Deploying Docker to Azure App Service

In this article

You can deploy a Docker container to Azure App Service as part of your continuous deployment (CD) workflows.

Introduction

This guide explains how to use GitHub Actions to build and deploy a Docker container to Azure App Service.

Note: If your GitHub Actions workflows need to access resources from a cloud provider that supports OpenID Connect (OIDC), you can configure your workflows to authenticate directly to the cloud provider. This will let you stop storing these credentials as long-lived secrets and provide other security benefits. For more information, see "About security hardening with OpenID Connect" and "Configuring OpenID Connect in Azure."

Prerequisites

Before creating your GitHub Actions workflow, you will first need to complete the following setup steps:

1. Create an Azure App Service plan.

   For example, you can use the Azure CLI to create a new App Service plan:

   Bash

   ```
   az appservice plan create \
      --resource-group MY_RESOURCE_GROUP \
      --name MY_APP_SERVICE_PLAN \
      --is-linux
   ```

   In the command above, replace `MY_RESOURCE_GROUP` with your pre-existing Azure Resource Group, and `MY_APP_SERVICE_PLAN` with a new name for the App Service plan.

   See the Azure documentation for more information on using the Azure CLI:

   - For authentication, see "Sign in with Azure CLI."
   - If you need to create a new resource group, see "az group."

2. Create a web app.

For example, you can use the Azure CLI to create an Azure App Service web app:

```shell
az webapp create \
    --name MY_WEBAPP_NAME \
    --plan MY_APP_SERVICE_PLAN \
    --resource-group MY_RESOURCE_GROUP \
    --deployment-container-image-name nginx:latest
```

In the command above, replace the parameters with your own values, where `MY_WEBAPP_NAME` is a new name for the web app.

3. Configure an Azure publish profile and create an `AZURE_WEBAPP_PUBLISH_PROFILE` secret.

   Generate your Azure deployment credentials using a publish profile. For more information, see "Generate deployment credentials" in the Azure documentation.

   In your GitHub repository, create a secret named `AZURE_WEBAPP_PUBLISH_PROFILE` that contains the contents of the publish profile. For more information on creating secrets, see "Using secrets in GitHub Actions."

4. Set registry credentials for your web app.

   Create a personal access token (classic) with the `repo` and `read:packages` scopes. For more information, see "Managing your personal access tokens."

   Set `DOCKER_REGISTRY_SERVER_URL` to `https://ghcr.io`, `DOCKER_REGISTRY_SERVER_USERNAME` to the GitHub username or organization that owns the repository, and `DOCKER_REGISTRY_SERVER_PASSWORD` to your personal access token from above. This will give your web app credentials so it can pull the container image after your workflow pushes a newly built image to the registry. You can do this with the following Azure CLI command:

   ```
    az webapp config appsettings set \
        --name MY_WEBAPP_NAME \
        --resource-group MY_RESOURCE_GROUP \
        --settings DOCKER_REGISTRY_SERVER_URL=https://ghcr.io
   DOCKER_REGISTRY_SERVER_USERNAME=MY_REPOSITORY_OWNER
   DOCKER_REGISTRY_SERVER_PASSWORD=MY_PERSONAL_ACCESS_TOKEN
   ```

5. Optionally, configure a deployment environment. Environments are used to describe a general deployment target like `production`, `staging`, or `development`. When a GitHub Actions workflow deploys to an environment, the environment is displayed on the main page of the repository. You can use environments to require approval for a job to proceed, restrict which branches can trigger a workflow, gate deployments with custom deployment protection rules, or limit access to secrets. For more information about creating environments, see "Using environments for deployment."

Creating the workflow

Once you've completed the prerequisites, you can proceed with creating the workflow.

The following example workflow demonstrates how to build and deploy a Docker container to Azure App Service when there is a push to the `main` branch.

Ensure that you set `AZURE_WEBAPP_NAME` in the workflow `env` key to the name of the web

app you created.

If you configured a deployment environment, change the value of `environment` to be the name of your environment. If you did not configure an environment or if your workflow is in a private repository and you do not use GitHub Enterprise Cloud, delete the `environment` key.

YAML

```yaml
# This workflow uses actions that are not certified by GitHub.
# They are provided by a third-party and are governed by
# separate terms of service, privacy policy, and support
# documentation.

# GitHub recommends pinning actions to a commit SHA.
# To get a newer version, you will need to update the SHA.
# You can also reference a tag or branch, but the action may change without
warning.

name: Build and deploy a container to an Azure Web App

env:
  AZURE_WEBAPP_NAME: MY_WEBAPP_NAME   # set this to your application's name

on:
  push:
    branches:
      - main

permissions:
  contents: 'read'
  packages: 'write'

jobs:
  build:
    runs-on: ubuntu-latest

    steps:
      - uses: actions/checkout@v4

      - name: Set up Docker Buildx
        uses: docker/setup-buildx-action@v2

      - name: Log in to GitHub container registry
        uses: docker/login-action@v2
        with:
          registry: ghcr.io
          username: ${{ github.actor }}
          password: ${{ secrets.GITHUB_TOKEN }}

      - name: Lowercase the repo name
        run: echo "REPO=${GITHUB_REPOSITORY,,}" >>${GITHUB_ENV}

      - name: Build and push container image to registry
        uses: docker/build-push-action@v4
        with:
          push: true
          tags: ghcr.io/${{ env.REPO }}:${{ github.sha }}
          file: ./Dockerfile

  deploy:
    runs-on: ubuntu-latest

    needs: build

    environment:
      name: 'production'
      url: ${{ steps.deploy-to-webapp.outputs.webapp-url }}
```

```
    steps:
      - name: Lowercase the repo name
        run: echo "REPO=${GITHUB_REPOSITORY,,}" >>${GITHUB_ENV}

      - name: Deploy to Azure Web App
        id: deploy-to-webapp
        uses: azure/webapps-deploy@85270a1854658d167ab239bce43949edb336fa7c
        with:
          app-name: ${{ env.AZURE_WEBAPP_NAME }}
          publish-profile: ${{ secrets.AZURE_WEBAPP_PUBLISH_PROFILE }}
          images: 'ghcr.io/${{ env.REPO }}:${{ github.sha }}'
```

Additional resources

The following resources may also be useful:

- For the original starter workflow, see `azure-container-webapp.yml` in the GitHub Actions `starter-workflows` repository.
- The action used to deploy the web app is the official Azure `Azure/webapps-deploy` action.
- For more examples of GitHub Action workflows that deploy to Azure, see the actions-workflow-samples repository.