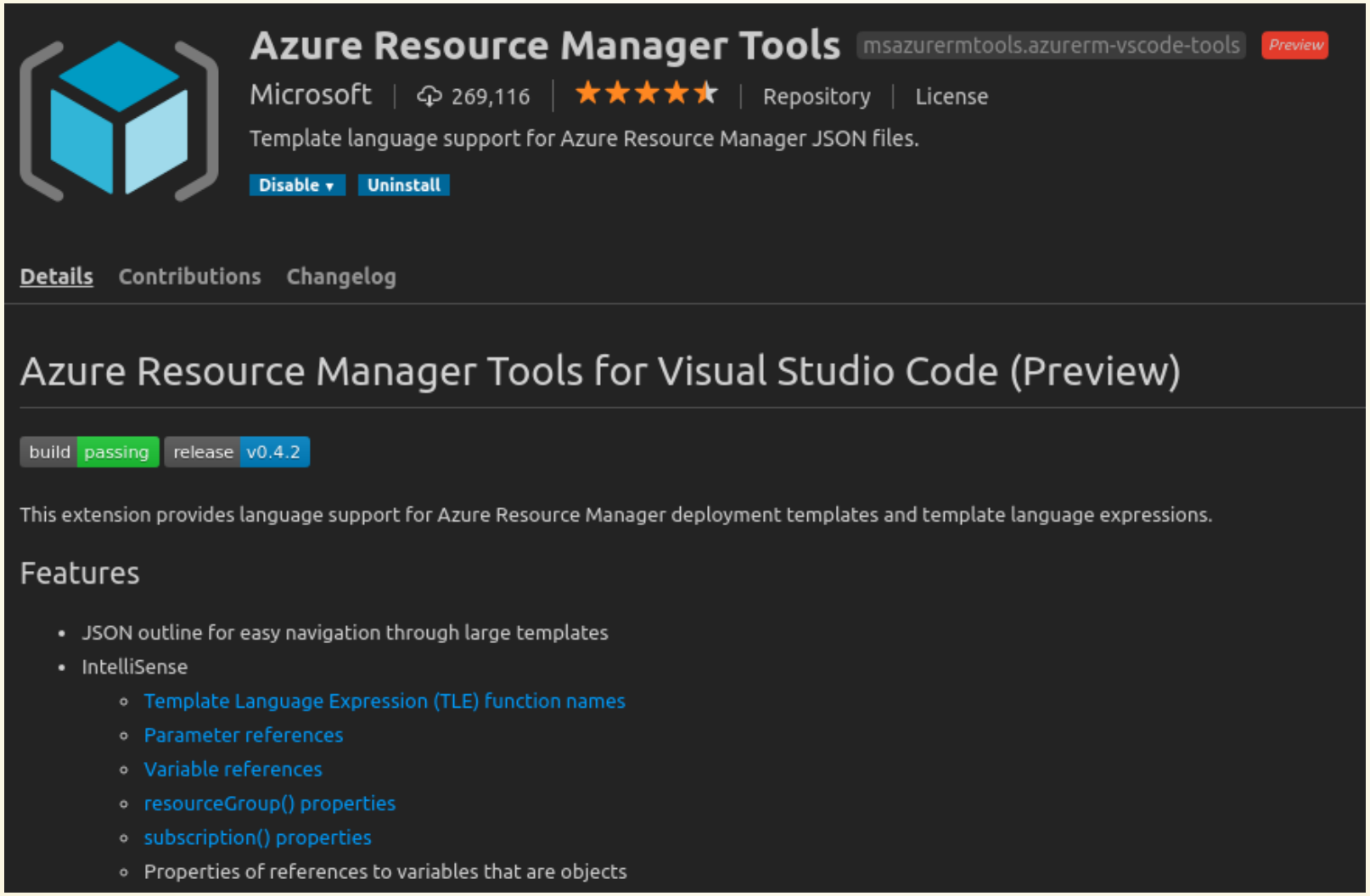
ARM TEMPLATES

Template deployment

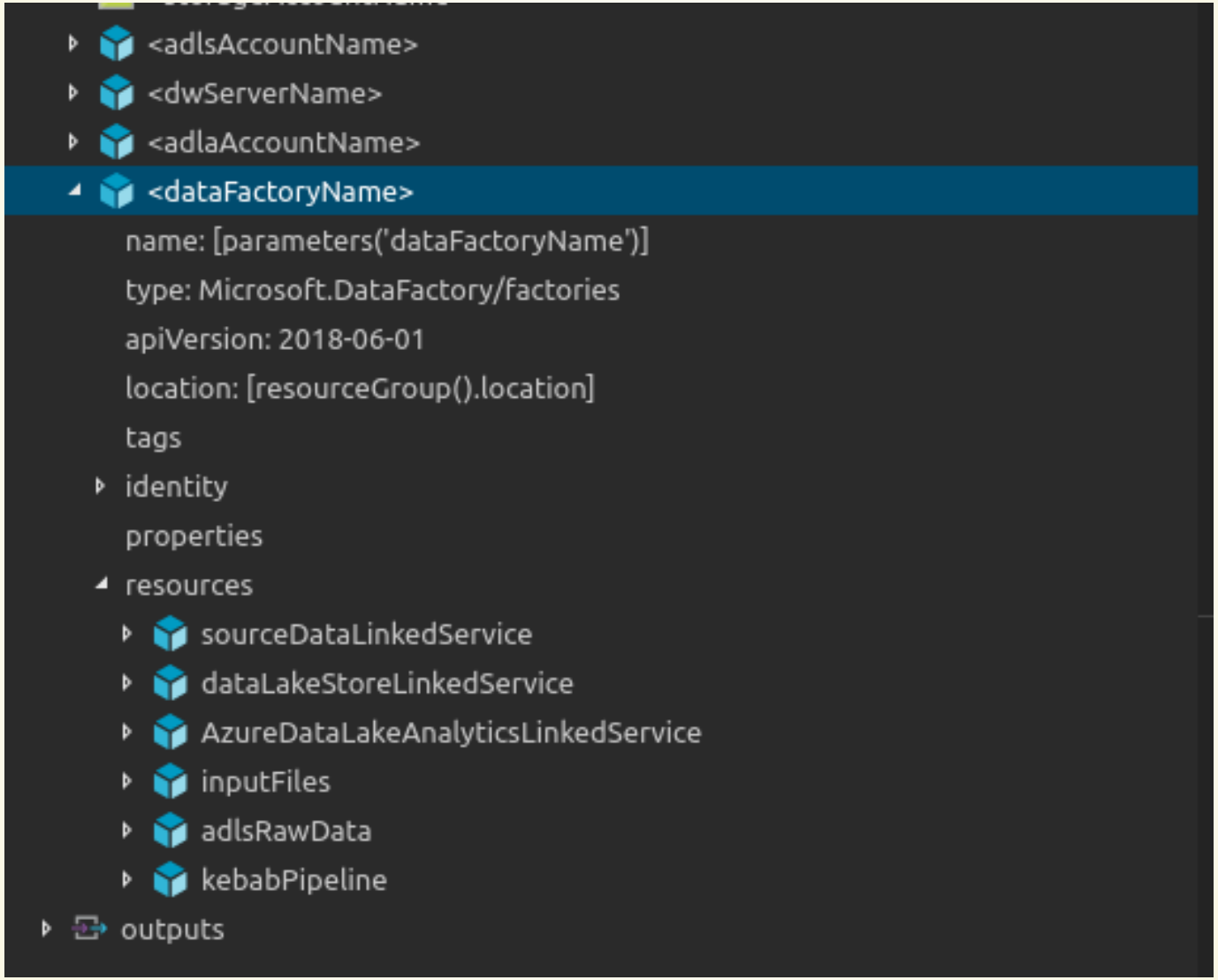
With Resource Manager, you can create a template (in JSON format) that defines the infrastructure and configuration of your Azure solution. By using a template, you can repeatedly deploy your solution throughout its lifecycle and have confidence your resources are deployed in a consistent state.

docs.microsoft.com, Resource Manager

ARM TEMPLATES



ALL OUR RESOURCES ARE DEFINED IN THE SAME PLACE



```
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```

```
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        },
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                "type": "string"

        },
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        },
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        },

        "dwTierName":{
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```
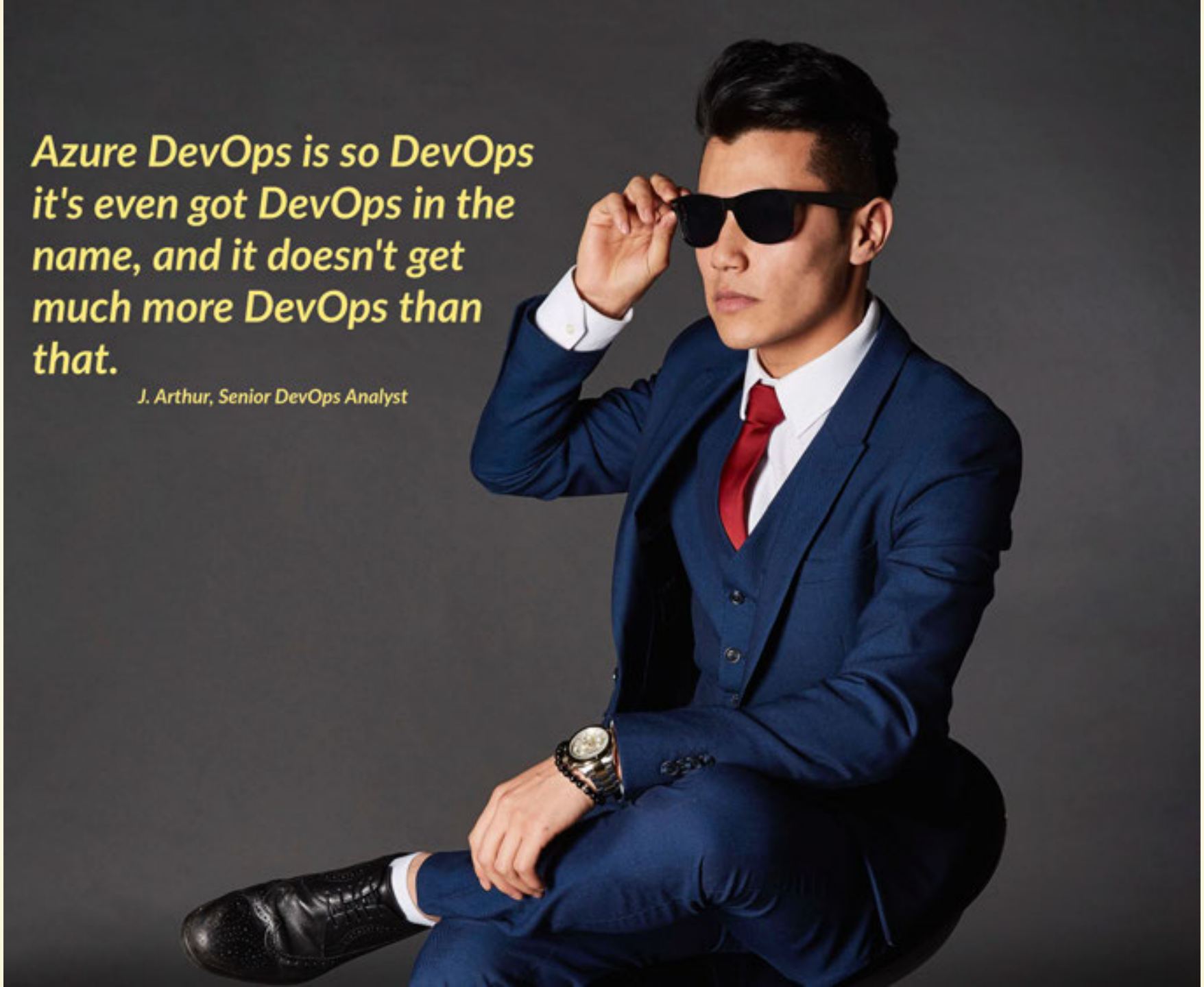

RESOURCES DEPLOYED TO AZURE

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.

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Azure Artifacts

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

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Extensions Marketplace

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

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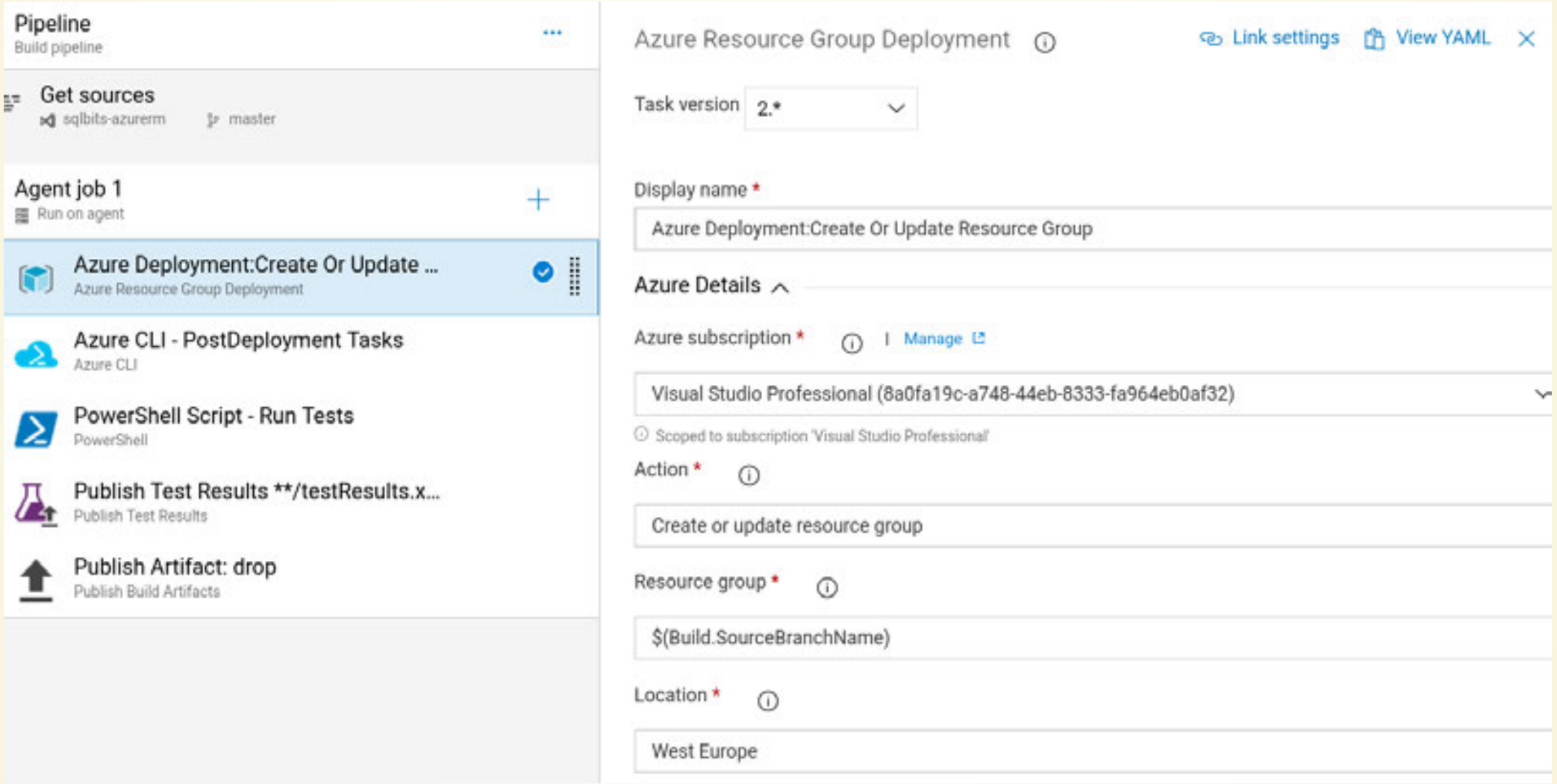
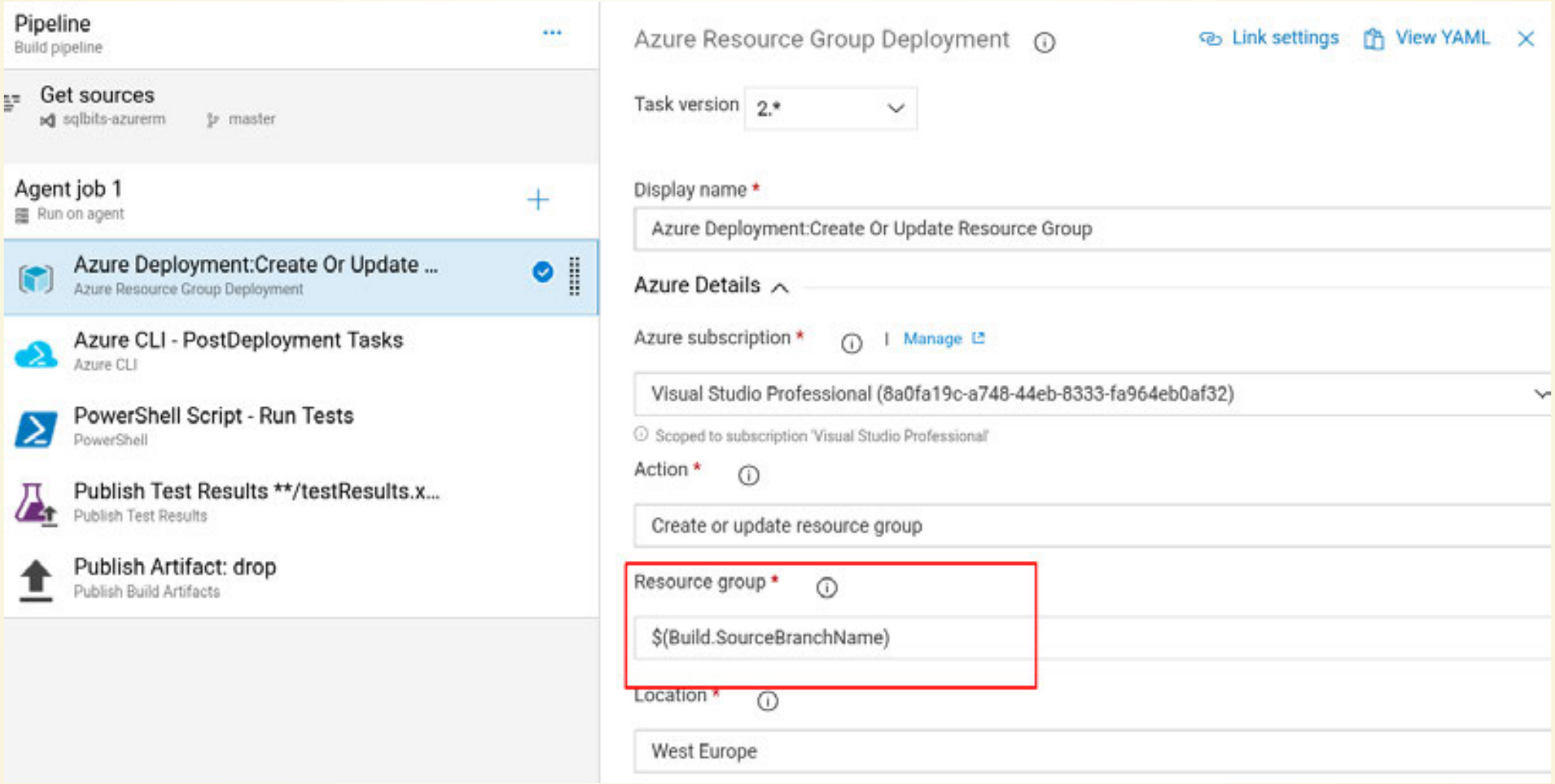
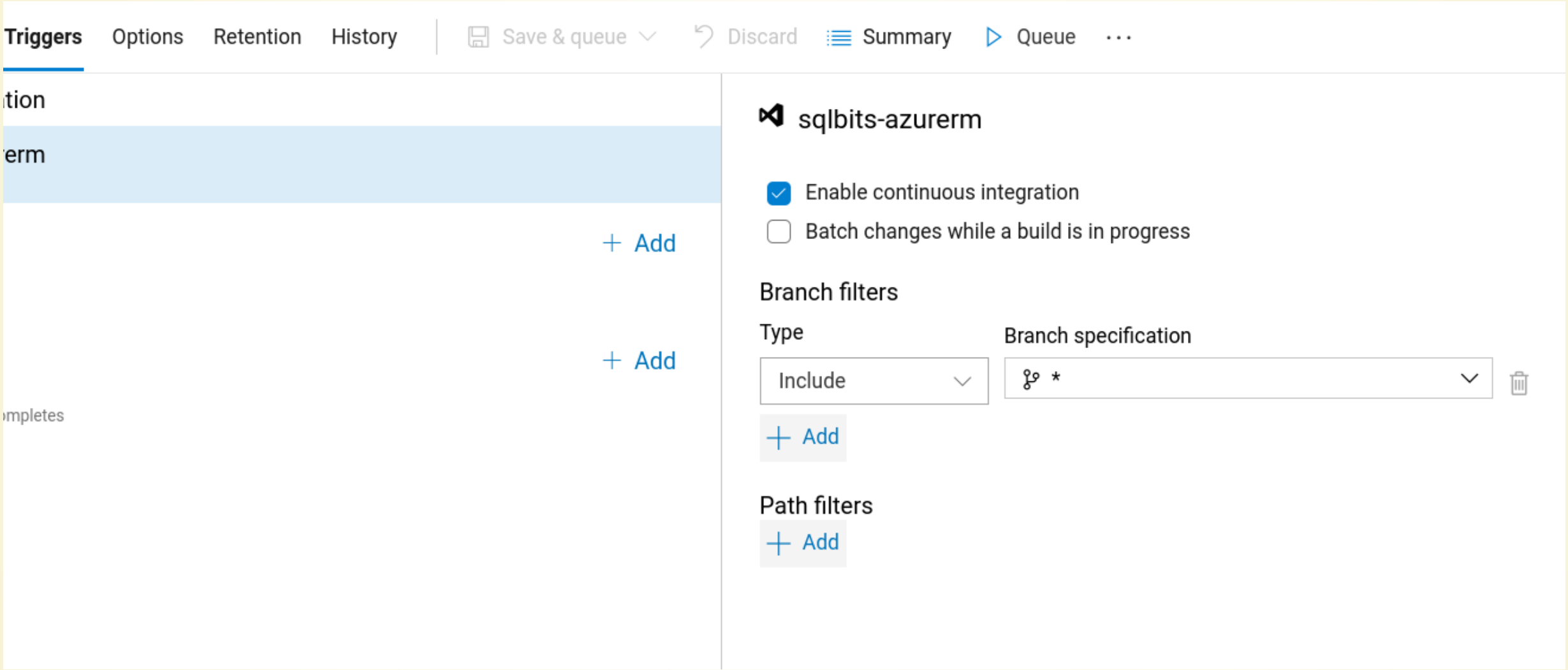
THE BUILD DEFINITION



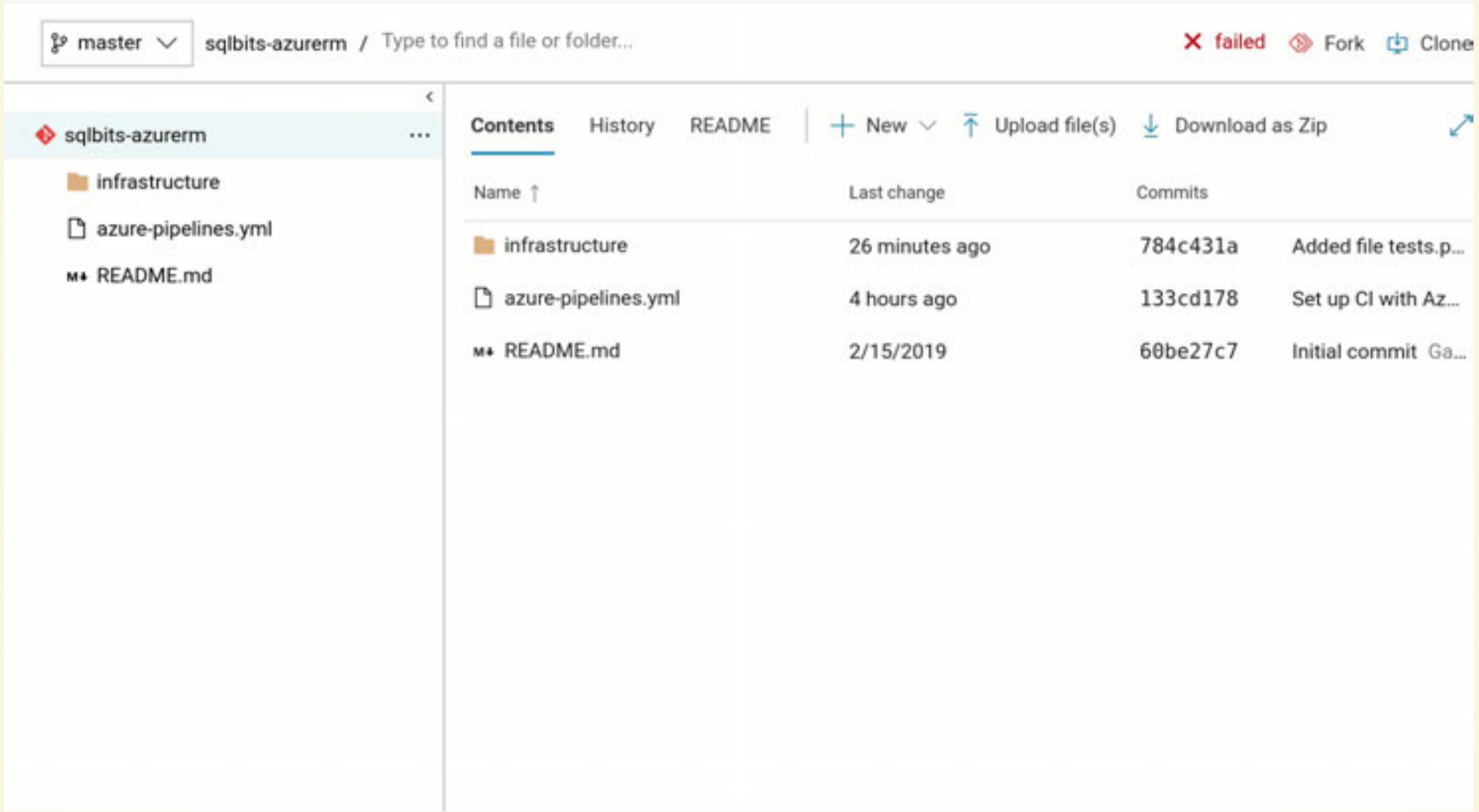
THE BUILD DEFINITION



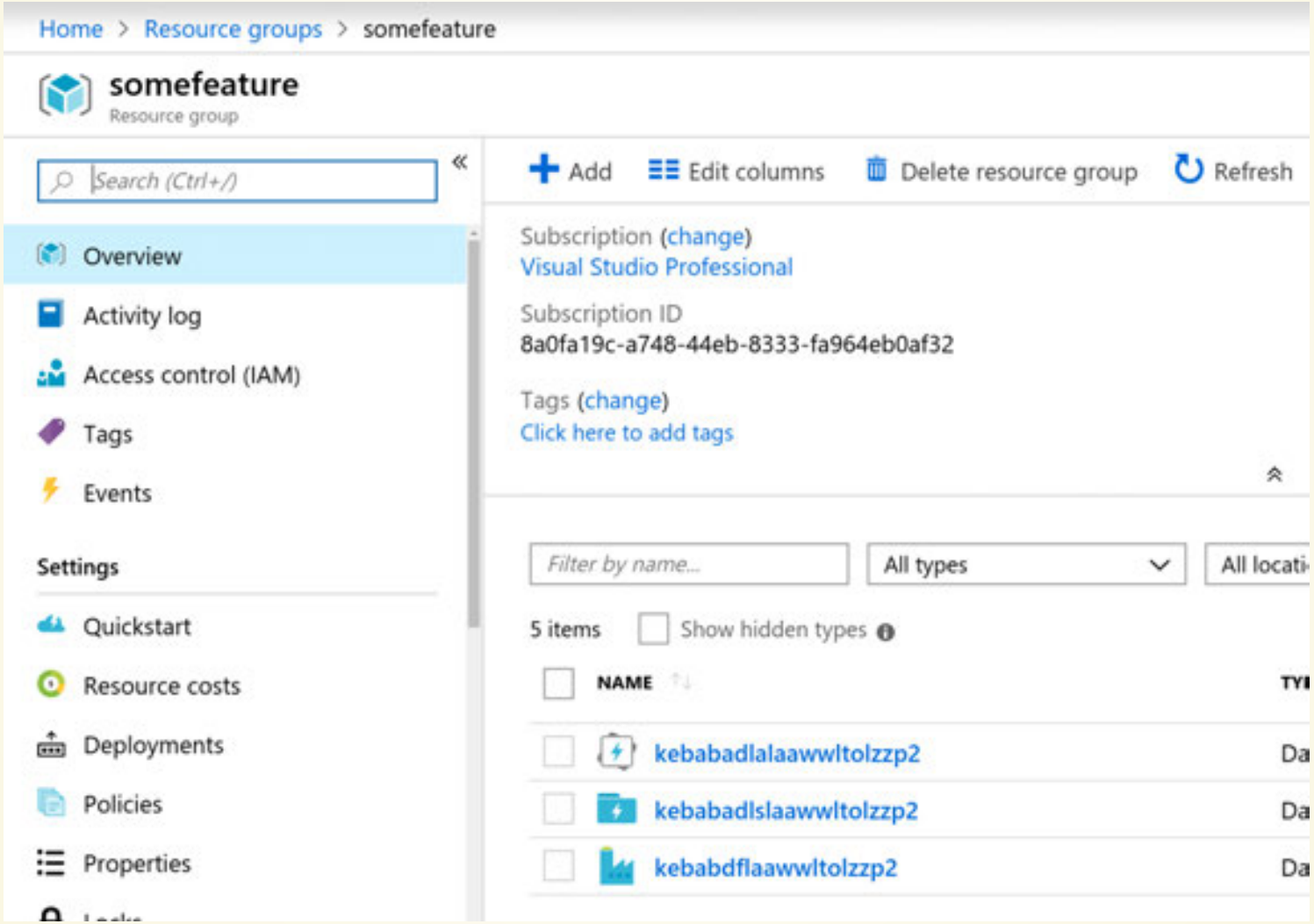
THE BUILD TRIGGER



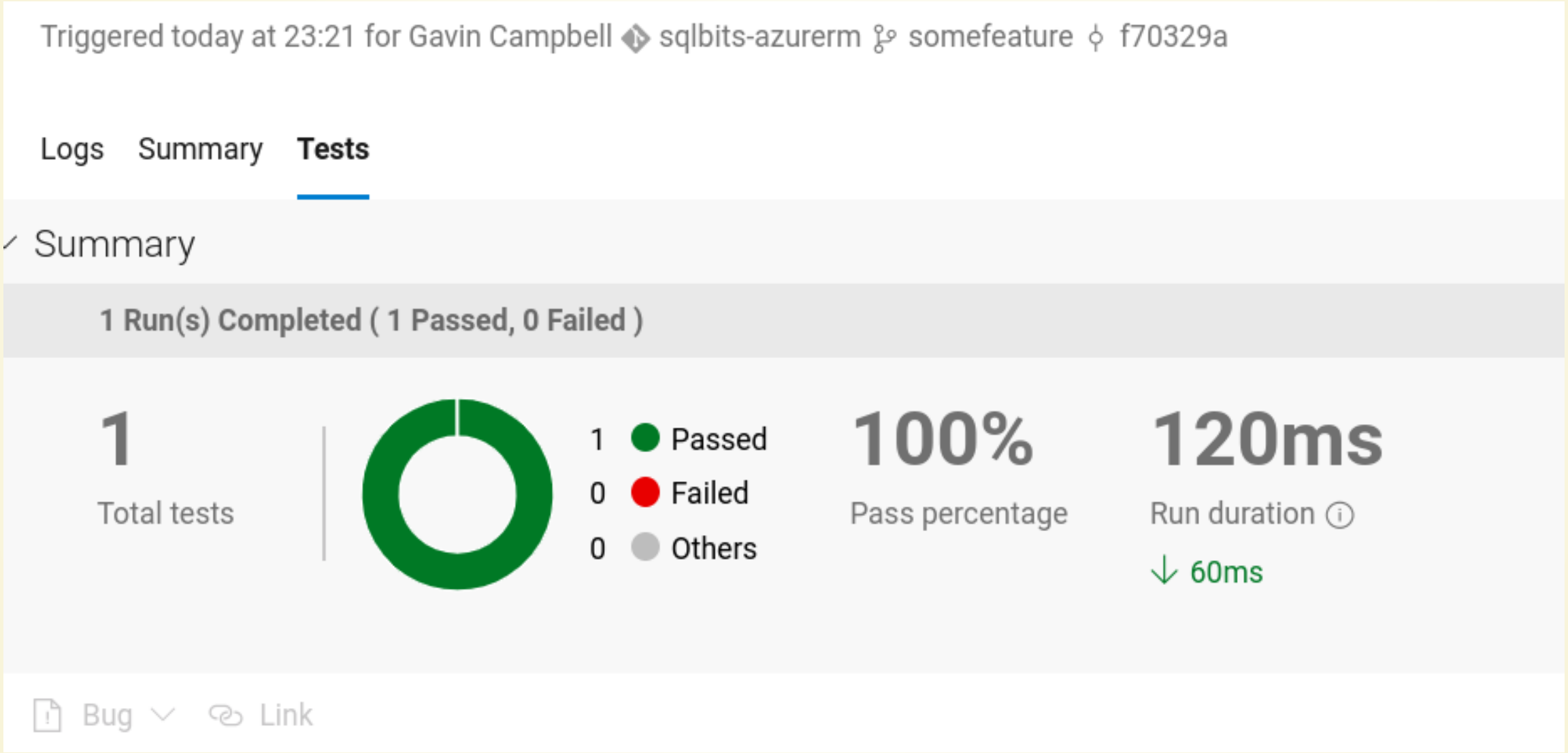
CREATING A BRANCH



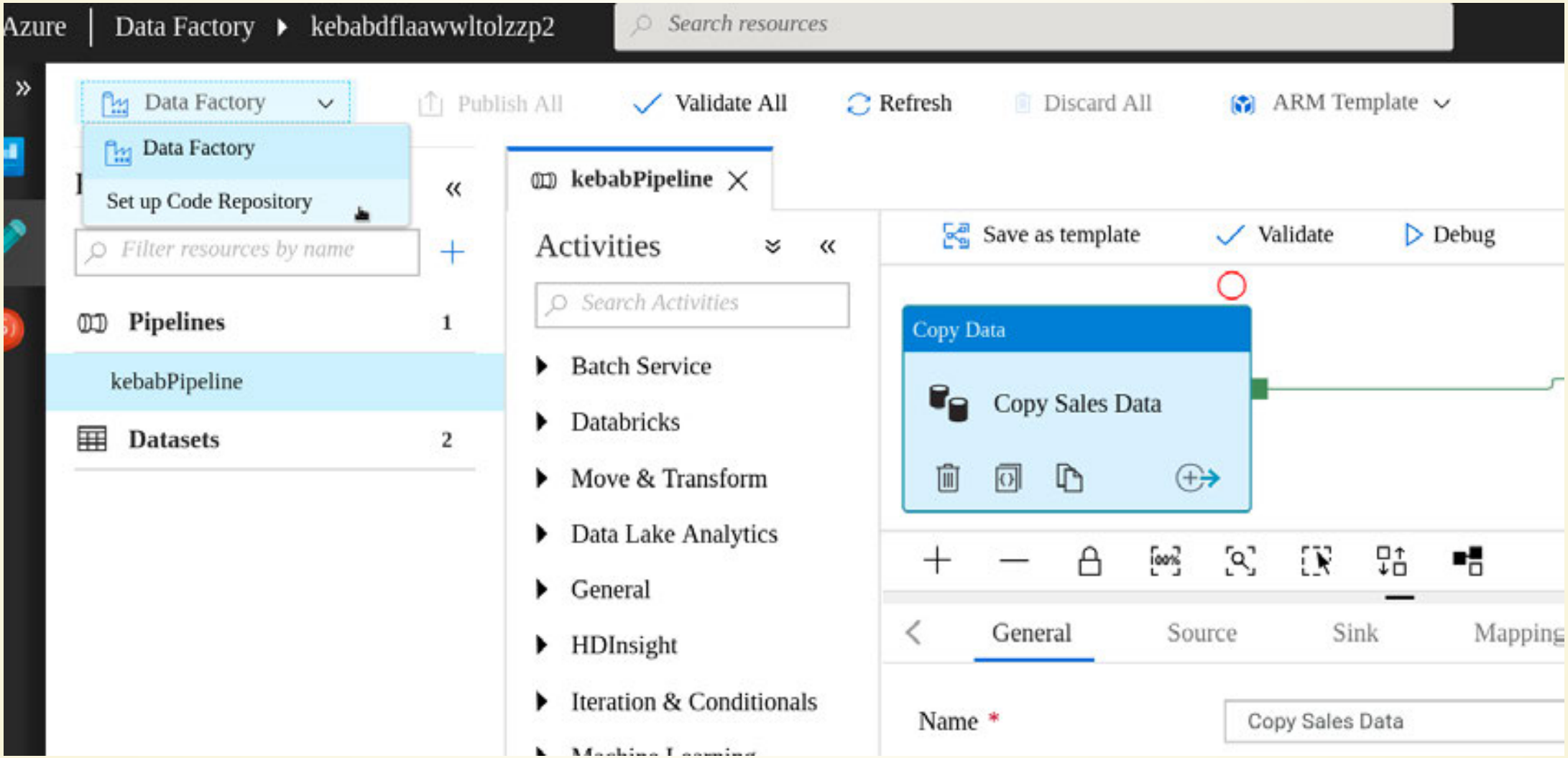
A DEDICATED ENVIRONMENT FOR THIS BRANCH



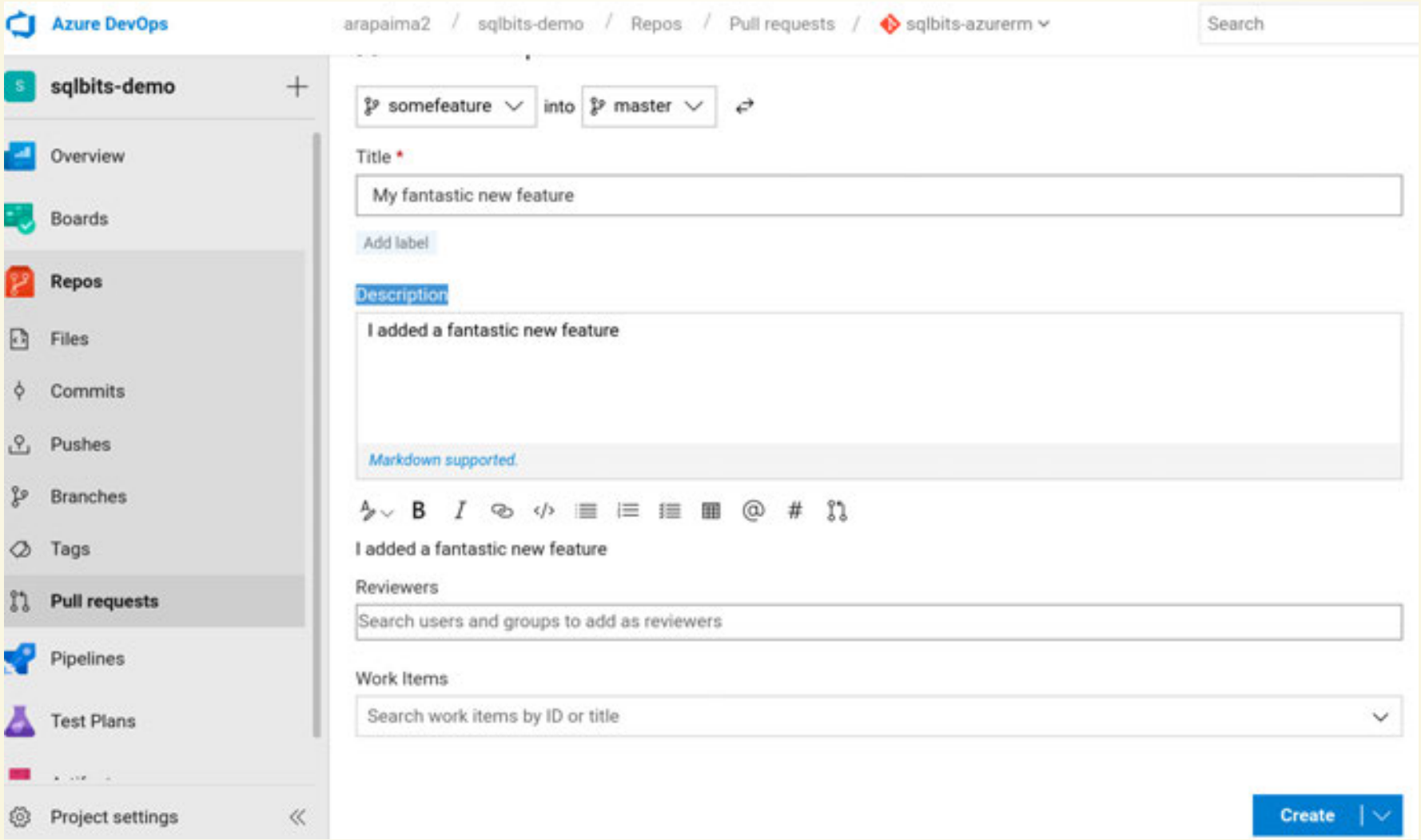
THE TESTS WERE PASSING WHEN THE BRANCH WAS CREATED...



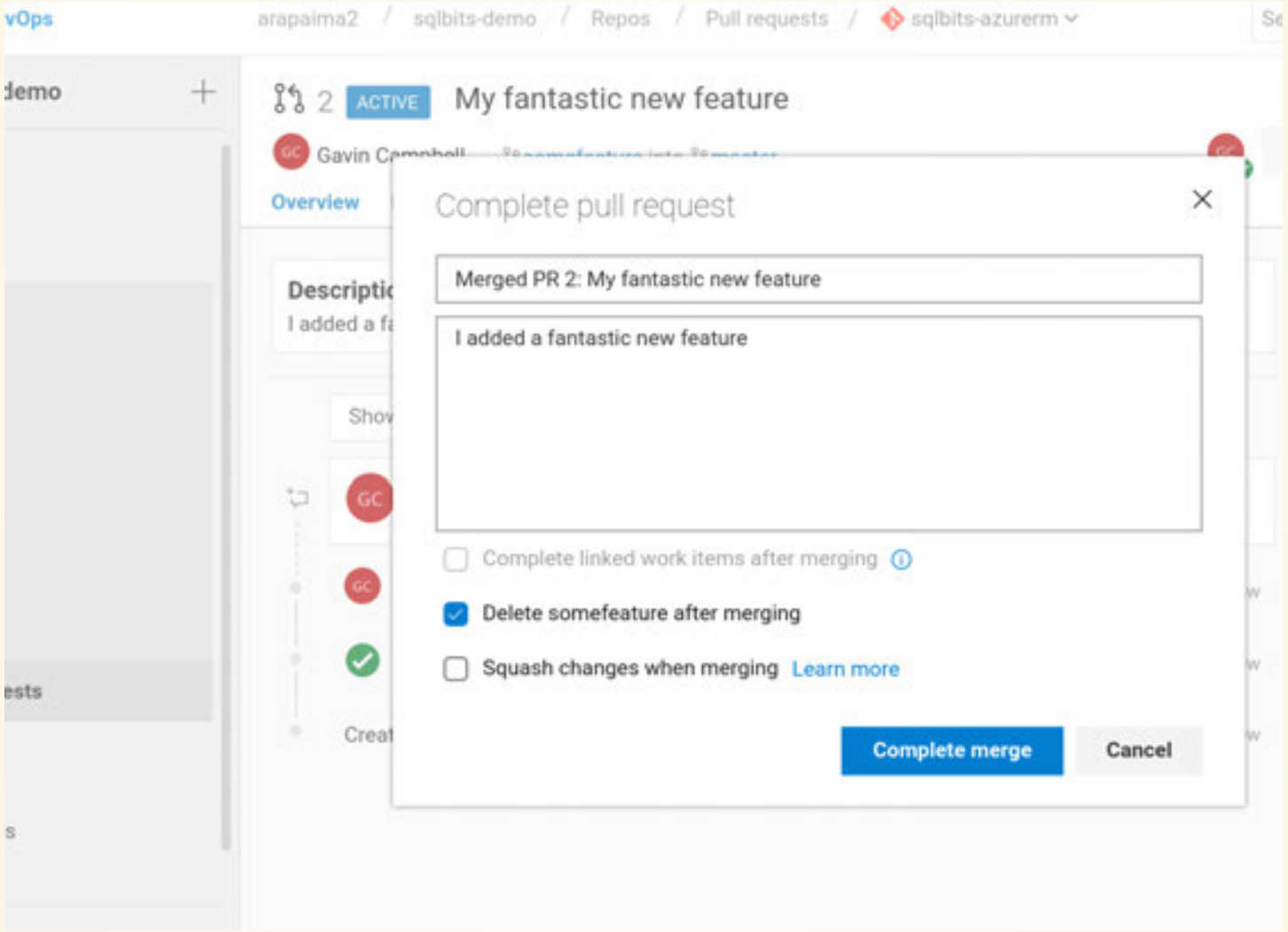
DEBUGGING THE DATA FACTORY



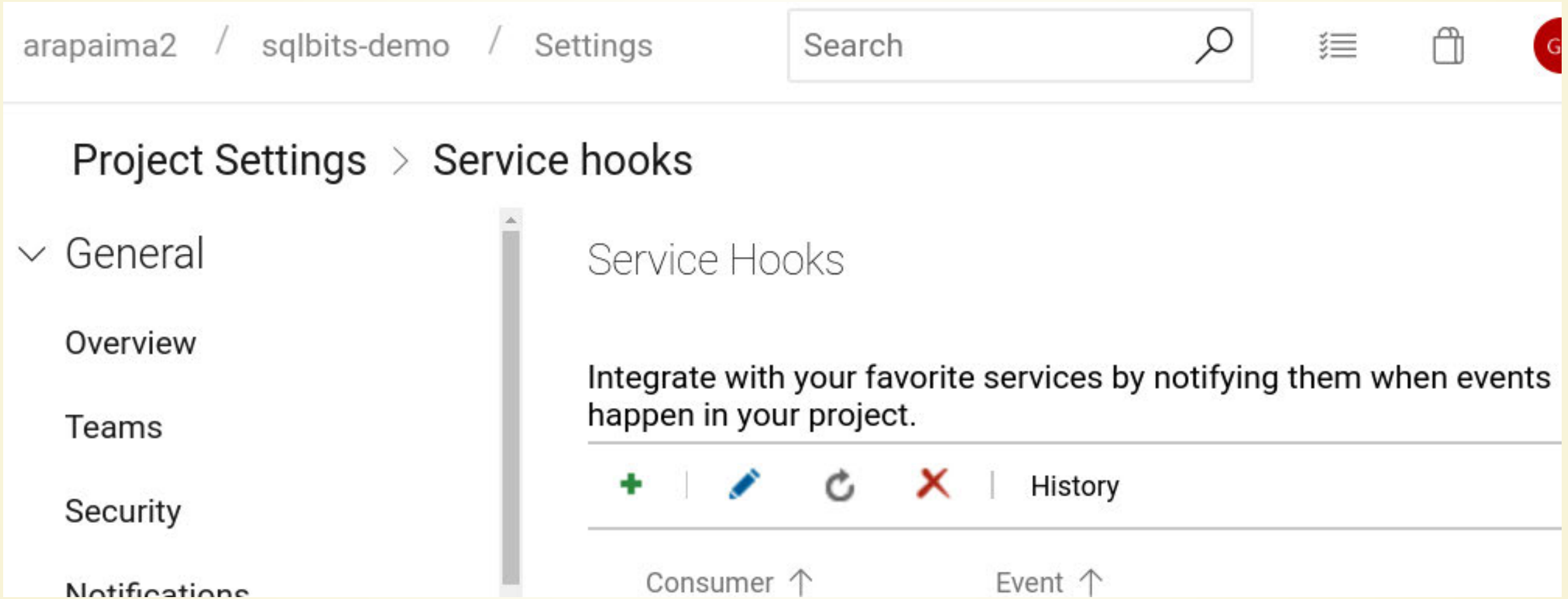
COMPLETING THE FEATURE



MERGING THE FEATURE



SERVICE HOOKS



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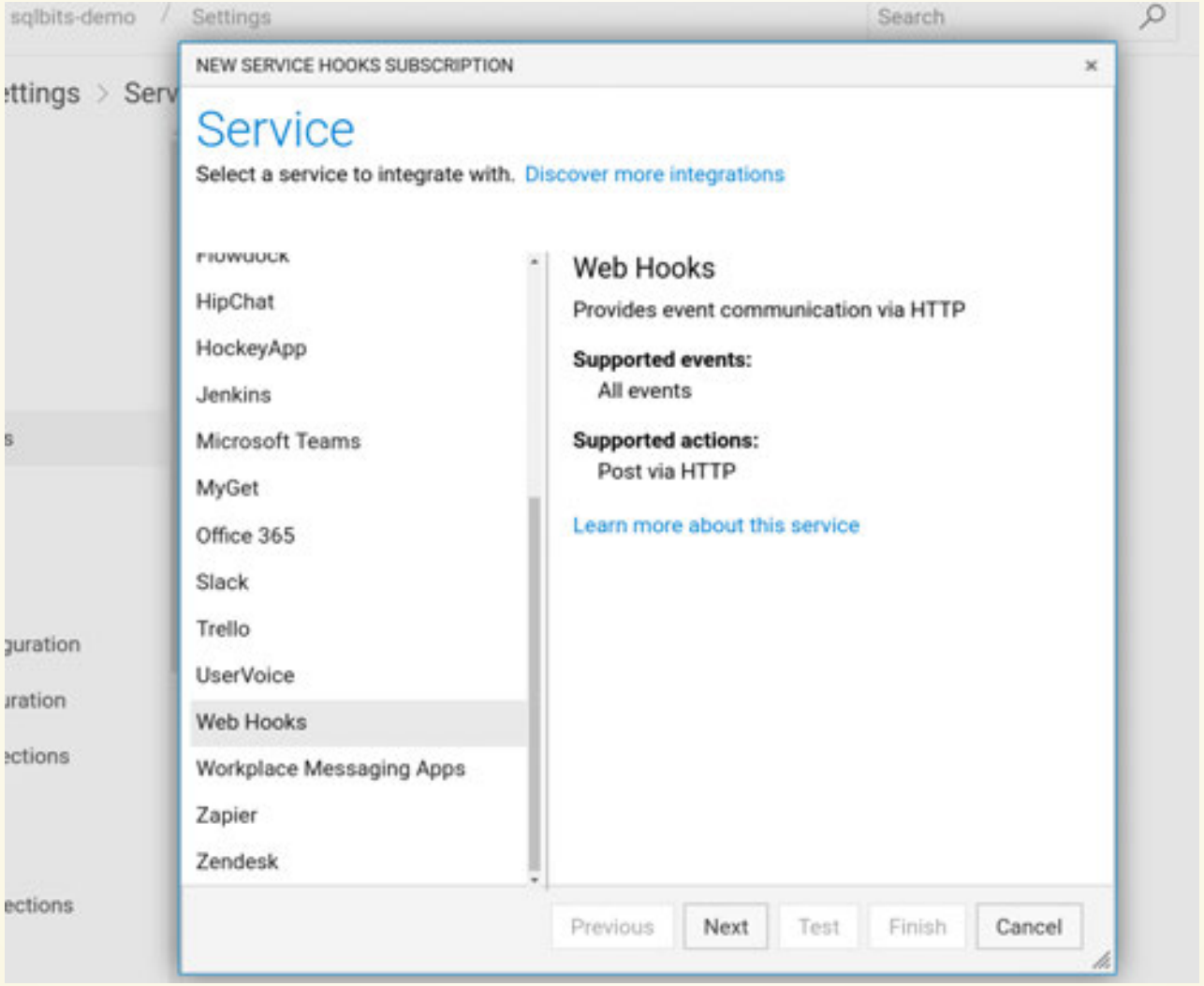

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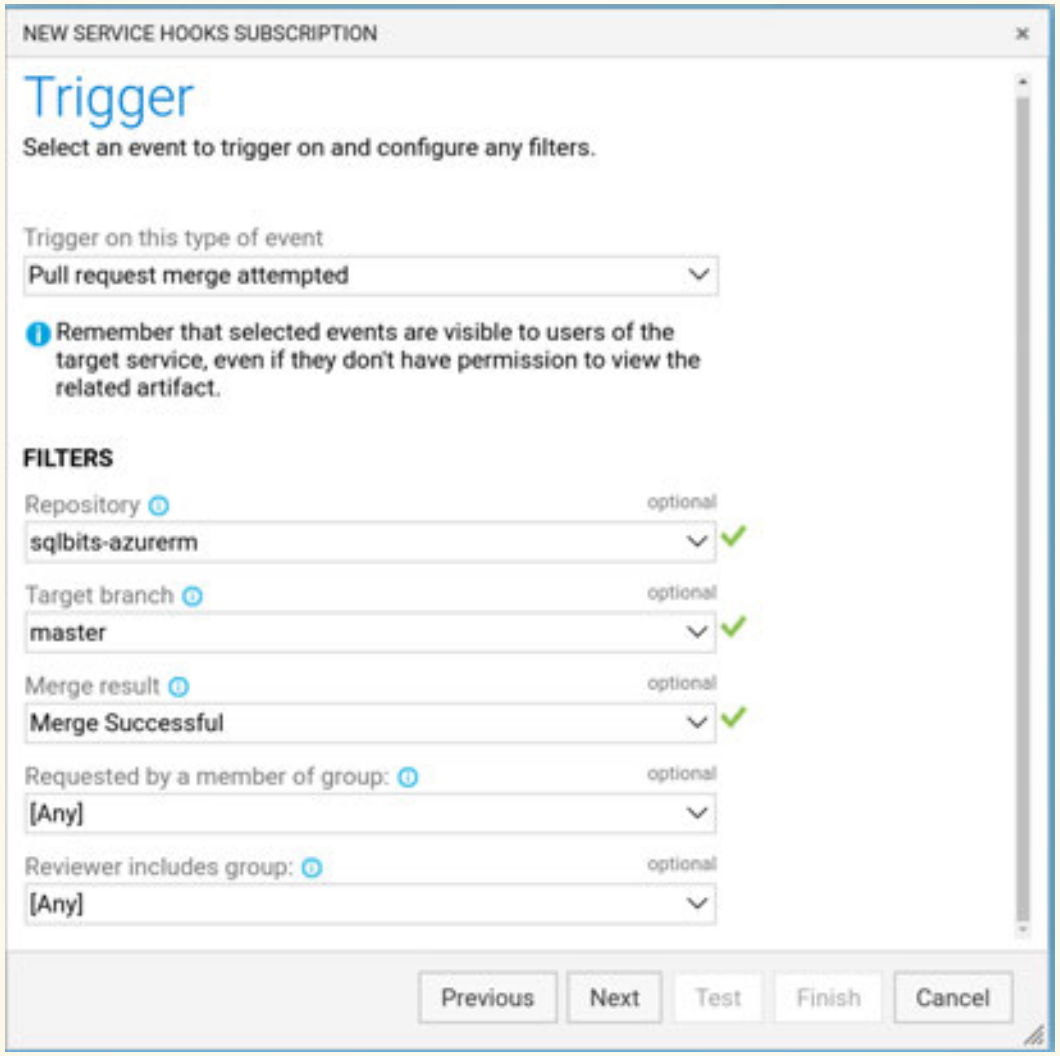
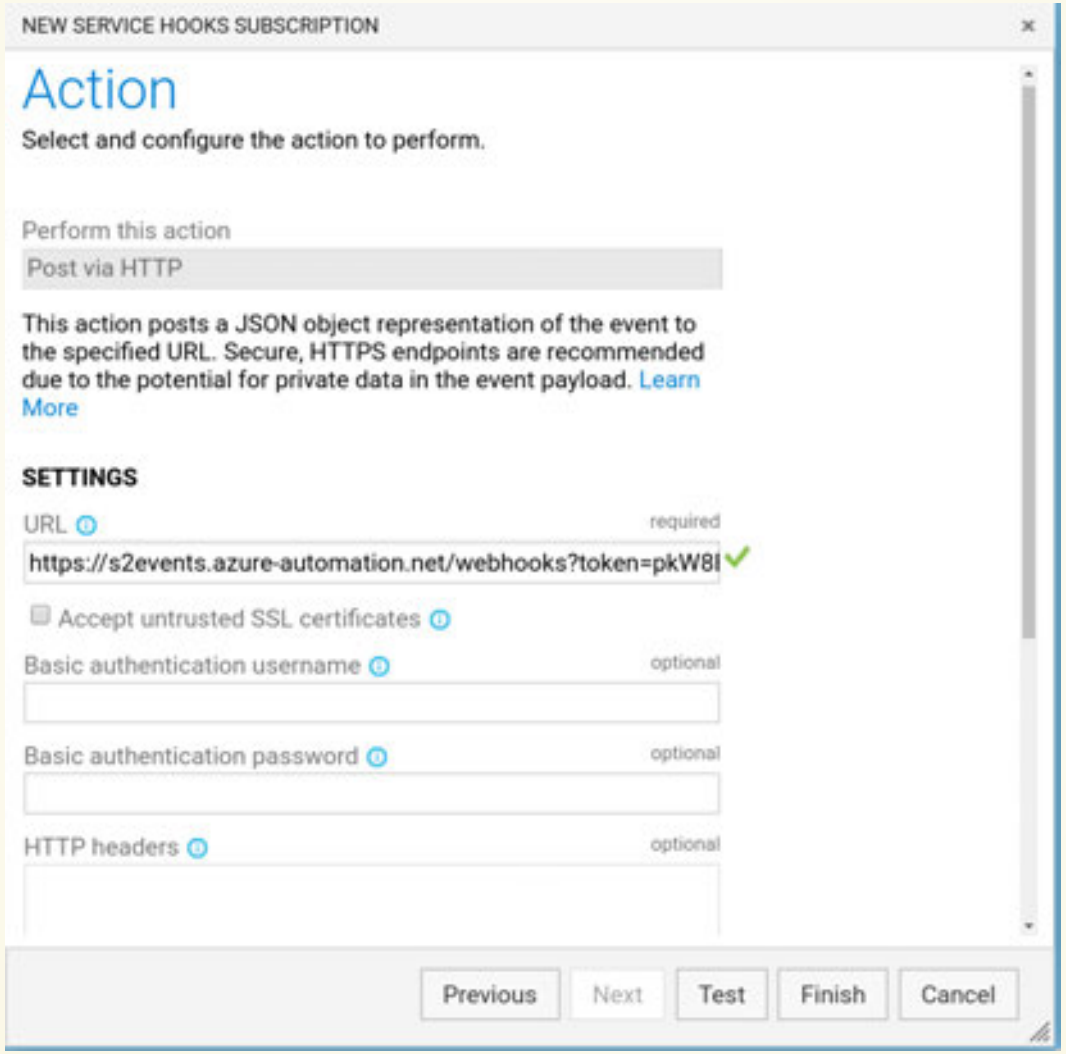
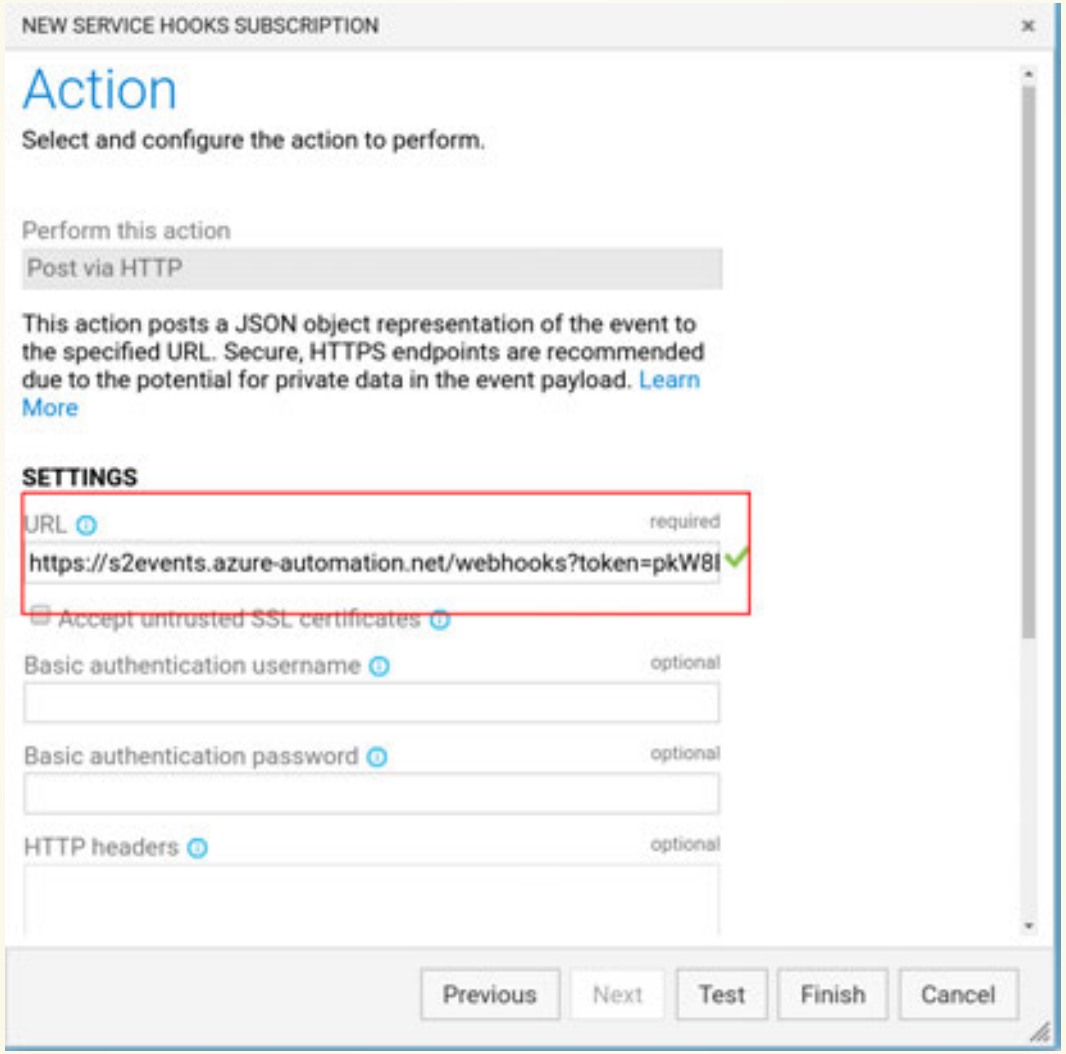


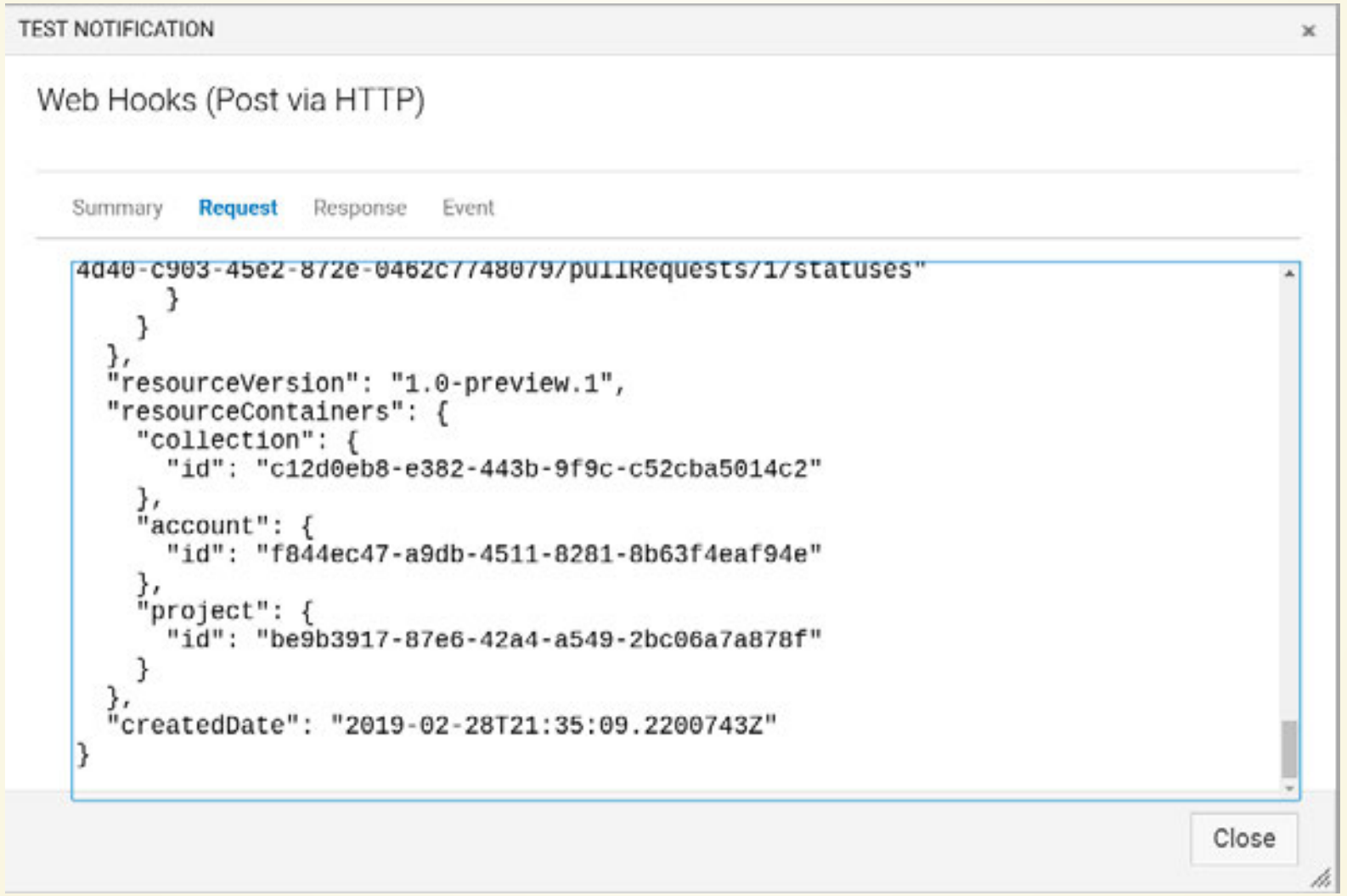
SERVICE HOOKS



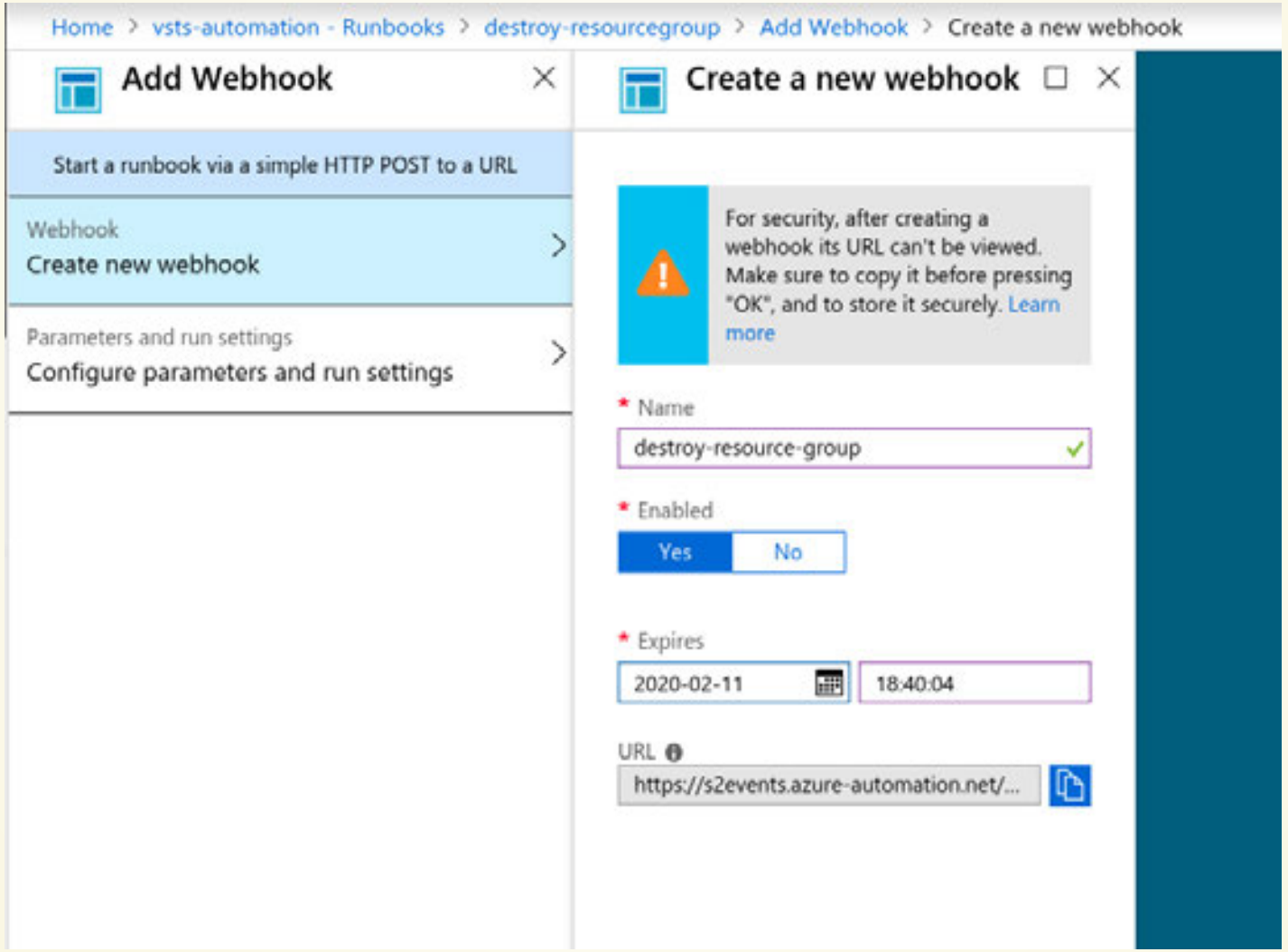
SERVICE HOOKS



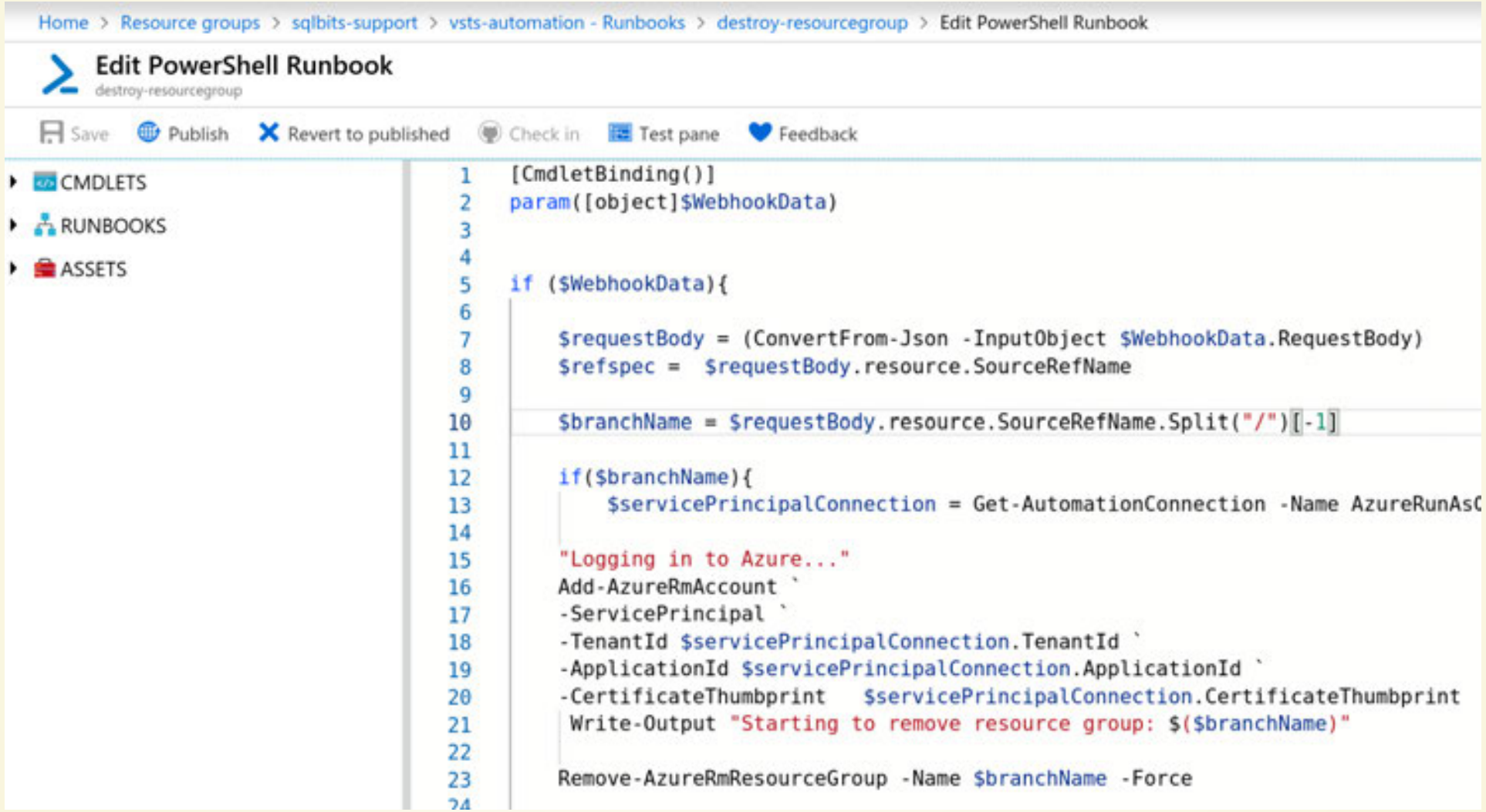
SAMPLE PAYLOAD



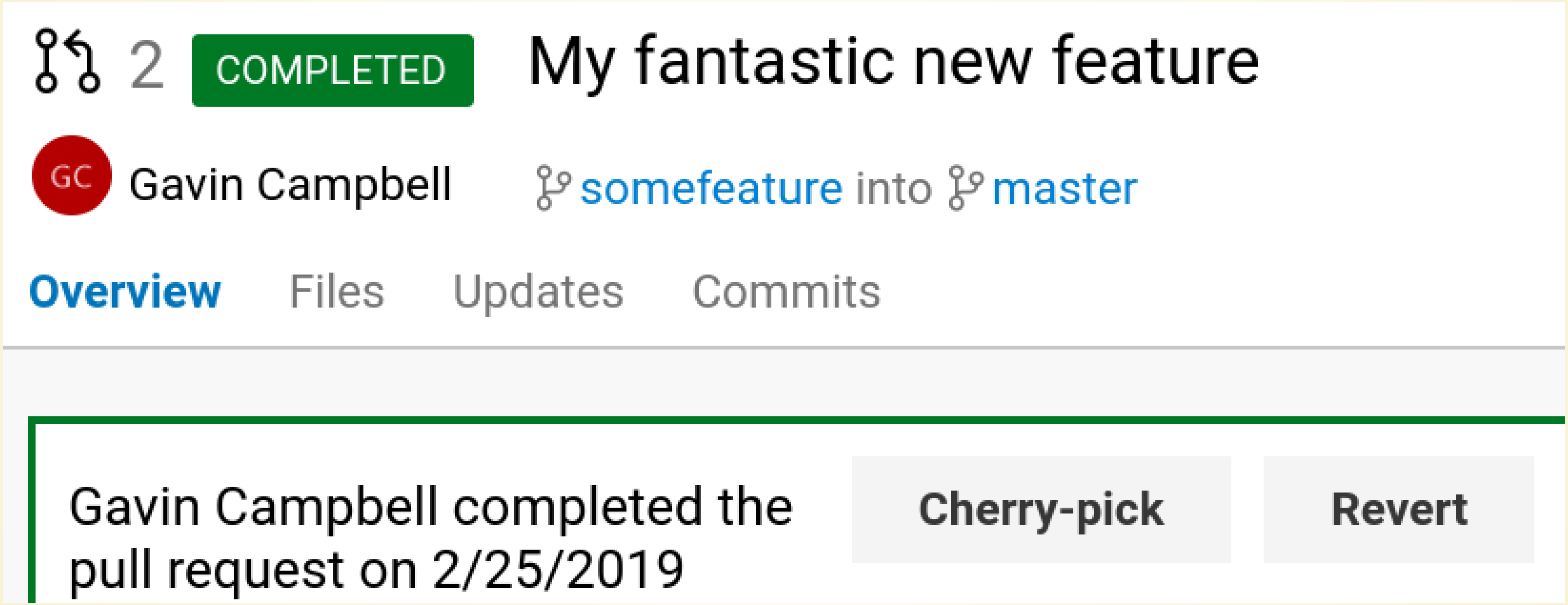
AZURE AUTOMATION



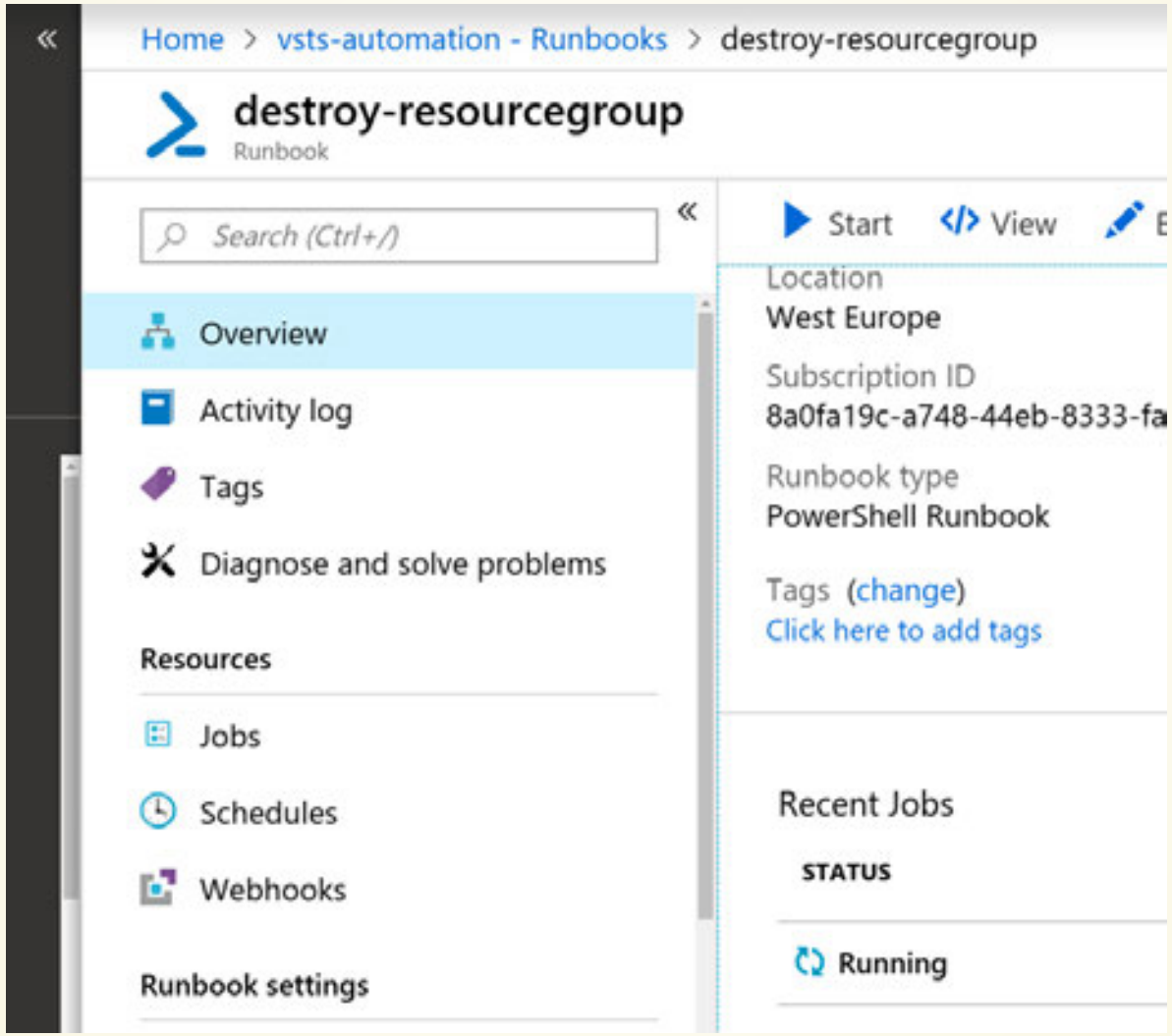
THE TERMINATOR



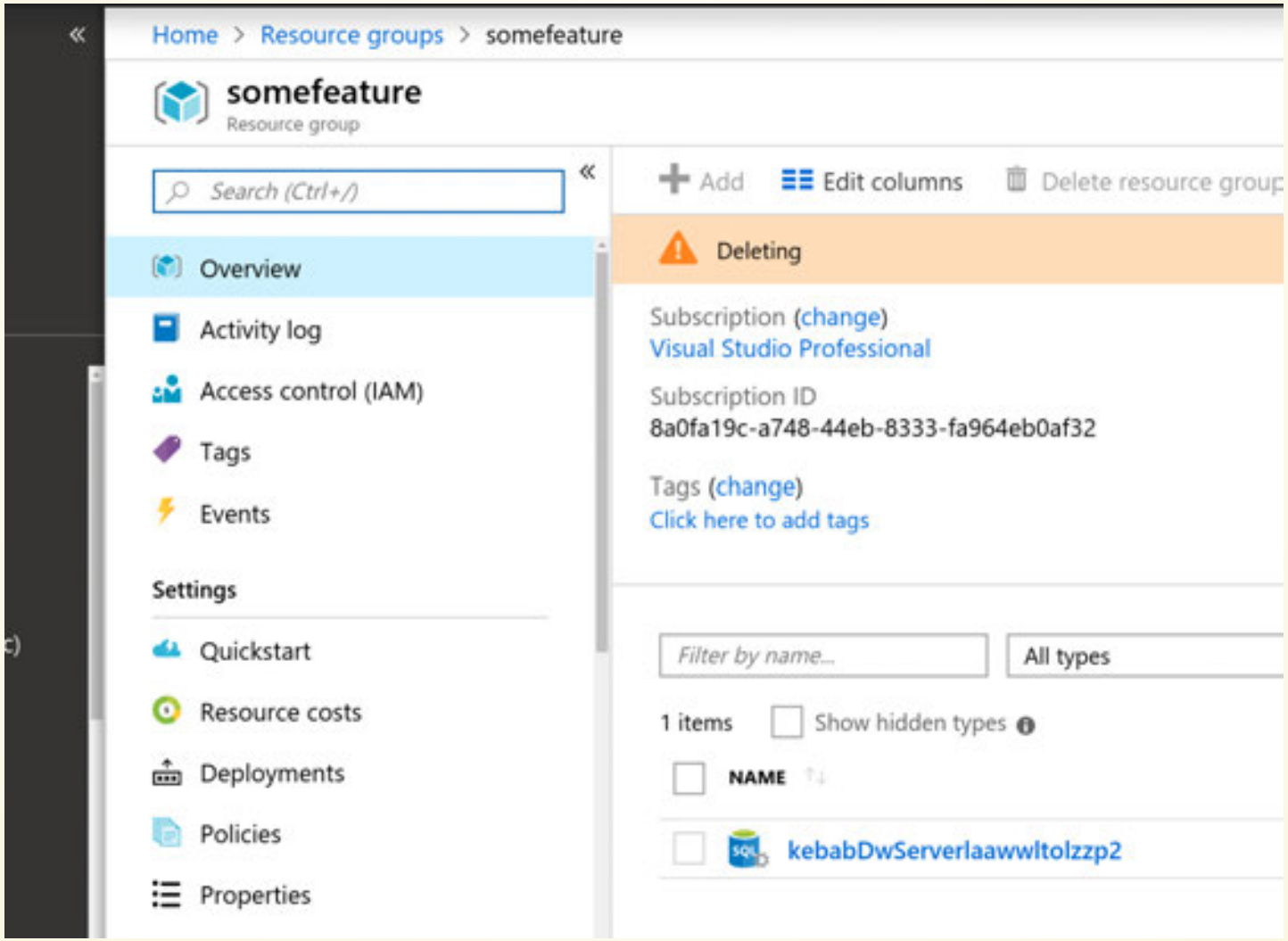
COMPLETING THE PULL REQUEST...



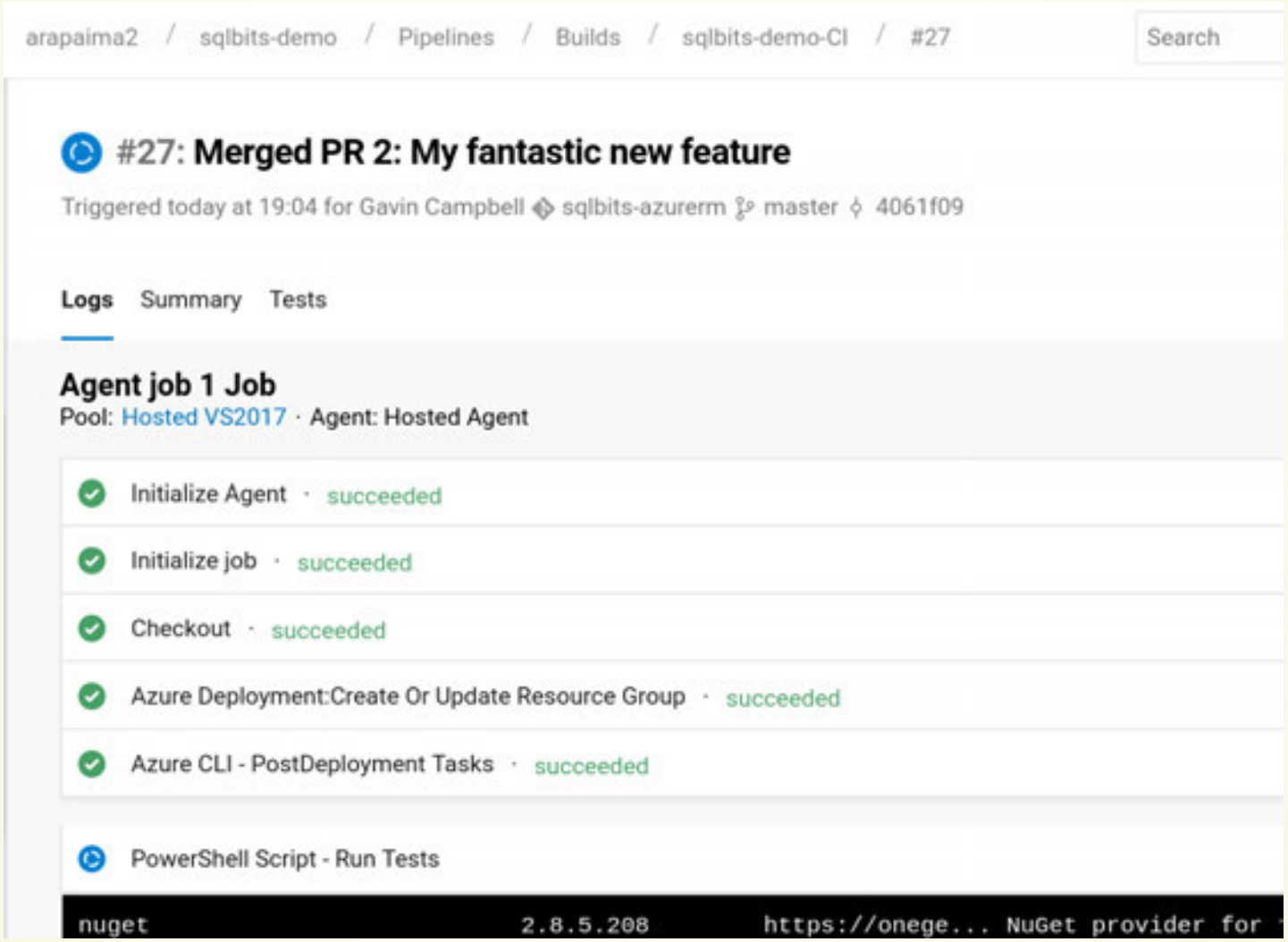
...TRIGGERS THE RUNBOOK...



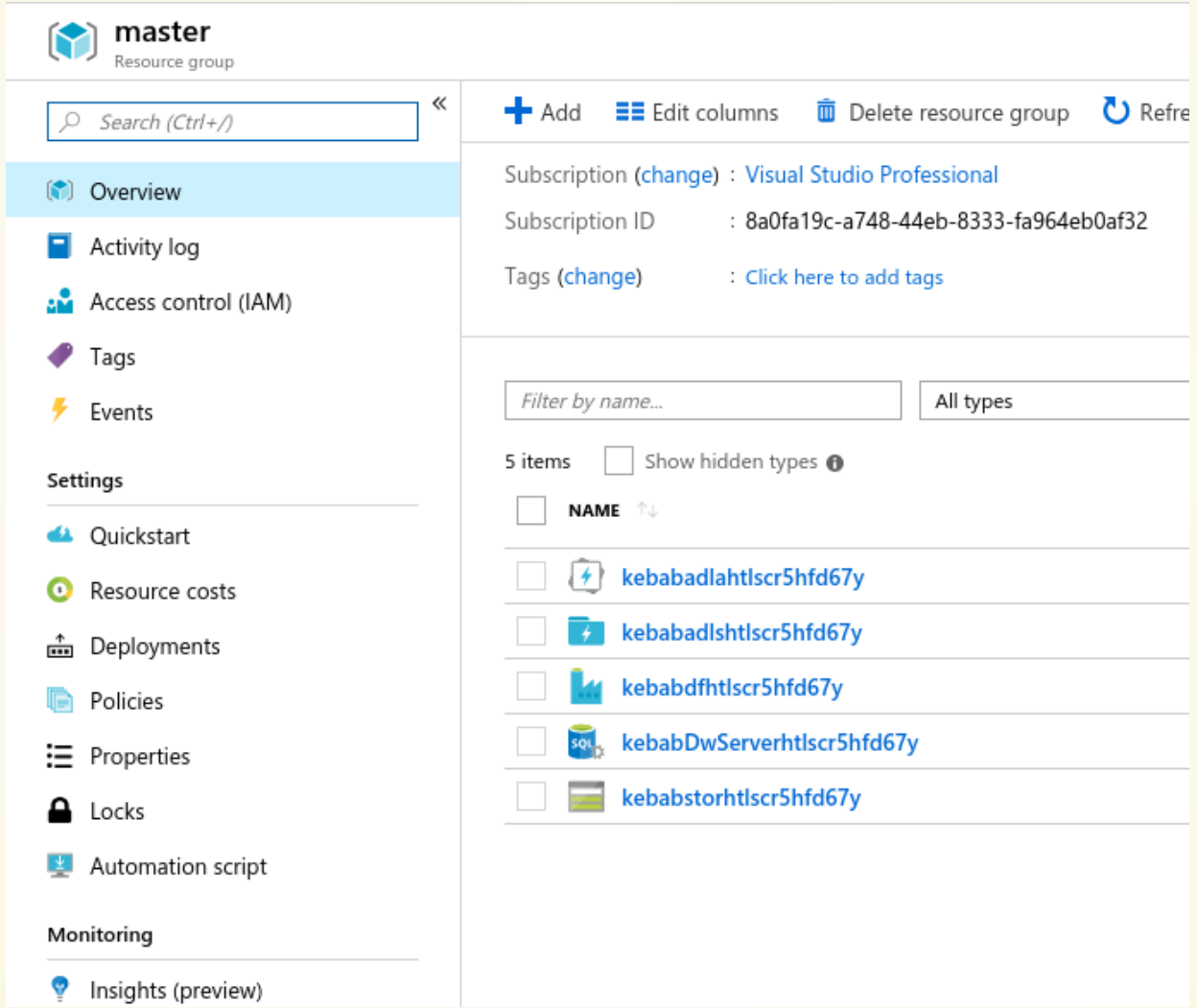
...WHICH DELETES THE RESOURCE GROUP



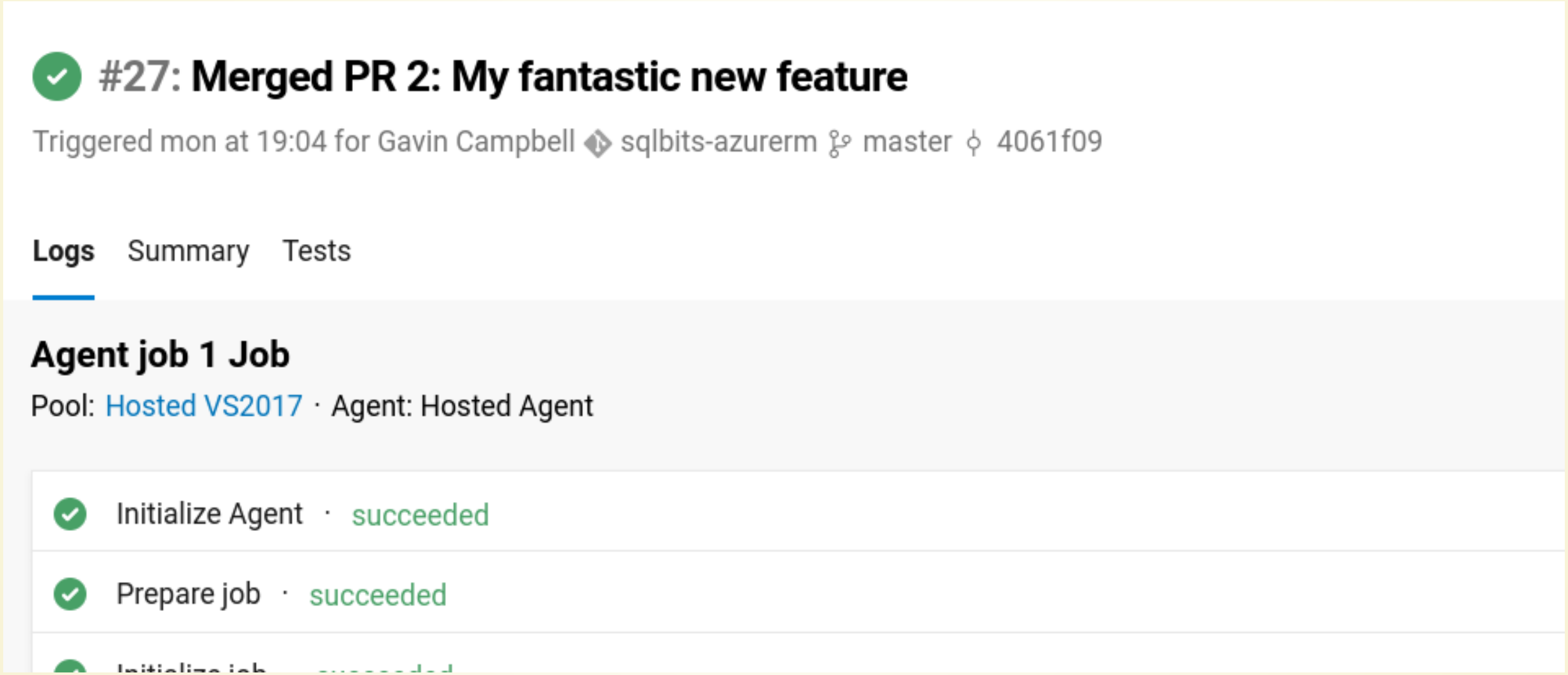
WE ALSO BUILD AND DEPLOY THE MASTER BRANCH...



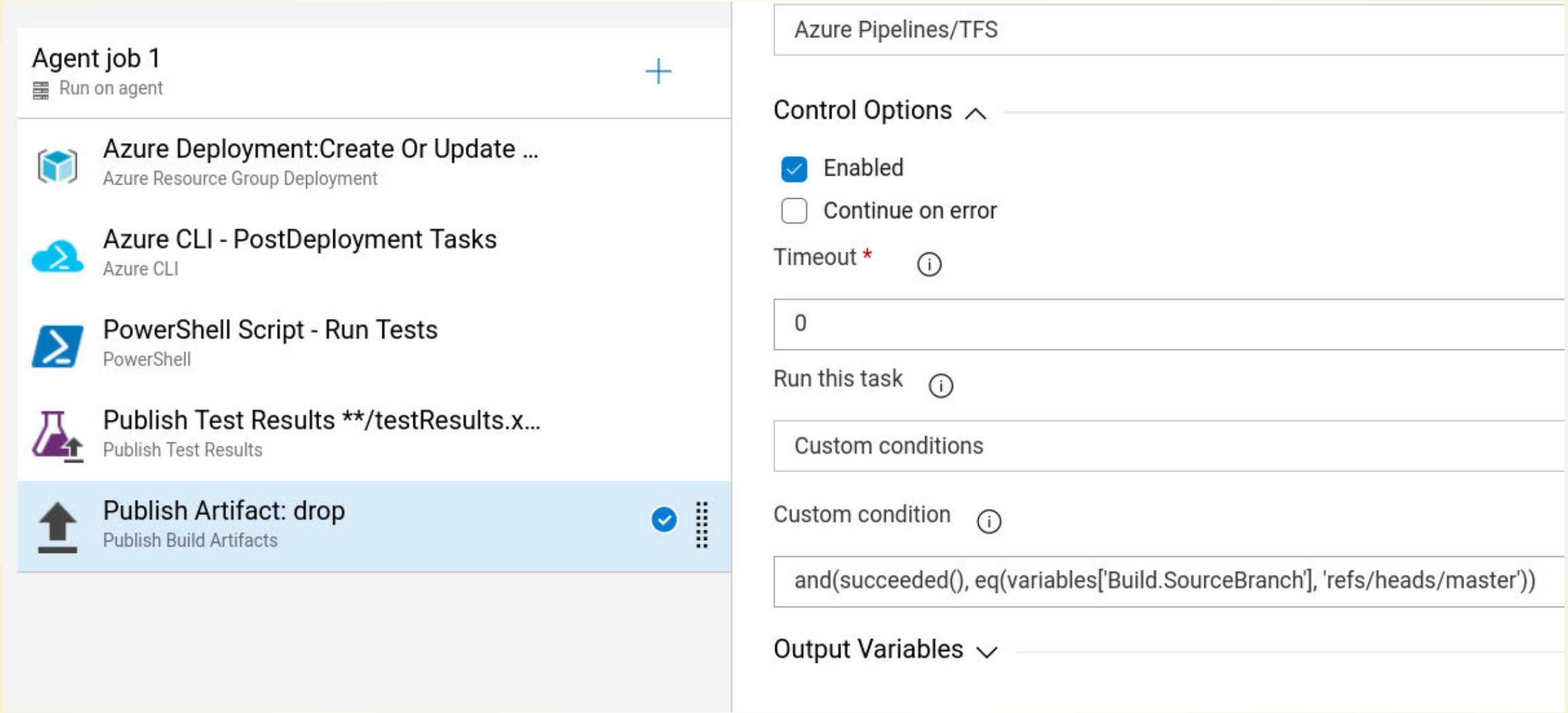
THE "MASTER" RESOURCE GROUP



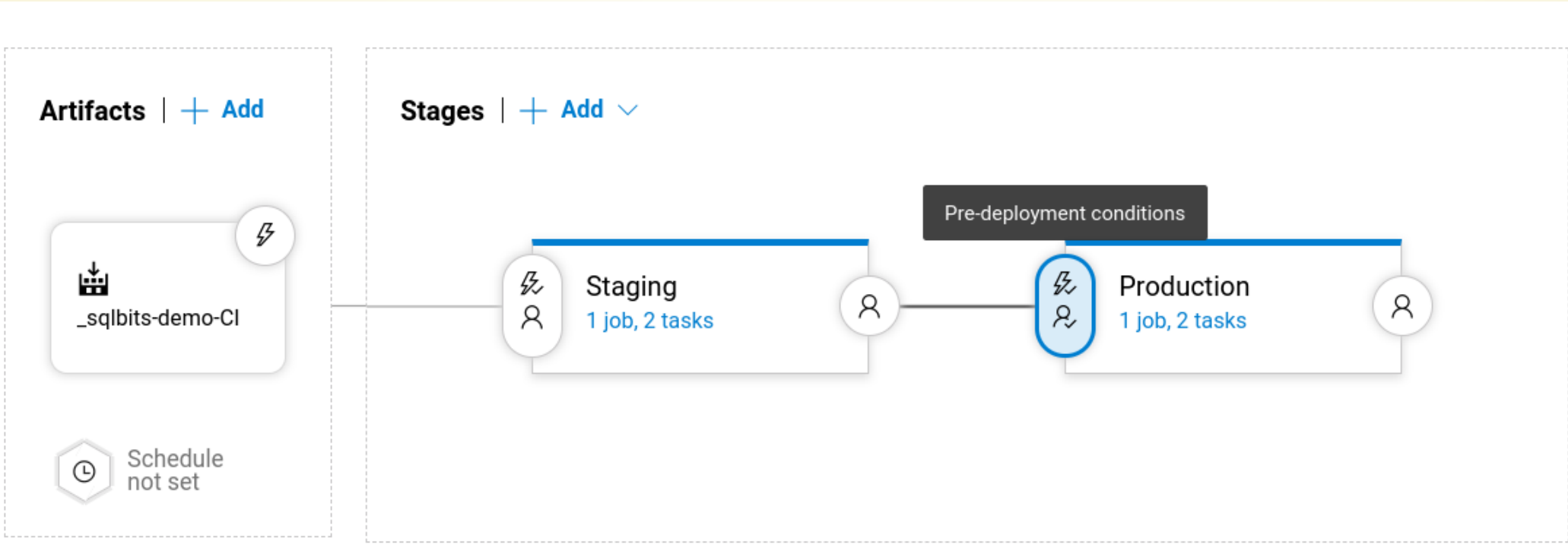
...AND RUN OUR TESTS...



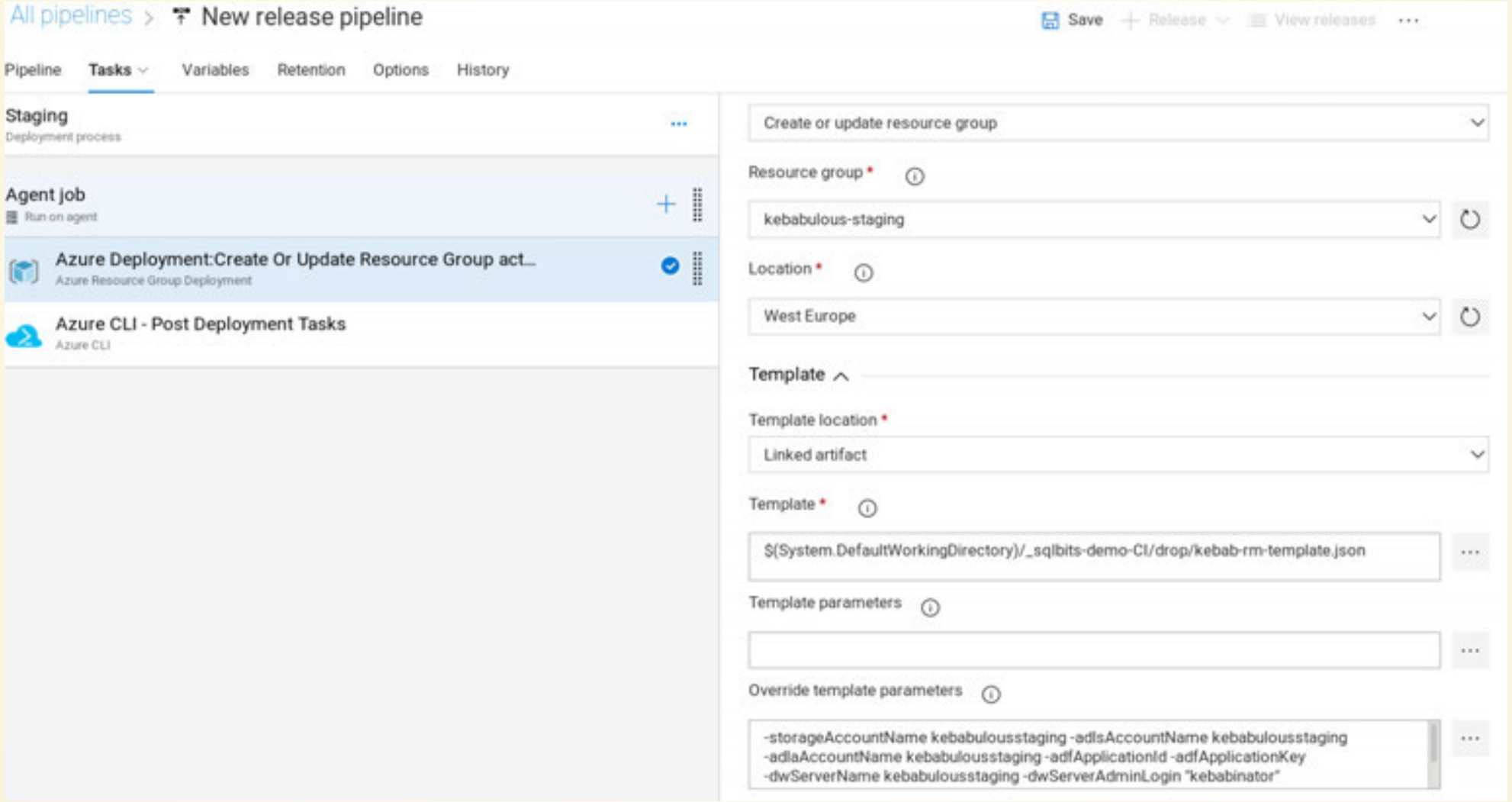
...AND SAVE THE BUILD ARTEFACTS



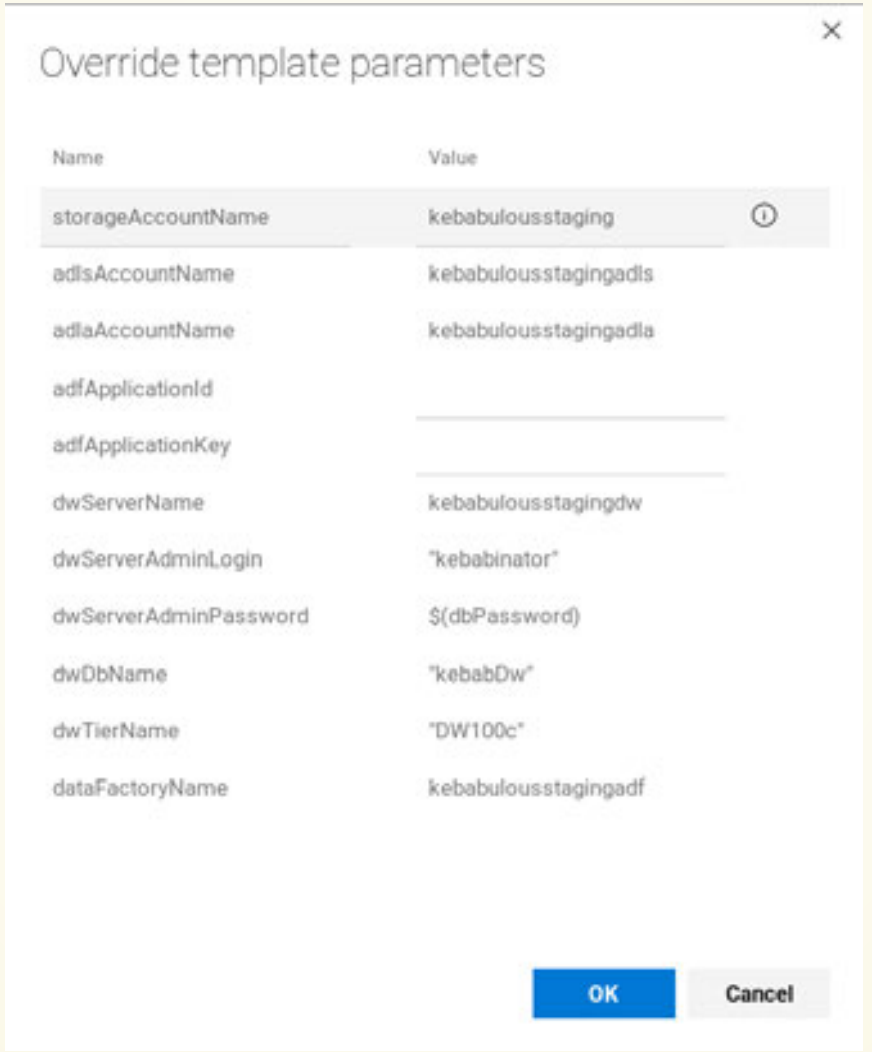
RELEASE MANAGEMENT



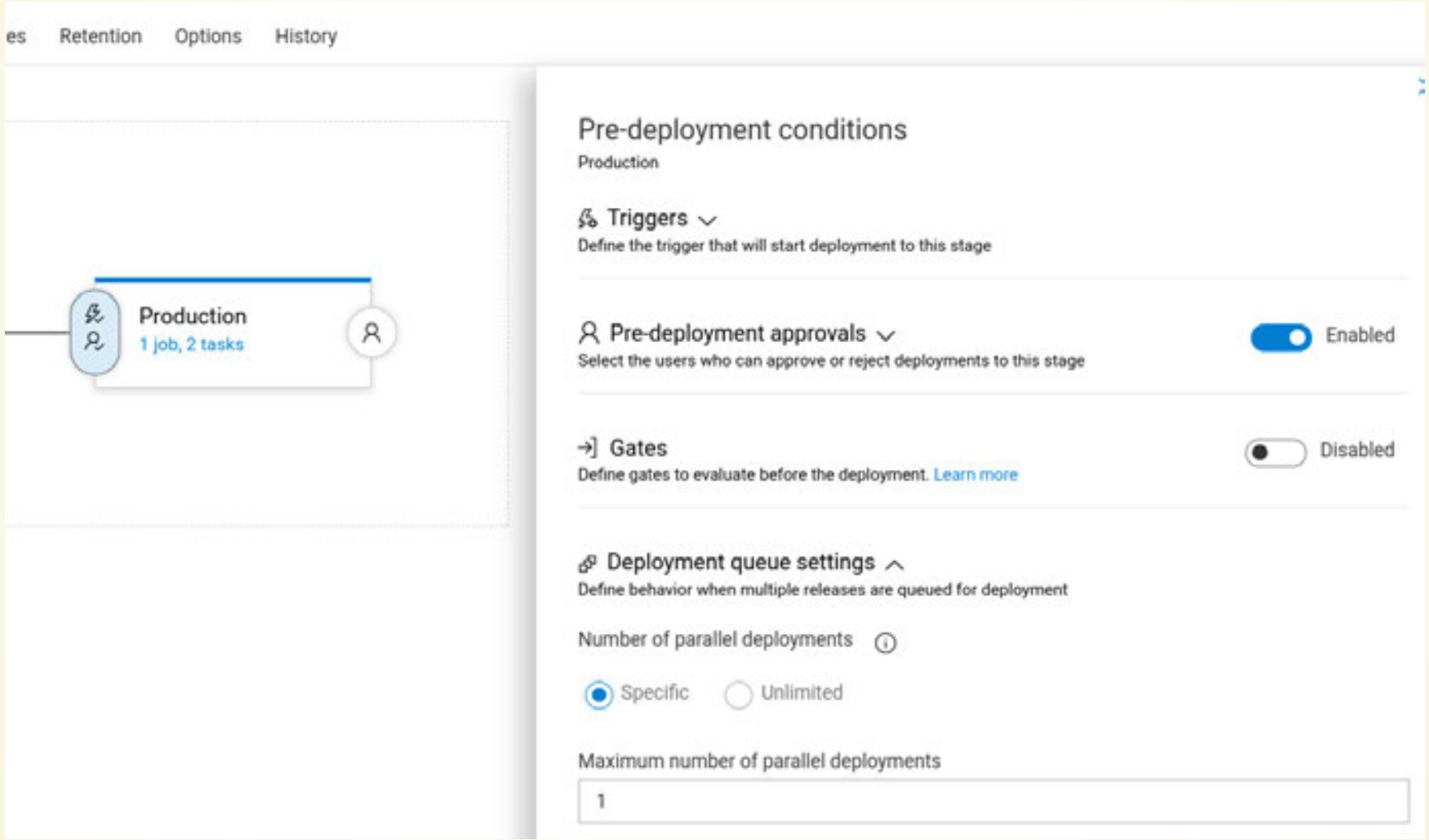
RELEASE TO STAGING



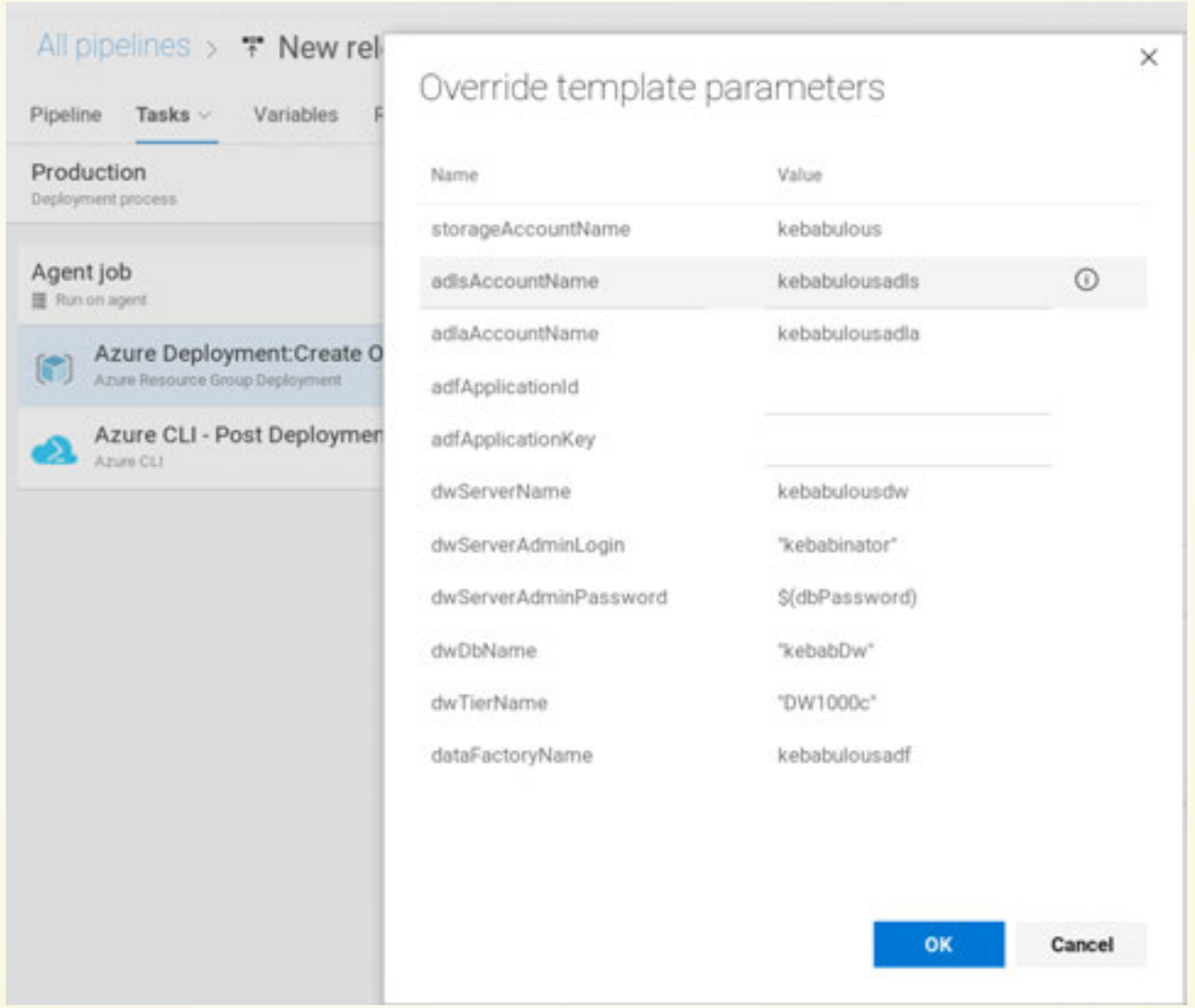
SUPPLYING ACTUAL PARAMETER VALUES



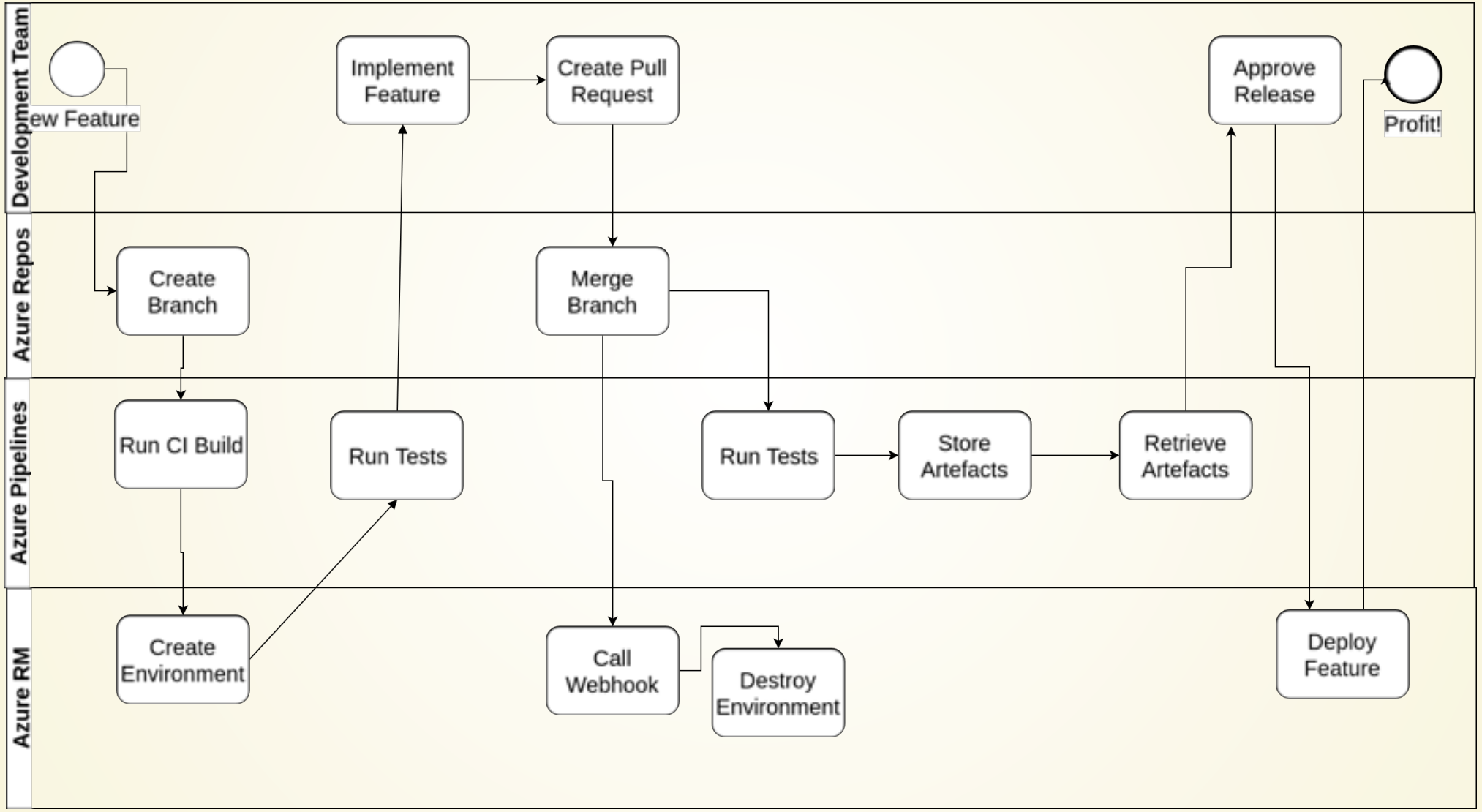
HANG ON A MINUTE...



RELEASE TO PRODUCTION



SUMMARY


Development Team
ew Feature
Implement Feature
Create Pull Request
Approve Release
Profit!
Azure Repos
Create Branch
Merge Branch
Azure Pipelines
Run CI Build
Run Tests
Run Tests
Store Artefacts
Retrieve Artefacts
Azure RM
Create Environment
Call Webhook
Destroy Environment
Deploy Feature

AUDIENCE PARTICIPATION...