MobileFirst Platform {dev}

Run Foundation on Bluemix

Relevant to:
 Native iOS  Native Android  Native Windows Phone 8  Native Windows 8
 Hybrid

Overview

This tutorial demonstrates how to take a locally developed IBM MobileFirst Platform Foundation project and run it on Bluemix. To achieve this result, you go through the following steps: set up your host computer with the required tools (MobileFirst CLI, Docker, and IBM Containers Extension (ICE) CLI), set up your Bluemix environment, build a MobileFirst Platform Foundation Server image, deploy your project runtime and push it to the Bluemix repository. Finally, you run the image on an IBM Bluemix Container and update it with the MobileFirst project application and adapter.

Prerequisite: Make sure to read the Introduction to Foundation on Bluemix tutorial.

Topics

Register an account at Bluemix

If you do not yet have an account, visit the Bluemix website and click **Get Started Free** or **Sign Up**. You'll need to fill up a registration form before you can move on to the next step.

The Bluemix Dashboard

After signing in to Bluemix, you are presented with the Bluemix Dashboard, which provides an overview of the active Bluemix **space**. By default, this work area receives the name "dev". You can create multiple work areas/spaces if needed.

Set up your host machine

To manage containers and images, you need to install the following tools: IBM MobileFirst Platform Foundation CLI, Docke, and IBM Containers Extension (ICE) CLI.

MobileFirst Platform Foundation CLI

Follow the Using CLI to create, build, and manage MobileFirst project artifacts tutorial to install the MobileFirst Command Line Interface.

Docker

Go to the Docker Documentation > on the left menu, select **Install > Docker Engine**, select your OS

type, and follow the instructions to install “Command-line Docker” with **Boot2Docker**.
Note: IBM does not support Docker Kitematic software.

IBM Containers Extension (ICE)

Prerequisites: Before you install the ICE CLI tool, you must first install Python, Python Setuptools, Python Pip, and Cloud Foundry CLI.

Installing Python, Python Pip, and Python Setuptools

Instructions for Windows

1. Launch Boot2Docker and run:

   ```
   $ boot2docker ssh
   ```

2. Install Python:

   ```
   $ wget http://www.tinycorelinux.net/5.x/x86/tcz/python.tcz && tce-load -i python.tcz && rm -f python.tcz
   ```

3. Install Python pip:

   ```
   $ curl -O https://bootstrap.pypa.io/get-pip.py
   $ sudo python get-pip.py
   ```

4. Follow the Python Setuptools installation instructions to install Python Setuptools.
5. Download the Cloud Foundry CLI:

   ```
   $ wget -O cf.tgz http://cli.run.pivotal.io/stable?release=linux32-binary
   ```

6. Install the Cloud Foundry CLI:

   ```
   $ sudo tar -zxvf cf.tgz -C /usr/bin/
   ```

Instructions for Linux and Mac OS X

1. Install Python, Python Pip, and Python Setuptools:
   - Linux
   - Mac OS X
2. Install the Cloud Foundry CLI from the Cloud Foundry CLI GitHub repository.

Installing ICE

- Install the IBM Containers Extension by running:

```
$ sudo pip install https://static-ice.ng.bluemix.net/icecli-3.0.zip
```

Note: If Boot2Docker was installed in OS X, remember to run the Docker`save` command in order to persist the changes. Otherwise you will have to go through the installation steps every time that the Boot2Docker VM is restarted.

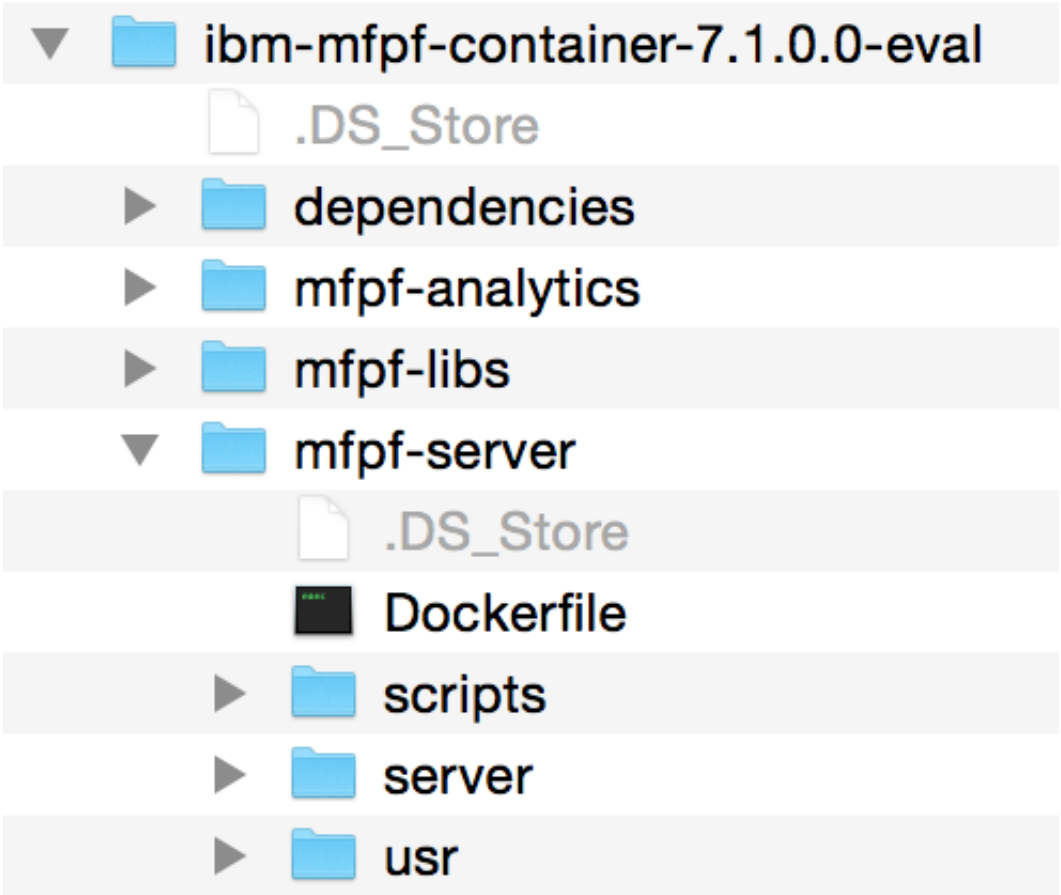
Run Foundation on Bluemix

To run Foundation on Bluemix, you must first create an image that will later be pushed to Bluemix.

If you have not downloaded the IBM MobileFirst Platform Foundation Evaluation on Containers v7.1 ZIP file yet, click the button below, accept the license, and download it.

Review the license and download the ibm-mfpf-container-7.1.0.0-eval.zip

Structure of the ibm-mfpf-container-7.1.0.0-eval.zip archive



The extracted ZIP file contains the files for building an image (`dependencies` and `mfpf-libs`), the files for building and deploying an IBM MobileFirst Platform Foundation Operational Analytics Container (`mfpf-analytics`), and files for configuring an IBM MobileFirst Platform Server Container (`mfpf-server`). This tutorial does not cover the analytics part.

The mfpf-server folder

- `Dockerfile`: Contains commands to build an image.
- `usr/projects` folder: The location of your MobileFirst Platform project runtime (`.war` file).
- `server` folder: Contains elements that are required for the IBM MobileFirst Platform Foundation Operational Server deployment.
- `scripts` folder: This folder contains the `args` folder, which contains a set of configuration files. It also contains scripts to run for logging in to Bluemix, building a Mobilefirst Platform Foundation Server image, deploying your project runtime, and for pushing and running the image on Bluemix. You can choose to run the scripts interactively or by preconfiguring the configuration files. See Step 3: Using the configuration files.

Step 1: Create an IBM MobileFirst Platform Foundation project

Create a new MobileFirst project or use an existing one. You can find tutorials on how to create a new project, and their associated sample projects, in the Getting Started with Foundation page.

Step 2: Prerequisites

1. **`ice login`**: To run ICE commands, you must first log in into the IBM Bluemix Container Cloud Service.
   This step is mandatory because you will be running ICE commands during the following step.
   Run:

   ```
   $ ice login
   ```

   When prompted, enter the following information:

   - Email
   - Password
   - Organization, if you have more than one
   - Space, if you have more than one
2. **`boot2docker start`** – If you are running on Linux, skip this step.
   To run the scripts and use Docker commands, you must first launch your Boot2Docker machine.
   On Windows or OS X, run:

   ```
   $ boot2docker start
   ```

3. Make sure that the namespace for container registry is set.
   - To set a namespace, run the command: `ice your-namespace set`.
   - To get the namespace that you have set, run the command:`ice namespace get`

Step 3: Using the configuration files

Note: If you choose to run the scripts interactively, you can skip this step.
The `args` folder contains a set of configuration files which contain the arguments that are required to run the scripts.

initenv.properties

- **BLUEMIX_API_URL –** Bluemix API endpoint. The default is `MARKDOWN_HASH1b7bd891a201b54a46b1864decfa0507MARKDOWN_HASH`.
- **BLUEMIX_REGISTRY –** The IBM Bluemix Containers registry domain. The default is `MARKDOWN_HASH9ee3199942def28e5988e93a94fb2159MARKDOWN_HASH`.
- **BLUEMIX_CCS_HOST –** The IBM Bluemix Container Cloud Service Host. The default is `MARKDOWN_HASH8f8c79b93c9659a7e1fd4bc417ab0400MARKDOWN_HASH`.
- **BLUEMIX_USER –** Your Bluemix username (email).
- **BLUEMIX_PASSWORD –** Your Bluemix password.
- **BLUEMIX_ORG –** Your Bluemix organization name.
- **BLUEMIX_SPACE –** Your Bluemix space (as explained previously).

prepareserverdbs.properties

- **DB_TYPE –** Bluemix DB service type (sqldb, cloudantNoSQLDB).
- **DB_SRV_NAME –** Your Bluemix DB service instance name.

- **DB_SRV_PLAN –** Bluemix database service plan.
  For SQL DB, the accepted values are sqldb_small, sqldb_free, sqldb_premium.
  For Cloudant DB, the accepted value is
  `MARKDOWN_HASH9e81e7b963c71363e2fb3eefcfecfc0eMARKDOWN_HASH`.
- **APP_NAME –** Your Bluemix DB application name.
  Note: Choose a unique name.
- **RUNTIME_NAME –** The MobileFirst project runtime name. This name should be commented out only when you configure the runtime database, as explained later.
- **SCHEMA_NAME –** Your database schema name. The default names are:
  - For admin database: WLDAMIN
  - For the MobileFirst project runtime database: the value of RUNTIME_NAME

prepareserver.properties

- **SERVER_IMAGE_TAG –** A tag for the image. Should be of the form:
  `MARKDOWN_HASHa724701b45631a7e2ddb07bbb296600cMARKDOWN_HASH`, where the repository namespace is a unique name to identify your private repository on the Bluemix registry. The namespace is assigned once and for all for an organization and cannot be changed.

  To set the namespace, run:

  ```
  $ ice namespace set <new_name>
  ```

- **PROJECT_LOC –** A path to the root directory of your MobileFirst project. Multiple project locations can be delimited by a comma.

startserver.properties

- **SERVER_IMAGE_TAG –** Same as in
  `MARKDOWN_HASH856e5f8530f350fec3a57a7622a2ae90MARKDOWN_HASH`.
- **SERVER_CONTAINER_NAME –** A name for your Bluemix Container.
- **SERVER_IP –** An IP address that the Bluemix Container should be bound to. To assign an IP address, run:

  ```
  $ ice ip request
  ```

  IP addresses can be reused in multiple containers in a space. If you've already assigned one, you can run:

  ```
  $ ice ip list
  ```

Step 4: Running the scripts

As explained above you can choose to run the scripts interactively or by using the configuration files:

- Using the configuration files – run the scripts and pass the respective configuration file as an argument
- Interactively – run the scripts without any arguments

The following demonstrate the first option.
To learn more about ICE commands use the `ice help` command.

1. **installcontainercli.sh – Adding Container Extension to the MobileFirst CLI**
   In order to use the Container Extension you must first add it to the MobileFirst CLI.

Run:

```
$ sudo ./installcontainercli.sh
```

2. **initenv.sh – Logging in to Bluemix**
   Run the `initenv.sh` script in order to login to Bluemix and for later use of the ICE commands:

   ```
   $ ./initenv.sh args/initenv.properties
   ```

3. **prepareserverdbs.sh – Prepare the MobileFirst Server database**
   The `prepareserverdbs.sh` script is used to configure your MobileFirst project database. You will need to run it separately, once for the admin database and once for every MobileFirst project runtime database.

   - For admin database run:

     ```
     $ ./prepareserverdbs.sh args/prepareserverdbs.properties
     ```

   - For each MobileFirst project runtime database – comment out the project `RUNTIME_NAME` argument and run:

     ```
     $ ./prepareserverdbs.sh args/prepareserverdbs.properties
     ```

   Note: If you are getting an error: “Application not configured correctly” – try to run the script (with the same properties) again.

4. **prepareserver.sh – Prepare a Mobilefirst Platform Foundation Server image**
   Run the `prepareserver.sh` script in order to build a Mobilefirst Platform Foundation Server image, deploy your project runtime and push it to to your Bluemix repository:

   ```
   $ ./prepareserver.sh args/prepareserver.properties
   ```

   To view all available images in your Bluemix repository run:

   ```
   $ ice images
   ```

   The list contains the image name, date of creation and ID.

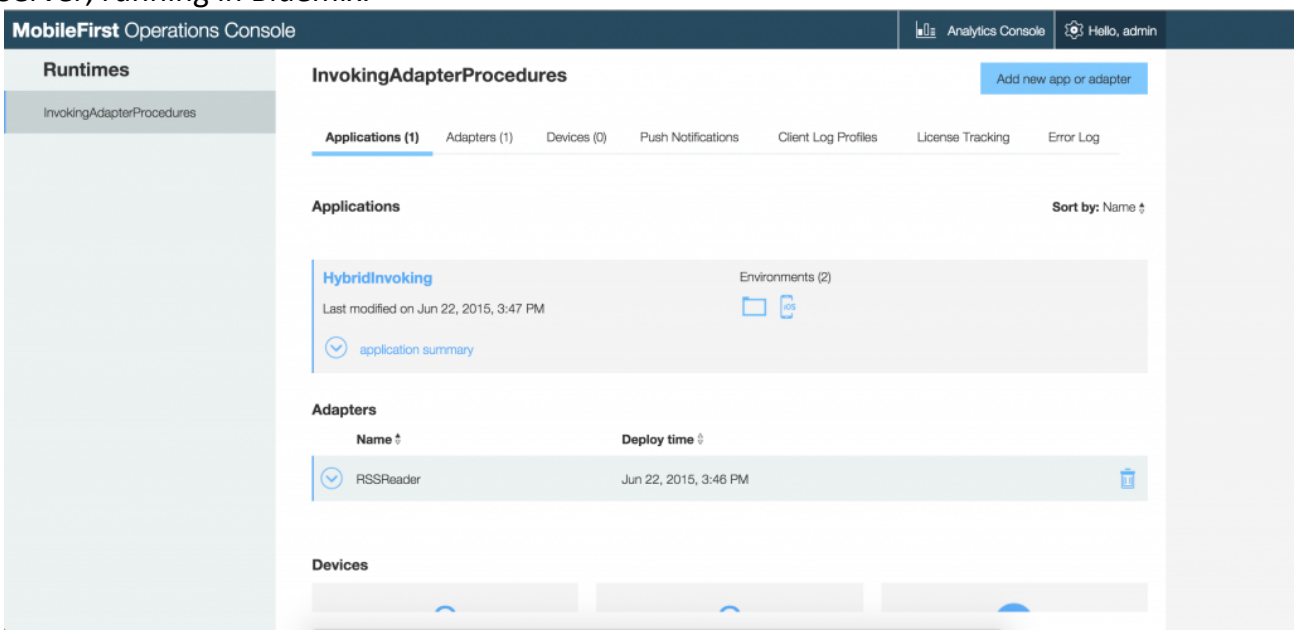
5. **startserver.sh – Running the image on an IBM Bluemix Container**
   The `startserver.sh` script is used to run the Mobilefirst Server image on an IBM Bluemix Container. It also Binds your image to a the public IP you configured in the `SERVER_IP` property.

   - Run:

     ```
     $ ./startserver.sh args/startserver.properties
     ```

   - Launch the MobileFirst Console by loading the following URL: http://<server_ip>:9080/worklightconsole (it may take a few moments).
   - Upload the `.wlapp` and `.adapter` files.
   - Update the application’s `worklight.plist` (for iOS) and/or `wlclient.properties` (for Android, Windows Universal, Windows Phone) with the protocol, host and port values of the IBM Container.

- You can now run your application to verify that it successfully connects to the MobileFirst Server, running in Bluemix.



Tips

- Part of the image building process is loading the image into your local docker repository. To view all available images in your local docker repository run:

  ```
  $ docker images
  ```

  The list contains the image repository, tag, ID, date of creation and virtual size.

- To delete an image from your local docker repository run:

  ```
  $ docker rmi <image ID>
  ```

- To start your image on a local container run:

  ```
  $ docker run -d -p 9080:9080 -p 9443:9443 <image ID>
  ```

- To view all available containers in your local docker repository run:

  ```
  $ docker ps
  ```

- To stop a running container run:

  ```
  $ docker stop <container ID>
  ```

- To delete a container from your local docker repository run:

  ```
  $ docker rm <container ID>
  ```

- To verify that the image is properly configured and the MobileFirst project runtime is available, launch the MobileFirst Console by loading the following URL: http://192.168.59.103:9080/worklightconsole.

> To learn more about Docker commands, review the Docker Documentation.