

Building and Deploying Source Projects with IBM Cloud Transformation Advisor [EXPERIMENTAL]

Note: This is an experimental feature in IBM Cloud Transformation Advisor. You can access this feature by clicking Ctrl + Shift + X in the UI.

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Overview

When migrating an application, you will often need to make changes to the source code of that application to ensure a successful migration to the new target platform. The exact nature of the changes will vary from application to application.

Transformation Advisor reports on the changes necessary for each individual application and will tag applications that require code changes as either Moderate or Complex. There is an eclipse plugin available - WebSphere Application Migration Toolkit (WAMT) – which can point out exactly where changes need to be made in the code and can suggest possible fixes. See this link for more details on that:

https://developer.ibm.com/wasdev/downloads/#asset/tools-WebSphere_Application_Server_Migration_Toolkit

The rest of this document describes how Transformation Advisor can create a pipeline to build your source code project and create the necessary images and charts to deploy to IBM Cloud Private.

Building and Deploying a Source Code Project

Prerequisites:

1. An instance of IBM Cloud Private
2. An installation of Transformation Advisor in IBM Cloud Private
3. An installation of Microclimate in IBM Cloud Private
4. The data collector results loaded into IBM Transformation Advisor with migration recommendations
5. Eclipse with the WebSphere Application Migration Toolkit (WAMT) plugin to make the necessary code modifications. WAMT can be obtained from https://developer.ibm.com/wasdev/downloads/#asset/tools-WebSphere_Application_Server_Migration_Toolkit. If you prefer a different IDE, use the detailed analysis report from Transformation Advisor to make your code changes.
6. An implementation of Git (GitHub/GitLab) or access to a public implementation (GitHub/GitLab)
 - o A user with permissions to create a repository, clone a repository & update a repository in the above implementation
7. A Maven repository where the application binary and other dependencies can be downloaded from. Make sure the repositories are accessible from Microclimate
8. A Liberty server to test the modified application

Initial Deployment of Skeleton Source Project

1. From the Recommendations Summary page in Transformation Advisor, locate the application of interest in the Recommendations Summary Table.
2. Click the *View migration plan* button for the application.

At this point, Transformation Advisor will generate a bundle of artifacts for the project that allow it to be deployed to IBM Cloud Private.

You can choose to download this bundle and execute the steps manually, or you can continue with Transformation Advisor to set up a pipeline to build and deploy the source code project.

3. Click on the *Build and deploy* button.
 - a. Enter a Git URL for a repository that you have created. If this directory is not empty – you will be asked to confirm overwriting its contents.
 - b. Enter the Git credentials
 - c. Enter the Microclimate URL for the Microclimate instance installed on ICP
 - d. Enter a project name
4. Click Deploy

5. Review the structure of the project created in Git (A link to the Git repo is provided in the UI for convenience)

In Git you will see a simple Maven project structure. A minimal project skeleton has been added will allow the pipeline to execute successfully and deploy the skeleton applicaiton to IBM Cloud Private.

6. Follow the progress of the pipeline execution in Jenkins. A link is provided in the Transformation Advisor UI for convenience. You will see the different stages of the pipeline complete.
7. When the pipeline completes, go to IBM Cloud Private. Navigate to *Workloads... Helm Releases* to see the skeleton application.

Adding your source code

1. Clone the Git repository to your local development environment.
2. Import the cloned repository as a Maven project into Eclipse (or your favorite IDE).
3. Build the project and deploy to a local Liberty server to see the skeleton project running locally.
4. The structure of the project is a standard Maven project. Consult Maven documentation for more details.
5. Copy your source into the src directory including your Java code, web app and any other resources.
6. Copy any dependencies into the src/main/liberty/lib directory, and also into the \${shared.config.dir}/lib/global of your local liberty server.
7. Add any required dependencies to the pom.xml – for example if you use servlet 3.1 you need to add the following:

```
<dependency>
  <groupId>javax.servlet</groupId>
  <artifactId>javax.servlet-api</artifactId>
  <version>3.1.0</version>
  <scope>provided</scope>
</dependency>
```

8. You may need to update the server.xml, for example to add passwords.

9. Build the project and deploy to your local Liberty server.

If you are using the Eclipse IDE, you can use the WebSphere Application Migration Toolkit (WAMT) – which can point out exactly where changes need to be made in the code and can suggest possible fixes. See this link for more details on that: [https://developer.ibm.com/wasdev/downloads/#asset/tools-WebSphere Application Server Migration Toolkit](https://developer.ibm.com/wasdev/downloads/#asset/tools-WebSphere%20Application%20Server%20Migration%20Toolkit)

10. When you are satisfied with your code updates, commit your changes and push back to the master branch. The push to master will trigger the pipeline. When the pipeline completes, your application will be deployed on IBM Cloud Private.