

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

■ 繼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
- 繼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

■ 繼続的デリバリー (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

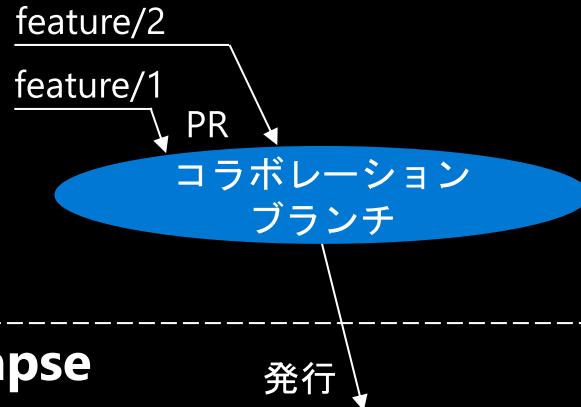
- ARM テンプレート
- パラメータ
- Artifact (成果物)



CI/CD のフロー (例)

ファイル

Git



Synapse
WS

Synapse
(テストWS)

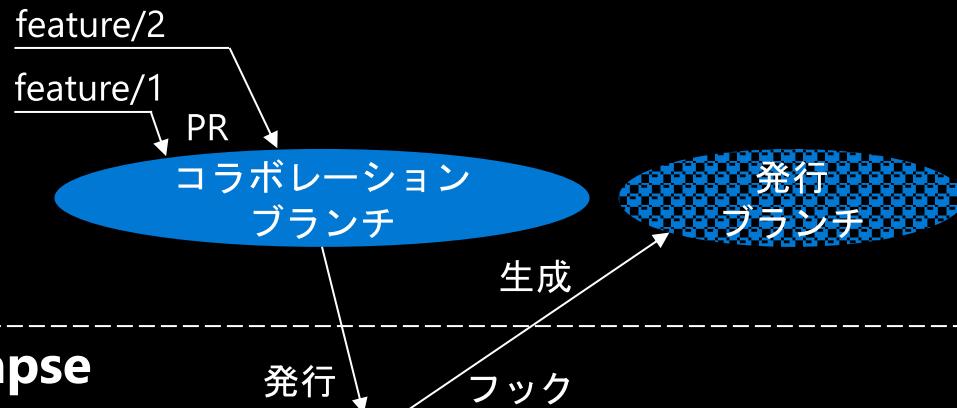
Synapse
(運用WS)

CI/CD
支援
ツール

CI/CD のフロー (例)

ファイル

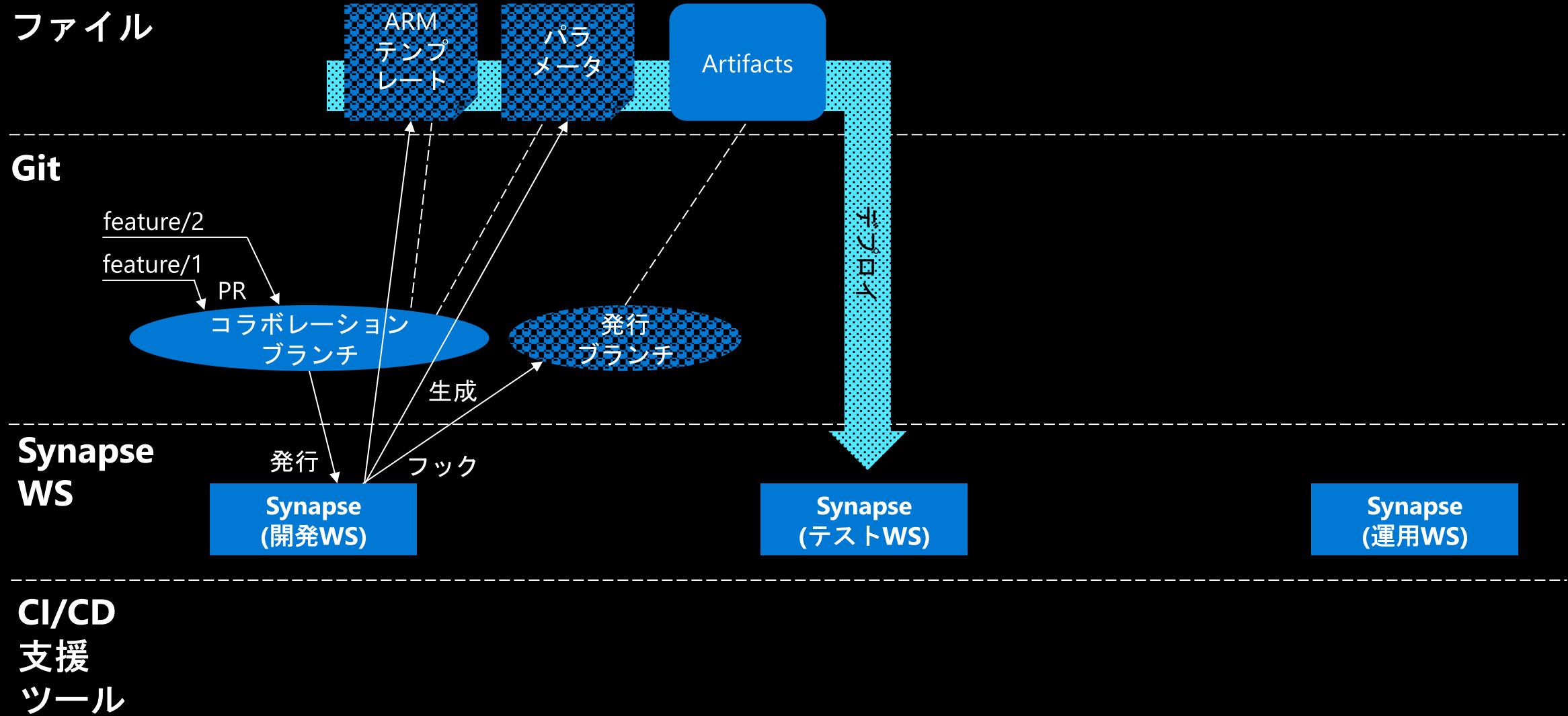
Git



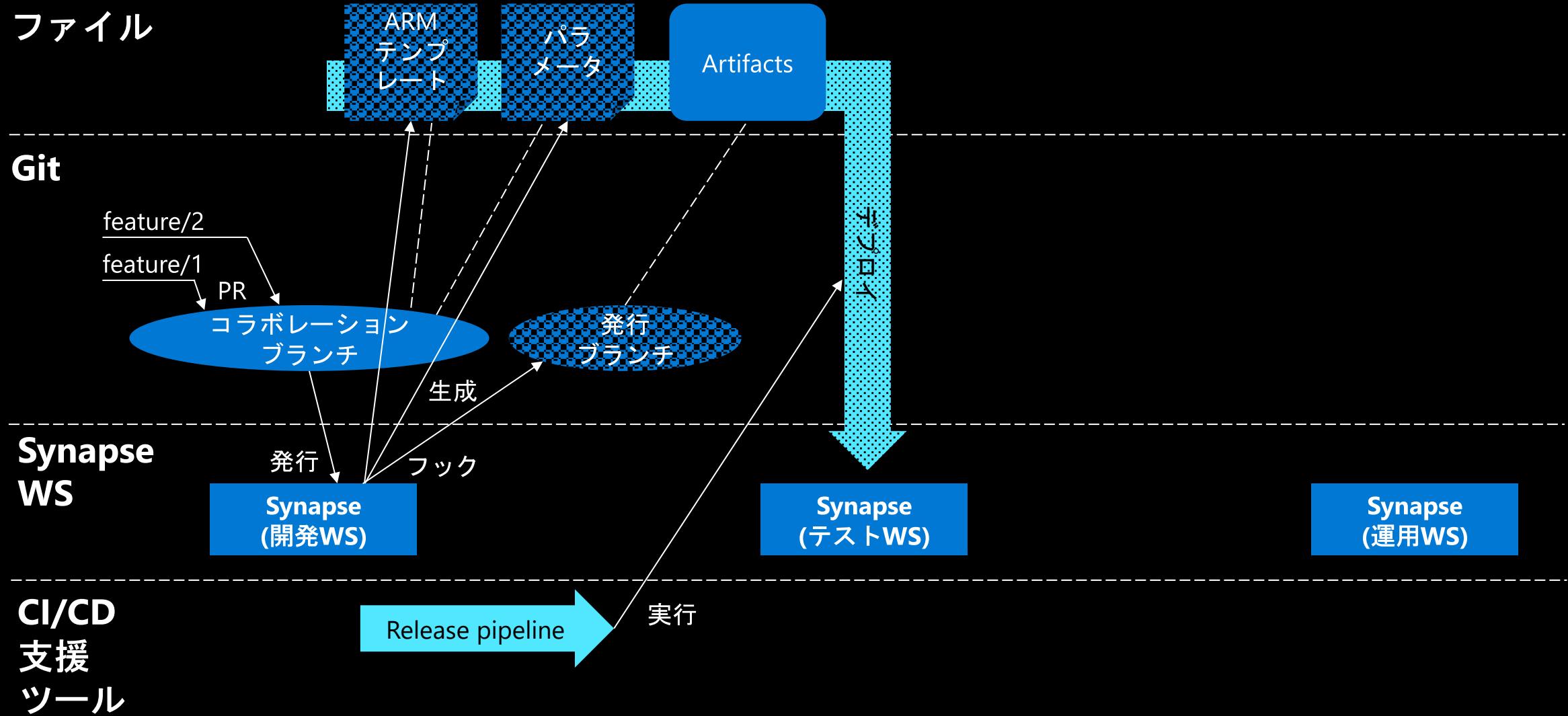
Synapse
WS

CI/CD
支援
ツール

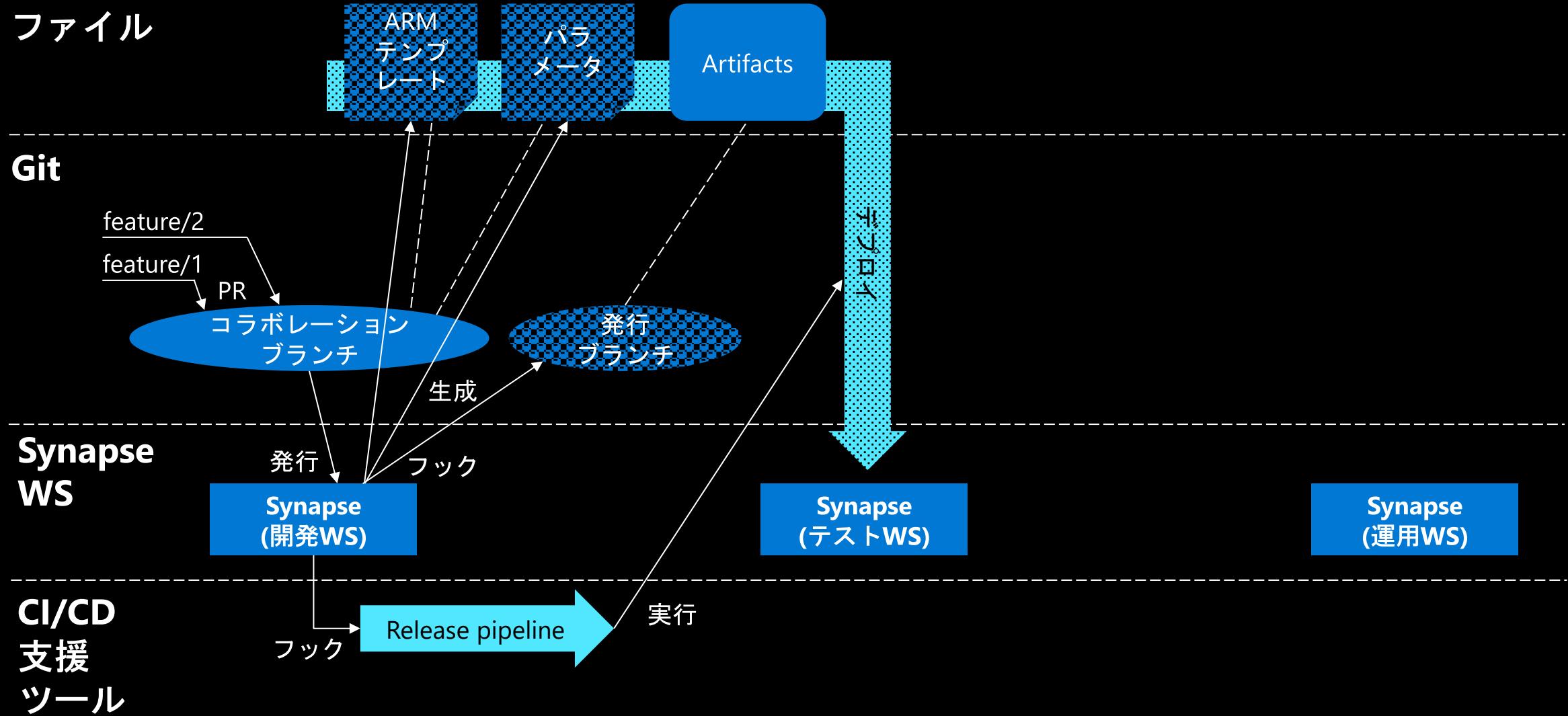
CI/CD のフロー (例)



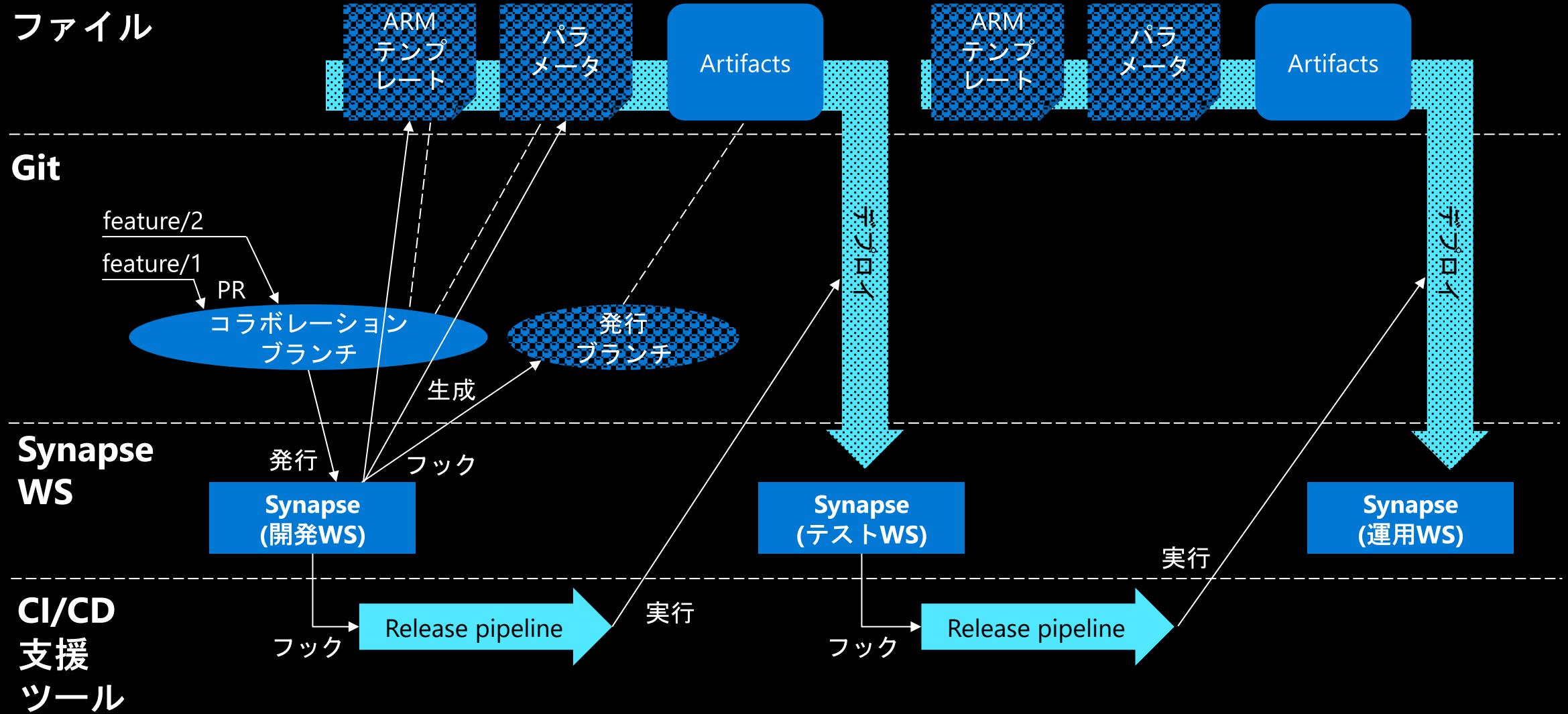
CI/CD のフロー (例)



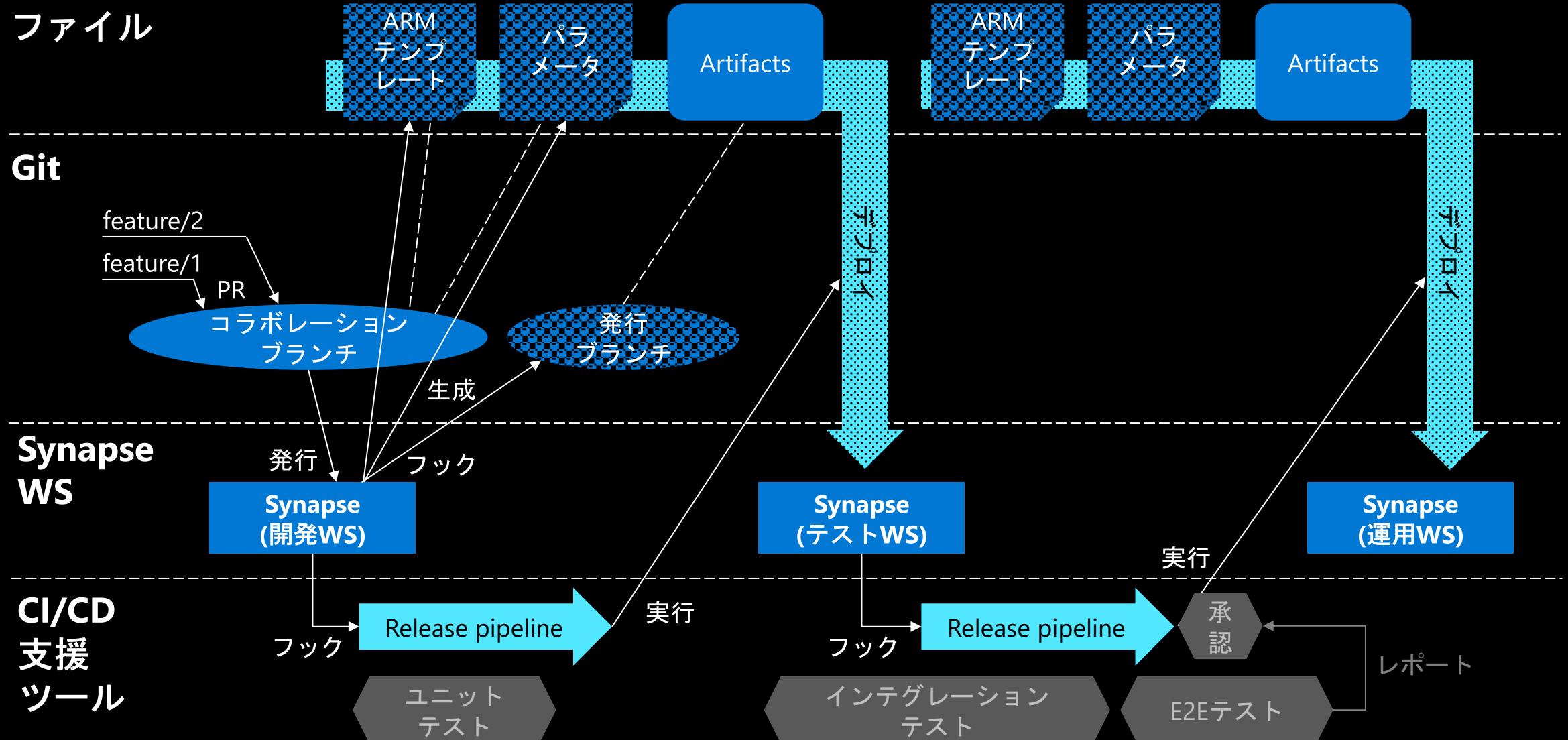
CI/CD のフロー (例)



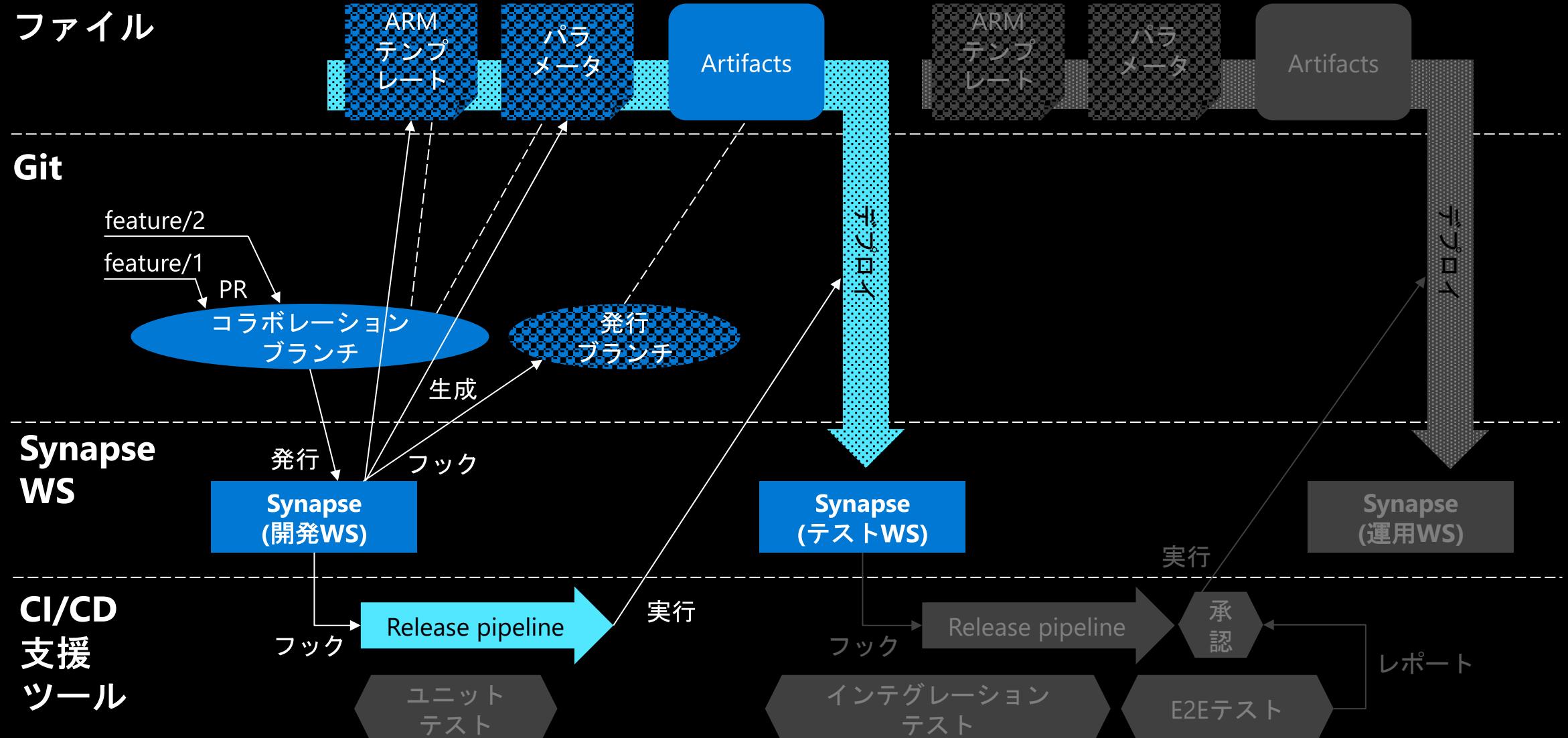
CI/CD のフロー (例)



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
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

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 is titled 'keisuketakahashi' and shows a single project card for 'mlops-quickstart'. At the top right, there's a search bar and a 'New project' button, which is highlighted with a red rectangular box. The URL in the browser is https://dev.azure.com/keisuketakahashi/.

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...

+ New project

Filter projects

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 window with the URL <https://dev.azure.com/keisuketakahashi/>. The browser toolbar includes icons for back, forward, search, and various extensions. The main content area displays the Azure DevOps interface for the user 'keisuketakahashi'. On the left, there's a sidebar with organization navigation (keisuketakahashi, MicrosoftIT, unifiedactiontracker, servicesdocs) and a 'New organization' button. The main area shows a list of projects: 'mlops-quickstart' (selected, indicated by a purple border), 'My work items', and 'My pull requests'. At the bottom of the sidebar, there are 'What's new' and 'Organization settings' sections. A message at the bottom says 'Waiting for web.vortex.data.microsoft.com...'. Overlaid on the right side is a 'Create new project' dialog box. The dialog has fields for 'Project name *' (MDW), 'Description' (empty), and 'Visibility' options ('Public', 'Enterprise' selected, 'Private'). It also includes 'Advanced' and 'Version control' (Git) and 'Work item process' (Basic) dropdowns. At the bottom right of the dialog is a red-bordered 'Create' button.

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:

- Azure DevOps
- MDW (selected)
- + Add project
- Overview
- Summary (highlighted)
- Dashboards
- Wiki
- Boards
- Repos (highlighted with a red box)
- Pipelines
- Test Plans
- Artifacts
- Compliance

The main content area displays the "MDW" project summary. It includes:

- Project stats:** No stats are available at this moment. Setup a service to see project activity.
- Members:** 1 member (Keisuke Takahashi).
- Welcome to the project!** What service would you like to start with? Options include Boards, Repos (selected), Pipelines, Test Plans, and Artifacts.
- Repos:** Sub-options include Files, Commits, Pushes, Branches, Tags, and Pull requests.

Bottom navigation bar:

- Project settings
- https://dev.azure.com/keisuketakahashi/_git/MDW

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps 'Files - Repos' interface. On the left, a sidebar lists various project sections: Overview, Boards, Repos (selected), Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, Artifacts, and Compliance. The main area displays a repository named 'MDW'. A message at the top says 'MDW is empty. Add some code!'. Below it, there's a 'Clone to your computer' section with 'HTTPS' and 'SSH' options, and a 'Clone in VS Code' button. A note about generating Git credentials is present. Underneath, there's a 'Push an existing repository from command line' section with 'HTTPS' and 'SSH' options, showing a command line input field containing 'git remote add origin https://keisuketakahashi@dev.azure.com/keisuketakahashi/MDW/_git/MDW'. The next section is 'Import a repository' with an 'Import' button. At the bottom, there's a 'Initialize main branch with a README or gitignore' section with checkboxes for 'Add a README' and 'Add a .gitignore: None' (which is selected), and a red box highlights the 'Initialize' button.

Azure DevOps プロジェクトを作成

The screenshot shows the Azure DevOps interface for managing repositories. On the left, a sidebar lists various project management and development tools: Overview, Boards, Repos (selected), Files, Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, Artifacts, and Compliance. The main content area displays a repository named "MDW". The repository structure is shown under "main":

- Files: README.md

Details for the README.md file:

Name	Last change	Commits
README.md	Just now	575006db Added README.md Keisuke Takahashi

The page includes sections for "Introduction", "Getting Started", "Build and Test", and "Contribute".

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](#)

At the bottom left, a message says "Project settings Processing request...".

CI/CD の構築手順 (例)

The screenshot shows the Azure DevOps project settings interface for a repository named "MDW". The main pane displays the CI/CD pipeline configuration, which includes sections for "Build and Test" and "Contribute". The "Build and Test" section contains a table of contents for the README.md file, including sections for installation, software dependencies, and API references. The "Contribute" section provides guidelines for improving code quality.

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

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

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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

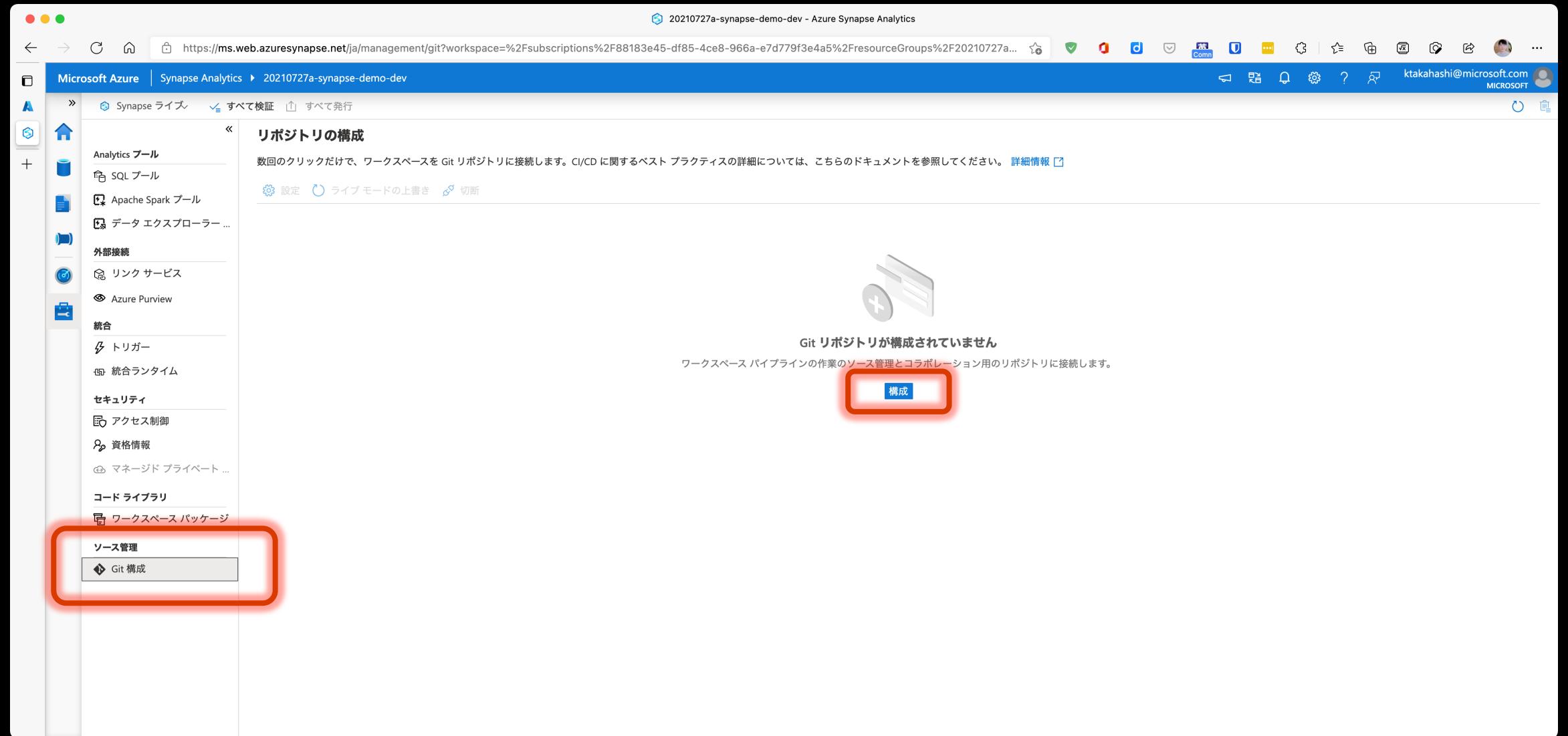
Git リポジトリが構成されていません

ワークスペース バイオペーラー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

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 * ①
Azure DevOps Git

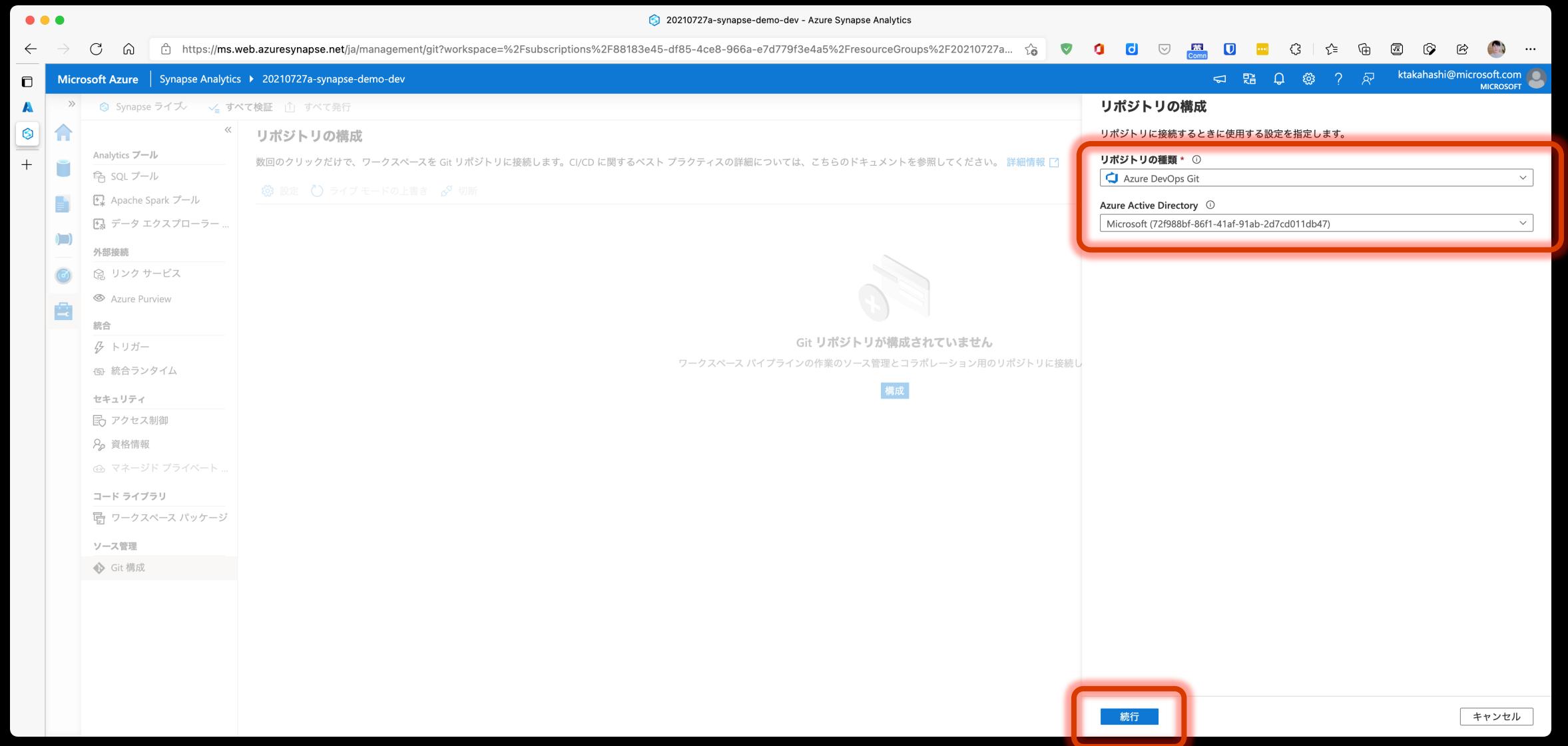
Azure Active Directory ①
Microsoft (72f988bf-86f1-41af-91ab-2d7cd011db47)

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' settings, there are sections for Overview, Teams, Permissions, Notifications, Service hooks, and Dashboards. The 'Pipelines' section includes Agent pools, Parallel jobs, Settings, Test management, Release retention, Service connections, and XAML build services. The 'Repos' section is currently selected, showing the 'All Repositories' list with one item: 'MDW CICD Demo'. The top navigation bar shows the URL https://dev.azure.com/keisuketakahashi/MDW/_settings/repositories. The browser toolbar includes standard icons for back, forward, search, and refresh.

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 box around it, indicating the '新規作成' (New Creation) radio button is selected, and the input field contains 'feature/1'. At the bottom right of the dialog is a red box around the '保存' (Save) button.

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

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

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 Azure Synapse Analytics workspace settings page for the workspace "20210727a-synapse-demo-dev". The left sidebar shows various workspace settings 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 the following details:

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)

The screenshot shows the Azure DevOps Git repository interface. The URL in the address bar is <https://ms.web.azure-synapse.net/ja/management/git?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2FresourceGroups%2F20210727a...>. The page displays a list of commits for a repository named 'synapse-demo-dev'. The commits are:

- 20210727a-synapse-demo-dev - Azure Synapse Analytics
- feature/1 フィルターを追加 (author: keisuketakahashi)
- すべて検証 → すべてコミット (author: keisuketakahashi)
- すべて発行 (author: keisuketakahashi)

The sidebar on the left lists various sections: Microservices, Feature, Apache Spark プール, 外部接続, リンク サービス, Azure Pipelines, リリース, コード ライブラリ, ワークスペース パッケージ, ソース管理, and Git 構成.

Overlaid on the screenshot are the six steps for CI/CD setup:

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
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Artifact を生成

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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 a '開発' (Development) tab selected. A red box highlights the 'SQL スクリプト' (SQL Script) option in a dropdown menu under the '開発' section. The main area displays two sections: '表示する項目がありません' (No items displayed) with a note to use the '+' button to create new items, and '項目の選択' (Item Selection) with a note to use the Resource Explorer to select or create 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

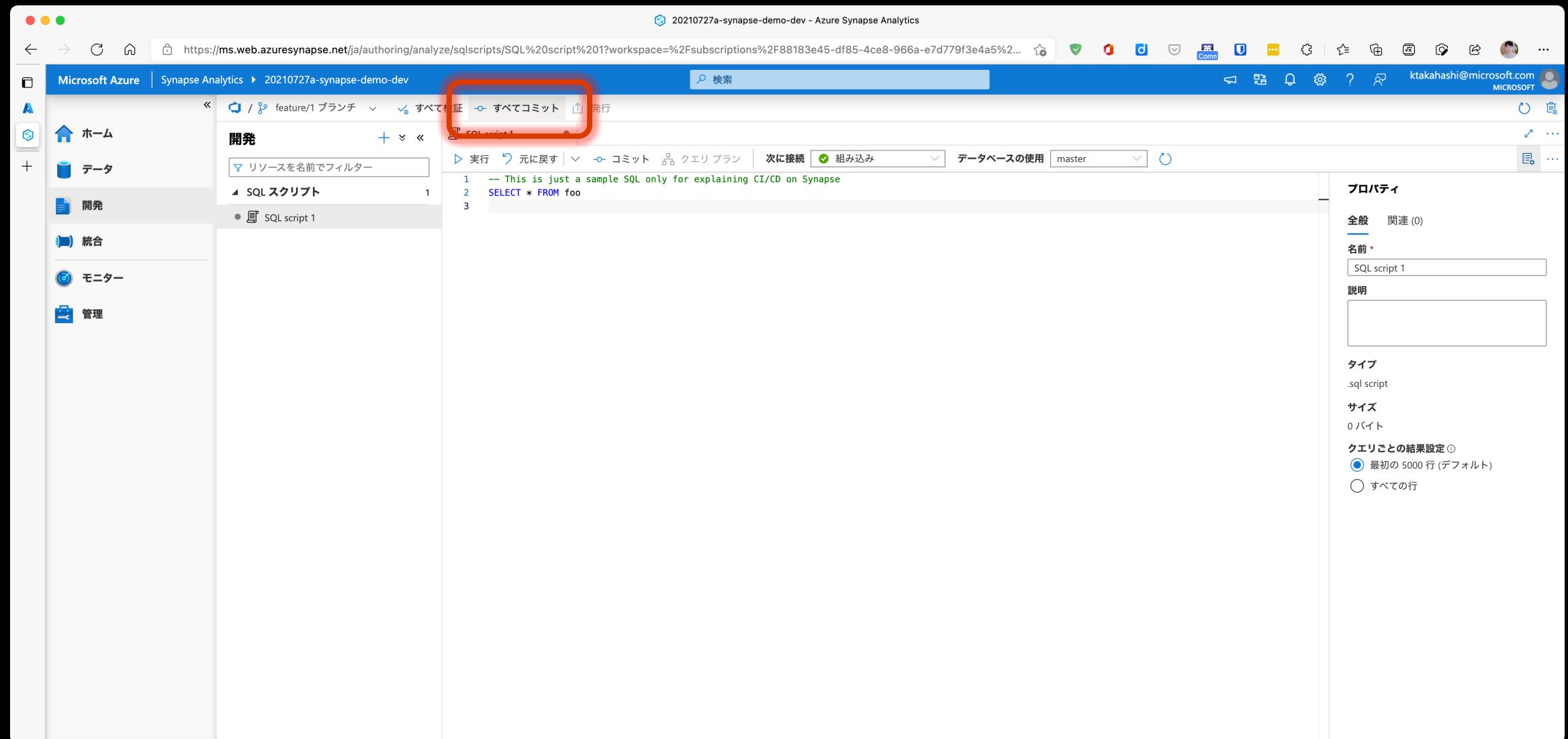
The screenshot shows the Microsoft Azure Synapse Analytics development interface. The left sidebar has '開発' selected. In the main area, there's a 'SQL script 1' tab with the following content:

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

A red box highlights the code editor area. To the right, the 'Properties' pane is open, showing:

- 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". In the center, there is a code editor window for "SQL script 1" 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 code editor are several buttons: "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) set to "master". To the right of the code editor is a "プロパティ" (Properties) panel with the following settings:

- 全般: 関連 (0)
- 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 '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 Synapse Analytics web interface. In the center, there is a code editor window titled "SQL script 1" containing a single line of SQL: "SELECT * FROM foo". Above the code editor, a status 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...". To the right of the code editor, a "Git" section shows a green checkmark and the message "Git リポジトリに正常にコミットされました" (Commit successful). On the far right, there is a "Properties" panel with tabs for "General" and "Relationships". The "General" tab shows the name "SQL script 1", a description field, and a type set to "sql script". Below the properties, there are sections for "Size" (0 bytes) and "Query settings" (with options for "First 5000 rows (Default)" or "All rows").

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

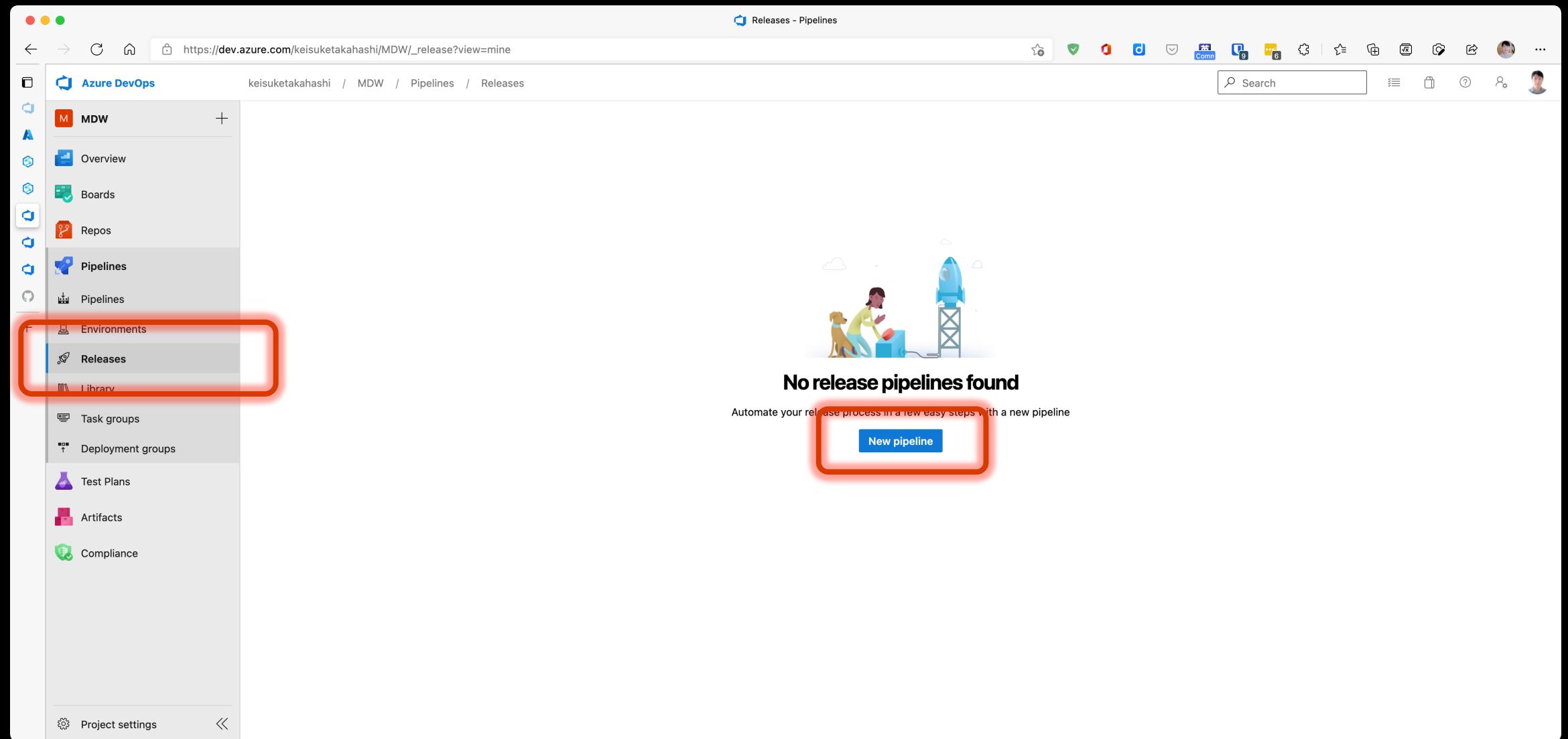
MDW

- 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 Stages | + Add Stage 1 Select a template

+ Add an artifact Schedule not set

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

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 (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 pipeline editor shows an 'Artifacts' section with a '+ Add' button 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' and 'Move' buttons at the top of the stage details panel.

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 with a red box highlighting it. The modal shows the 'Source type' section with 'Build' selected (indicated by a checked checkbox) and 'Azure Re...' highlighted with a blue border. Below this, there are 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'. At the bottom of the modal is a large red box enclosing the 'Add' button.

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

Pipeline Tasks Variables Retention Options History

Artifacts | + Add Stages | + Add Stage 1 1 job, 0 task

Schedule not set

Add an artifact

Source type

Build ✓ Azure Re...

GitHub TFVC

6 more artifact types

Project * MDW

Source (repository) * MDW CICD Demo

Default branch * main

Default version * Latest from the default branch

Checkout submodules

Checkout files from LFS

Shallow fetch depth

Source alias * MDW CICD Demo ARM

Add

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 'All pipelines > New release pipeline' screen. On the left, there are sections for 'Artifacts' and 'Stages'. The 'Artifacts' section has a button labeled 'Add an artifact' which is highlighted with a red box. The 'Stages' section shows 'Stage 1' with '1 job, 0 task'. On the right, a modal window titled 'Add an artifact' is open, also highlighted with a red box. The 'Source type' section shows 'Build' selected (indicated by a checked checkbox) and 'Azure Re...' highlighted with a blue box. Below it, there are buttons for 'GitHub' and 'TFVC'. The 'Project' dropdown is set to 'MDW'. The 'Source (repository)' dropdown is set to 'MDW CICD Demo'. The 'Default branch' dropdown shows 'feature/1' and 'main' listed. 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 データ 開発 モニター 管理

main プラン ... 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

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

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 interface for creating a new release pipeline. On the left, the navigation bar includes 'Azure DevOps', 'keisuketakahashi / MDW / Pipelines / Releases'. The main area shows 'All pipelines > New release pipeline'. The pipeline structure is divided into 'Artifacts' and 'Stages' sections.

Artifacts: Contains 'MDW CICD Demo ARM' and 'Add an artifact' (button).

Stages: Contains 'Stage 1' (1 job, 0 task) and a 'Schedule not set' button.

Add an artifact: A modal window is open for adding an artifact. It shows 'Source type' options: 'Build' (selected), 'Azure Re...' (selected), 'GitHub', and 'TFVC'. A red box highlights the 'Azure Re...' section.

Configuration Fields (highlighted by a red box):

- Project *: MDW
- Source (repository) *: MDW CICD Demo
- Default branch *: workspace_publish
- Default version *: Latest from the default branch
 - Checkout submodules
 - Checkout files from LFS
- Shallow fetch depth
- Source alias *: MDW CICD Demo Artifacts

Bottom Buttons:

- Cancel
- Save

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 section for adding tasks, with a 'Stage name' input field containing 'Stage 1' and a large red box highlighting a blue '+' 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 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 list of tasks is shown, with the first item, 'Synapse workspace deployment', highlighted. A red box surrounds the search bar and the 'Add' button for the task.

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 for creating a new release pipeline. The left sidebar lists various project management and development tools: MDW, Overview, Boards, Repos, Pipelines (selected), Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the 'Dev to Staging release pipeline' under the 'Pipelines' section. The pipeline configuration includes an 'Agent job' and an 'ARM Template deployment: Resource Group scope'. On the right, the 'Tasks' tab is selected, showing the 'Add tasks' section and a 'Marketplace' search results page for 'Synapse'. A red box highlights the 'Get it free' button for the 'Synapse workspace deployment' extension.

Dev to Staging release pipeline - Pipelines

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 Learn more

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" section, which contains a dropdown menu set to "keisuketakahashi" and a blue "Install" button. To the right, there is a "Permissions" section listing various API permissions and a "Terms of Service" section with a link to the Microsoft Online Services Privacy Statement.

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

The screenshot shows a web browser window for the Visual Studio Marketplace at the URL <https://marketplace.visualstudio.com/acquisition?itemName=AzureSynapseWorkspace.synapseciid-deploy>. The page displays a success message: "You are all set!" with two buttons: "Proceed to organization" and "Go to Marketplace". The "Proceed to organization" button is highlighted with a red box. The user's profile "Keisuke Takahashi (ktakahashi@microsoft.com)" is visible in the top right corner.

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, Pipelines (selected), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area displays a 'New release pipeline - Pipelines' page with a 'Stage 1' deployment process. A task named 'Synapse deployment task for workspace:' is listed under 'Agent job'. This task is highlighted with a red box. To the right, there is a 'Tasks' tab with sub-options like Variables, Retention, Options, and History. Below the stage, there is a 'Marketplace' section with a search bar containing 'synapse'. Several marketplace items are listed, including 'Synapse workspace deployment', 'SARIF SAST Scans Tab', 'Replace Tokens', 'SonarQube', 'ARM Outputs', 'Terraform', 'SonarCloud', 'Team Project Health', and 'IIS Web App Deployment Using WinRM'. The URL in the browser is https://dev.azure.com/keisuketakahashi/MDW/_releaseDefinition?definitionId=0&_a=definition-tasks&environmentId=-3.

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 red box highlights a 'Select a file or folder' dialog window. This dialog lists 'Linked artifacts' from 'MDW CICD Demo ARM (Azure Repos Git)' and 'MDW CICD Demo Artifacts (Azure Repos Git)'. The 'readme.md' file under 'MDW CICD Demo Artifacts' is selected. The dialog also contains a note about artifact availability and a location field set to 'MDW CICD Demo Artifacts'. At the bottom are 'OK' and 'Cancel' buttons.

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases

All pipelines > New release pipeline

Pipeline Tasks Variables Retention Options History

Stage 1 Deployment process

Synapse workspace deployment

Select a file or folder

- Linked artifacts
 - MDW CICD Demo ARM (Azure Repos Git)
 - credential
 - integrationRuntime
 - linkedService
 - readme.md
 - MDW CICD Demo Artifacts (Azure Repos Git)
 - 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: **readme.md**.

Location **MDW CICD Demo Artifacts**

OK Cancel

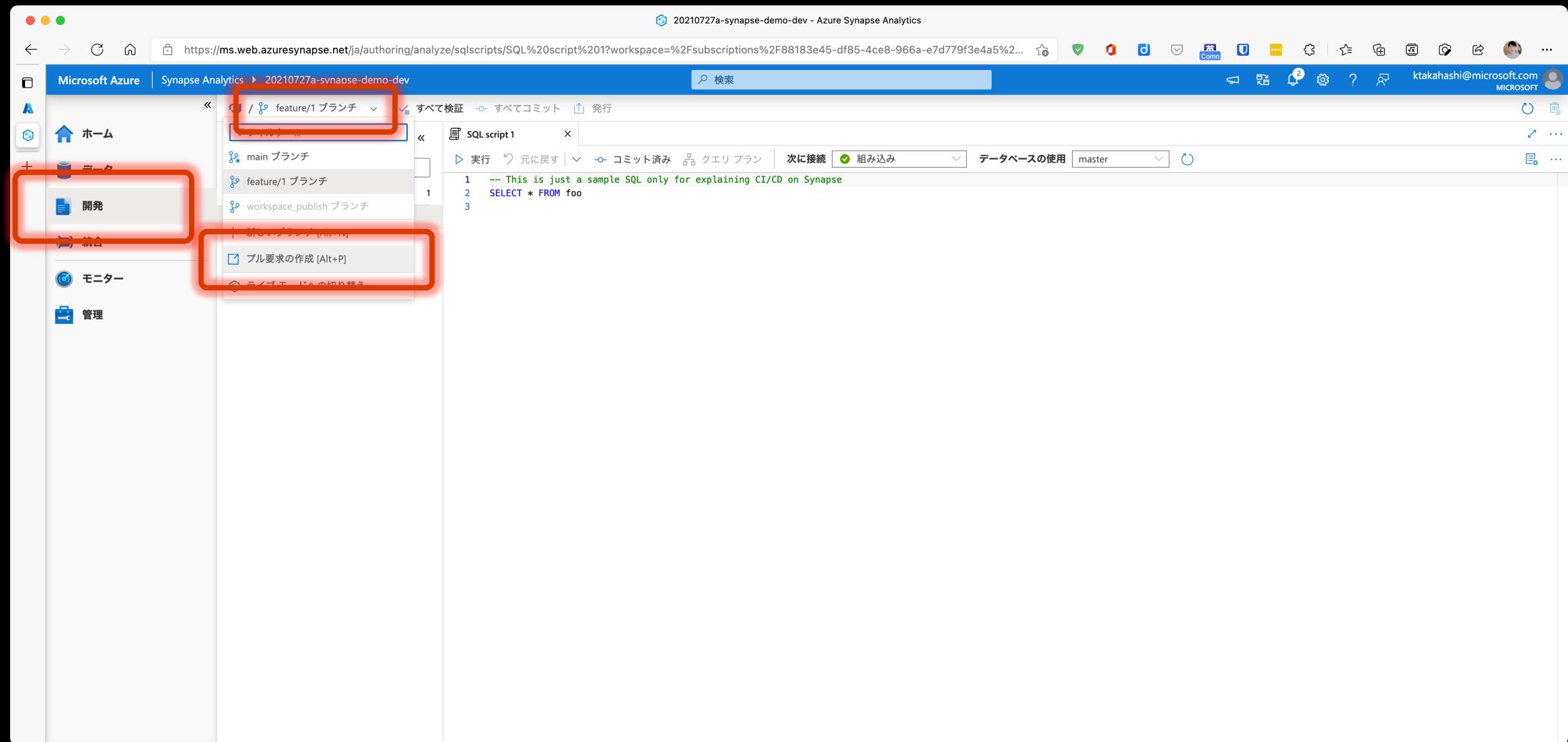
Synapse workspace name

This setting is required.

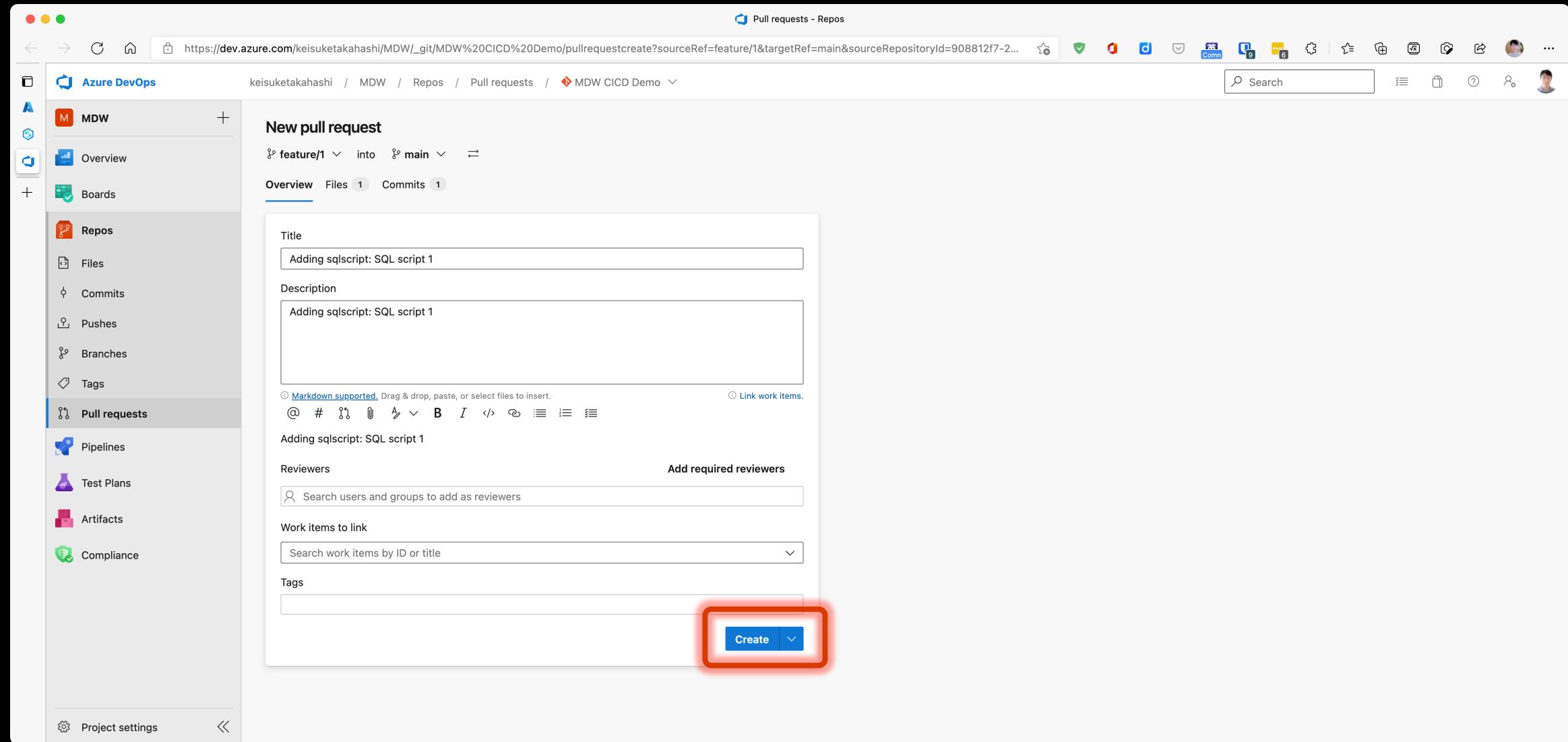
Delete Artifacts Not In Template

Override parameters

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'.

New pull request

feature/1 into main

Overview Files 1 Commits 1

Title
Adding sqldscript: SQL script 1

Description
Adding sqldscript: SQL script 1

Markdown supported. Drag & drop, paste, or select files to insert. Link work items.

Adding sqldscript: SQL script 1

Reviewers
Search users and groups to add as reviewers

Add required reviewers

Work items to link
Search work items by ID or title

Tags

Create

A red box highlights the 'Create' button at the bottom center of the dialog.

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

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

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 breadcrumb path 'main プラン ...' and the 'すべて検証' (All Validated) status. The top right corner shows the user 'ktakahashi@microsoft.com' and the Microsoft logo. 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
```

Below the script are various execution and connection options.

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 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
```

At the top right, there are tabs for "すべて検証" (All Verify) and "すべてコミット" (All Commit). Below these 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 "発行" (Publish) button is also present.

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

リリースパイプラインを作成

New release pipeline - Pipelines

keisuketakahashi / MDW / Pipelines / Releases / New release pipeline

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

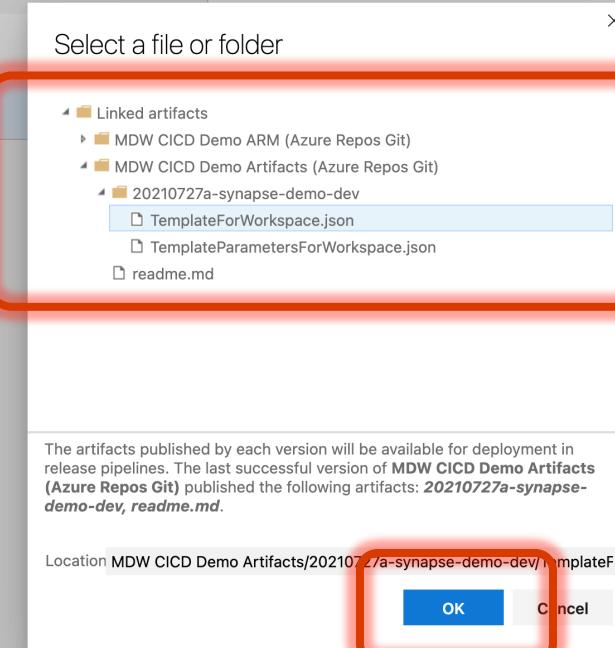
- Linked artifacts
 - MDW CICD Demo ARM (Azure Repos Git)
 - MDW CICD Demo Artifacts (Azure Repos Git)
 - 20210727a-synapse-demo-dev
 - TemplateForWorkspace.json
 - TemplateParametersForWorkspace.json
 - readme.md

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

Advanced Deployment name Deployment outputs



リリースパイプラインを作成

Screenshot of the Azure DevOps Pipelines interface showing the creation of a new release pipeline.

The left sidebar shows the project navigation: keisuketakahashi / MDW / Pipelines / Releases / New release pipeline.

The main area shows the "New release pipeline - Pipelines" screen with the "Tasks" tab selected. A "Stage 1" deployment process is visible.

A modal dialog titled "Select a file or folder" is open, listing artifacts from the "MDW CICD Demo Artifacts" repository:

- Linked artifacts
 - MDW CICD Demo ARM (Azure Repos Git)
 - MDW CICD Demo Artifacts (Azure Repos Git)
 - 20210727a-synapse-demo-dev
 - TemplateForWorkspace.json
 - TemplateParametersForWorkspace.json (highlighted with a red box)
 - readme.md

The "TemplateParametersForWorkspace.json" file is highlighted with a red box. The entire modal dialog is also highlighted with a red box.

Below the modal, the "Location" field shows the path: MDW CICD Demo Artifacts/20210727a-synapse-demo-dev/template. The "OK" button is also highlighted with a red box.

At the bottom of the dialog, there are "OK" and "Cancel" buttons.

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, MDW (selected), Overview, Boards, Repos, Pipelines (selected), Pipelines, Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main content area shows the 'New release pipeline' configuration. The 'Tasks' tab is selected. A single task named 'Synapse deployment task for workspace:' is listed under 'Agent job'. 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 (Azure Internal Subscription - KATAKHASHI (Keisuke Takahashi)), Subscription (Azure Internal Subscription - KATAKHASHI (Keisuke Takahashi)), Action (Create or update resource group), Resource group (20210727a_Synapse_Demo), and Location (Japan East). The top right of the page has a 'Save' button, which is highlighted with a red box. The entire 'Azure Details' section is also highlighted with a large orange box.

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 task named 'Synapse deployment task for workspace:' is listed under Stage 1. On the right, 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 about trigger change), 'Stage 1' (selected), 'Artifacts' (listing 'MDW CICD Demo ARM' and 'MDW CICD Demo Artifacts'), and 'Release description'. The bottom right of the modal has 'Create' and 'Cancel' buttons, both highlighted with red boxes.

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

Source alias Version

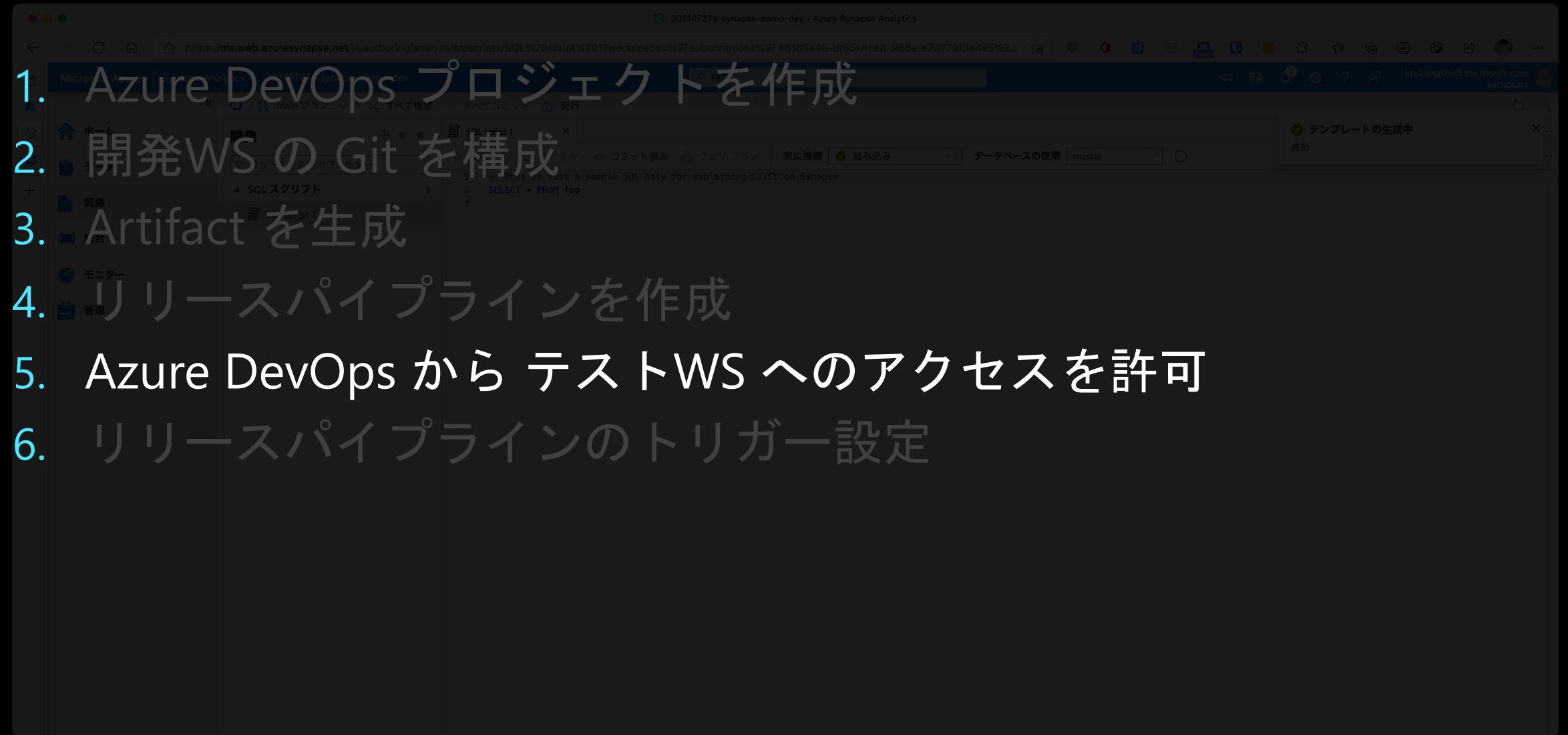
MDW CICD Demo ARM 165ca70b (Merged PR 4: Adding sqls...)

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 "Artifacts" section lists two items: "MDW CICD Demo ARM" (165ca70b) and "MDW CICD Demo Arti..." (d091457c). The "Stages" section on the right shows a single stage named "Stage 1" with the status "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'. The left sidebar is open, showing the 'Pipelines' section. The main area displays the 'Release' and 'Stages' sections. In the 'Release' section, it's noted as 'Manually triggered' by 'Keisuke Takahashi' on '11/23/2021, 12:52 AM'. The 'Stages' section shows 'Stage 1' which is 'Not deployed'. The right panel provides details for 'Stage 1', including the message 'To be deployed (Deploying for the first time) Release-1'. It lists two artifacts: 'MDW CICD Demo ARM / 165ca70b' and 'MDW CICD Demo Artifacts / d09f457c'. At the bottom of this panel is a 'Deploy' button, which is highlighted with a red box.

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 "New release pipeline > Release-1".

Release section:

- Triggered: 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 section:

- Stage 1** (Failed):
 - Synapse deployment task ... on 11/23/2021, 12:53 AM

A red box highlights the "Stage 1" card, indicating it is the failed stage.

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."}}
```

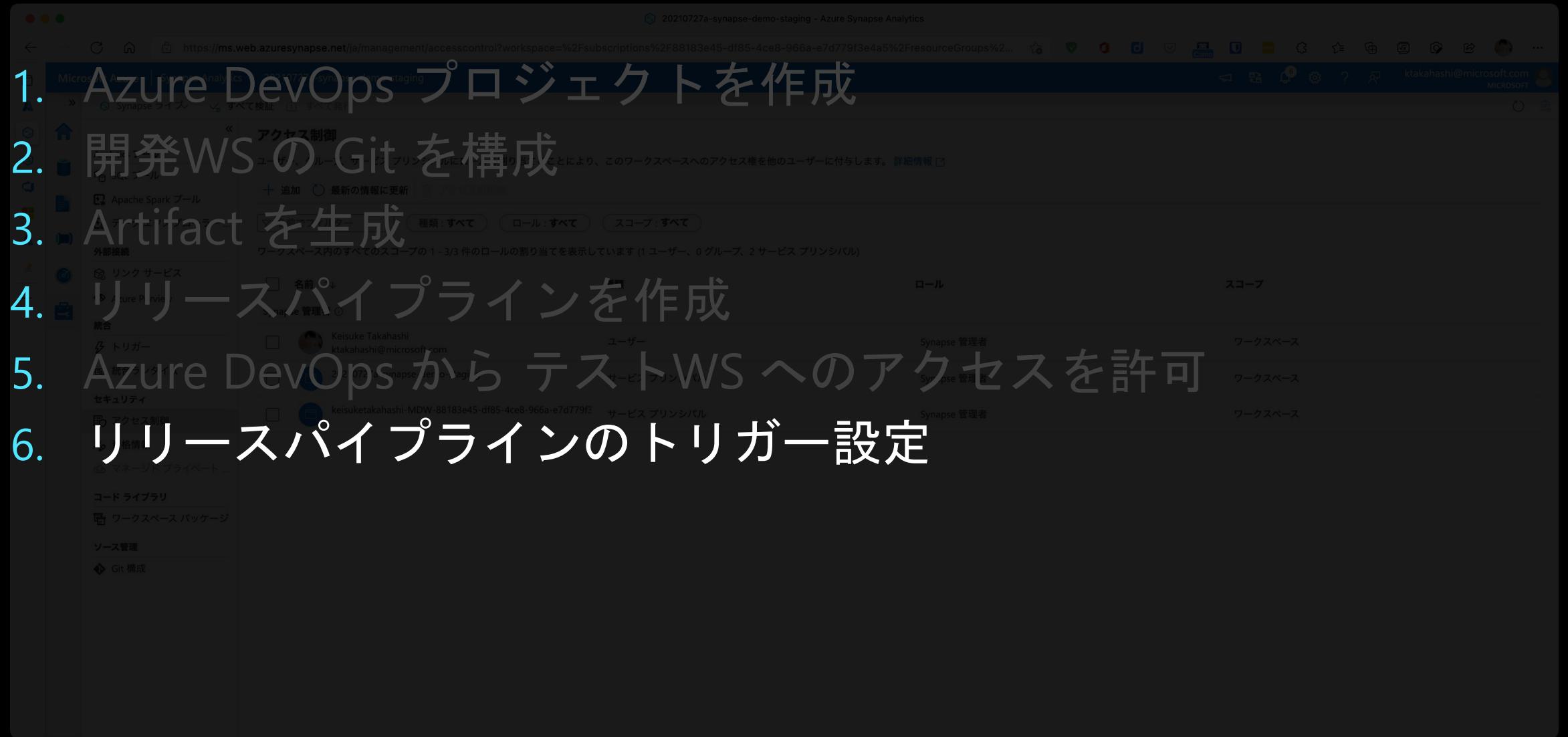
The last line of the log, "Finishing: Synapse deployment task for workspace: 20210727a-synapse-demo-staging", is highlighted with a red rectangle.

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 displays the access control table with two 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 'トリガー' (Triggers) and 'コード ライブラリ' (Code Library), which are part of the CI/CD pipeline configuration.

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 a project named "MDW". 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 a "New release pipeline" with a single stage named "Stage 1" containing one job and one task. The "Artifacts" section lists two artifacts: "MDW CICD Demo ARM" and "MDW CICD Demo Artifacts". A red box highlights the "MDW CICD Demo ARM" artifact icon. On the right, a detailed view of the "Continuous deployment trigger" settings is shown, which is enabled for the "main" branch of the selected Git repository. Below it, the "Pull request trigger" settings are also enabled for the "main" branch. A note at the bottom indicates that 1 of 1 stages are enabled for pull request deployments.

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

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
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 'Azure DevOps', 'MDW' (selected), 'Overview', 'Boards', 'Repos', 'Pipelines' (selected), 'Environments', 'Releases', 'Library', 'Task groups', 'Deployment groups', 'Test Plans', 'Artifacts' (highlighted with a red box), and 'Compliance'. The main area displays 'All pipelines > New release pipeline'. The pipeline structure shows 'Artifacts' (MDW CICD Demo ARM and MDW CICD Demo Artifacts) and 'Stages' (Stage 1). A red box highlights the 'Artifacts' section. A large red box surrounds 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 ⓘ
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 options like Overview, Boards, Repos, Pipelines (selected), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, Artifacts, and Compliance. The main area displays the pipeline structure with 'Artifacts' and 'Stages'. A stage named 'Stage 1' is highlighted with a red box. To the right, a detailed configuration pane for 'Pre-deployment conditions' is open, also highlighted with a red box. This pane contains sections for Triggers, Artifact filters, Schedule, Pull request deployment, Pre-deployment approvals, Gates, and Deployment queue settings.

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 content area displays the 'New release pipeline' configuration screen. On the left, there's a 'Artifacts' section with 'MDW CICD Demo ARM' and 'MDW CICD Demo Artifacts' listed, and a 'Schedule not set' option. On the right, there's a 'Stages' section with 'Stage 1' containing '1 job, 1 task'. At the top right, there are buttons for 'Save' (highlighted with a red box), 'Create release', and 'View releases'. The browser address bar shows the URL: https://dev.azure.com/keisuketakahashi/MDW/_releaseDefinition?definitionId=2&_a=definition-pipeline.

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

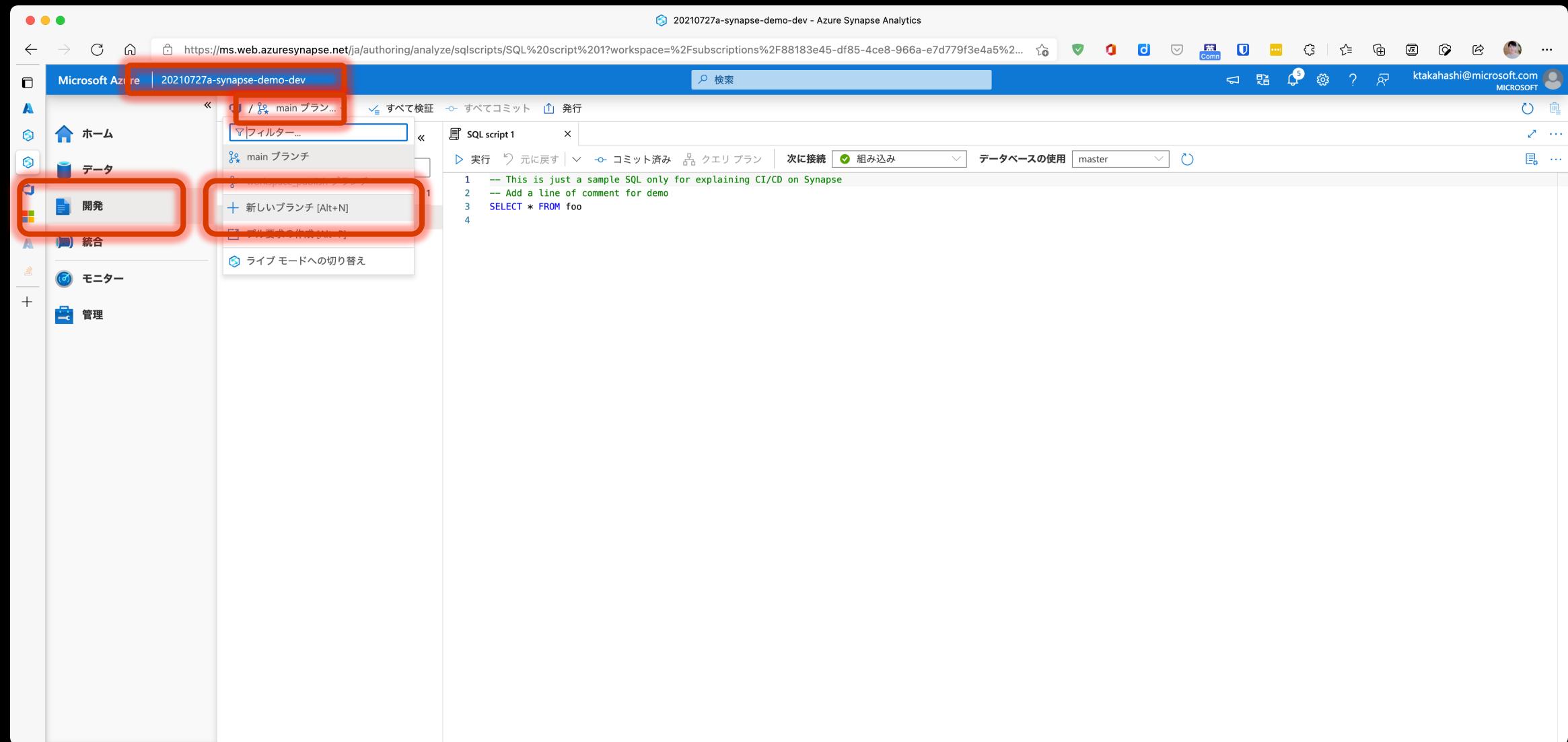
MDW CICD Demo ARM 91d78a9b (Merged PR 5: Updating sq...)

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

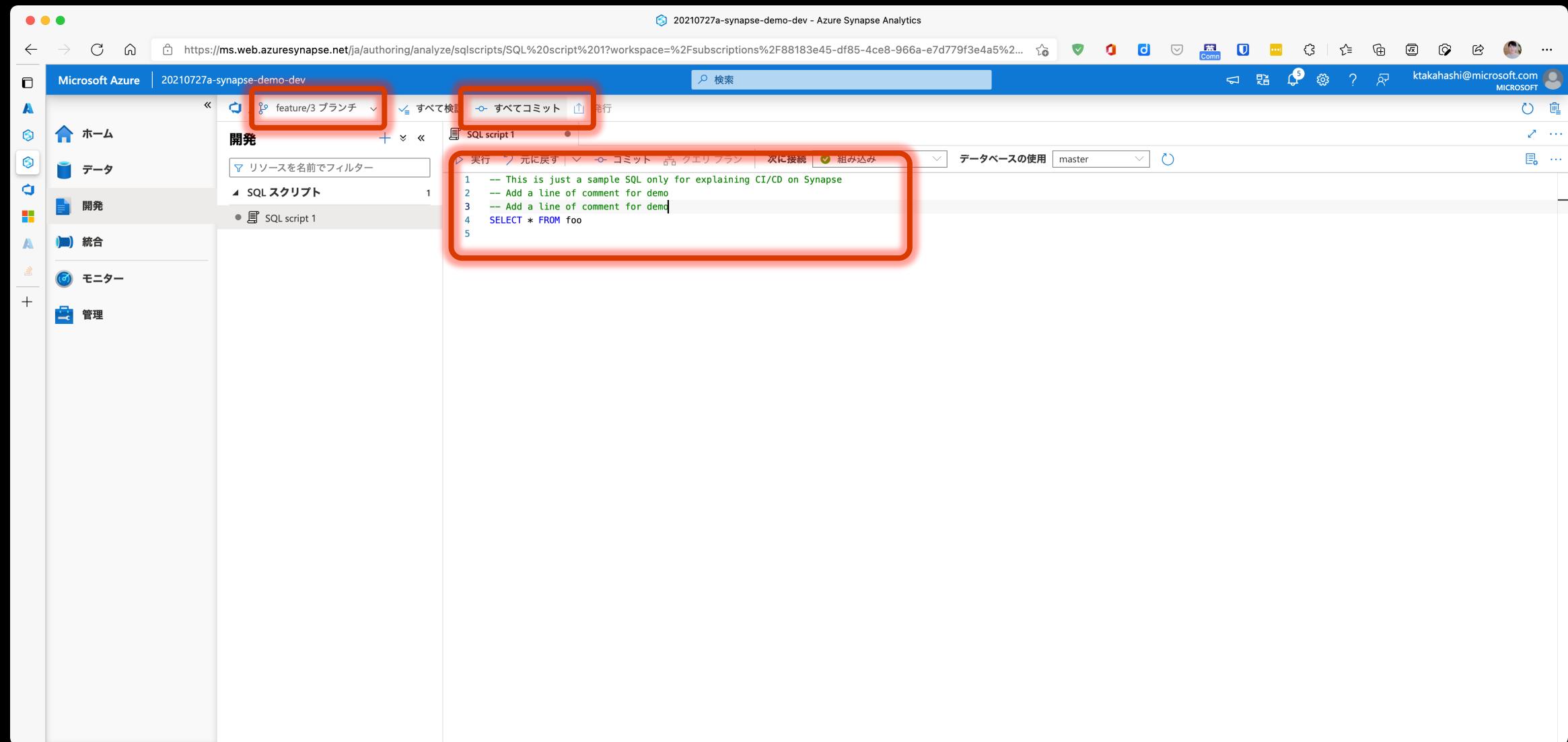
Release description

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

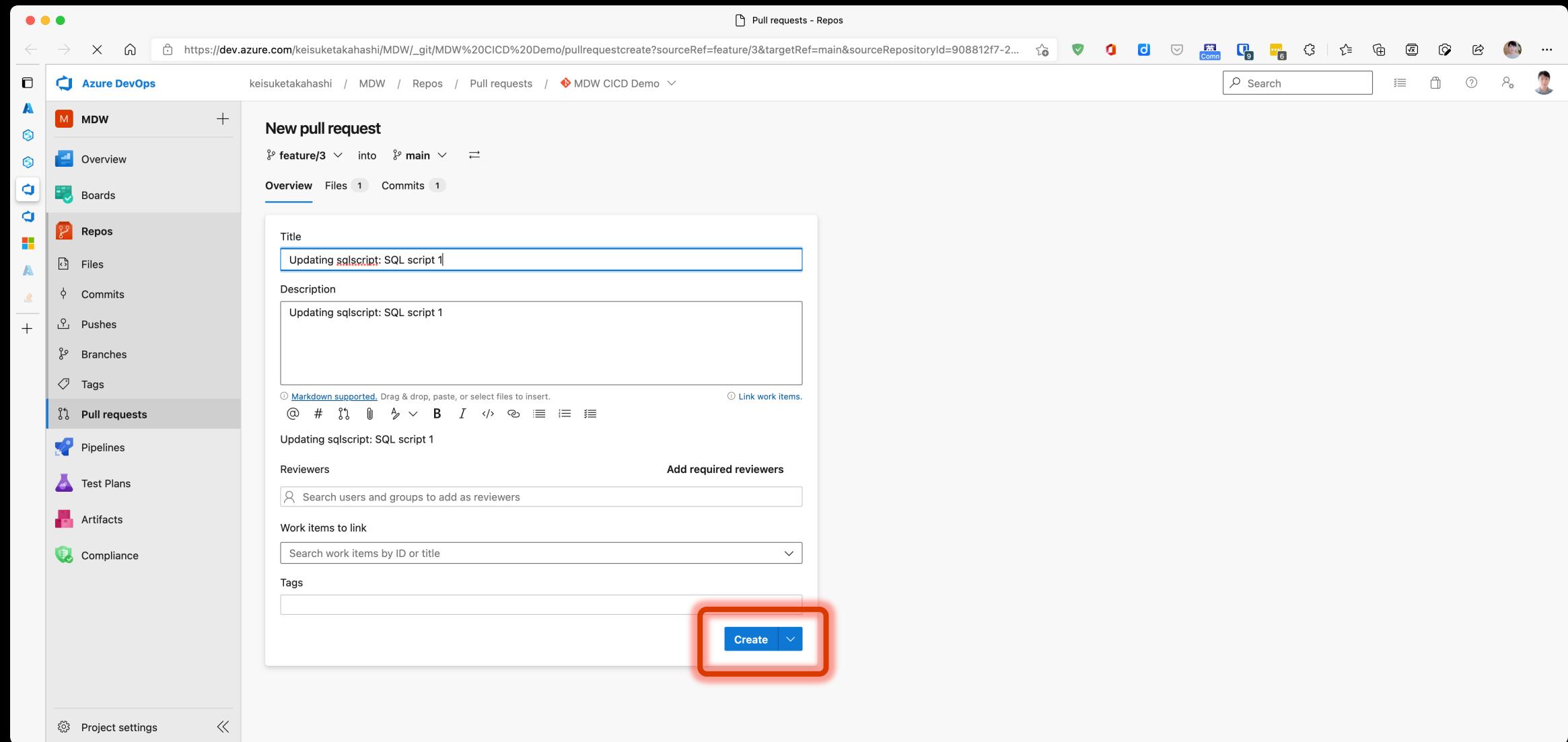
The screenshot shows the Microsoft Azure Synapse Analytics web interface. The URL in the browser is <https://ms.web.azure-synapse.net/ja/authoring/analyze/sqlscripts/SQL%20script%201?workspace=%2Fsubscriptions%2F88183e45-df85-4ce8-966a-e7d779f3e4a5%2...>. The page title is "20210727a-synapse-demo-dev - Azure Synapse Analytics".

The left sidebar shows the Azure navigation menu with "ホーム" selected. The main area displays a CI/CD pipeline named "feature/3 ブランチ". A red box highlights the "新しいブランチ [Alt+N]" and "プル要求の作成 [Alt+P]" options in the dropdown menu.

The right side shows the "SQL script 1" editor with 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 'New pull request' dialog in the Azure DevOps interface. The dialog is titled 'New pull request' and displays 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 blue 'Create' button is located at the bottom right of the dialog. This button is highlighted with a red rectangular box, indicating it is the primary action to be taken.

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)

Activity:
Keisuke Takahashi created the pull request Just now

Navigation:
Azure DevOps, MDW, Overview, Boards, Repos, Files, Commits, Pushes, Branches, Tags, Pull requests (selected), Pipelines, Test Plans, Artifacts, Compliance.

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

Address Bar:
https://dev.azure.com/keisuketakahashi/MDW/_git/MDW%20CICD%20Demo/pullrequest/6

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, and another red box highlights the "Complete" button in the top right corner.

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

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

Search

Approve Complete

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

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 for a SQL script update.

The main page shows the pull request details:

- Repository: MDW
- Pull Request ID: 6
- Title: Updating sqlscript: SQL script 1
- Author: Keisuke Takahashi
- Merge status: Active
- Reviewers: 16
- Description: Updating sqlscript: SQL script 1
- Check status:
 - No required checks (Optional check succeeded)
 - New release pipeline succeeded
 - No merge conflicts (Last checked 2m ago)
- Comments: Add a comment...
- History: Keisuke Takahashi created the pull request

A modal window titled "Complete pull request" is open on the right side:

- Merge type: Merge (no fast forward) (selected)
- Post-completion options:
 - Complete associated work items after merging (checked)
 - Delete feature/3 after merging (checked)
 - Customize merge commit message (unchecked)
- Buttons at the bottom: Cancel and Complete merge (the "Complete merge" button is highlighted with a red box).

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 right corner, there is a "Show everything (2)" button. At the very bottom, a comment from Keisuke Takahashi is visible: "Keisuke Takahashi completed the pull request Just now".

The left sidebar shows the project navigation menu with "Pull requests" selected. Other options include Overview, Boards, Repos, Files, Commits, Pushes, Branches, Tags, Pipelines, Test Plans, Artifacts, and Compliance.

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 displays the 'New release pipeline' under the 'Releases' tab. A red box highlights the first release entry:

Release	Created	Stage
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

Each release entry includes a small user icon, a commit hash, a deployment status icon, and a timestamp. The 'Stage' column indicates that all releases have completed Stage 1.

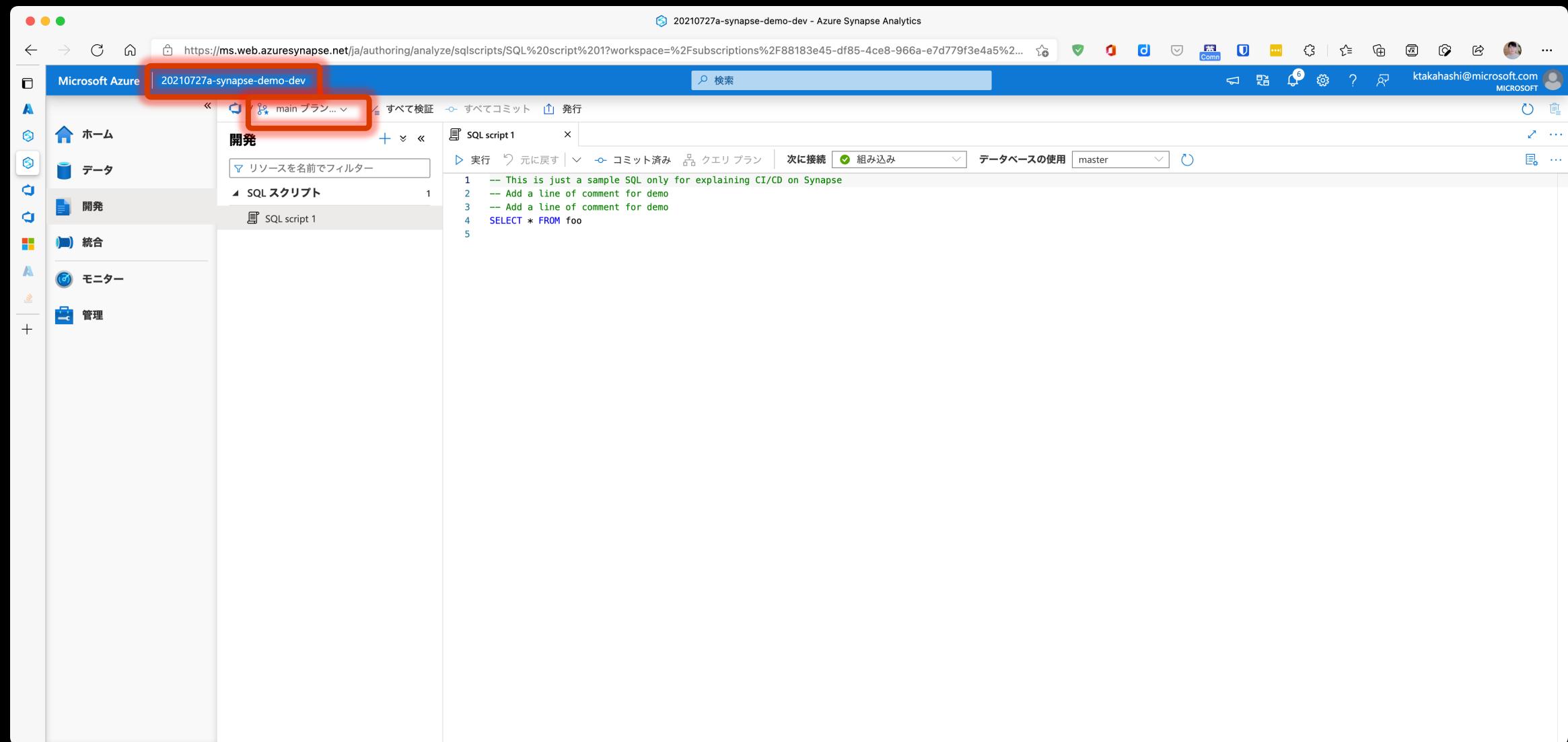
リリースパイプラインのトリガー設定 > 動作確認

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...' triggered by 'Keisuke Takahashi' on '11/23/2021, 4:09 AM'. It lists artifacts: 'MDW CICD Demo...' (commit b3d86b2b) and 'MDW CICD Demo Arti...' (commit 54457cd). On the right, under 'Stages', the first stage is shown as 'In progress' with a progress bar indicating 3/3 tasks completed in 00:32, labeled 'Synapse deployment'. 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 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..." (commit b3d86b2b) and "MDW CICD Demo Arti..." (commit 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.

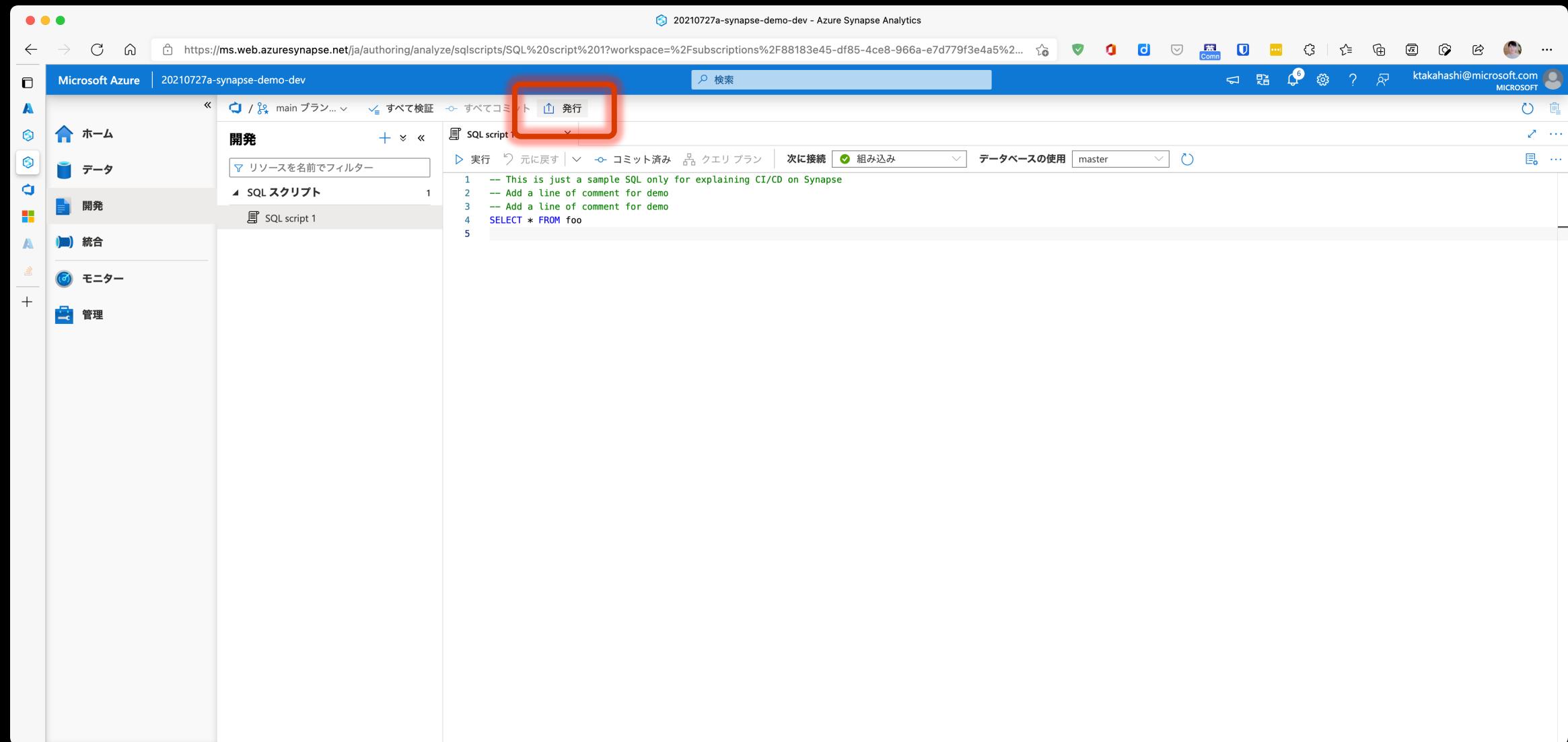
リリースパイプラインのトリガー設定 > 動作確認



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..." pipeline. A red box highlights the pipeline name in the breadcrumb navigation. The workspace contains a "SQL スクリプト" (SQL Script) section with one item named "SQL script 1". 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 Azure Synapse Analytics. The left sidebar is visible with various navigation options like Home, Data, Development, Integration, Monitoring, and Management. The main content 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. The "SQL script 1" editor 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
```

The toolbar above the editor includes buttons for "Execute", "Undo", "Redo", "Commit", "Cancel", "Query Plan", "Next Connection", "Combine", and "Database Usage". The "Execute" button is highlighted with a red box.

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 managing a CI/CD pipeline in an Azure Synapse Analytics workspace. The left sidebar navigation bar includes Home, Data, Development, Integration, Monitoring, and Management sections. The main content area displays the 'Development' workspace named '20210727a-synapse-demo-dev'. A sub-menu under 'Development' shows 'main プラン ...' (main plan), 'すべて検証' (All validation), 'すべてコミット' (All commit), and '公開' (Publish). The central workspace contains a 'SQL script 1' editor window with 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
```

Below the editor 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). To the right of the editor is a '保留中の変更' (Pending changes) panel titled 'workspace_publish' with the following items listed:

- ▽ バイブルайн
- ▽ データセット
- ▽ データ フロー
- ▽ 統合ランタイム
- ▽ リンク サービス
- ▽ トリガー
- ▽ 資格情報
- ▽ ノートブック
- ▽ Spark ジョブ定義
- ▽ SQL スクリプト
- SQL script 1 (編集済み) SQL script 1
- ▽ データベース
- ▽ KQL スクリプト

At the bottom right of the workspace, there are 'OK' and 'キャンセル' (Cancel) buttons, with the 'OK' button being highlighted by a red rectangle.

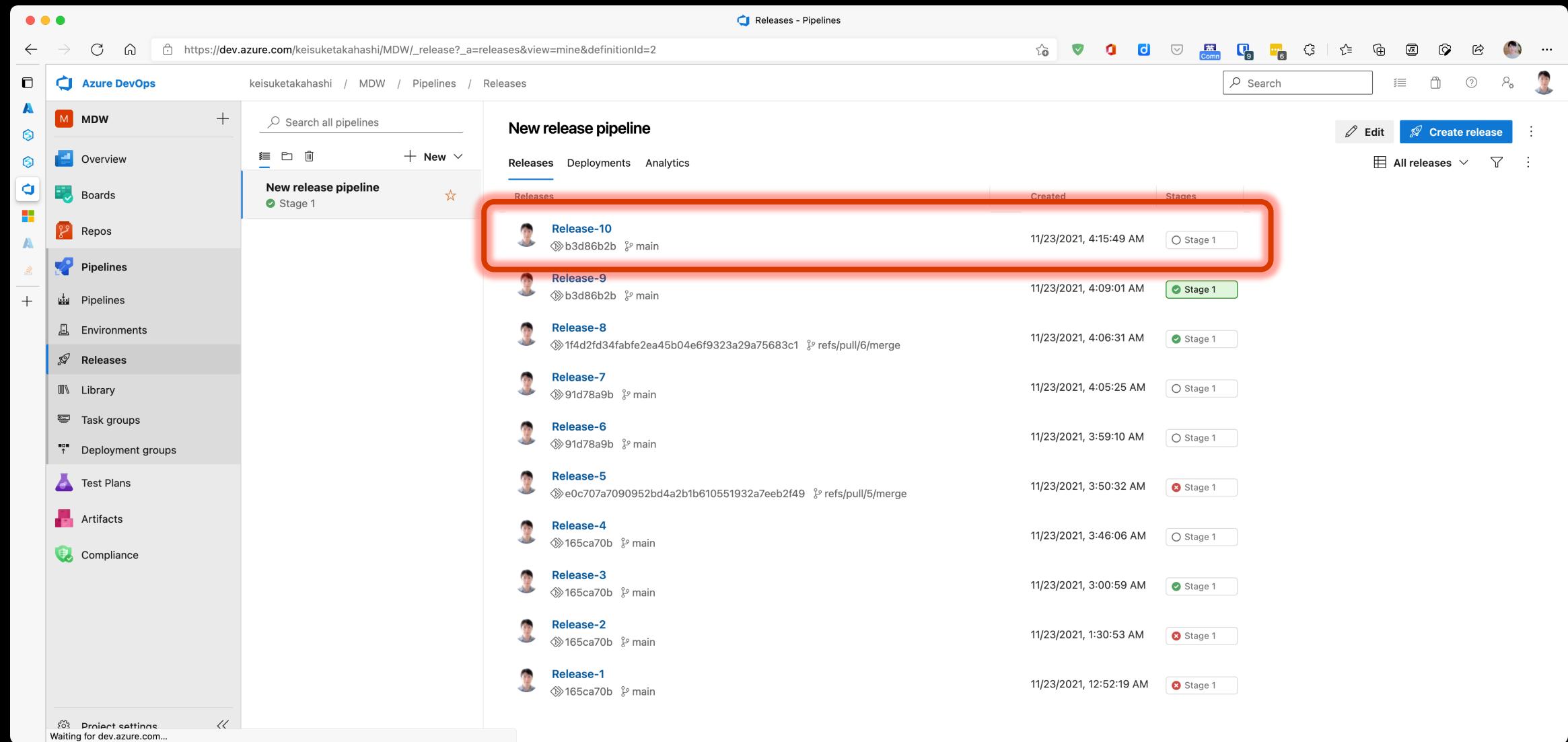
リリースパイプラインのトリガー設定 > 動作確認

The screenshot shows the Microsoft Azure portal interface for Azure Synapse Analytics. The left sidebar is visible with various navigation options like Home, Data, Development, Integration, Monitor, and Management. The main area is titled "20210727a-synapse-demo-dev - Azure Synapse Analytics". A sub-menu bar at the top of the main area includes "main プラン ...", "すべて検証", "すべてコミット", and "発行". The "SQL script 1" tab is selected, showing a SQL script 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, 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).

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.

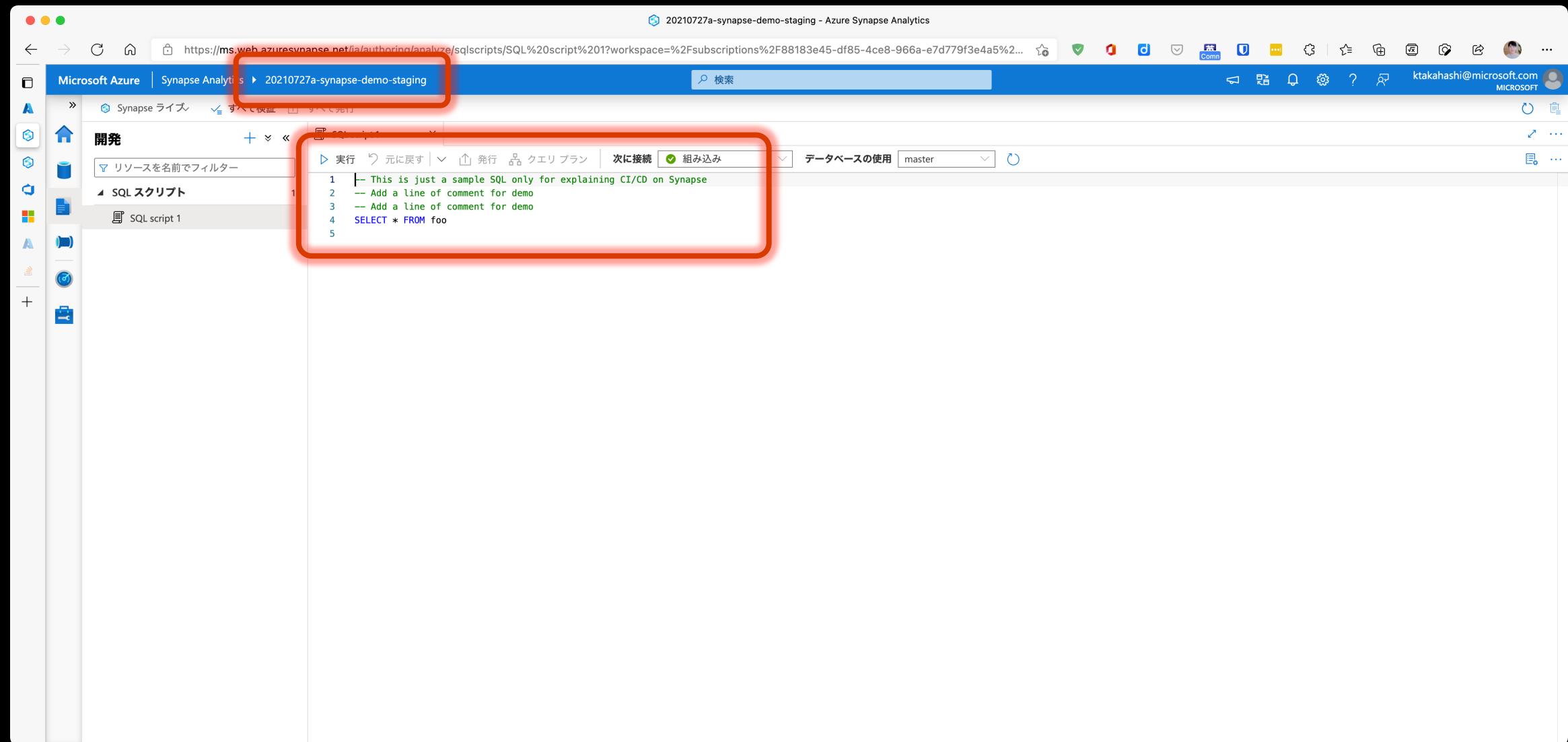
The main content area is titled 'New release pipeline' and displays a list of releases under the 'Releases' tab. The table has columns for 'Releases', 'Created', and 'Stages'. A red box highlights the first row, which represents 'Release-10'. The details for Release-10 show it was created on 11/23/2021 at 4:15:49 AM and is currently in 'Stage 1'. The other releases listed are Release-9, Release-8, Release-7, Release-6, Release-5, Release-4, Release-3, Release-2, and Release-1, each with their respective creation times and stage status.

Releases	Created	Stages
Release-10 b3d86b2b ↗ main	11/23/2021, 4:15:49 AM	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 e0c70a7090952bd4a2b1b610551932a7eeb2f49 ↗ 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

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 the same timestamp.

リリースパイプラインのトリガー設定 > 動作確認

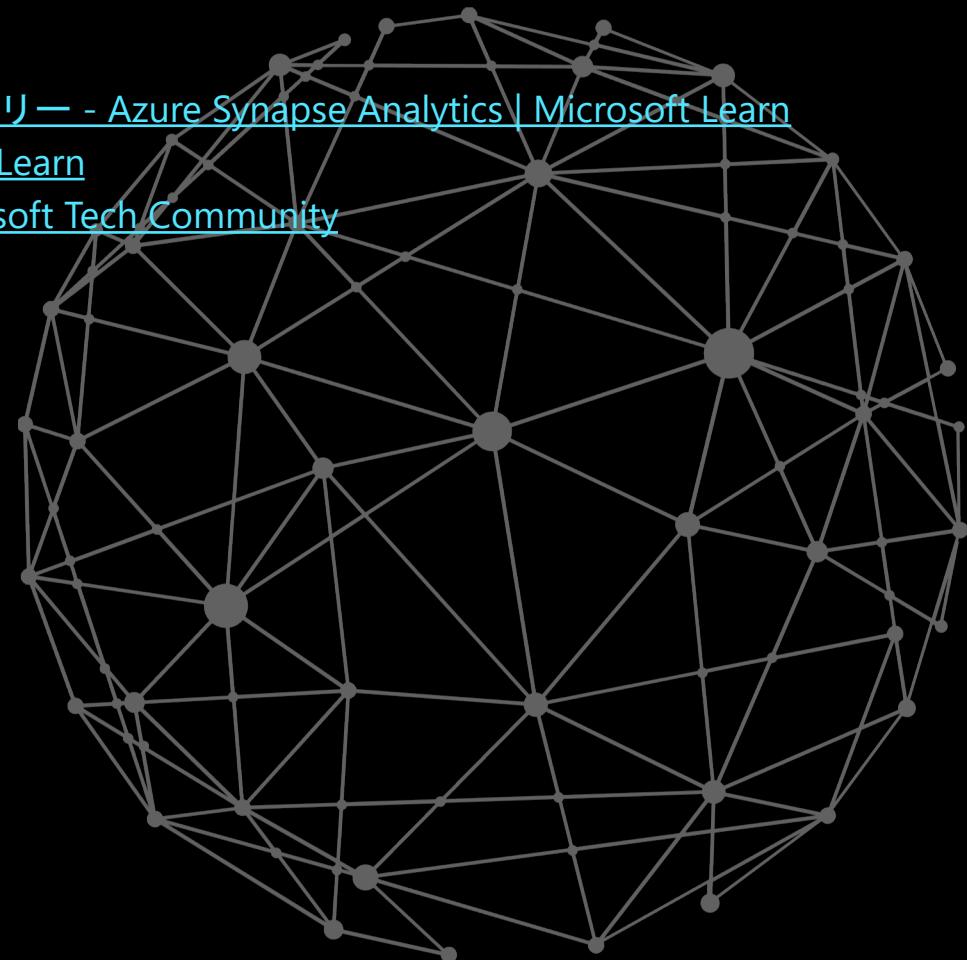


CI/CD の構築手順 (例, 再掲)

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 Learn](#)
- [Synapse Studio でのソース管理 - Azure Synapse Analytics | Microsoft Learn](#)
- [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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