

Azure Synapse Analytics CI/CD 概要

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本セッションのゴール

- Azure Synapse Analytics における CI/CD に関して:

- ✓ 基本的な概念を知っている
- ✓ フローが理解できている
- ✓ 構築のイメージを掴めている
- ✓ 参照すべき文献が分かっている



CI/CD

■ 繙続的インテグレーション (CI)

- コードのビルドとテストを自動化するプロセス
- 繙続的デリバリー対象となる成果物を自動的に生成する
- 変更がバージョンコントロールにコミットされるたびに実行されるのが理想

■ 繙続的デリバリー (CD)

- テスト/ステージング環境や運用環境に成果物をデプロイするプロセス
- ビルド→テスト→構成→デプロイ
- 複数ステージにデプロイしテストを行うことで品質の向上に役立つ



コンポーネント

- Synapse ワークスペース

- 開発を行う場所
- 一般的な Development, Staging, Production のステージに沿って 開発, テスト, 運用のワークスペースを用意

- Git

- 言わずと知れた分散型バージョン管理ツール

- CI/CD 支援ツール

- Azure DevOps (or GitHub)
- ビルド, テスト, 構成, デプロイを自動化

- ファイル

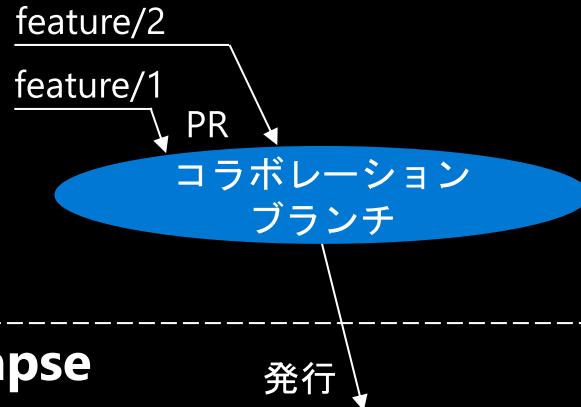
- ARM テンプレート
- パラメータ
- Artifact (成果物)



CI/CD のフロー (例)

ファイル

Git



Synapse
WS

Synapse
(開発WS)

Synapse
(テストWS)

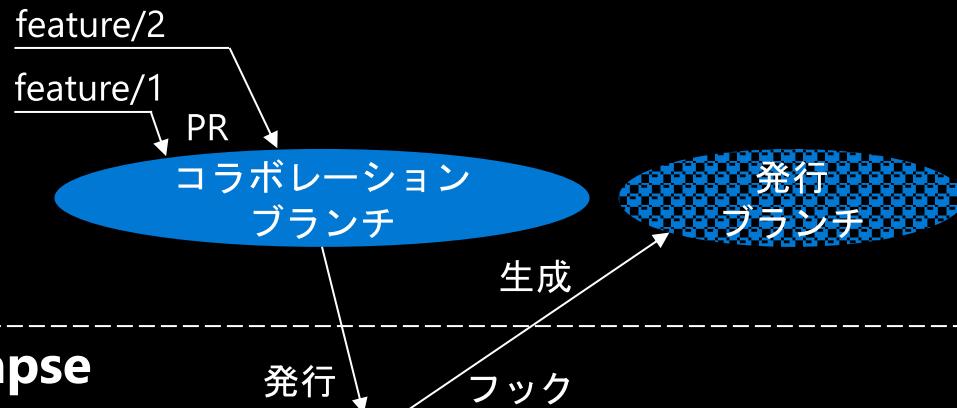
Synapse
(運用WS)

CI/CD
支援
ツール

CI/CD のフロー (例)

ファイル

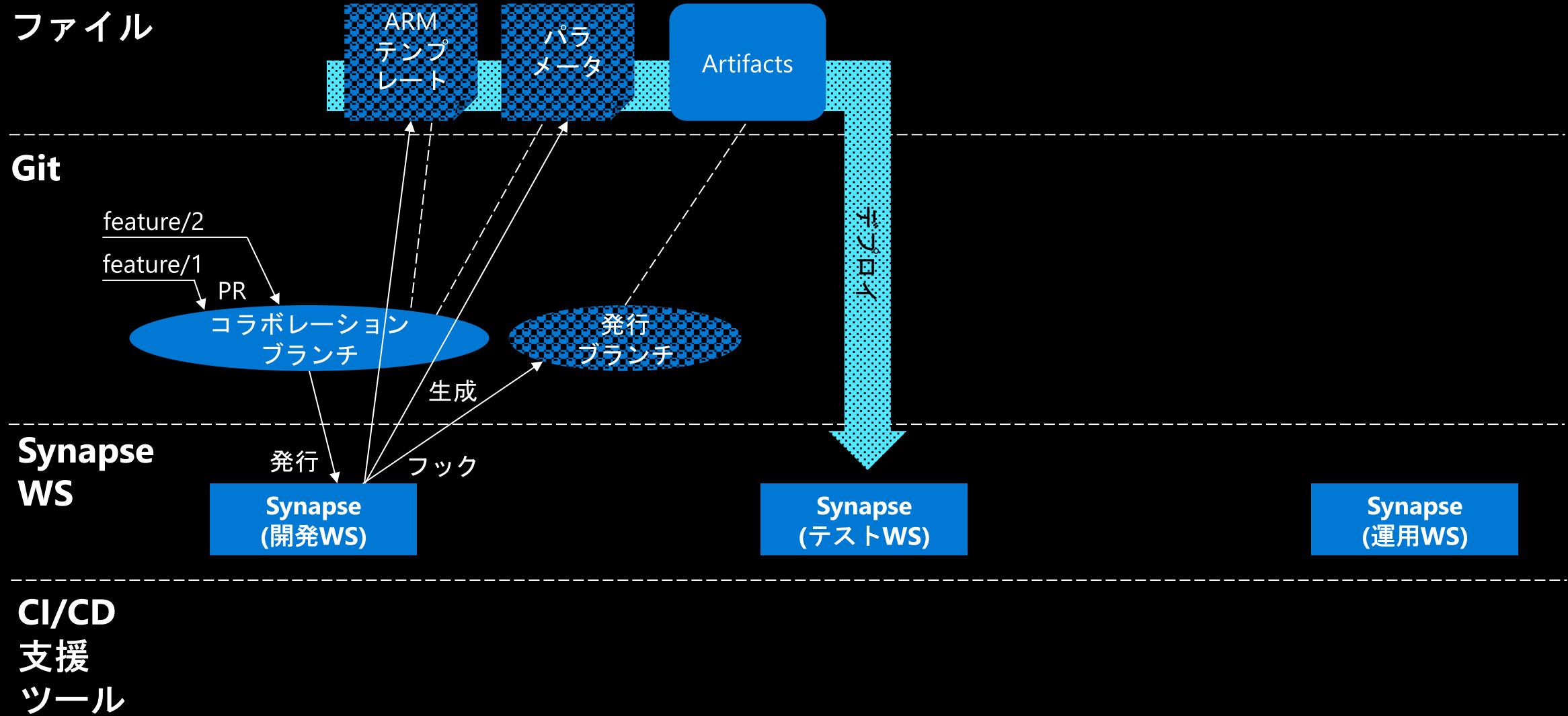
Git



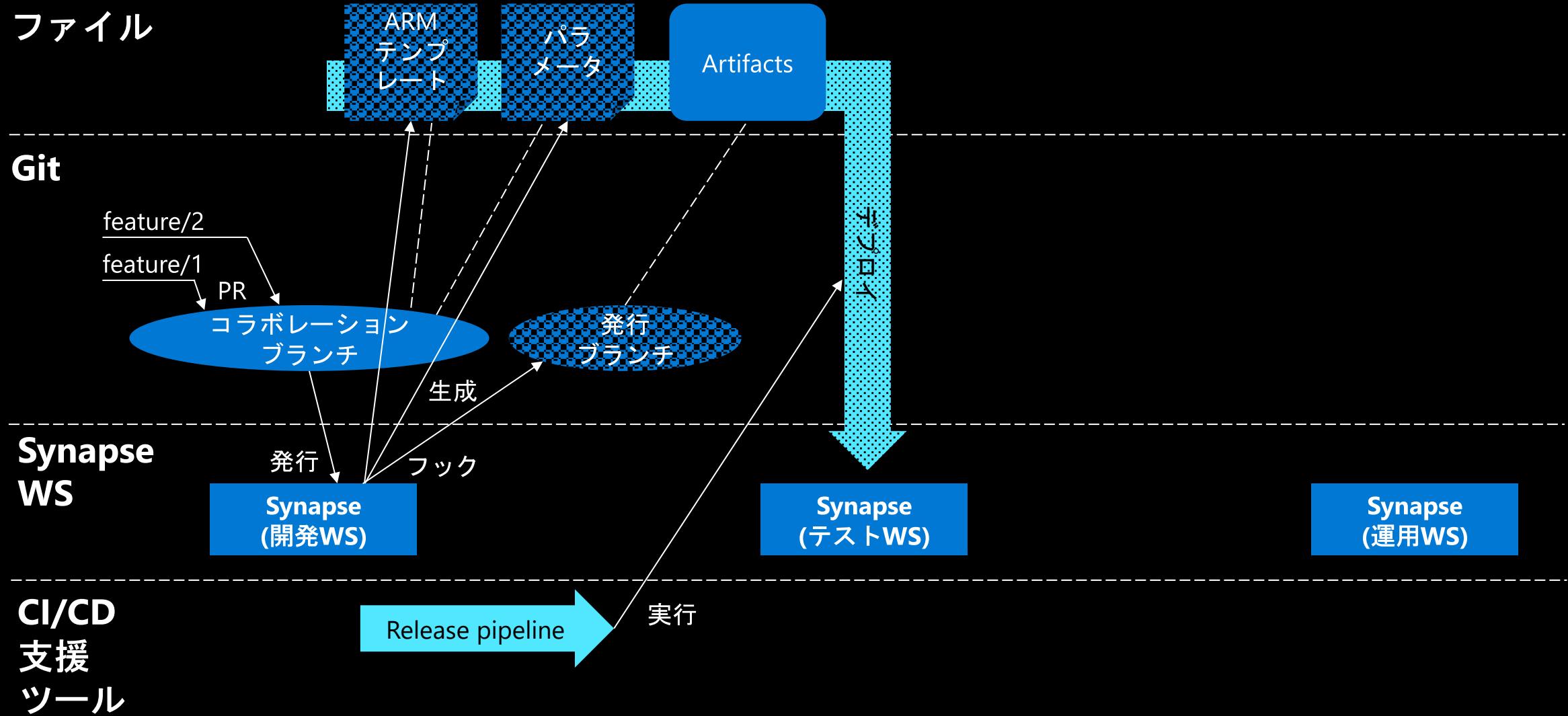
Synapse
WS

CI/CD
支援
ツール

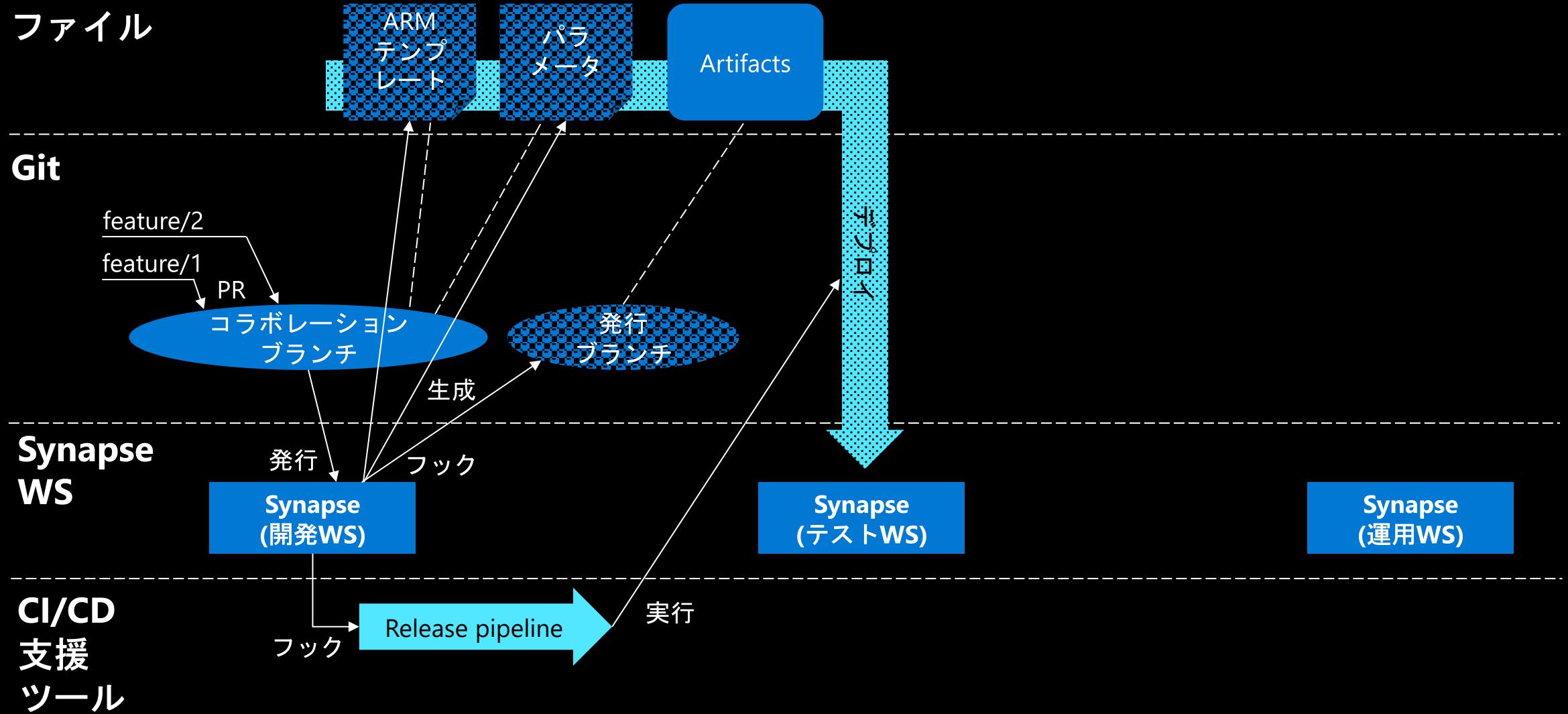
CI/CD のフロー (例)



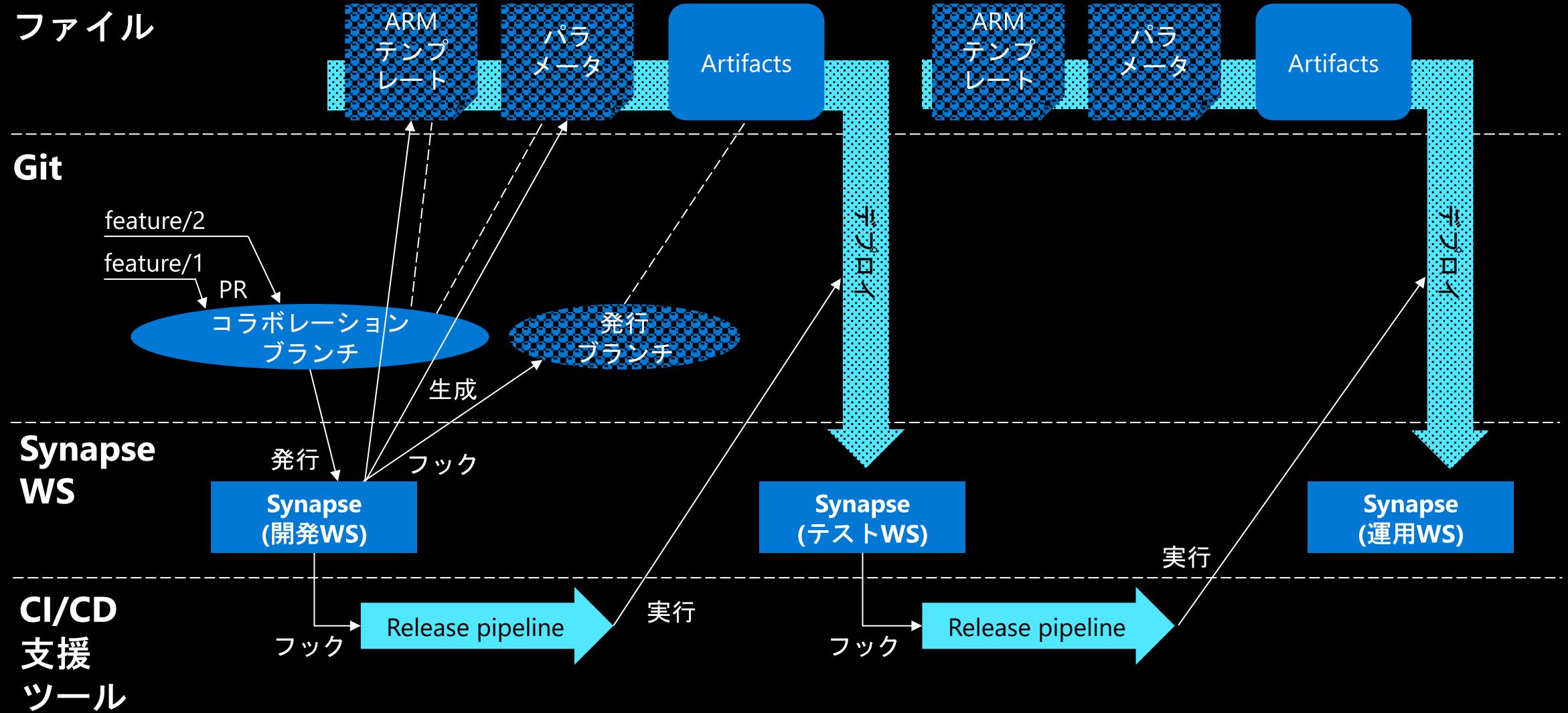
CI/CD のフロー (例)



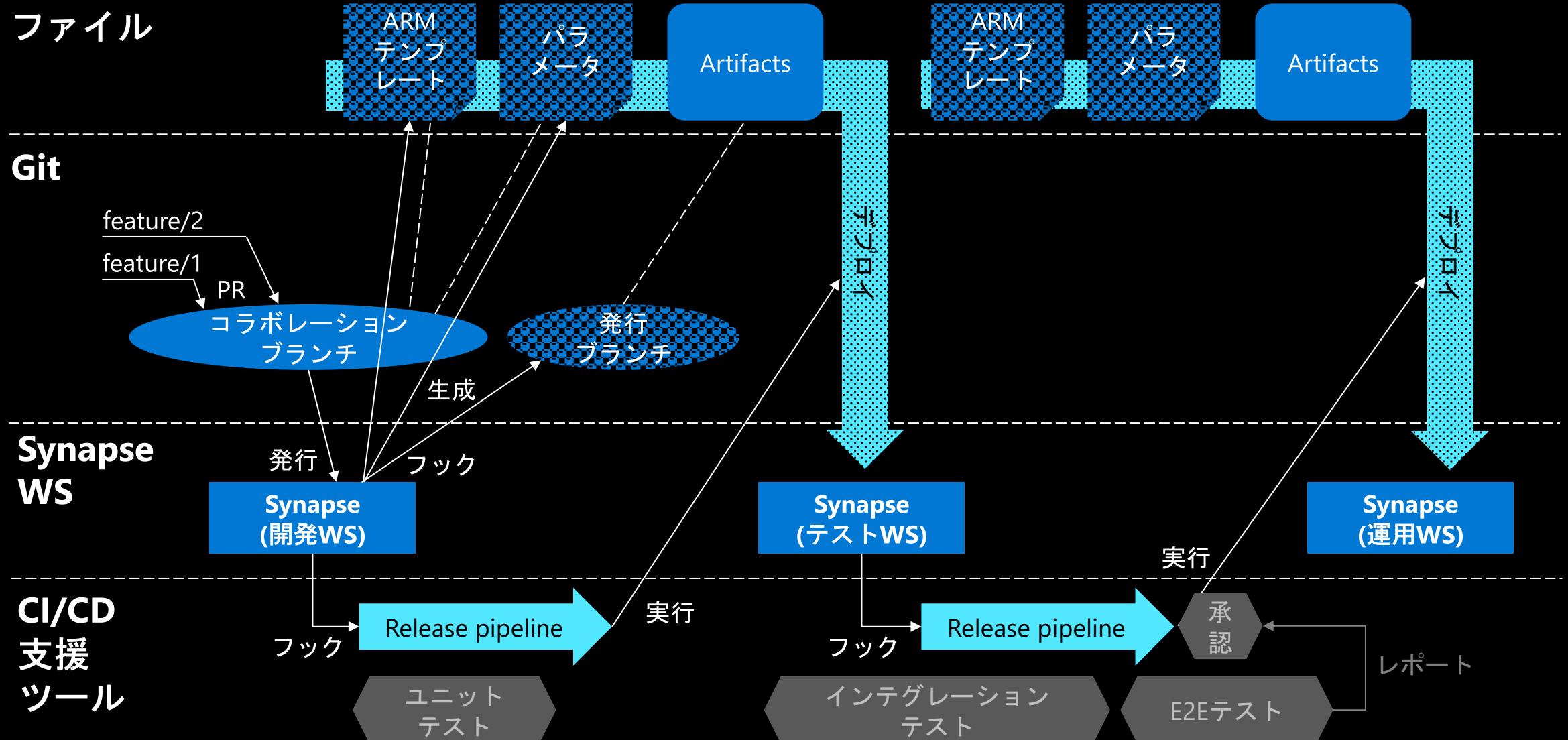
CI/CD のフロー (例)



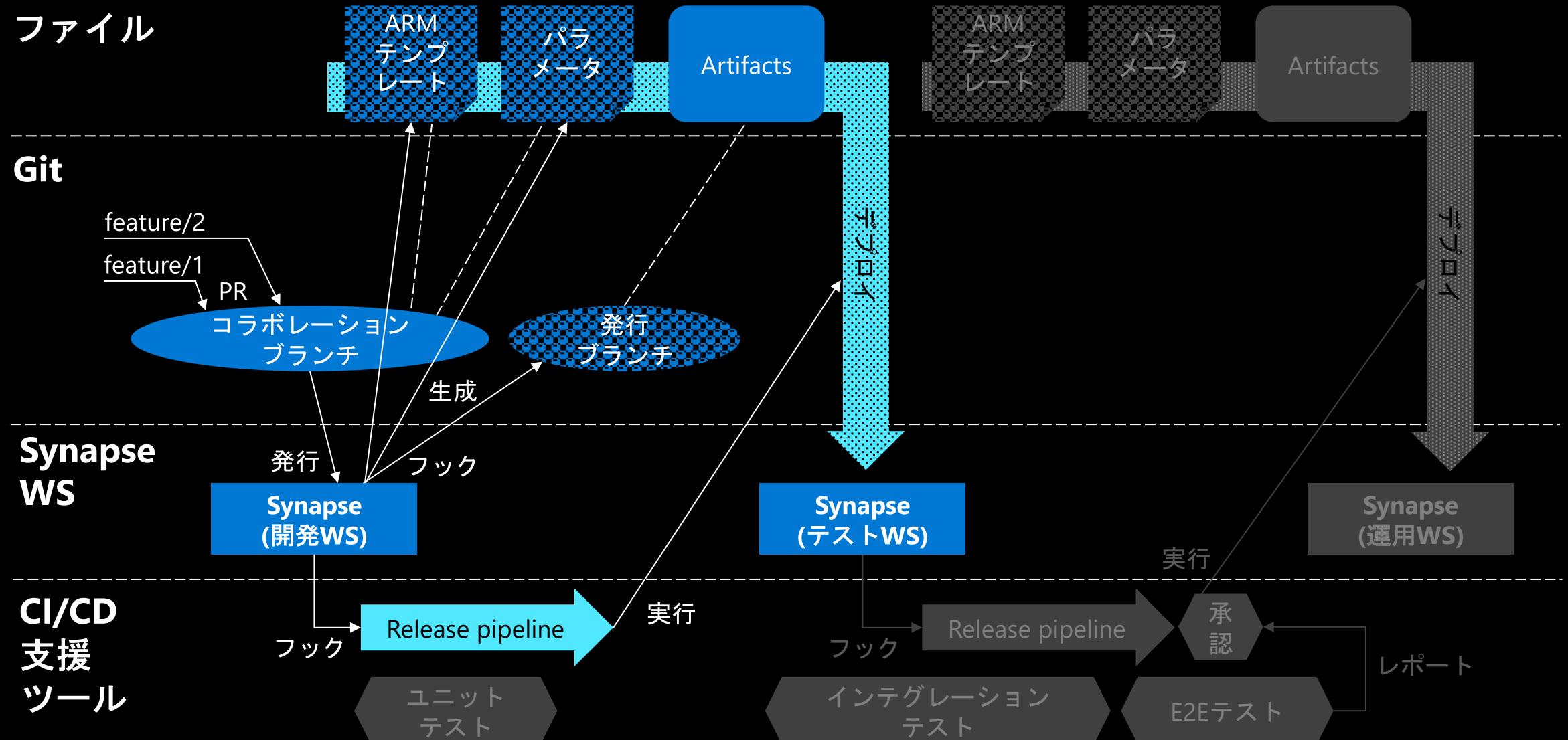
CI/CD のフロー (例)



CI/CD のフロー (例)



CI/CD のフロー (本セッションのスコープ)



ソフトウェア開発における CI/CD との違い

	ソフトウェア開発	Synapse + Azure DevOps
ビルド～デプロイ対象	<ul style="list-style-type: none">ソースコードコンテナ	<ul style="list-style-type: none">ARMテンプレートパラメータArtifacts (この中にSynapse WS 上で作った諸々が含まれる)
Git のブランチモデル	<ul style="list-style-type: none">git-flow, GitHub Flow などマスター ブランチは単一 (master or main)	<ul style="list-style-type: none">GitHub Flow ライク成果物ごとにブランチが分かれている (main, workspace_publish)
Git の UI	<ul style="list-style-type: none">CLI が主流	<ul style="list-style-type: none">Web UI (Synapse Studio)
Git の変更差分	<ul style="list-style-type: none">ソースコードの行ごと	<ul style="list-style-type: none">各Artifactの行ごとJSON形式であり、Synapse Studio で見える形式とは必ずしも一致しない

CI/CD の構築 (テストWSまで, Azure DevOps利用)

■ 前提

- Azure サブスクリプションの所有者(Owner)ロールを割り当てられている
- Azure DevOps にアカウントがある
- Azure Synapse Analytics にワークスペース (開発, テスト, 運用) が作成されている
- 今回、リリースパイプラインのタスクでは ARM Template Deployment ではなく Synapse workspace deployment を使う

■ ゴール

- 開発WS でコラボレーションブランチにプルリクエストでマージされた変更が、自動的にテストWS に同期される。

■ 手順 (一部順不同)

- Azure DevOps プロジェクトを作成
- Synapse (開発WS) の Git を構成
- コラボレーションブランチから「発行」することで発行ブランチとARMテンプレートとパラメータを作成
- リリースパイプラインを作成
- Feature ブランチから initial コミットすることで Artifact を生成
- Azure DevOps のサービスプリンシパルID を取得して Synapse (テストWS) へのアクセス制御を許可
- リリースパイプラインのトリガーを設定

CI/CD の構築手順 (例)

1. Azure DevOps プロジェクトを作成
2. 開発WS の Git を構成
3. Artifact を生成
4. リリースパイプラインを作成
5. Azure DevOps から テストWS へのアクセスを許可
6. リリースパイプラインのトリガー設定

CI/CD の構築手順 (例)

1. Azure DevOps プロジェクトを作成
2. 開発WS の Git を構成
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4. リリースパイプラインを作成
5. Azure DevOps から テストWS へのアクセスを許可
6. リリースパイプラインのトリガー設定

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps Home page. On the left, there's a sidebar with a list of organizations: keisuketakahashi (selected), MicrosoftIT, unifiedactiontracker, and servicesdocs. Below that is a link to 'New organization'. The main area displays the 'keisuketakahashi' organization with one project listed: 'mlops-quickstart'. At the top right, there's a search bar and a 'New project' button, which is highlighted with a red rectangular box. Other UI elements include a 'Projects' tab, a 'My work items' tab, a 'My pull requests' tab, and a 'What's new' section at the bottom left.

Projects - Home

keisuketakahashi

Projects My work items My pull requests

mlops-quickstart

+ New project

keisuketakahashi

M

What's new

Sprint 194 release notes

Azure Pipelines will post neutral status to GitHub when a build is skipped. Check out the release notes for details.

Organization settings

Waiting for web.vortex.data.microsoft.com...

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps interface on a Mac OS X system. The main window displays the user's organization 'keisuketakahashi' with a single project 'mlops-quickstart'. A modal dialog box titled 'Create new project' is open in the center. The 'Project name *' field is highlighted with a red border. The 'Description' and 'Visibility' sections are also visible. The 'Visibility' section includes three options: 'Public' (disabled), 'Enterprise' (selected), and 'Private'.

Projects - Home

keisuketakahashi

Projects My work items My pull requests

mlops-quickstart

New organization

What's new

Sprint 194 release notes

Azure Pipelines will post neutral status to GitHub when a build is skipped. Check out the release notes for details.

Organization settings

Waiting for web.vortex.data.microsoft.com...

Create new project

Project name *

Description

Visibility

Public

Anyone on the internet can view the project. Certain features like TFVC are not supported.

Enterprise

Members of your enterprise can view the project.

Private

Only people you give access to will be able to view this project.

Cancel Create

Azure DevOps プロジェクトを作成

The screenshot shows a web browser displaying the Azure DevOps interface at <https://dev.azure.com/keisuketakahashi/>. On the left, the sidebar lists organizations: keisuketakahashi (selected), MicrosoftIT, unifiedactiontracker, and servicesdocs. The main area shows the 'keisuketakahashi' organization with a single project named 'mlops-quickstart'. A 'Create new project' dialog box is open on the right, overlaid on the page. The dialog has fields for 'Project name *' (MDW), 'Description' (empty), and 'Visibility' (Enterprise selected). It also includes 'Advanced' settings for 'Version control' (Git) and 'Work item process' (Basic). The 'Create' button at the bottom right is highlighted with a red rectangle.

Projects - Home

keisuketakahashi

Projects My work items My pull requests

mlops-quickstart

New organization

What's new

Sprint 194 release notes

Azure Pipelines will post neutral status to GitHub when a build is skipped. Check out the release notes for details.

Organization settings

Waiting for web.vortex.data.microsoft.com...

Create new project

Project name *

MDW

Description

Visibility

Public

Anyone on the internet can view the project. Certain features like TFVC are not supported.

Enterprise

Members of your enterprise can view the project.

Private

Only people you give access to will be able to view this project.

Advanced

Version control

Git

Work item process

Basic

Create

Azure DevOps プロジェクトを作成

Summary - Overview

keisuketakahashi / MDW / Overview / Summary

Search

Enterprise Invite

MDW

Overview

Summary

Dashboards

Wiki

Boards

Repos

Pipelines

Test Plans

Artifacts

Compliance

Project stats

No stats are available at this moment
Setup a service to see project activity.

Welcome to the project!

What service would you like to start with?

Boards Repos Pipelines

Test Plans Artifacts

or manage your services

Members 1

The screenshot shows the 'Summary - Overview' page of an Azure DevOps project named 'MDW'. The left sidebar contains navigation links for 'Azure DevOps', 'MDW', 'Overview', 'Summary', 'Dashboards', 'Wiki', 'Boards', 'Repos', 'Pipelines', 'Test Plans', 'Artifacts', and 'Compliance'. The main content area features a central illustration of a person working at a desk with a dog nearby. Below the illustration, the text 'Welcome to the project!' is displayed, followed by the question 'What service would you like to start with?'. A horizontal bar of buttons includes 'Boards', 'Repos', 'Pipelines', 'Test Plans', and 'Artifacts'. At the bottom, there is a link to 'manage your services'. To the right, a 'Project stats' section indicates 'No stats are available at this moment' and suggests 'Setup a service to see project activity.' Below this is a 'Members' section showing one user profile. The browser address bar shows the URL https://dev.azure.com/keisuketakahashi/MDW.

Azure DevOps プロジェクトを作成

Screenshot of the Azure DevOps Project Overview page for the "MDW" project.

The left sidebar shows the project navigation menu:

- Overview
- Summary
- Dashboards
- Wiki
- Boards
- Repos** (highlighted with a red box)
- Pipelines
- Test Plans
- Artifacts
- Compliance

The main content area displays the "Welcome to the project!" message with a cartoon illustration of a person working at a desk with a dog. Below the illustration, there are several service links:

- Boards
- Repos** (highlighted with a red box)
- Pipelines
- Test Plans
- Artifacts
- or manage your services

The right sidebar shows the "Project stats" section, which currently displays the message: "No stats are available at this moment. Setup a service to see project activity." It also shows the "Members" section, which lists one member (Keisuke Takahashi).

Page URL: https://dev.azure.com/keisuketakahashi/MDW

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps interface for managing repositories. The left sidebar lists various project components: Overview, Boards, Repos (selected), Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, Artifacts, and Compliance. The main content area displays the details for the 'MDW' repository under the 'keisuketakahashi / MDW / Repos / Files' path. A message at the top states 'MDW is empty. Add some code!'. Below this, there are sections for cloning the repository via HTTPS or SSH, generating Git credentials, pushing an existing repository from the command line, importing a repository, and initializing the main branch with a README or .gitignore. A red box highlights the 'Initialize' button, which is associated with the 'Add a README' checkbox and a dropdown menu set to 'None'.

keisuketakahashi / MDW / Repos / Files / MDW

MDW is empty. Add some code!

Clone to your computer

HTTPS SSH https://keisuketakahashi@dev.azure.com/keisuketakahashi/MDW

OR Clone in VS Code

Generate Git Credentials

Having problems authenticating in Git? Be sure to get the latest version [Git for Windows](#) or our plugins for [IntelliJ](#), [Eclipse](#), [Android Studio](#) or [Windows command line](#).

Push an existing repository from command line

HTTPS SSH

```
git remote add origin https://keisuketakahashi@dev.azure.com/keisuketakahashi/MDW/_git/MDW
```

Import a repository

Import

Initialize main branch with a README or .gitignore

Add a README

Add a .gitignore: None

Initialize

Project settings Waiting for dev.azure.com...

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps interface for a repository named "MDW". The left sidebar contains navigation links for Overview, Boards, Repos (selected), Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, Artifacts, and Compliance. The main content area displays the "Files" tab for the "main" branch, showing a single file "README.md". A table lists the file's details: Name (README.md), Last change (Just now), and Commits (575006db Added README.md Keisuke Takahashi). Below the table, sections for Introduction, Getting Started, Build and Test, and Contribute are present, each with TODO instructions. A "Set up build" button is located in the top right corner.

MDW - Repos

keisuketakahashi / MDW / Repos / Files / MDW

Search

MDW

Overview

Boards

Repos

Files

Commits

Pushes

Branches

Tags

Pull requests

Pipelines

Test Plans

Artifacts

Compliance

Project settings

Processing request...

MDW

main

README.md

Set up build

Clone

Name ↑

Last change

Commits

M README.md

Just now

575006db Added README.md Keisuke Takahashi

Introduction

TODO: Give a short introduction of your project. Let this section explain the objectives or the motivation behind this project.

Getting Started

TODO: Guide users through getting your code up and running on their own system. In this section you can talk about:

1. Installation process
2. Software dependencies
3. Latest releases
4. API references

Build and Test

TODO: Describe and show how to build your code and run the tests.

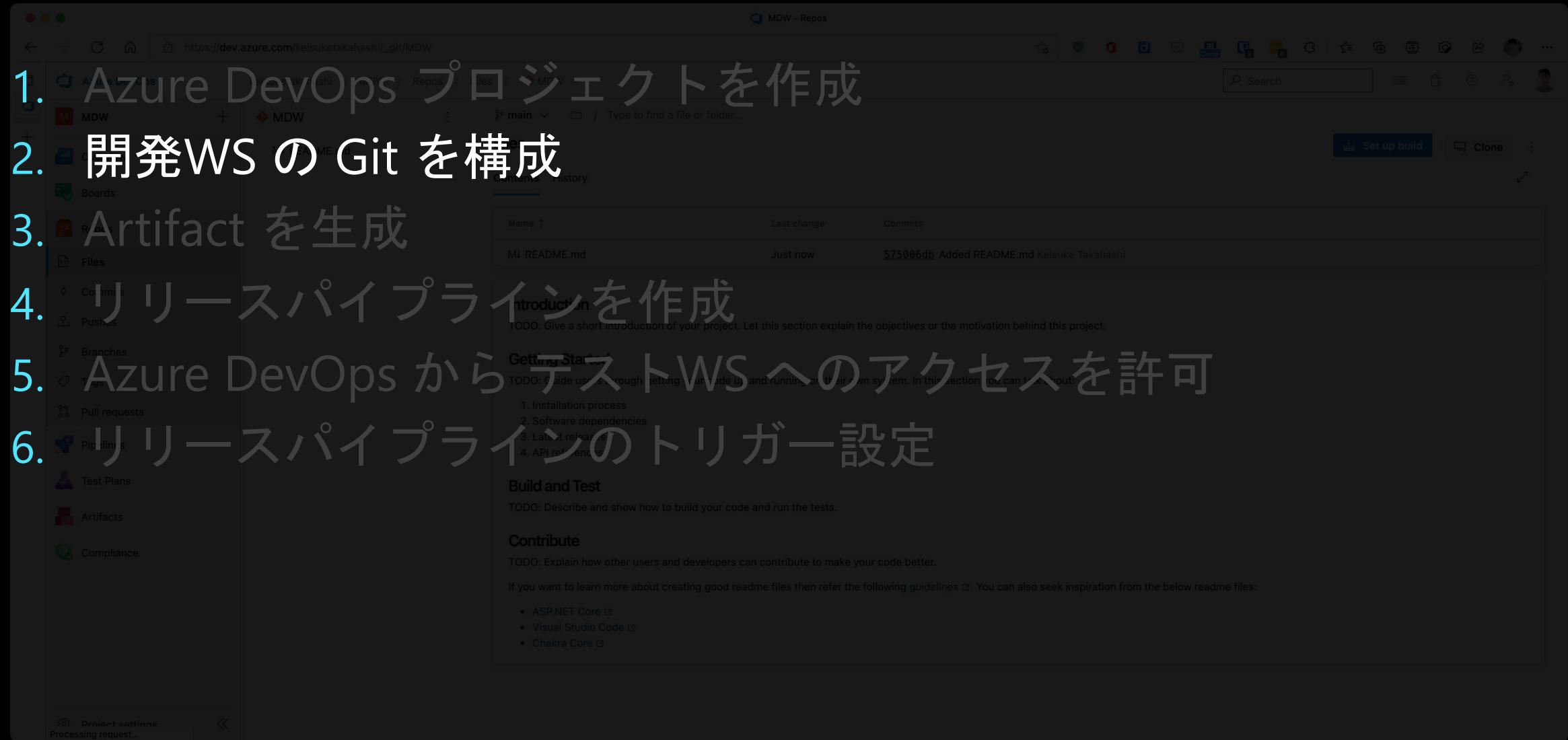
Contribute

TODO: Explain how other users and developers can contribute to make your code better.

If you want to learn more about creating good readme files then refer the following [guidelines](#). You can also seek inspiration from the below readme files:

- [ASP.NET Core](#)
- [Visual Studio Code](#)
- [Chakra Core](#)

CI/CD の構築手順 (例)



The screenshot shows the Azure DevOps repository interface for a project named "MDW". The main view displays a single file, "README.md", which contains the text "Added README.md Keisuke Takahashi". The interface includes a sidebar with options like Boards, Files, Columns, Pushes, Branches, Pull requests, Pipelines, Test Plans, Artifacts, and Compliance. At the top right, there are buttons for "Set up build" and "Clone". The title bar indicates the current view is "MDW - Repos".

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6. リリースパイプラインのトリガー設定

開発WS の Git を構成

20210727a-synapse-demo-dev - Azure Synapse Analytics

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev

Synapse Analytics ワークスペース
20210727a-synapse-demo-dev

新規 ▾

取り込み
1回限りの、またはスケジュールされたデータの読み込みを実行します。

探索と分析
データから分析情報を取得する方法について説明します。

可視化
Power BI 機能を使用して対話型レポートを作成します。

詳細情報

ナレッジセンター パートナーの参照

最近のリソース

最近のリソースがありません
最近開いたリソースがここに表示されます。

開発WS の Git を構成

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev

リポジトリの構成

数回のクリックだけで、ワークスペースを Git リポジトリに接続します。CI/CD に関するベスト プラクティスの詳細については、こちらのドキュメントを参照してください。 詳細情報

設定 ライブ モードの上書き 切断

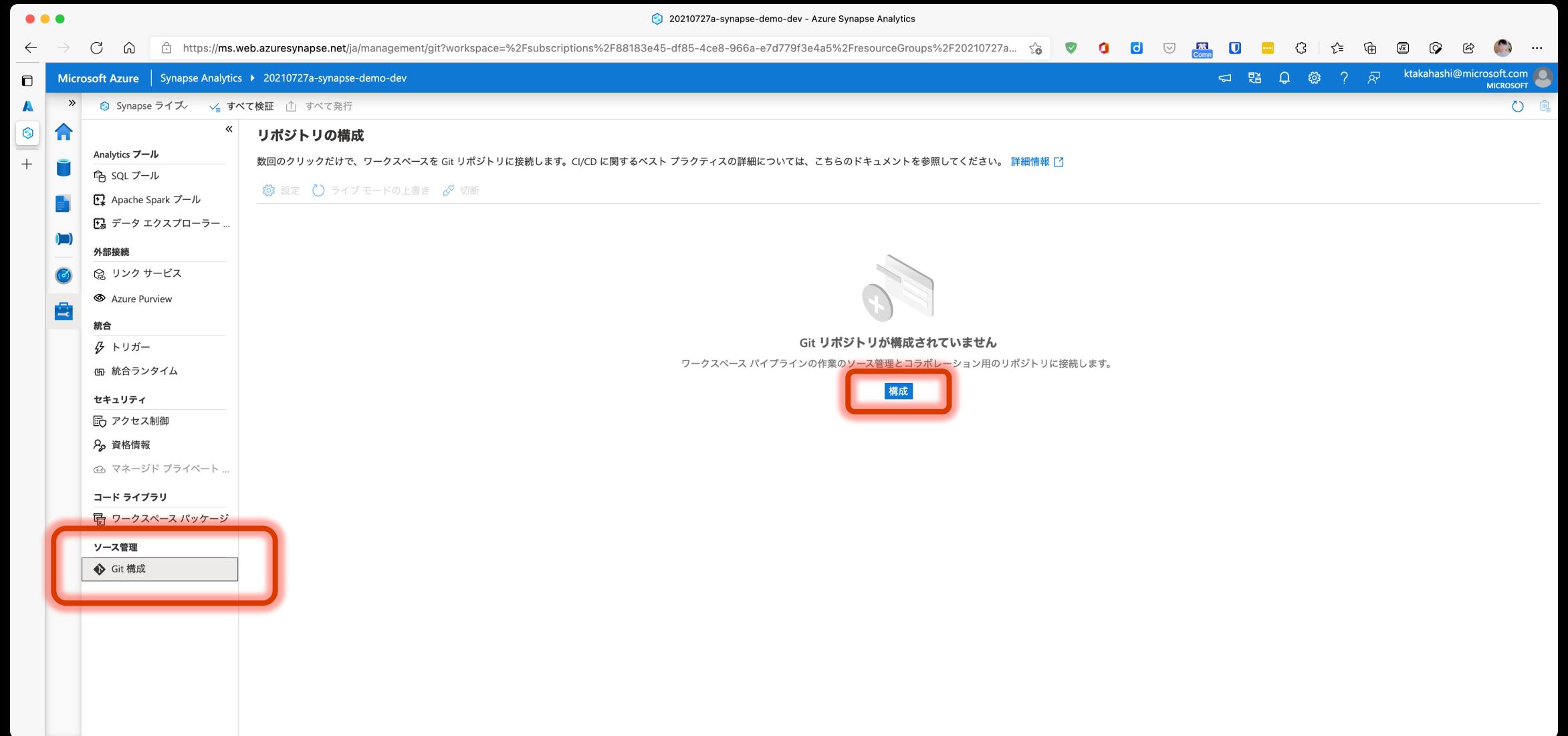
Git リポジトリが構成されていません

ワークスペース パイプラインの作業のソース管理とコラボレーション用のリポジトリに接続します。

構成

ソース管理

Git 構成



開発WS の Git を構成

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev

リポジトリの構成

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設定 ライブ モードの上書き 切断

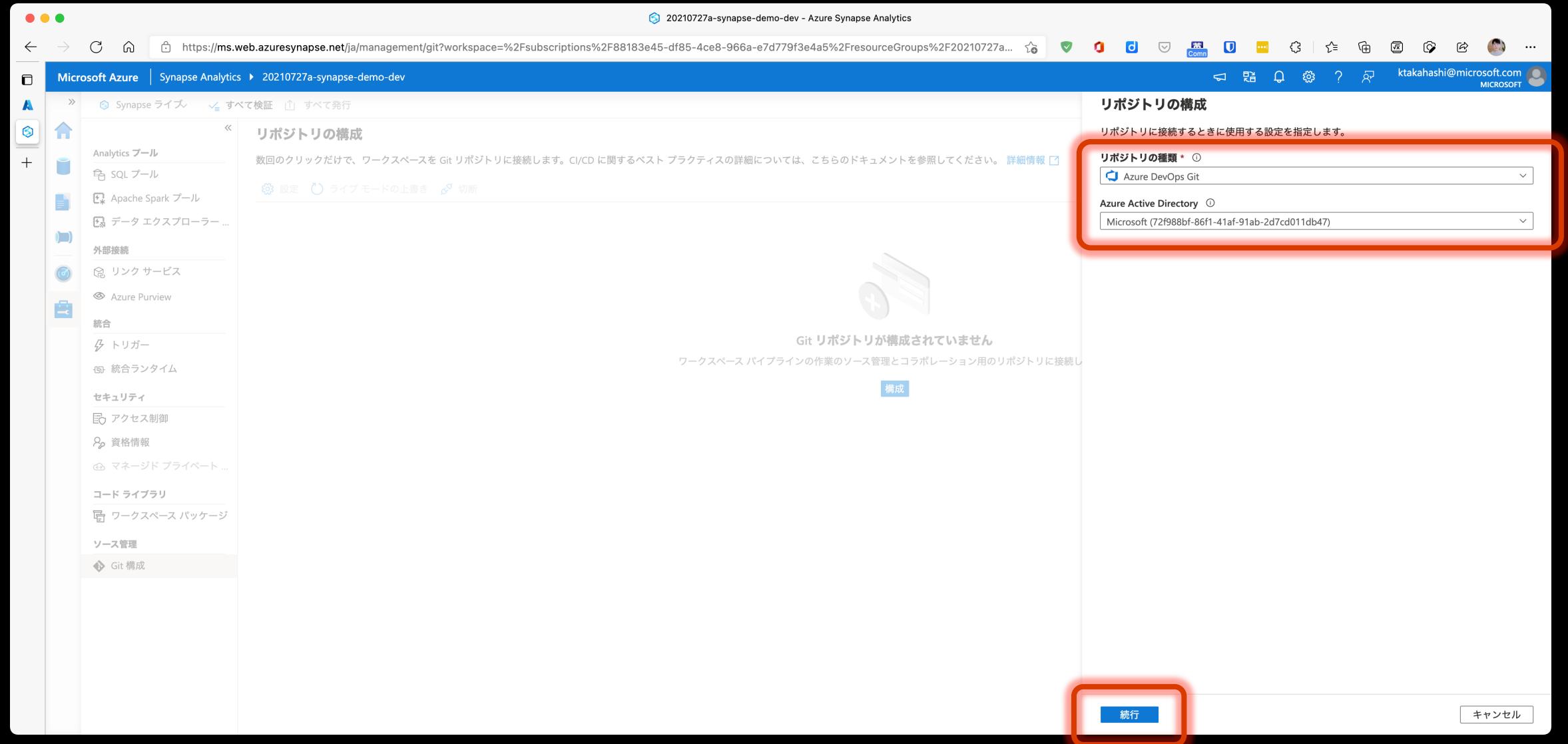
リポジトリの種類 * ①
Azure DevOps Git

Azure Active Directory ①
Microsoft (72f988bf-86f1-41af-91ab-2d7cd011db47)

Git リポジトリが構成されていません

ワークスペース バイブルайнの作業のソース管理とコラボレーション用のリポジトリに接続し 構成

続行 キャンセル



開発WS の Git を構成

The screenshot shows the Azure DevOps interface for managing repositories. The left sidebar displays project navigation links such as Overview, Boards, Repos, Pipelines, Test Plans, Artifacts, and Compliance. The main area is titled 'Project Settings' for the 'MDW' project. Under 'General', there are sections for Overview, Teams, Permissions, Notifications, Service hooks, and Dashboards. Under 'Boards', there are Project configuration, Team configuration, and GitHub connections. Under 'Pipelines', there are Agent pools, Parallel jobs, Settings, Test management, Release retention, Service connections, and XAML build services. Under 'Repos', there is a link to 'Repositories'. The top navigation bar shows the URL https://dev.azure.com/keisuketakahashi/MDW/_settings/repositories. The title bar says 'Settings - Repositories (MDW) - Settings'. The right side of the screen shows the 'All Repositories' list, with one repository named 'MDW CICD Demo' listed.

keisuketakahashi / MDW / Settings / Repositories

Search

All Repositories

MDW CICD Demo

General

- Overview
- Teams
- Permissions
- Notifications
- Service hooks
- Dashboards

Boards

- Project configuration
- Team configuration
- GitHub connections

Pipelines

- Agent pools
- Parallel jobs
- Settings
- Test management
- Release retention
- Service connections
- XAML build services

Repos

Create

Filter by keywords

Project settings

開発WS の Git を構成

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リポジトリの構成

数回のクリックだけで、ワークスペースを Git リポジトリに接続します。CI/CD に関するベスト プラクティスの詳細については、こちらのドキュメントを参照してください。 詳細情報

設定 ライブ モードの上書き 切断

Git リポジトリが構成されていません

ワークスペース バイブルайнの作業のソース管理とコラボレーション用のリポジトリに接続

構成

リポジトリの構成

Microsoft (72f988bf-86f1-41af-91ab-2d7cd011db47)

リポジトリに接続するときに使用する設定を指定します。

リポジトリを選択します リポジトリ リンクの使用

Azure DevOps の組織名 * ①
keisuketakahashi

プロジェクト名 * ①
MDW

リポジトリ名 * ①
MDW CI/CD Demo

コラボレーション プランチ * ①
main

発行プランチ * ①
workspace_publish

ルート フォルダー * ①
/

既存のリソースのインポート
 既存のリソースをリポジトリにインポートする

このプランチへのリソースのインポート ①
main

適用 戻る キャンセル



開発WS の Git を構成

The screenshot shows the Azure Synapse Analytics workspace settings page for the workspace '20210727a-synapse-demo-dev'. The left sidebar shows various workspace configurations like Analytics Pool, SQL Pool, Apache Spark Pool, etc. The main area is titled 'リポジトリの構成' (Repository Configuration) and displays basic repository details such as provider (Azure DevOps Git), organization (keisuketakahashi), project name (MDW), repository name (MDW CICD Demo), and branch (main). A 'Git 構成' (Git Configuration) section is open, showing a '作業ブランチの設定' (Working Branch Configuration) dialog. This dialog has a red border around it. It contains a radio button for '新規作成' (Create New) selected, a radio button for '既存のものを使用' (Use Existing), and a text input field containing 'feature/1'. At the bottom right of the dialog is a blue '保存' (Save) button, also highlighted with a red border.

20210727a-synapse-demo-dev - Azure Synapse Analytics

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev

リポジトリの構成

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リポジトリの種類 Azure DevOps Git

Azure DevOps 組織 keisuketakahashi

プロジェクト名 MDW

リポジトリ名 MDW CICD Demo

コラボレーション ブランチ main

発行ブランチ workspace_publish

ルート フォルダー /

最後に発行されたコミット

作業ブランチの設定

作業ブランチ 新規作成 既存のものを使用

feature/1

保存

開発WS の Git を構成

The screenshot shows the Microsoft Azure portal interface for managing a Synapse Analytics workspace. The URL in the address bar is <https://ms.web.azuresynthesize.net/ja/management/git?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2FresourceGroups%2F20210727a...>. The left sidebar shows various workspace settings like Analytics Pool, SQL Pool, Apache Spark Pool, etc. The 'Git Configuration' section is currently selected. The main content area displays the 'Repository Configuration' settings for the workspace.

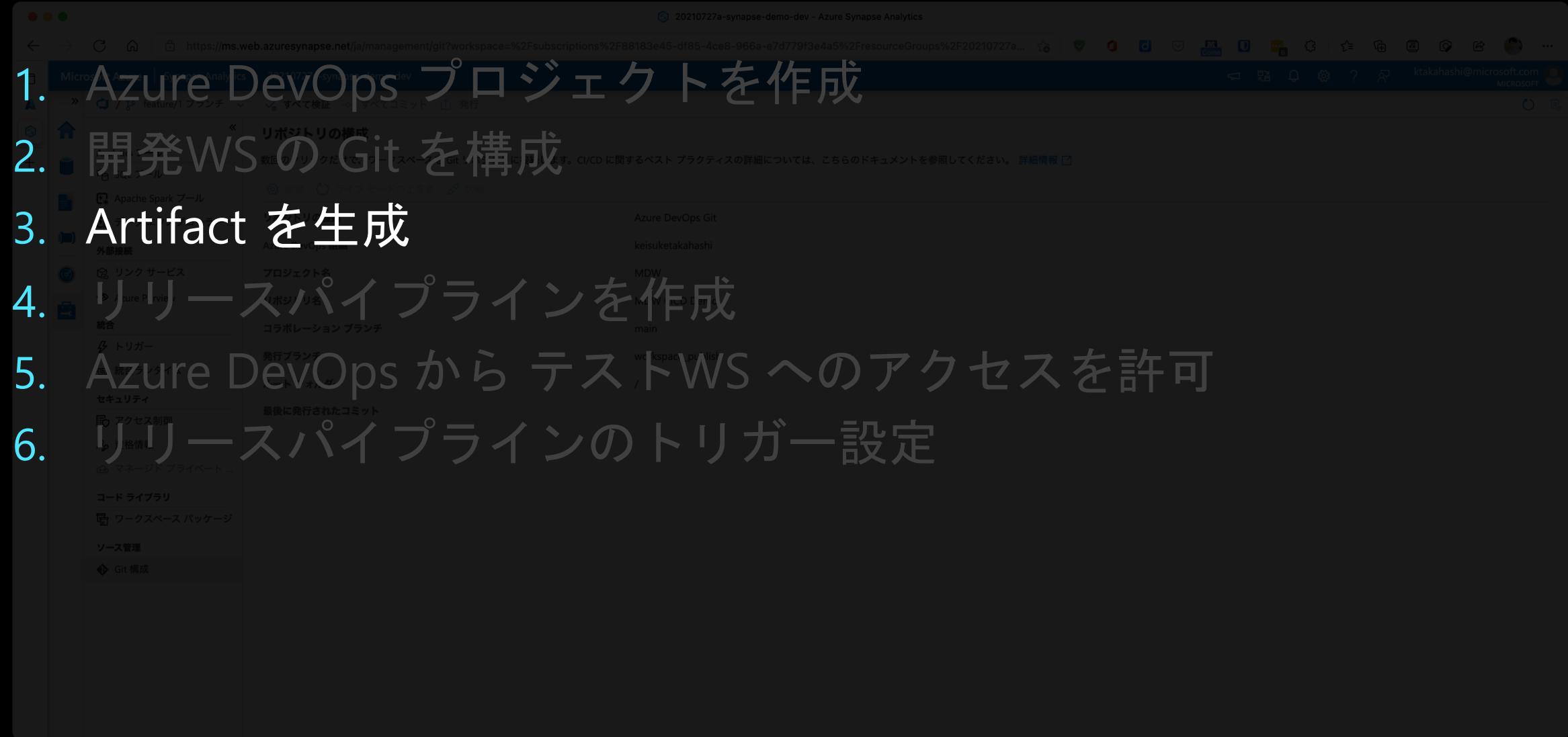
リポジトリの構成

数回のクリックだけで、ワークスペースを Git リポジトリに接続します。CI/CD に関するベスト プラクティスの詳細については、こちらのドキュメントを参照してください。 [詳細情報](#)

[設定](#) [ライブ モードの上書き](#) [切断](#)

リポジトリの種類	Azure DevOps Git
Azure DevOps 組織	keisuketakahashi
プロジェクト名	MDW
リポジトリ名	MDW CICD Demo
コラボレーション ブランチ	main
発行ブランチ	workspace_publish
ルート フォルダー	/
最後に発行されたコミット	(No commit history shown)

CI/CD の構築手順 (例)



Artifact を生成

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev - Azure Synapse Analytics

feature/1 ブランチ / 検索 すべて検証 すべてコミット 発行

開発 リソースを名前でフィルター

開発

モニター 管理

表示する項目がありません
上の [+] ボタンを使用して、新しい項目を作成してください。 詳細情報

項目の選択
リソース エクスプローラーを使用して、選択するか、新しい項目を作成します

Artifact を生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. The left sidebar has '開発' (Development) selected. The main area displays a 'Create' dialog with a red box highlighting the 'SQL スクリプト' (SQL Script) option under the 'リソースを名前でフィルター' (Filter by name) section. Below the dialog, there are two sections: '表示する項目がありません' (No items to display) with a note to use the '+' button to create new items, and '項目の選択' (Select item) with a note about using the Resource Explorer to select or create new items.

20210727a-synapse-demo-dev - Azure Synapse Analytics

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev

検索

開発

リソースを名前でフィルター

- SQL スクリプト
- KQL スクリプト
- ノートブック
- データ フロー
- ジョブ定義の Apache Spark
- ギャラリーを参照
- インポート

表示する項目がありません
上の [+] ボタンを使用して、新しい項目を作成してください。 詳細情報

項目の選択
リソース エクスプローラーを使用して、選択するか、新しい項目を作成します

Artifact を生成

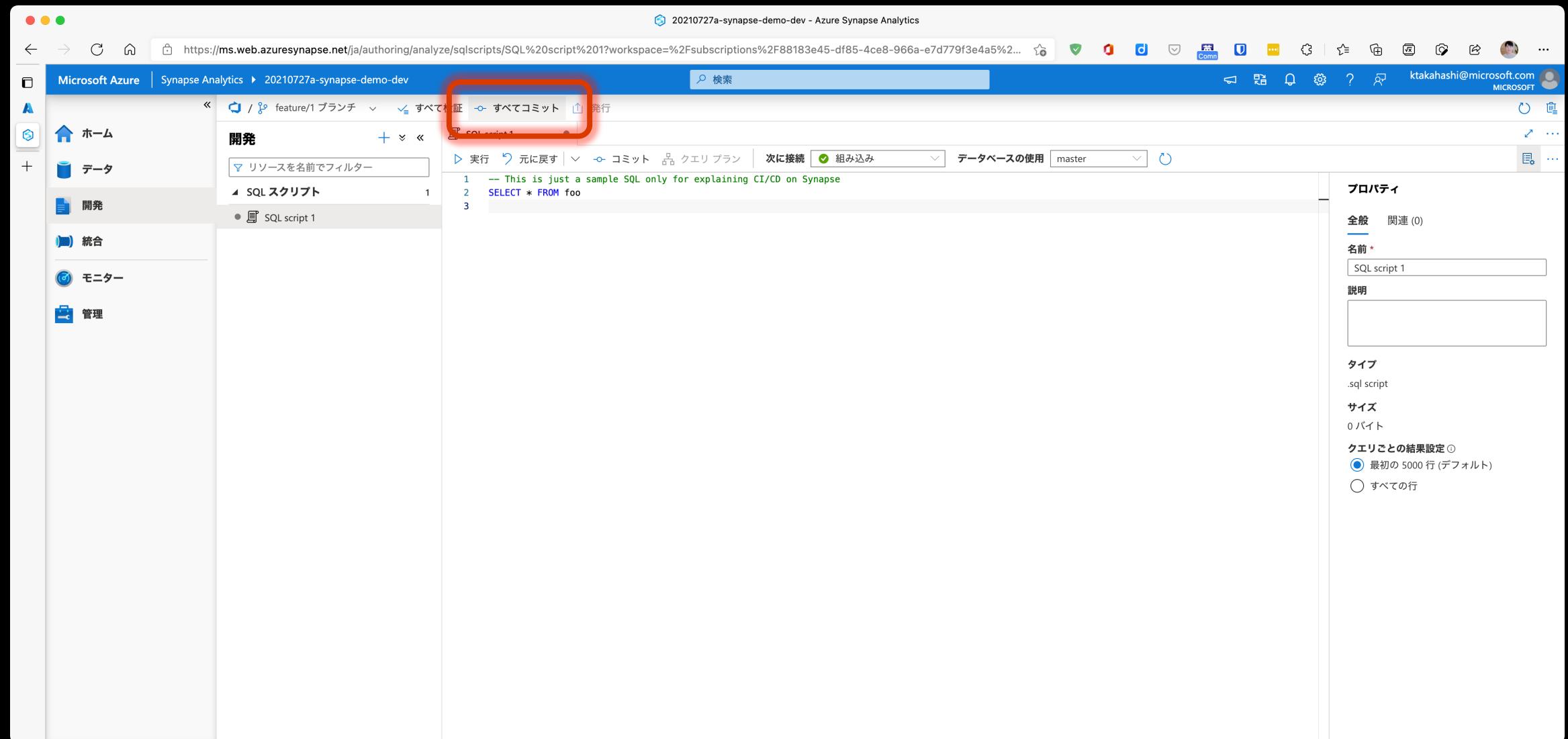
The screenshot shows the Microsoft Azure Synapse Analytics development interface. The URL in the browser is <https://ms.web.azure-synapse.net/ja/authoring/analyze/sqlscripts/SQL%20script%201?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2...>. The main area displays a SQL script named "SQL script 1" with the following content:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

The "Commit" button is highlighted with a red box. To the right, the "Properties" pane shows the following details:

- 名前 ***: SQL script 1
- 説明**: (empty)
- タイプ**: .sql script
- サイズ**: 0 バイト
- クエリごとの結果設定**:
 - 最初の 5000 行 (デフォルト)
 - すべての行

Artifact を生成



The screenshot shows the Microsoft Azure Synapse Analytics development interface. On the left, the navigation bar includes Home, Data, Development (which is selected), Integration, Monitor, and Management. The main area displays a development workspace titled "feature/1 ブランチ". A red box highlights the "すべてコミット" (Commit All) button in the toolbar above the code editor. The code editor contains a single SQL script:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

The toolbar also includes "実行" (Run), "元に戻す" (Undo), "コミット" (Commit), "クエリプラン" (Query Plan), "次に接続" (Next Connection), "組み込み" (Built-in), and "データベースの使用" (Database Usage) dropdowns, along with a "master" database selection. To the right, the "プロパティ" (Properties) panel shows the following details:

- 全般 関連 (0)
- 名前 * SQL script 1
- 説明
- タイプ .sql script
- サイズ 0 バイト
- クエリごとの結果設定 ① 最初の 5000 行 (デフォルト) すべての行

Artifact を生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. On the left, the navigation bar includes Home, Data, Development (which is selected), Integration, Monitor, and Management. The main area displays a 'feature/1 プランチ' workspace under the '開発' tab. A 'SQL script 1' editor window is open, containing the following SQL code:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

Below the editor are execution options: '実行' (Run), '元に戻す' (Undo), 'コミット済み' (Committed), 'クエリ プラン' (Query Plan), '次に接続' (Next Connection), '組み込み' (Built-in), and 'データベースの使用' (Database Usage) set to 'master'. A red box highlights a success message in the top right corner: 'Git リポジトリに正常にコミットされました' (Commit succeeded to Git repository). The message continues: 'すべての変更が GIT リポジトリに正常にコミットされました' (All changes committed to GIT repository successfully). The right side of the screen shows the 'Properties' panel for the 'SQL script 1' artifact.

Properties for 'SQL script 1':

- 名前 *: SQL script 1
- 説明: (empty)
- タイプ: .sql script
- サイズ: 0 バイト
- クエリごとの結果設定: 最初の 5000 行 (デフォルト) すべての行

CI/CD の構築手順 (例)

The screenshot shows the Azure DevOps interface with a dark theme. On the left, a vertical sidebar lists navigation items: ホーム, 開発, モニター, and 管理。The main area displays a numbered list of steps for setting up a CI/CD pipeline:

1. Azure DevOps プロジェクトを作成
2. 開発WS の Git を構成
3. Artifact を生成
4. リリースパイプラインを作成
5. Azure DevOps から テストWS へのアクセスを許可
6. リリースパイプラインのトリガー設定

On the right side of the interface, there is a detailed view of a specific artifact. The artifact is named "SQL script 1" and is of type "sql script". It has a size of 0 bytes and is set to return the first 5000 rows by default. A message at the top right indicates that the commit was successful: "Git リポジトリに正常にコミットされました" (Commit succeeded to the repository).

リリースパイプラインを作成

Azure DevOps Releases - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

Search

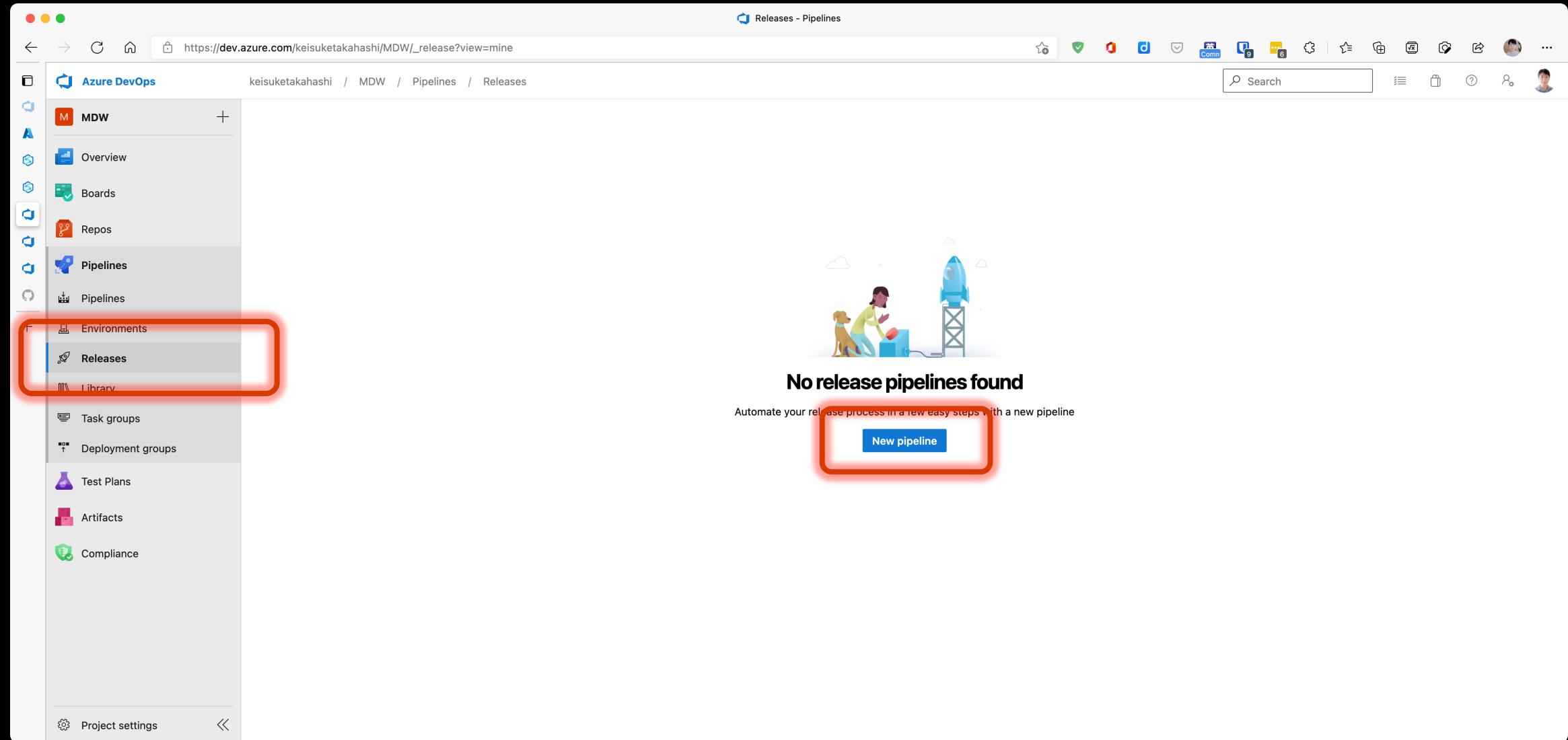
MDW

- Overview
- Boards
- Repos
- Pipelines
- Pipelines
- Environments
- Releases**
- Library
- Task groups
- Deployment groups
- Test Plans
- Artifacts
- Compliance

No release pipelines found

Automate your release process in a few easy steps with a new pipeline

New pipeline



リリースパイプラインを作成

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Artifacts | + Add
+ Add an artifact
Schedule not set

Stages | + Add
Stage 1 Select a template

Select a template
Or start with an Empty job

Empty job

Featured

- Azure App Service deployment
- Deploy a Java app to Azure App Service
- Deploy a Node.js app to Azure App Service
- Deploy a PHP app to Azure App Service and Azure Database for MySQL
- Deploy a Python app to Azure App Service and Azure database for MySQL
- Deploy to a Kubernetes cluster
- IIS website and SQL database deployment

Others

- Azure App Service deployment with continuous monitoring
- Azure App Service deployment with slot

Search

Project settings Waiting for dev.azure.com...

リリースパイプラインを作成

The screenshot shows the Azure DevOps interface for creating a new release pipeline. The left sidebar navigation bar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area displays the 'New release pipeline - Pipelines' page under 'keisuketakahashi / MDW / Pipelines / Releases'. The pipeline editor shows an 'Artifacts' section with a placeholder for adding artifacts, and a 'Stages' section containing a single stage named 'Stage 1' which is currently empty ('1 job, 0 task'). To the right, a detailed view of 'Stage 1' is shown with fields for 'Stage name' (set to 'Stage 1') and 'Stage owner' (set to 'Keisuke Takahashi'). A red box highlights the 'Delete' button for the stage.

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

Search

Save Create release View releases

Artifacts | + Add

Stages | + Add

Add an artifact

Schedule not set

Stage 1
1 job, 0 task

Stage

Stage 1

Properties

Name and owners of the stage

Stage name

Stage 1

Stage owner

Keisuke Takahashi

Delete Move

Project settings

Waiting for dev.azure.com...

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'New release pipeline - Pipelines' screen under 'keisuketakahashi / MDW / Pipelines / Releases'. The pipeline structure is shown with 'Artifacts' and 'Stages' sections. A red box highlights the 'Add an artifact' button in the Artifacts section. To the right, a modal window titled 'Add an artifact' is open, also highlighted with a red box. It shows the 'Source type' dropdown set to 'Build' (which is also highlighted with a red box) and the 'Azure Re...' option selected. The modal contains fields for 'Project' (set to 'MDW'), 'Source (repository)' (set to 'MDW CICD Demo'), 'Default branch' (set to 'main'), and 'Default version' (set to 'Latest from the default branch'). There are also checkboxes for 'Checkout submodules' and 'Checkout files from LFS', both of which are unchecked. The 'Shallow fetch depth' and 'Source alias' fields are present but empty. A large red box encloses the entire 'Add an artifact' modal.

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'MDW' (selected), 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Test Plans', 'Artifacts', and 'Compliance'. The main area displays the 'All pipelines > New release pipeline' screen. It features two sections: 'Artifacts' and 'Stages'. The 'Artifacts' section contains a card for 'MDW CICD Demo ARM' and a button labeled 'Add an artifact'. The 'Stages' section shows 'Stage 1' with '1 job, 0 task'. A red box highlights the 'Add an artifact' button. A modal window titled 'Add an artifact' is open on the right, showing the 'Source type' section with 'Build' (selected) and 'Azure Repos' (highlighted with a red box). Below it, a large red box highlights the 'Project', 'Source (repository)', 'Default branch', and 'Source alias' fields. The 'Project' dropdown shows 'MDW'. The 'Source (repository)' dropdown shows 'MDW CICD Demo'. The 'Default branch' dropdown shows 'feature/1' and 'main'. The 'Source alias' dropdown shows '_MDW CICD Demo'. A note at the bottom of the modal states: 'The artifacts published by each version will be available for deployment in release pipelines. The last successful version of MDW CICD Demo published the following artifacts: credential, integrationRuntime, linkedService and 1 more'.

リリースパイプラインを作成 < 発行ブランチを生成

Microsoft Azure | Synapse Analytics > 20210727a-synapse-demo-dev - Azure Synapse Analytics

ホーム 開発 モニター 管理

開発 リソースを名前でフィルター

main プラン ... すべて検証 すべてコミット 発行

開発

表示する項目がありません
上の [+] ボタンを使用して、新しい項目を作成してください。 詳細情報

リソースを名前でフィルター

リソース エクスプローラーを使用して、選択するか、新しい項目を作成します

項目の選択

リリースパイプラインを作成 < 発行ブランチを生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. The top navigation bar displays the URL <https://ms.web.azuresynthesize.net/ja/authoring/analyze?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2FresourceGroups%2F2021072...> and the title "20210727a-synapse-demo-dev - Azure Synapse Analytics". The left sidebar includes links for Home, Data, Development (which is selected), Integration, Monitor, and Management.

In the main area, there is a "開発" (Development) section with a "リソースを名前でフィルター" (Filter by name) input field. A red box highlights the "発行" (Release) button in the top right corner of this section.

On the right side, there is a "項目の選択" (Select item) section featuring two cylinders and a code editor icon. Below it, the text reads: "リソース エクスプローラーを使用して、選択するか、新しい項目を作成します" (Use the Resource Explorer to select or create a new item). A red box highlights a success message: "発行が完了しました" (Release completed) with the note: "コラボレーション ブランチから発行する新しい変更はありません" (No new changes from the collaboration branch have been released).

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'keisuketakahashi / MDW / Pipelines / Releases', and various project and pipeline management links. The main area displays the 'Artifacts' and 'Stages' sections. The 'Artifacts' section lists 'MDW CICD Demo ARM' and 'Add an artifact'. The 'Stages' section shows 'Stage 1' with '1 job, 0 task'. To the right, a modal window titled 'Add an artifact' is open, showing the 'Source type' section with 'Build' and 'Azure Repo...' selected (highlighted by a red box). Below this, a dropdown menu shows '6 more artifact types'. The 'Project' dropdown is set to 'MDW'. The 'Source (repository)' dropdown is set to 'MDW CICD Demo'. The 'Default branch' dropdown is set to 'workspace_publish'. The 'Default version' dropdown is set to 'Latest from the default branch'. Under 'Latest from the default branch', checkboxes for 'Checkout submodules' and 'Checkout files from LFS' are available. The 'Shallow fetch depth' field is empty. The 'Source alias' field is set to 'MDW CICD Demo Artifacts'. At the bottom of the modal is a blue 'Add' button.

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar includes links for Overview, Boards, Repos, Pipelines (selected), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area displays the 'New release pipeline - Pipelines' page under 'keisuketakahashi / MDW / Pipelines / Releases'. The top navigation bar shows the URL https://dev.azure.com/keisuketakahashi/MDW/_releaseDefinition?definitionId=0&_a=definition-tasks&environmentId=-3. The page title is 'All pipelines > New release pipeline'. The tabs at the top are Pipeline (selected) and Tasks (with a dropdown arrow). Below the tabs, there is a stage named 'Stage 1' with the sub-label 'Deployment process'. A red box highlights the 'Tasks' tab. On the right side, there is a 'Stage name' input field containing 'Stage 1' and a large blue '+' button. The bottom left corner of the main content area has a 'Project settings' link.

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays a 'New release pipeline' screen with tabs for Pipeline, Tasks (selected), Variables, Retention, Options, and History. A search bar at the top right contains the text 'synapse'. Below it, a 'Marketplace' section lists various tasks, with the 'Synapse workspace deployment' task highlighted and its 'Add' button also highlighted with a red box.

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Agent job Run on agent

Add tasks Refresh

synapse

Synapse workspace deployment Deployment task for synapse workspace.

Add

Marketplace

- SARIF SAST Scans Tab Adds a 'Scans' tab to each Build Result and Work Item for viewing associated SARIF SAST logs.
- Replace Tokens Task to replace tokens in files.
- SonarQube Detect bugs, vulnerabilities and code smells across project branches and pull requests.
- ARM Outputs This extension reads the output values of an ARM deployment and sets them as Azure Pipelines variable
- Terraform Install terraform and run terraform commands to manage resources on Azure, AWS and GCP.
- SonarCloud Detect bugs, vulnerabilities and code smells across project branches and pull requests.
- Team Project Health Enable users to visualise the overall health of builds, delivering a visual cue similar to the Codify Build Light.
- IIS Web App Deployment Using WinRM

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface. The left sidebar is visible with various project management and development tools like Boards, Repos, Pipelines, and Test Plans. The main area displays the 'Dev to Staging release pipeline' under the 'Pipelines' section. The pipeline has one task named 'ARM Template deployment: Resource Group scope'. On the right, there's a marketplace search bar with 'Synapse' typed in. A red box highlights the 'Get it free' button for the 'Synapse workspace deployment' extension by Microsoft, which has 2,067 installs.

Dev to Staging release pipeline - Pipelines

Azure DevOps keisuketakahashi / MDW / Pipelines / Releases / New release pipeline

All pipelines > Dev to Staging release pipeline

Pipeline Tasks Variables Retention Options History

Dev to Staging Deployment process

Agent job Run on agent

ARM Template deployment: Resource Group scope ARM template deployment

Add tasks Refresh

Marketplace

Synapse workspace deployment Deployment task for synapse workspace.
by Microsoft | 2,067 installs Get it free

Azure Synapse This extension adds release tasks related to Azure Synapse artifacts.

QuerySurge Integration with Azure DevOps Automate data validation and testing of Big Data, Data Warehouses, Business Intelligence Reports and Enterprise Applications with full DevOps functionality for continuous testing.

Project settings

リリースパイプラインを作成

Synapse workspace deployment - Visual Studio Marketplace

Please help us make the Marketplace better! [Take the survey](#)

VisualStudio | Marketplace

Azure DevOps > Azure Pipelines > Synapse workspace deployment

Keisuke Takahashi (ktakahashi@microsoft.com) Sign out

 **Synapse workspace deployment**

Microsoft | 2,067 installs | ★★★★★ (12) | Free

Deployment task for synapse workspace.

[Get it free](#)

[Overview](#) [Q & A](#) [Rating & Review](#)

Synapse Workspace Deployment

Azure Synapse Analytics

Azure Synapse is an integrated analytics service that accelerates time to insight across data warehouses and big data systems. Azure Synapse brings together the best of SQL technologies used in enterprise data warehousing, Spark technologies used for big data, Pipelines for data integration and ETL/ELT, and deep integration with other Azure services such as Power BI, CosmosDB, and AzureML.

Synapse Workspace Deployment

Designed for synapse workspace artifacts deployment. You can use this extension to continuous delivery your synapse artifacts from one workspace to another.

Getting started

Step1: Search and get the extension from Azure DevOps [marketplace](#) if you have installed the extension before, uninstall it first.

Step 2: Make sure Azure DevOps pipeline's service principal has been granted the permission of subscription and also assigned as workspace admin for target workspace.

Step 3. Create a new task in the release pipeline stage. Search for Synapse workspace deployment, and then select

Categories
Azure Pipelines

Tags
Utility task

Works with
Azure DevOps Services
Azure DevOps Server

Resources
[License](#)

More Info

Version	1.9.3
Released on	11/25/2020, 8:45:58 AM
Last updated	11/18/2021, 2:19:34 PM
Publisher	Microsoft
Report	Report Abuse

[Twitter](#) [Facebook](#) [Email](#)

リリースパイプラインを作成

The screenshot shows a web browser window displaying the Visual Studio Marketplace at <https://marketplace.visualstudio.com/acquisition?itemName=AzureSynapseWorkspace.synapseciid-deploy>. The page is titled "Synapse workspace deployment". A red box highlights the "Select an Azure DevOps organization" dropdown menu, which contains the value "keisuketakahashi". Below the dropdown is a blue "Install" button. To the right of the dropdown, there is a "Permissions" section listing several API permissions. Further down is a "Terms of Service" section.

Visual Studio Marketplace

Please help us make the Marketplace better! [Take the survey](#)

Keisuke Takahashi (ktakahashi@microsoft.com) [Sign out](#) [Search](#)

Synapse workspace deployment

Organization Done

Select an Azure DevOps organization

keisuketakahashi

Install

For Azure DevOps Server

Download

Permissions

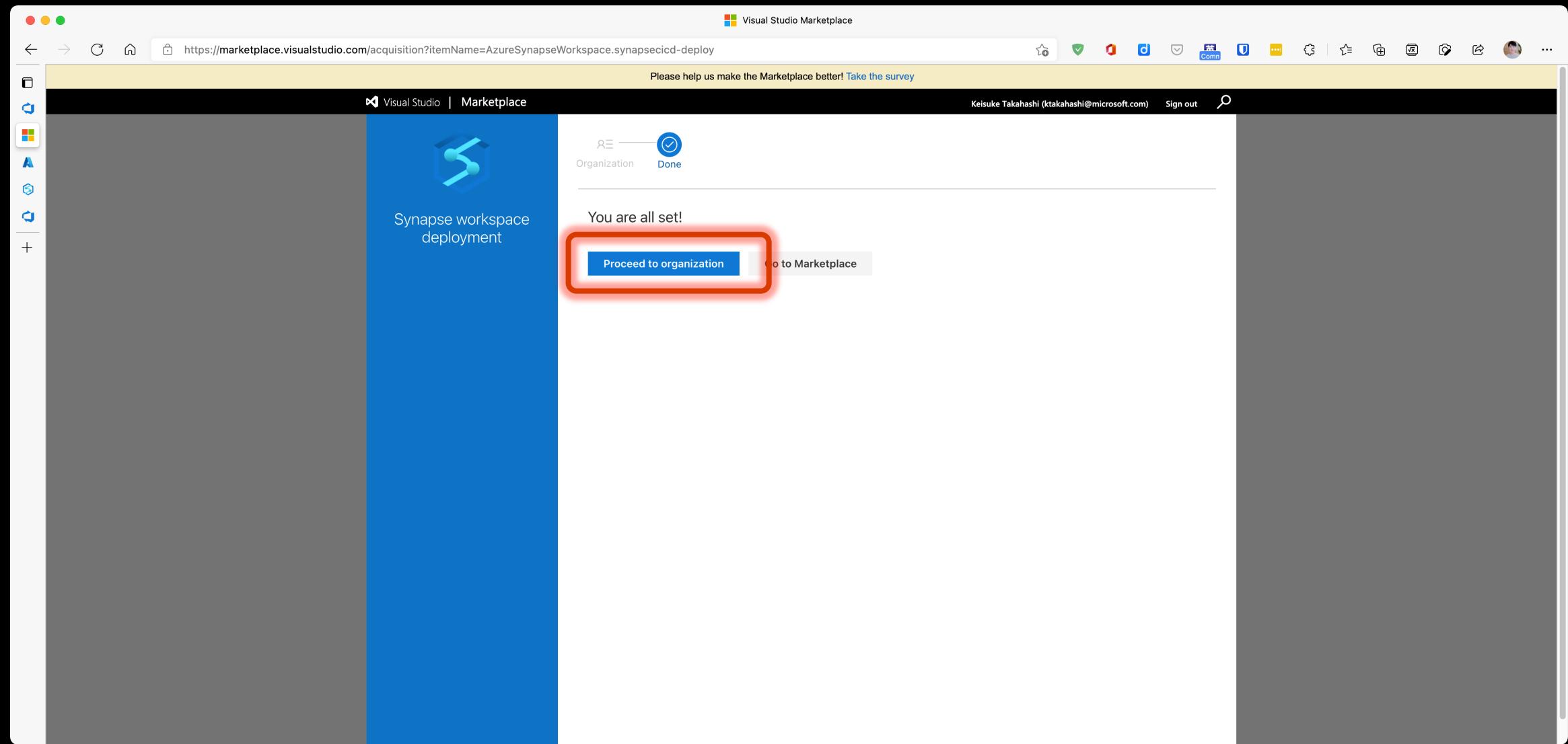
The extension uses the following permissions:

- Build (read)
- Code (read)
- Release (read)
- Service Endpoints (read and query)
- Variable Groups (read)

Terms of Service

By proceeding, you agree on behalf of all users in the organization that this extension is provided under this [license](#) and [Microsoft Online Services Privacy Statement](#).

リリースパイプラインを作成



リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays a 'New release pipeline - Pipelines' page with a breadcrumb trail: keisuketakahashi / MDW / Pipelines / Releases. The top navigation bar has tabs for Pipeline, Tasks (which is selected), Variables, Retention, Options, and History. A search bar at the top right contains the text 'Search'. Below the tabs, there's a 'Stage 1' section labeled 'Deployment process' with an 'Agent job' step. An 'Add tasks' button is available. A red box highlights the 'Synapse deployment task for workspace:' task, which has a warning message: 'Some settings need attention'. To the right of the task list is a 'Marketplace' section with a search bar containing 'synapse'. It lists several marketplace extensions: Synapse workspace deployment, SARIF SAST Scans Tab, Replace Tokens, SonarQube, ARM Outputs, Terraform, SonarCloud, Team Project Health, and IIS Web App Deployment Using WinRM.

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Agent job

Add tasks Refresh

synapse

Synapse deployment task for workspace:
Some settings need attention

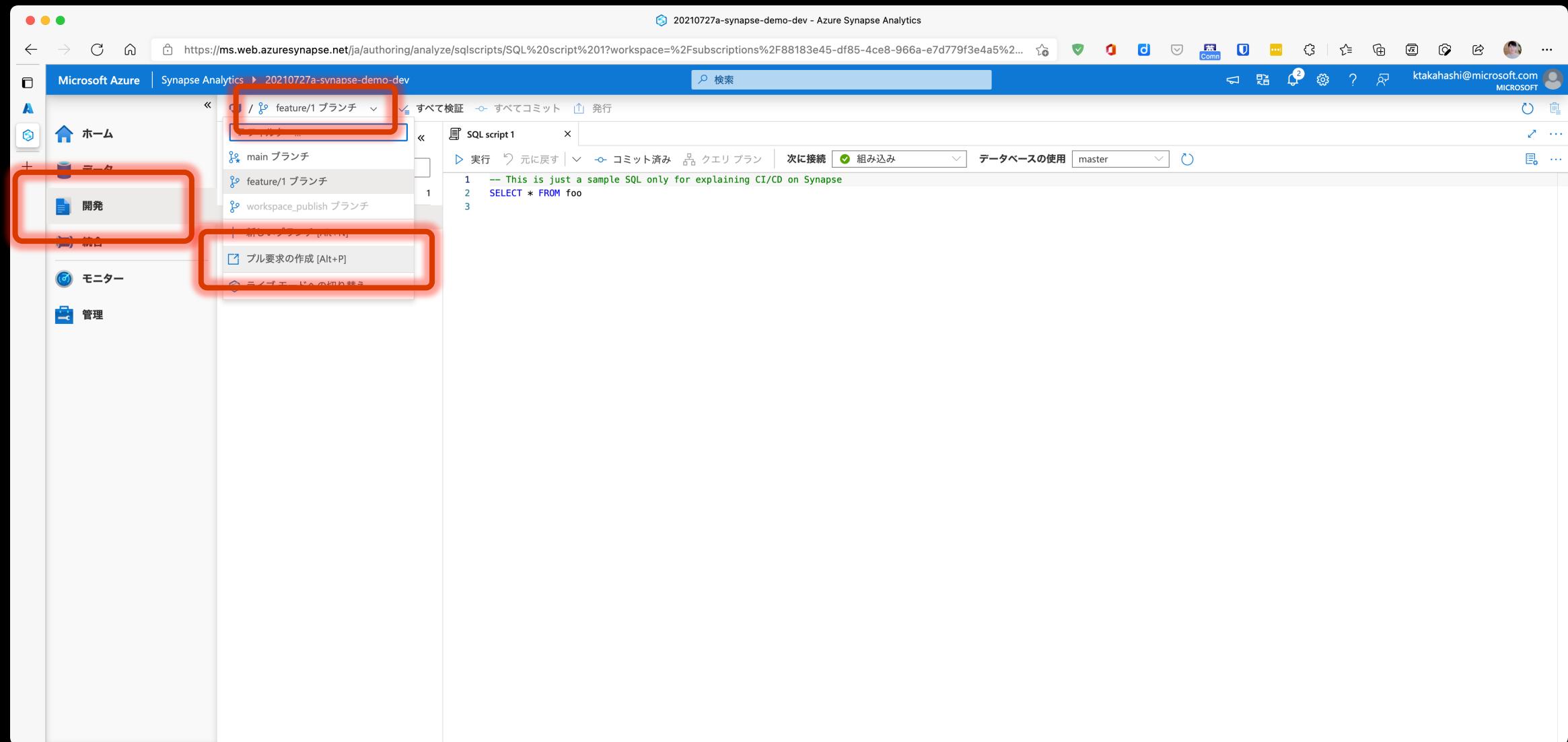
Marketplace

- Synapse workspace deployment
- SARIF SAST Scans Tab
- Replace Tokens
- SonarQube
- ARM Outputs
- Terraform
- SonarCloud
- Team Project Health
- IIS Web App Deployment Using WinRM

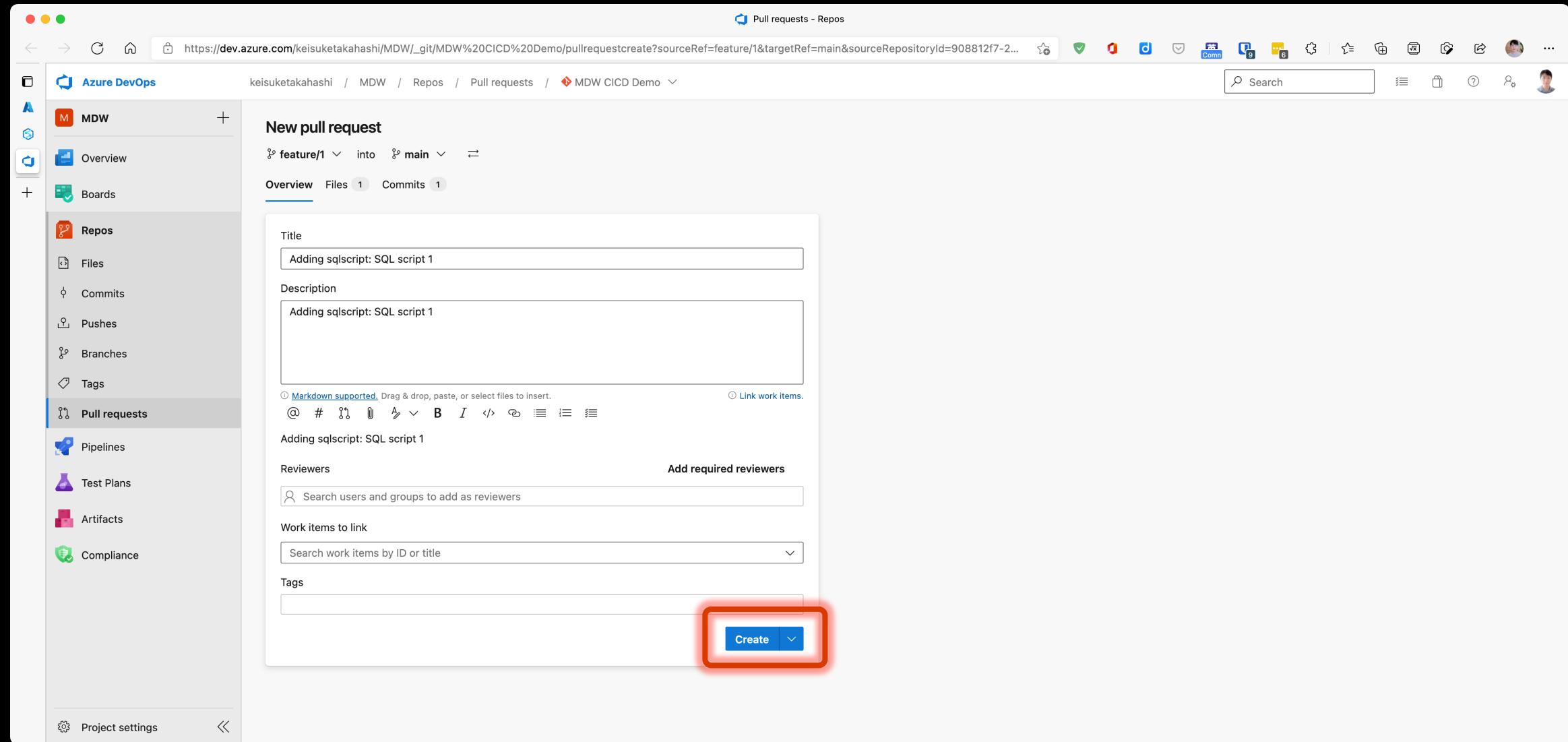
リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'New release pipeline - Pipelines' screen, which has tabs for Pipeline, Tasks (selected), Variables, Retention, Options, and History. A Stage 1 deployment process is shown with a 'Synapse workspace deployment' task. A modal dialog titled 'Select a file or folder' is open, listing artifacts from 'MDW CICD Demo Artifacts (Azure Repos Git)'. The 'readme.md' file is selected. Below the list, a note states: 'The artifacts published by each version will be available for deployment in release pipelines. The last successful version of MDW CICD Demo Artifacts (Azure Repos Git) published the following artifacts: readme.md.' The 'Location' field is set to 'MDW CICD Demo Artifacts'. The 'OK' button is highlighted with a red border.

リリースパイプラインを作成 < ARMテンプレートを生成



リリースパイプラインを作成 < ARMテンプレートを生成



The screenshot shows the 'New pull request' dialog in Azure DevOps. The URL in the browser is https://dev.azure.com/keisuketakahashi/MDW/_git/MDW%20CICD%20Demo/pullrequestcreate?sourceRef=feature/1&targetRef=main&sourceRepositoryId=908812f7-2.... The left sidebar shows the project structure under 'MDW'. The 'Pull requests' tab is selected. The main area displays the 'New pull request' form. The 'Title' field contains 'Adding sqldscript: SQL script 1'. The 'Description' field contains 'Adding sqldscript: SQL script 1'. Below the title, there are Markdown supported controls and a link work items button. The 'Reviewers' section has a search bar with 'Search users and groups to add as reviewers'. The 'Add required reviewers' section is empty. The 'Work items to link' section has a search bar with 'Search work items by ID or title'. The 'Tags' section is empty. At the bottom right of the dialog, a blue 'Create' button is highlighted with a red rectangular box.

リリースパイプラインを作成 < ARMテンプレートを生成

The screenshot shows the Azure DevOps interface for a pull request titled "Adding sqlscript: SQL script 1". The pull request is active, created by Keisuke Takahashi from the "feature/1" branch into the "main" branch. The left sidebar shows the "Pull requests" section selected. The top right features a toolbar with "Approve", "Complete" (which is highlighted with a red box), and a more options menu. The main content area includes sections for "Overview", "Files", "Updates", and "Commits". It also displays a note about "No merge conflicts" and a "Description" field containing the text "Adding sqlscript: SQL script 1". A comment input field says "Add a comment...". Below the description, a message indicates "Keisuke Takahashi created the pull request Just now". To the right, there are sections for "Reviewers" (both required and optional), "Tags", and "Work items", all currently empty.

リリースパイプラインを作成 < ARMテンプレートを生成

Screenshot of the Azure DevOps interface showing a pull request for "Adding sqlscript: SQL script 1". The pull request is active, merging "feature/1" into "main". A "Complete pull request" dialog is open, set to "Merge (no fast forward)". It includes options for post-merge actions: "Complete associated work items after merging" (checked), "Delete feature/1 after merging" (checked), and "Customize merge commit message" (unchecked). The "Complete merge" button at the bottom right is highlighted with a red box.

Pull request 4: Adding sqlscript: SQL script 1 - Repos

Azure DevOps keisuketakahashi / MDW / Repos / Pull requests / MDW CICD Demo

Adding sqlscript: SQL script 1

Active 14 Keisuke Takahashi feature/1 into main

Overview Files Updates Commits

No merge conflicts Last checked Just now

Description

Adding sqlscript: SQL script 1

Add a comment...

Keisuke Takahashi created the pull request

Project settings Processing request...

Complete pull request

Merge type Merge (no fast forward)

Post-completion options

Complete associated work items after merging

Delete feature/1 after merging

Customize merge commit message

Cancel Complete merge

リリースパイプラインを作成 < ARMテンプレートを生成

The screenshot shows a browser window for a pull request in Azure DevOps. The URL is https://dev.azure.com/keisuketakahashi/MDW/_git/MDW%20CICD%20Demo/pullrequest/4. The page title is "Pull request 4: Adding sqlscript: SQL script 1 - Repos".

Completed 14 Keisuke Takahashi [feature/1](#) into main

Overview [Files](#) [Updates](#) [Commits](#)

Keisuke Takahashi completed this pull request 3m ago

Merged PR 4: Adding sqlscript: SQL script 1
165ca70b Keisuke Takahashi Today at 12:38 AM

Show details

No merge conflicts Last checked 3m ago

Description

Adding sqlscript: SQL script 1

Cherry-pick Revert

Reviewers Add

Required No required reviewers

Optional No optional reviewers

Tags +

No tags

Work items +

No work items

Add a comment...

Keisuke Takahashi completed the pull request 3m ago

Keisuke Takahashi created the pull request 4m ago

Project settings Processing request...

リリースパイプラインを作成 < ARMテンプレートを生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. The left sidebar has a red box around the '開発' (Development) icon. The top navigation bar has a red box around the 'main プラン ...' dropdown and the '発行' (Publish) button. The main area shows a SQL script editor with the following code:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

リリースパイプラインを作成 < ARMテンプレートを生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. On the left, the navigation bar includes Home, Data, Development (selected), Integration, Monitor, and Management. The main area displays a SQL script editor titled "SQL script 1" containing the following code:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

Below the editor are buttons for Run, Undo, Redo, Commit, Plan, Next Connection, and Save. To the right, a sidebar titled "保留中の変更" (Pending changes) lists various items under the "workspace_publish" branch, each with a collapse arrow:

- バイブルайн (Pipeline)
- データセット (Dataset)
- データフロー (Data Flow)
- 統合ランタイム (Integration Runtime)
- リンクサービス (Link Service)
- トリガー (Trigger)
- 資格情報 (Identity)
- ノートブック (Notebook)
- Sparkジョブ定義 (Spark Job Definition)
- SQLスクリプト (SQL Script)
- データベース (Database)
- KQLスクリプト (KQL Script)

A red box highlights the "OK" button at the bottom right of the dialog, which is used to commit the pending changes.

リリースパイプラインを作成 < ARMテンプレートを生成

The screenshot shows the Microsoft Azure Synapse Analytics development interface. On the left, the navigation bar includes Home, Data, Development (which is selected), Integration, Monitor, and Management. The main area displays a SQL script titled "SQL script 1" with the following content:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 SELECT * FROM foo
3
```

At the top of the main area, there are buttons for Run, Go back, Commit, Plan, Next connection, and Database selection (set to master). A status bar at the bottom indicates "テナントの接続" (Tenant connection) and "データベースの使用" (Database usage).

A red box highlights a success message in the top right corner: "テンプレートの生成中 成功".

The browser address bar shows the URL: <https://ms.web.azure-synapse.net/ja/authoring/analyze/sqlscripts/SQL%20script%201?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2...>

リリースパイプラインを作成

The screenshot shows the Azure DevOps interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'MDW', 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Artifacts', and 'Compliance'. The main area shows a 'New release pipeline' being created under 'keisuketakahashi / MDW / Pipelines / Releases / New release pipeline'. The pipeline has one stage named 'Stage 1' with a deployment process. A 'Synapse deployment task for workspace:' is present, with a note: 'Some settings need attention'. A modal dialog titled 'Select a file or folder' is open, listing artifacts from 'MDW CICD Demo Artifacts (Azure Repos Git)'. The artifact '20210727a-Synapse-Demo-dev' is expanded, showing files like 'TemplateForWorkspace.json', 'TemplateParametersForWorkspace.json', and 'readme.md'. The 'OK' button at the bottom of the dialog is highlighted with a red box. The URL in the browser is https://dev.azure.com/keisuketakahashi/MDW/_releaseDefinition?definitionId=2&_a=definition-tasks&environmentId=2.

リリースパイプラインを作成

Azure DevOps keisuketakahashi / MDW / Pipelines / Releases / New release pipeline

New release pipeline - Pipelines

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Agent job Run on agent

Synapse deployment task for workspace: Some settings need attention

Select a file or folder

Linked artifacts

- MDW CICD Demo ARM (Azure Repos Git)
- MDW CICD Demo Artifacts (Azure Repos Git)
- 20210727a-synapse-demo-dev
 - TemplateForWorkspace.json
 - TemplateParametersForWorkspace.json
 - readme.md

The artifacts published by each version will be available for deployment in release pipelines. The last successful version of MDW CICD Demo Artifacts (Azure Repos Git) published the following artifacts: 20210727a-synapse-demo-dev, readme.md.

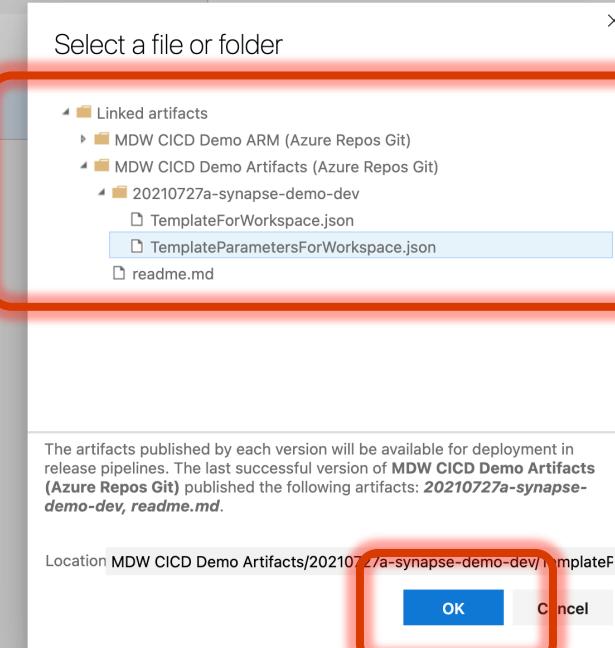
Location MDW CICD Demo Artifacts/20210727a-synapse-demo-dev/templateF... OK Cancel

Deployment name Deployment outputs

Save Create release View releases

Search

Project settings



リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation includes: Azure DevOps, keisuketakahashi / MDW / Pipelines / Releases / New release pipeline, Overview, Boards, Repos, Pipelines (selected), Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area shows a 'New release pipeline - Pipelines' page with a 'Pipeline' tab selected. A single stage named 'Stage 1' is defined under 'Deployment process'. This stage contains an 'Agent job' task labeled 'Synapse deployment task for workspace:'. The 'Azure Details' section is expanded, showing configuration for an 'ARM template deployment'. It includes fields for 'Deployment scope *' (Resource Group), 'Azure Resource Manager connection *' (selected connection: Azure Internal Subscription - KTAKAHASHI (Keisuke Takahashi) (88183e45-df85-4ce8-966a-e7d779f3e4a5)), 'Subscription *' (selected subscription: Azure Internal Subscription - KTAKAHASHI (Keisuke Takahashi) (88183e45-df85-4ce8-966a-e7d779f3e4a5)), 'Action *' (Create or update resource group), 'Resource group *' (20210727a_Synapse_Demo), and 'Location *' (Japan East). The top right features a 'Save' button (highlighted with a red box) and other actions like 'Create release' and 'View releases'. The URL in the browser is https://dev.azure.com/keisuketakahashi/MDW/_releaseDefinition?definitionId=2&_a=definition-tasks&environmentId=2.

リリースパイプラインを作成

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation includes: Azure DevOps, keisuketakahashi / MDW / Pipelines / Releases / New release pipeline, Pipelines, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'New release pipeline - Pipelines' page with a 'Pipeline' tab selected. A modal window titled 'Create a new release' is open, showing the configuration for a new release pipeline. The modal includes sections for 'Pipeline' (with a note to change trigger from automated to manual), 'ARM template deployment' (Task version 3*, Display name ARM Template deployment: Resource Group scope), 'Azure Details' (Deployment scope Resource Group, Azure Resource Manager connection, Azure Internal Subscription - KTAKAHASHI (Keisuke Takahashi) (88183...), Subscription), 'Action' (Create or update resource group), 'Resource group' (20210727a_Synapse_Demo), 'Location' (Japan East), and 'Artifacts' (Source alias MDW CICD Demo ARM, Version 165ca70b (Merged PR 4: Adding sqls...), MDW CICD Demo Artifacts, Version d09f457c (コラボレーション プランチ...)). The 'Release description' section is empty. The 'Create' button at the bottom of the modal is highlighted with a red box.

New release pipeline - Pipelines

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Agent job Run on agent

Synapse deployment task for workspace: Some settings need attention

Create a new release

New release pipeline

Pipeline Click on a stage to change its trigger from automated to manual.

Stage 1

Stages for a trigger change from automated to manual.

Stage 1

ARM template deployment

Task version 3*

Display name * ARM Template deployment: Resource Group scope

Azure Details

Deployment scope * Resource Group

Azure Resource Manager connection * Manage

Azure Internal Subscription - KTAKAHASHI (Keisuke Takahashi) (88183...)

Subscription *

Azure Internal Subscription - KTAKAHASHI (Keisuke Takahashi) (88183...)

Action *

Create or update resource group

Resource group *

20210727a_Synapse_Demo

Location *

Japan East

Artifacts

Source alias

MDW CICD Demo ARM

Version

165ca70b (Merged PR 4: Adding sqls...)

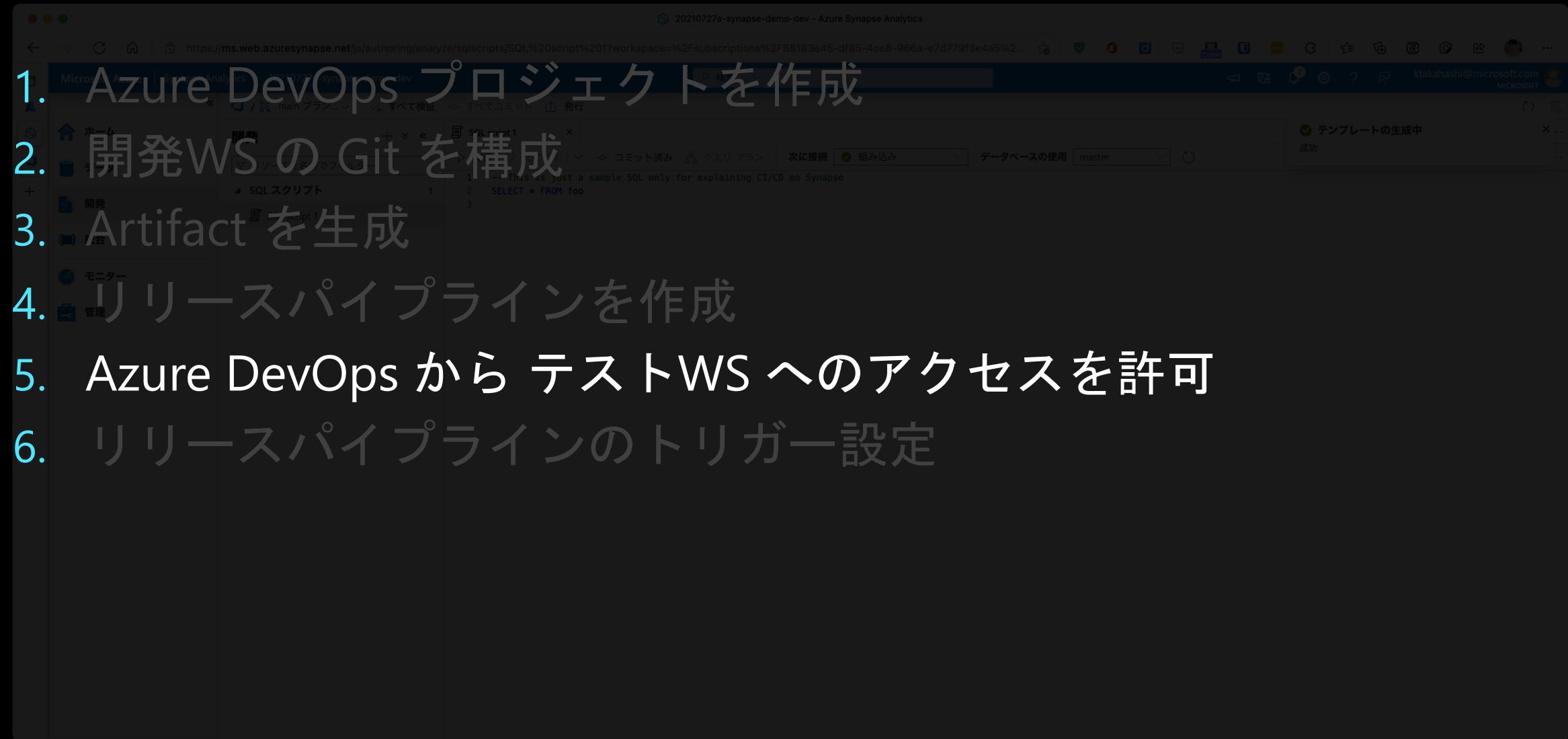
MDW CICD Demo Artifacts

d09f457c (コラボレーション プランチ...)

Release description

Create Cancel

CI/CD の構築手順 (例)



Azure DevOps から テストWSへのアクセスを許可

The screenshot shows the Azure DevOps Pipelines interface for a project named "MDW". The left sidebar navigation bar includes links for Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area displays a "New release pipeline > Release-2" screen. The "Release" section on the left shows a manually triggered release by Keisuke Takahashi on 11/23/2021 at 1:30 AM. The "Stages" section on the right shows a single stage named "Stage 1" which is currently "Not deployed". A red box highlights the "Deploy" button for this stage. The top navigation bar shows the URL https://dev.azure.com/keisuketakahashi/MDW/_releaseProgress?a=release-pipeline-progress&releaseld=16.

Azure DevOps から テストWSへのアクセスを許可

The screenshot shows the Azure DevOps Pipelines interface for a 'New release pipeline - Release-1 - Pipelines'.

Left Sidebar:

- MDW
- Overview
- Boards
- Repos
- Pipelines** (selected)
- Pipelines
- Environments
- Releases
- Library
- Task groups
- Deployment groups
- Test Plans
- Artifacts
- Compliance

Top Bar:

- https://dev.azure.com/keisuketakahashi/MDW/_releaseProgress?a=release-pipeline-progress&releaseId=15
- Search bar
- User profile

Main Content Area:

New release pipeline > Release-1

Release: Manually triggered by Keisuke Takahashi on 11/23/2021, 12:52 AM.

Stages: Stage 1 (Not deployed)

Stage 1 Details:

Deploy release

Overview (selected), Commits, Work Items

To be deployed (Deploying for the first time)
Release-1

Artifacts:

- MDW CICD Demo ARM / 165ca70b (main)
- MDW CICD Demo Artifacts / d09f457c (workspace_publish)

Comment: [Empty text area]

Buttons: Deploy (highlighted with a red box), Cancel

Azure DevOps から テストWSへのアクセスを許可

The screenshot shows the Azure DevOps Pipelines interface for a project named "MDW". The current view is "Release-1". A red box highlights the "Stage 1" card, which displays the message "Failed" and "Synapse deployment task ... on 11/23/2021, 12:53 AM".

Release

- Manually triggered by Keisuke Takahashi on 11/23/2021, 12:52 AM
- Artifacts:
 - MDW CICD Demo ARM
165ca70b
main
 - MDW CICD Demo Arti...
d09f457c
workspace_publish

Stages

- Stage 1 (Failed)

Pipeline Variables History | + Deploy | Cancel | Refresh | Edit | ...

Project settings Waiting for dev.azure.com...

Azure DevOps から テストWSへのアクセスを許可

Screenshot of a browser window showing the Azure DevOps Pipelines logs for a Synapse deployment task.

The URL is https://dev.azure.com/keisuketakahashi/MDW/_releaseProgress?_a=release-environment-logs&releaseld=15&environmentId=15.

The log output shows the deployment process for workspace 20210727a-synapse-demo-staging. The log ends with an error message:

```
2021-11-22T16:23:43.8676934Z For Artifact: SQL script 1: Deploy artifact failed: {"error":{"code":"Unauthorized","message":"The principal '05ec4b93-f566-4894-8942-cec8d68e5c4f' does not have the required permission to perform this operation."}}
```

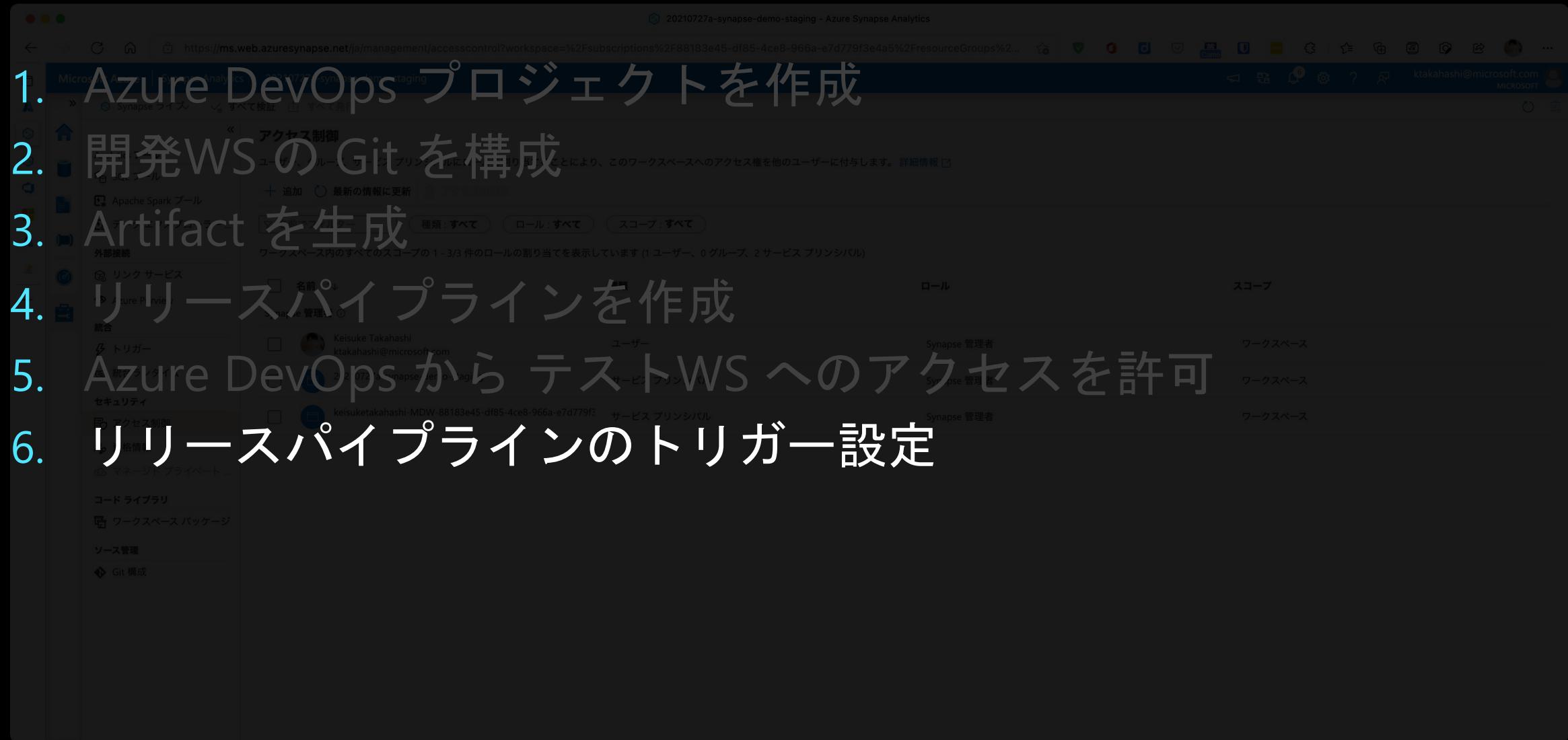
The last line of the log, "Finishing: Synapse deployment task for workspace: 20210727a-synapse-demo-staging", is highlighted with a red rectangle.

Azure DevOps から テストWSへのアクセスを許可

The screenshot shows the Azure Synapse Analytics access control interface. The URL in the browser is <https://ms.web.azure-synapse.net/ia/management/accesscontrol?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2FresourceGroups%2...>. The page title is "20210727a-synapse-demo-staging - Azure Synapse Analytics". The left sidebar shows various Synapse components like Analytics Pools, SQL Pools, and Data Explorer. The "セキュリティ" (Security) section is highlighted with a red box, containing "アクセス制御" (Access Control) and "資格情報" (Identity). The main content area is titled "アクセス制御" (Access Control) and shows a table of assigned roles. A red box highlights the "追加" (Add) button and the "最新の情報に更新" (Update) button. The table lists three entries:

名前	種類	ロール	スコープ
Keisuke Takahashi ktakahashi@microsoft.com	ユーザー	Synapse 管理者	ワークスペース
20210727a-synapse-demo-staging	サービス プリンシパル	Synapse 管理者	ワークスペース
keisuketakahashi-MDW-88183e45-df85-4ce8-966a-e7d779f3	サービス プリンシパル	Synapse 管理者	ワークスペース

CI/CD の構築手順 (例)



The screenshot shows the Azure Synapse Analytics management portal with the URL <https://ms.web.azuresynthesize.net/ja/management/accesscontrol?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2FresourceGroups%2...>. The page displays access control settings for a workspace, listing users, service principals, and roles assigned to specific scopes.

ユーザー	ロール	スコープ
Keisuke Takahashi ktakahashi@microsoft.com	Synapse 管理者	ワークスペース
keisuketakahashi-MDW-88183e45-df85-4ce8-966a-e7d779f3e4a5	サービス プリンシパル	ワークスペース
	Synapse 管理者	ワークスペース

Below the table, there are sections for 'コード ライブラリ' (Code Library) and 'ワークスペース パッケージ' (Workspace Package), both of which are currently empty.

1. Azure DevOps プロジェクトを作成
2. 開発WS の Git を構成
3. Artifact を生成
4. リリースパイプラインを作成
5. Azure DevOps から テストWS へのアクセスを許可
6. リリースパイプラインのトリガー設定

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'MDW' (selected), 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Test Plans', 'Artifacts', and 'Compliance'. The main area displays 'All pipelines > New release pipeline'. The pipeline structure shows 'Artifacts' (MDW CICD Demo ARM, MDW CICD Demo Artifacts) and 'Stages' (Stage 1: 1 job, 1 task). A red box highlights the 'MDW CICD Demo ARM' artifact. A large red box surrounds the 'Continuous deployment trigger' and 'Pull request trigger' sections on the right.

Continuous deployment trigger
Git: MDW CICD Demo ARM

Enabled
Creates a release every time a Git push occurs in the selected repository.

Branch filters ⓘ

Type	Branch
Include	main

[+ Add](#)

Pull request trigger
Git: MDW CICD Demo ARM

Enabled
Creates a release every time a new version of the selected artifact is available as part of a pull request workflow.

Target Branch Filters ⓘ

Target Branch Filters
main

[+ Add](#)

Stages ⓘ

1 of 1 stages are enabled for pull request deployments. You can enable a stage for pull request based deployments in the pre-deployment conditions of that stage.
The following stages are enabled: Stage 1

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes options like Overview, Boards, Repos, Pipelines (selected), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'Artifacts' and 'Stages' sections. In the 'Artifacts' section, two artifacts are listed: 'MDW CICD Demo ARM' and 'MDW CICD Demo Artifacts'. The second artifact has a red box around its circular icon. In the 'Stages' section, a single stage named 'Stage 1' is shown with '1 job, 1 task'. A large red box highlights the 'Continuous deployment trigger' and 'Pull request trigger' sections on the right.

Continuous deployment trigger
Git: MDW CICD Demo Artifacts

Enabled
Creates a release every time a Git push occurs in the selected repository.

Branch filters ⓘ
Type Branch
Include workspace_publish

Pull request trigger
Git: MDW CICD Demo Artifacts

Enabled
Creates a release every time a new version of the selected artifact is available as part of a pull request workflow.

Target Branch Filters ⓘ
workspace_publish

Stages ⓘ

1 of 1 stages are enabled for pull request deployments. You can enable a stage for pull request based deployments in the pre-deployment conditions of that stage.
The following stages are enabled: Stage 1

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'MDW' (selected), 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Test Plans', 'Artifacts', and 'Compliance'. The main area displays 'Artifacts' and 'Stages'. An artifact named 'MDW CICD Demo ARM' is listed under Artifacts. A stage named 'Stage 1' is shown in the Stages section, with a red box highlighting its icon. To the right, a detailed view of the 'Pre-deployment conditions' for Stage 1 is displayed, enclosed in a red box. This view includes sections for 'Triggers', 'Artifact filters', 'Schedule', 'Pull request deployment', 'Pre-deployment approvals', 'Gates', and 'Deployment queue settings'. The 'After release' trigger option is selected.

New release pipeline - Pipelines

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Artifacts | + Add

Stages | + Add ▾

MDW CICD Demo ARM

MDW CICD Demo Artifacts

Schedule not set

Stage 1
1 job, 1 task

Pre-deployment conditions

Stage 1

Triggers ▾

Define the trigger that will start deployment to this stage

Select trigger

After release (Selected)

Manual only

Artifact filters

Disabled

Schedule

Disabled

Pull request deployment

Enabled

Pre-deployment approvals

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

Gates

Define gates to evaluate before the deployment.

Learn more

Deployment queue settings ▾

Define behavior when multiple releases are queued for deployment

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar includes options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'New release pipeline' configuration screen. On the left, under 'Artifacts', there are two items: 'MDW CICD Demo ARM' and 'MDW CICD Demo Artifacts'. On the right, under 'Stages', there is one stage named 'Stage 1' which contains '1 job, 1 task'. At the top right of the screen, there is a red rectangular box highlighting the 'Save' button. Below the 'Save' button are other actions: 'Create release', 'View releases', and a three-dot menu.

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. The left sidebar navigation bar is visible, with the 'Pipelines' section currently selected. The main content area displays the 'New release pipeline' configuration screen. On the left, there are sections for 'Artifacts' and 'Stages'. Under 'Artifacts', two items are listed: 'MDW CICD Demo ARM' and 'MDW CICD Demo Artifacts'. Under 'Stages', one stage is defined: 'Stage 1' which contains '1 job, 1 task'. In the top right corner, there is a toolbar with various buttons, including 'Save' and 'Create release'. The 'Create release' button is highlighted with a red box.

リリースパイプラインのトリガー設定

The screenshot shows the Azure DevOps Pipelines interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'MDW' (selected), 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Test Plans', 'Artifacts', and 'Compliance'. The main area displays 'All pipelines > New release pipeline'. The pipeline structure shows 'Artifacts' (MDW CICD Demo ARM, MDW CICD Demo Artifacts) and 'Stages' (Stage 1: 1 job, 1 task). A modal window titled 'Create a new release' is open, with a red box highlighting the 'Stage 1' section. The modal contains instructions: 'Click on a stage to change its trigger from automated to manual.' Below this is a dropdown menu showing 'Stage 1' selected. Another red box highlights the 'Create' button at the bottom right of the modal.

New release pipeline - Pipelines

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Artifacts | + Add

Stages | + Add ▾

MDW CICD Demo ARM

MDW CICD Demo Artifacts

Schedule not set

Stage 1
1 job, 1 task

Create a new release

New release pipeline

Pipeline Click on a stage to change its trigger from automated to manual.

Stage 1

Stages for a trigger change from automated to manual. ⓘ

Stage 1

Artifacts Select the version for the artifact sources for this release

Source alias Version

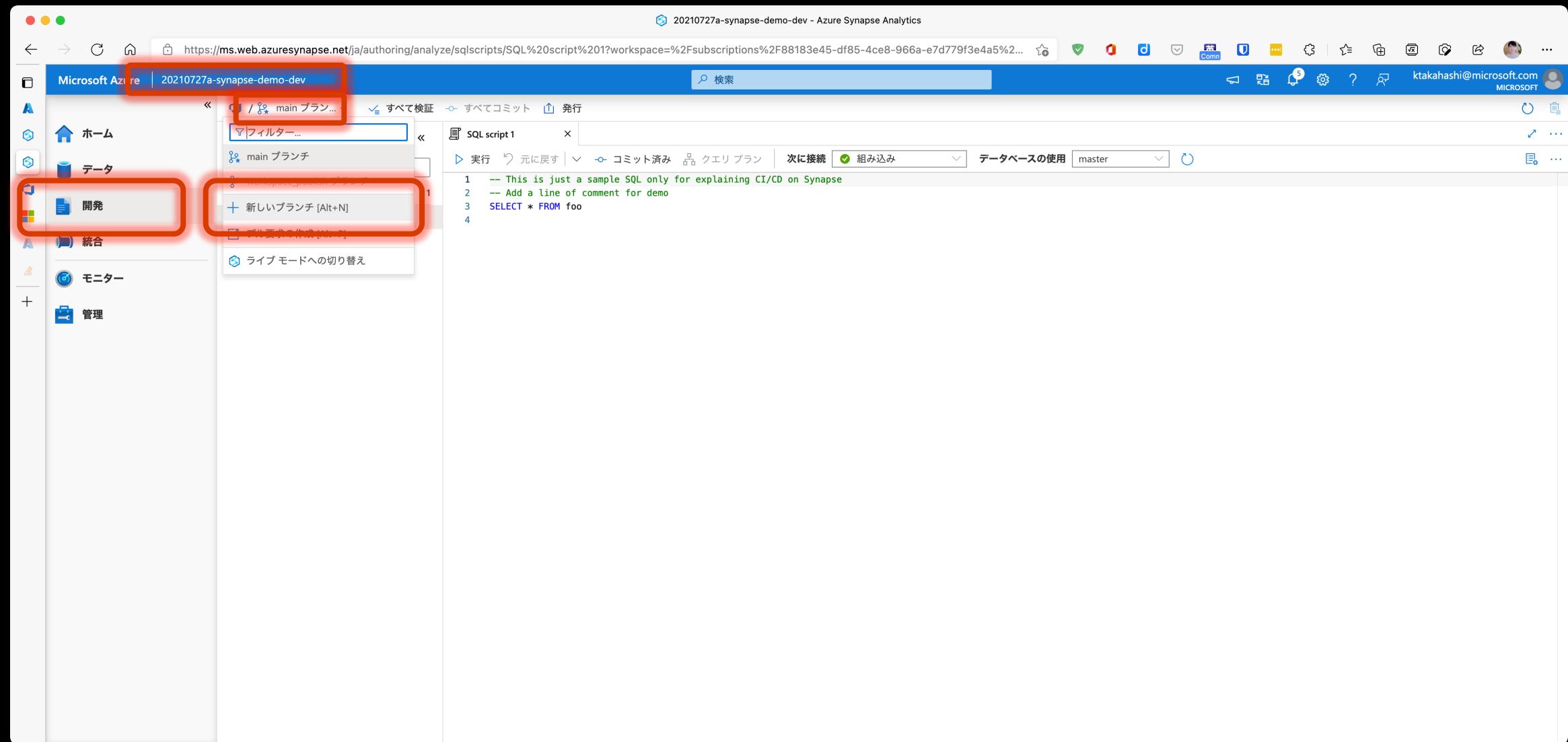
MDW CICD Demo ARM 91d78a9b (Merged PR 5: Updating sq...)

MDW CICD Demo Artifacts 54457cdd (コラボレーション プラン...)

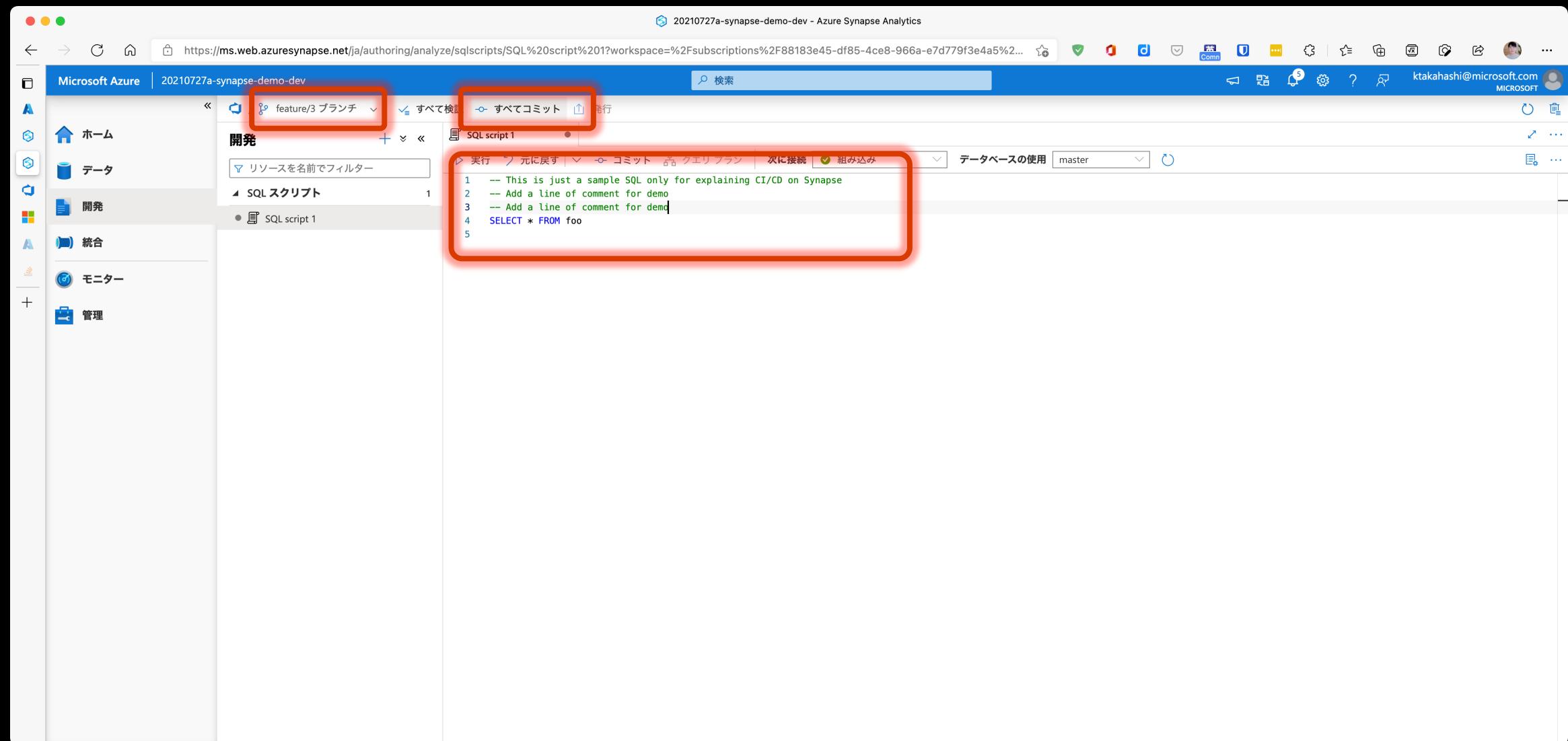
Release description

Create Cancel

リリースパイプラインのトリガー設定 > 動作確認



リリースパイプラインのトリガー設定 > 動作確認



リリースパイプラインのトリガー設定 > 動作確認

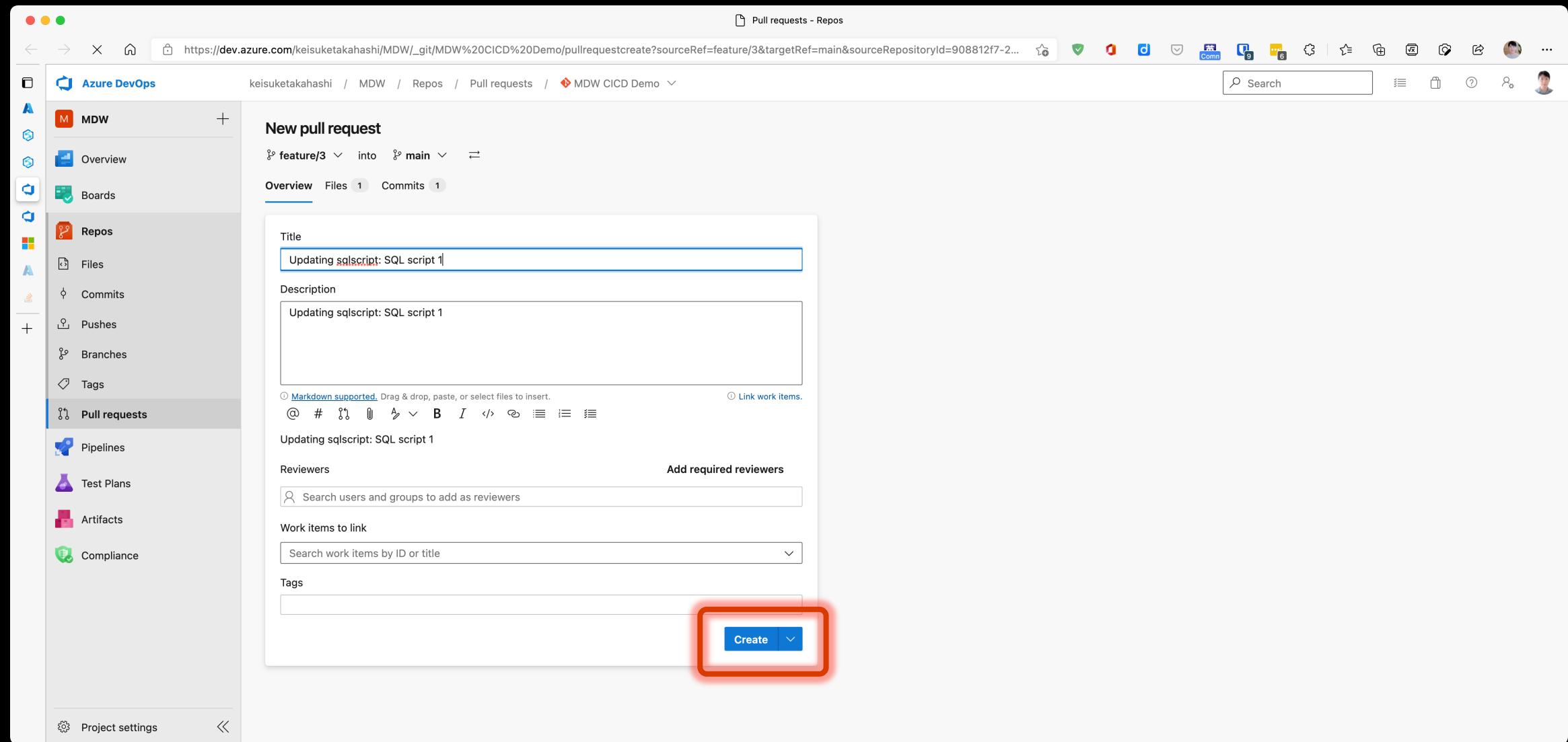
The screenshot shows the Microsoft Azure Synapse Analytics authoring interface. The left sidebar lists various workspace plans: main プランチ, feature/3 プランチ, and workspace_publish プランチ. A red box highlights the "新しいプランチ [Alt+N]" (New Plan) button at the bottom of the sidebar.

The main area displays a SQL script named "SQL script 1" with the following content:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 -- Add a line of comment for demo
3 -- Add a line of comment for demo
4 SELECT * FROM foo
5
```

The interface includes standard Azure navigation and search bars at the top, and a bottom toolbar with options like "実行" (Run), "元に戻す" (Undo), "コミット済み" (Committed), "クエリ プラン" (Query Plan), "次に接続" (Next Connection), "組み込み" (Built-in), and "データベースの使用" (Database Usage).

リリースパイプラインのトリガー設定 > 動作確認



The screenshot shows the 'New pull request' dialog in the Azure DevOps interface. The dialog is titled 'New pull request' and shows the following fields:

- Title:** Updating sqlscript: SQL script 1
- Description:** Updating sqlscript: SQL script 1
- Reviewers:** Search users and groups to add as reviewers
- Add required reviewers:** (button)
- Work items to link:** Search work items by ID or title
- Tags:** (empty input field)

A large red box highlights the blue 'Create' button at the bottom right of the dialog.

The browser address bar shows the URL: https://dev.azure.com/keisuketakahashi/_git/MDW%20CICD%20Demo/pullrequestcreate?sourceRef=feature/3&targetRef=main&sourceRepositoryId=908812f7-2...

The left sidebar shows the project navigation menu with 'Pull requests' selected.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps interface for a pull request titled "Updating sqlscript: SQL script 1". The pull request is active, created by Keisuke Takahashi from the "feature/3" branch into the "main" branch. A red box highlights the status bar message "New release pipeline in progress".

Reviewers:
Required: No required reviewers
Optional: No optional reviewers

Description:
Updating sqlscript: SQL script 1

Comments:
Add a comment... (Keisuke Takahashi created the pull request)

Work items:
No work items

Bottom Status Bar:
Project settings Processing request...

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps interface for a pull request titled "Updating sqlscript: SQL script 1". The pull request is active and was created by Keisuke Takahashi. The pipeline status section indicates that the "New release pipeline succeeded". The "Reviewers" section shows no required or optional reviewers. The "Tags" section shows no tags applied. The "Work items" section shows no work items assigned. A red box highlights the "New release pipeline succeeded" status message, and another red box highlights the "Complete" button in the top right corner of the pull request details.

Pull request 6: Updating sqlscript: SQL script 1 - Repos

keisuketakahashi / MDW / Repos / Pull requests / MDW CICD Demo

Search

Approve Complete

Updating sqlscript: SQL script 1

Active 16 Keisuke Takahashi feature/3 into main

Overview Files Updates Commits

No required checks
Optional check succeeded

New release pipeline succeeded

No merge conflicts
Last checked Just now

Description

Updating sqlscript: SQL script 1

Show everything (1)

Add a comment...

Keisuke Takahashi created the pull request Just now

Reviewers

Required: No required reviewers

Optional: No optional reviewers

Tags

Work items

Project settings Processing request...

リリースパイプラインのトリガー設定 > 動作確認

Screenshot of the Azure DevOps interface showing a pull request completion dialog.

The main page shows a pull request titled "Updating sqlscript: SQL script 1" from branch "feature/3" into "main". The status bar indicates "Active" and "16" reviews. The "Overview" tab is selected, showing green checkmarks for "No required checks", "Optional check succeeded", "New release pipeline succeeded", and "No merge conflicts".

A modal dialog titled "Complete pull request" is open on the right. It contains the following settings:

- Merge type:** Merge (no fast forward)
- Post-completion options:**
 - Complete associated work items after merging
 - Delete feature/3 after merging
 - Customize merge commit message

At the bottom right of the modal, there are "Cancel" and "Complete merge" buttons. The "Complete merge" button is highlighted with a red rectangle.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps interface for a pull request titled "Updating sqlscript: SQL script 1". The pull request has been completed by Keisuke Takahashi, merging the "feature/3" branch into the "main" branch. The status bar indicates "Completed" and "16".

The "Overview" tab is selected, showing the following details:

- Keisuke Takahashi completed this pull request Just now.
- Merged PR 6: Updating sqlscript: SQL script 1 (Commit b3d86b2b by Keisuke Takahashi Just now)
- Show details
- No required checks (Optional check succeeded)
- New release pipeline succeeded
- No merge conflicts (Last checked Just now)

The "Reviewers" section shows "Required" and "Optional" fields, both currently empty. The "Tags" section shows "No tags". The "Work items" section shows "No work items".

In the bottom left, there is a comment input field with the placeholder "Add a comment...". A recent comment from Keisuke Takahashi is shown: "Keisuke Takahashi completed the pull request" (Just now).

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps Pipelines interface for the 'MDW' project. The left sidebar is visible with various project navigation options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The 'Releases' option is currently selected.

The main area displays the 'New release pipeline' screen under the 'Releases' tab. It lists nine releases, each with a small user icon, a name, a commit hash, a branch, a creation date, and a 'Stage 1' status indicator. The first release, 'Release-9', is highlighted with a red rectangular box.

Release	Commit Hash	Branch	Created	Stage 1
Release-9	b3d86b2b	main	11/23/2021, 4:09:01 AM	Stage 1
Release-8	1f4d2fd34fabfe2ea45b04e6f9323a29a75683c1	refs/pull/6/merge	11/23/2021, 4:06:31 AM	Stage 1
Release-7	91d78a9b	main	11/23/2021, 4:05:25 AM	Stage 1
Release-6	91d78a9b	main	11/23/2021, 3:59:10 AM	Stage 1
Release-5	e0c707a7090952bd4a2b1b610551932a7eeb2f49	refs/pull/5/merge	11/23/2021, 3:50:32 AM	Stage 1
Release-4	165ca70b	main	11/23/2021, 3:46:06 AM	Stage 1
Release-3	165ca70b	main	11/23/2021, 3:00:59 AM	Stage 1
Release-2	165ca70b	main	11/23/2021, 1:30:53 AM	Stage 1
Release-1	165ca70b	main	11/23/2021, 12:52:19 AM	Stage 1

At the bottom left, there is a message: 'Project settings <> Waiting for dev.azure.com...'.

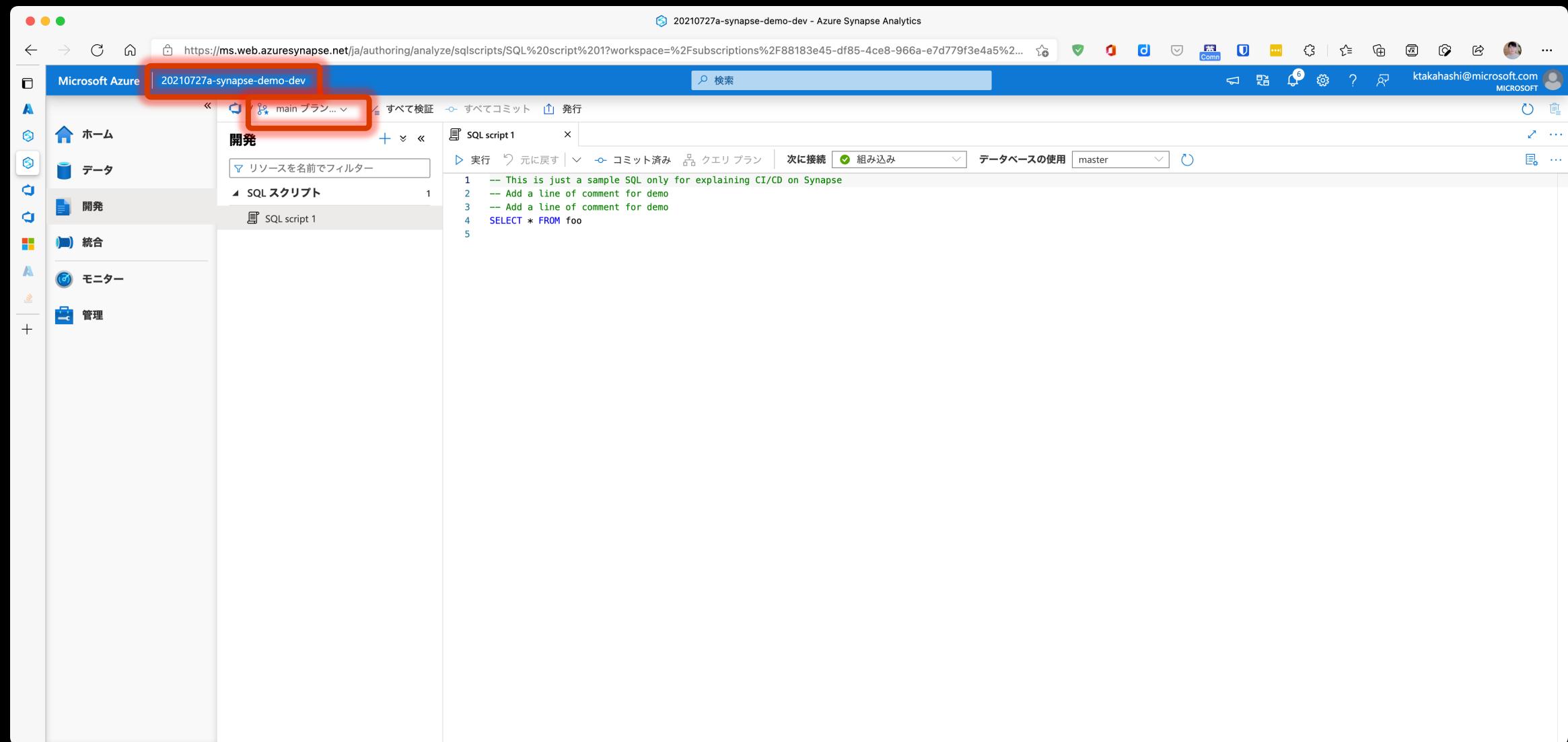
リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps Pipelines interface for a project named "MDW". The left sidebar is visible with various navigation options like Overview, Boards, Repos, Pipelines, and Test Plans. The main area displays a "New release pipeline > Release-9" screen. On the left, under "Release", there's a summary for a "Continuous deployment..." run by "Keisuke Takahashi" on "11/23/2021, 4:09 AM". It lists artifacts: "MDW CICD Dem..." (b3d86b2b) and "MDW CICD Demo Arti..." (54457cd). On the right, under "Stages", the "Stage 1" is shown as "In progress" for "Synapse deployment". It indicates 3/3 tasks completed in 00:32 with 2 pending artifacts.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps Pipelines interface for a project named "MDW". The left sidebar is visible with various navigation options like Overview, Boards, Repos, Pipelines, and Test Plans. The main area displays a "New release pipeline > Release-9" run. The "Release" section shows a "Continuous deployment..." entry for "Keisuke Takahashi" on "11/23/2021, 4:09 AM". Under "Artifacts", two items are listed: "MDW CICD Dem..." (version b3d86b2b) and "MDW CICD Demo Arti..." (version 54457cd). The "Stages" section shows a single stage named "Stage 1" with a green checkmark indicating it has "Succeeded". It also mentions "2 warnings" from the run on "11/23/2021, 4:10 AM". The browser address bar shows the URL: https://dev.azure.com/keisuketakahashi/MDW/_releaseProgress?a=release-pipeline-progress&releaseld=23.

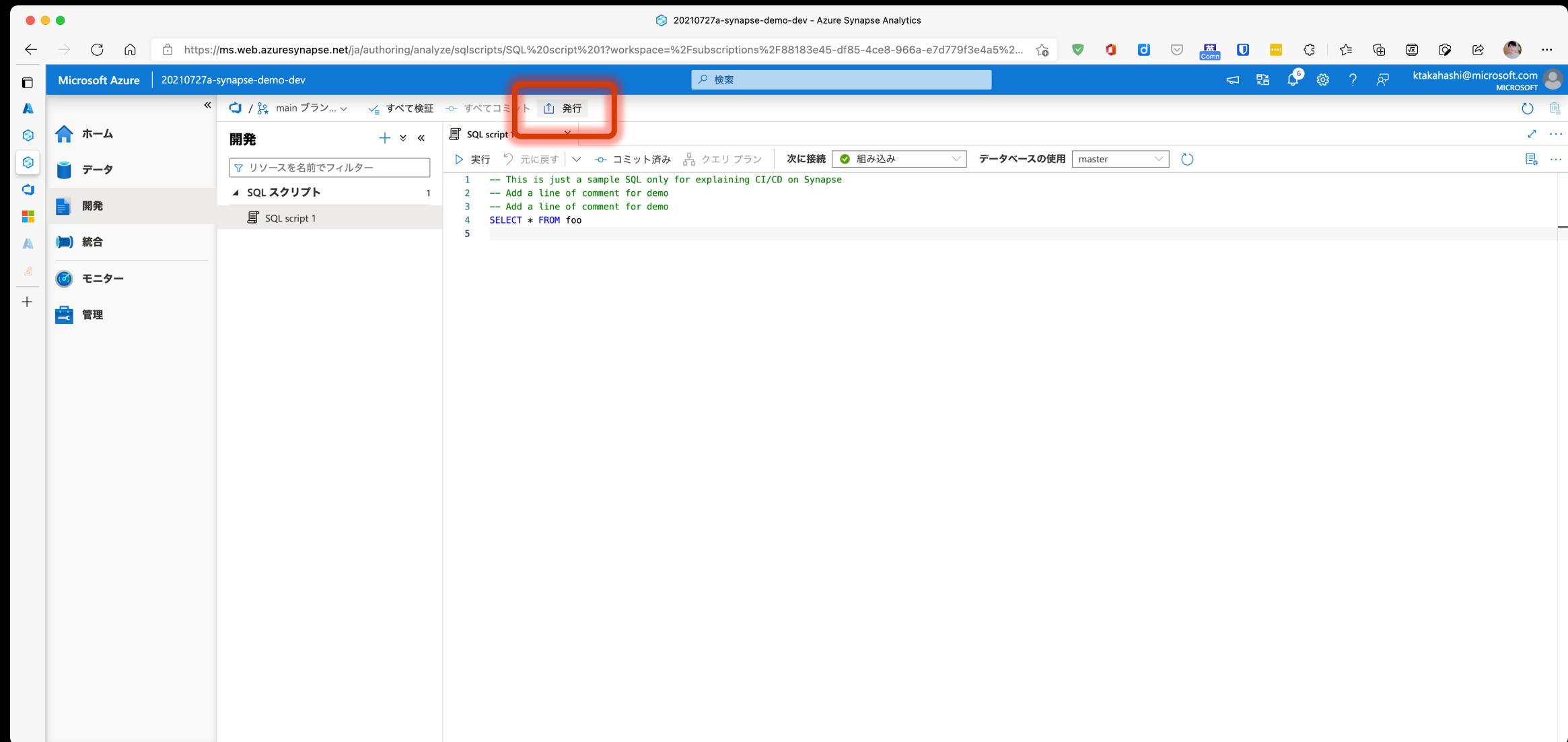
リリースパイプラインのトリガー設定 > 動作確認



The screenshot shows the Microsoft Azure portal interface for Azure Synapse Analytics. The browser address bar displays the URL: <https://ms.web.azure-synapse.net/ja/authoring/analyze/sqlscripts/SQL%20script%201?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2...>. The page title is "20210727a-synapse-demo-dev - Azure Synapse Analytics". The left sidebar navigation includes "ホーム", "データ", "開発" (selected), "統合", "モニター", and "管理". The main content area shows the "開発" (Development) workspace for the "main プラン ...". A red box highlights the workspace name in the breadcrumb navigation. The workspace interface includes a search bar, tabs for "すべて検証" (All Verify), "すべてコミット" (All Commit), and "発行" (Publish). A "SQL script 1" editor window is open, containing the following SQL code:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 -- Add a line of comment for demo
3 -- Add a line of comment for demo
4 SELECT * FROM foo
5
```

リリースパイプラインのトリガー設定 > 動作確認



The screenshot shows the Microsoft Azure portal interface for Azure Synapse Analytics. The left sidebar is visible with various navigation options like Home, Data, Development, Integration, Monitoring, and Management. The main area is titled "20210727a-synapse-demo-dev - Azure Synapse Analytics". The "Development" section is selected, showing a list of resources under "SQL Script". A single item, "SQL script 1", is listed with a count of 1. A red box highlights the "Execute" button (up arrow) in the toolbar above the script editor. The script content is as follows:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 -- Add a line of comment for demo
3 -- Add a line of comment for demo
4 SELECT * FROM foo
5
```

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Microsoft Azure portal interface for the workspace "20210727a-synapse-demo-dev". The left sidebar navigation bar includes Home, Data, Development, Integration, Monitoring, and Management sections. The main content area displays the "Development" section under "SQL Scripts". A SQL script named "SQL script 1" is shown with the following content:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 -- Add a line of comment for demo
3 -- Add a line of comment for demo
4 SELECT * FROM foo
5
```

Below the script editor, there is a "保留中の変更" (Pending Changes) panel on the right side. This panel lists various changes made to the workspace, such as "workspace_publish", "パイプライン" (Pipeline), "データセット" (Dataset), "データフロー" (Data Flow), "統合ランタイム" (Integration Runtime), "リンクサービス" (Link Service), "トリガー" (Trigger), "資格情報" (Identity), "ノートブック" (Notebook), "Sparkジョブ定義" (Spark Job Definition), "SQLスクリプト" (SQL Script), and "KQLスクリプト" (KQL Script). The "SQL script 1" entry is highlighted with a red box around the "OK" button at the bottom right of the panel.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Microsoft Azure portal interface for Azure Synapse Analytics. The left sidebar navigation bar includes Home, Data, Development (which is selected), Integration, Monitor, and Management. The main content area is titled "20210727a-synapse-demo-dev - Azure Synapse Analytics". It displays a "Development" workspace with a "SQL script 1" tab open. The SQL script contains the following code:

```
1 -- This is just a sample SQL only for explaining CI/CD on Synapse
2 -- Add a line of comment for demo
3 -- Add a line of comment for demo
4 SELECT * FROM foo
5
```

At the top of the workspace, there are buttons for "実行" (Run), "元に戻す" (Undo), "コミット済み" (Committed), "クエリ プラン" (Query Plan), "次に接続" (Next Connection), "組み込み" (Built-in), and "データベースの使用" (Database Usage) set to "master". A red box highlights a success message in the top right corner: "発行が完了しました" (Deployment completed) and "コラボレーション ブランチから正常に発行されました" (Published successfully from the collaboration branch). The URL in the browser address bar is <https://ms.web.azuresynthesize.net/ja/authoring/analyze/sqlscripts/SQL%20script%201?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2...>.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps interface for managing releases. On the left, the navigation bar is visible with options like Overview, Boards, Repos, Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The 'Releases' option is currently selected.

The main content area is titled 'New release pipeline' and displays a list of releases under the 'Releases' tab. The table has columns for 'Releases', 'Created', and 'Stages'. A red box highlights the first row, which corresponds to the 'Release-10' entry.

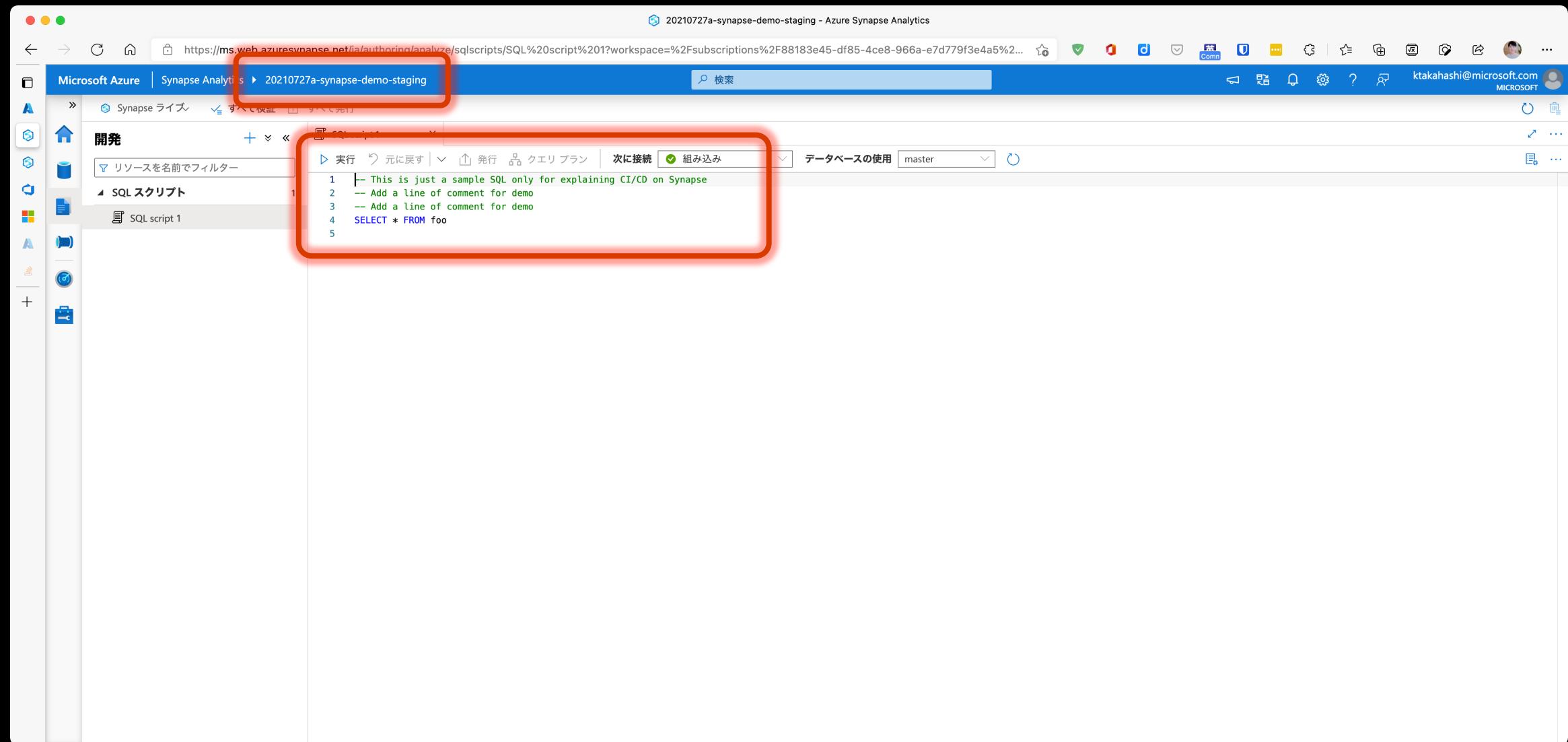
Releases	Created	Stages
Release-10 b3d86b2b ↗ main	11/23/2021, 4:15:49 AM	<input type="radio"/> Stage 1
Release-9 b3d86b2b ↗ main	11/23/2021, 4:09:01 AM	<input checked="" type="radio"/> Stage 1
Release-8 1f4d2fd34fabfe2ea45b04e6f9323a29a75683c1 ↗ refs/pull/6/merge	11/23/2021, 4:06:31 AM	<input checked="" type="radio"/> Stage 1
Release-7 91d78a9b ↗ main	11/23/2021, 4:05:25 AM	<input type="radio"/> Stage 1
Release-6 91d78a9b ↗ main	11/23/2021, 3:59:10 AM	<input type="radio"/> Stage 1
Release-5 e0c70a7090952bd4a2b1b610551932a7eeb2f49 ↗ refs/pull/5/merge	11/23/2021, 3:50:32 AM	<input checked="" type="radio"/> Stage 1
Release-4 165ca70b ↗ main	11/23/2021, 3:46:06 AM	<input type="radio"/> Stage 1
Release-3 165ca70b ↗ main	11/23/2021, 3:00:59 AM	<input checked="" type="radio"/> Stage 1
Release-2 165ca70b ↗ main	11/23/2021, 1:30:53 AM	<input checked="" type="radio"/> Stage 1
Release-1 165ca70b ↗ main	11/23/2021, 12:52:19 AM	<input checked="" type="radio"/> Stage 1

At the top right of the main area, there are buttons for 'Edit' and 'Create release'. Below the table, there is a dropdown menu labeled 'All releases'.

リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Azure DevOps Pipelines interface for a project named "MDW". The left sidebar is visible with various navigation options like Overview, Boards, Repos, Pipelines, and Test Plans. The main area displays a "New release pipeline > Release-10" view. On the left, under "Release", there's a summary for a "Continuous deployment..." run by Keisuke Takahashi on 11/23/2021 at 4:15 AM. It lists artifacts: "MDW CICD Demo ARM" (commit b3d86b2b, branch main) and "MDW CICD Dem..." (commit t4f99086, branch workspace_publish). On the right, under "Stages", the "Stage 1" is shown as "Succeeded" with 2 warnings from 11/23/2021 at 4:17 AM.

リリースパイプラインのトリガー設定 > 動作確認

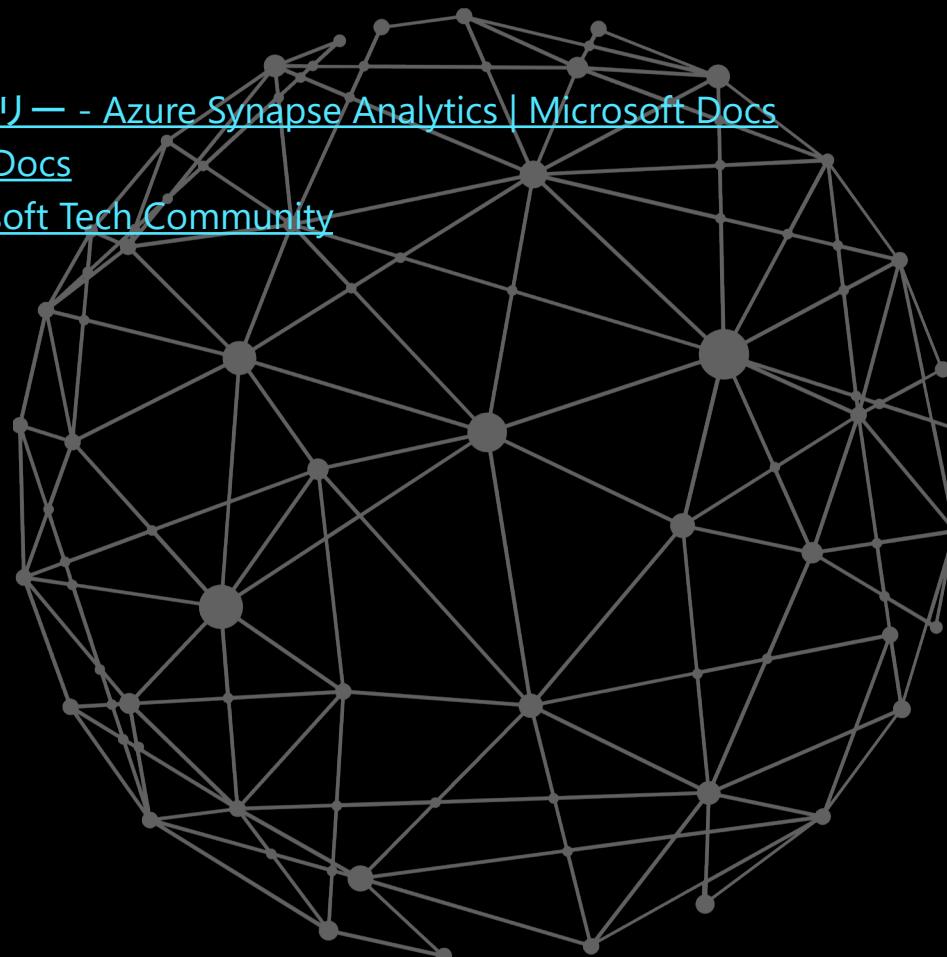


CI/CD の構築手順 (例, 再掲)

1. Azure DevOps プロジェクトを作成
2. 開発WS の Git を構成
3. Artifact を生成
4. リリースパイプラインを作成
5. Azure DevOps から テストWS へのアクセスを許可
6. リリースパイプラインのトリガー設定

参考文献

- [Azure Synapse Analytics における継続的インテグレーションとデリバリー - Azure Synapse Analytics | Microsoft Docs](#)
- [Synapse Studio でのソース管理 - Azure Synapse Analytics | Microsoft Docs](#)
- [CI CD in Azure Synapse Analytics Part 4 - The Release Pipeline - Microsoft Tech Community](#)



本セッションのゴール (再掲)

- Azure Synapse Analytics における CI/CD に関して:

- ✓ 基本的な概念を知っている
- ✓ フローが理解できている
- ✓ 構築のイメージを掴めている
- ✓ 参照すべき文献が分かっている





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