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Hands-on Lab Session 3478

Creating Open Toolchains for IBM Bluemix

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Bluemix DevOps Toolchain Lab

Objective

This series of labs shows how to set up a productive Continuous Delivery toolchain with a sample that consists of three microservices. After you finish this part of the series, you will be familiar with a toolchain that demonstrates practices from the IBM® Bluemix® Garage Method. ***Note:*** Toolchains are currently available in the US South region only and the instructions in this lab are written for the US South region.

To create this toolchain, we will use a sample to create an online store that consists of three microservices: a Catalog API, an Orders API, and a UI that calls both of the APIs. The toolchain is preconfigured for continuous delivery, source control, blue-green deployment, functional testing, issue tracking, online editing, and alert notification. We will explore the various integrations.

Online Store sample

The online store consists of three microservices:

1. Catalog API: A back-end RESTful API that tracks all of the items in the store.
2. Orders API: A back-end RESTful API that tracks all store orders.
3. UI: A simple UI that displays all of the items in the store catalog, and that can create orders. This PHP UI calls both of the REST APIs.

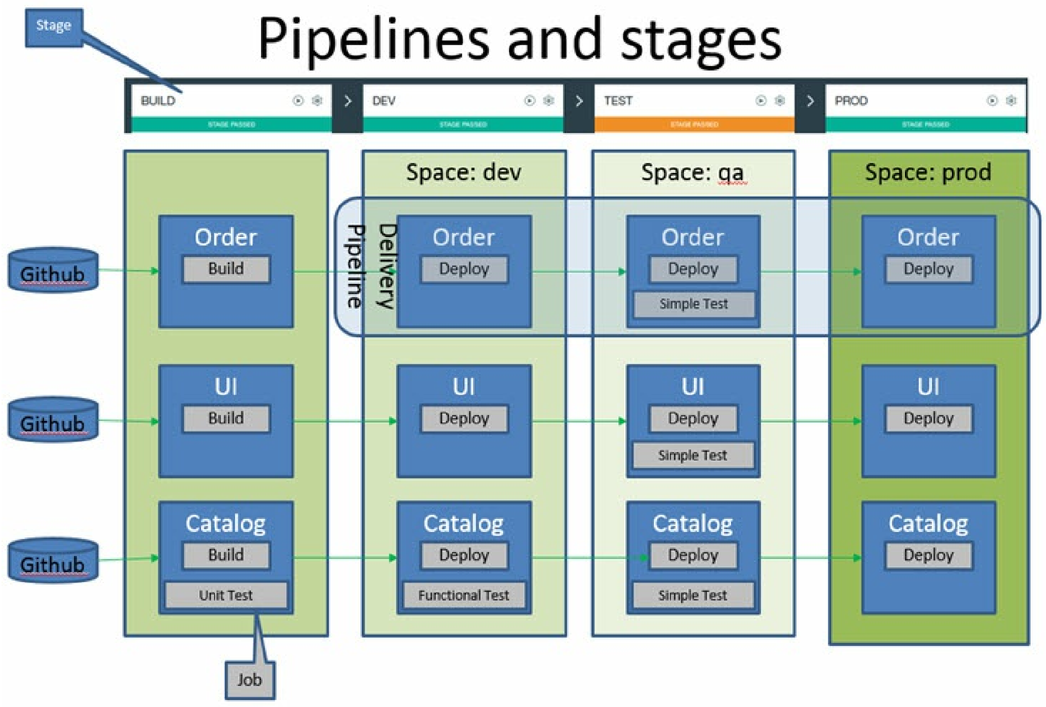
The Catalog and Orders API are backed by a Cloudant store. As part of deploying this application a no cost Cloudant service instance will be created.

Pipelines, stages and deployment environments - oh my!

In the real world, many enterprises have a process for developing, testing and deploy code to production. The lab scenario we will go through shows how Bluemix Continuous Delivery toolchains can be used to to automate that process.

- The code for the online store is already in three different GitHub repositories, one per microservice. As part of creating the Continuous Delivery toolchain, you will clone the repositories to your own GitHub account.
- Three delivery pipelines will also be created, again one per microservice. Each pipeline can be run in parallel.
- Each delivery pipeline will consists of a number of stages (Build, Dev, Test and Prod).
- Each stage will consist of one or more jobs that perform a task such a build the code, deploy the code, or testing the codes.
- As part of the respoective delivery pipeline, each microservice is deployed to three environments: development, test, and production. You end up with nine deployed apps.
- While we could edit locally (using Eclipse for example) and push the code up to Bluemix, we will instead use the Eclipse Orion Web IDE, which you can use to edit your code and deploy it with the pipeline from a web browser.
- We want our application to scale as needed so we will be deploying one of the microservices into Bluemix containers

Conceptually, the process looks like:



Teaming

Software development is a team activity. The lab scenario also shows how Bluemix Continuous Delivery tool integrations can be used to alerts teams when activities occur (such as builds or deployments) as well as when events happen (such as a build failing or an application outage).

- Slack is configured to alert the team when activities occur
- [PagerDuty | IBM Alert Notification] is configured to alert the team when events happen
- Bluemix Availbility Monitoring is configured to monitor the application in production and alert the team when outages occur

It sounds like a lot ... and it is! Thankfully, it is all handled by a Bluemix Continuous Delivery toolchain. And even better, we will use an existing template to give a great starting point.

Prerequisites

Prior to running these labs, you must have a Bluemix account, a GitHub account and access to a lab laptop. Follow the steps in Lab 0 to create one or both of those accounts.

Labs

- Lab 0: Create Bluemix and GitHub accounts
- Lab 1: Create Toolchain for Sample Application
- Lab 2: Build and deploy to dev space
- Lab 3: Customize Toolchain to add Slack Integration
- Lab 4: Customize Toolchain to allow full deployment
- Lab 5: Customize Toolchain to add Bluemix Availability Monitoring
- Lab 6: Add Bluemix IBM Alert Notification
- Lab 7: Modify Pipeline for Catalog to deploy Catalog to Containers
- Lab 8: Add auto-scaling support to Catalog