EDD AWS CodePipeline and CodeBuild Deployment Process

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Initial Draft

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# The EDD Deployment Process

We use AWS CodePipeline and AWS CodeBuild to deploy code from a central account we call the **Shared Account**. The pipelines are created with CloudFormation using AWS Service Catalog.

## Accounts

We currently have a number of accounts. We deploy to these accounts when code is pushed to the associated branches.

A diagram of a computer

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Figure : Accounts Detail

### AWS Account Numbers

Table : AWS Account Numbers

| Account # | IV Name | EDD Name | Purpose |
| --- | --- | --- | --- |
| 318484875904 | Shared | n/a | Contains all AWS CodePipeline, CodeBuild, and CodeCommit resources |
| 90541811020 | RND | n/a | Developers create components in the AWS Console |
| 441184076731 | Feature | n/a | Developers use this account to test their infrastructure as code and deployments |
| 658456346551 | Dev | n/a | Used for internal testing and validation |
| 640079793484 | QA | QA | Used for testing by Osaas |
| 137271411486 | QA-FIX | QA-FIX | Patch/bugfix environment fot QA |
| 559450564007 | Sandbox1 | Sandbox1 | R&D environment for EDD’s IT department |
| 123372620210 | Sandbox2 | Sandbox2 | R&D environment for EDD’s IT department |
| 990703426931 | Sandbox3 | Sandbox3 | R&D environment for EDD’s IT department |
| 414275752728 | DIBT | DIBT | Training environment for call center workers |
| 443054495397 | Staging | UAT | Used for customer validation |
| 635425321918 | UAT | Performance | Used for performance testing |
| 058264286667 | UAT-FIX | UAT-FIX | Patch/bugfix environment fot UAT |
| 559550955475 | Prod | Prod | Contains production Connect instance |
| 891376957702 | Prod-FIX | Prod-FIX | Patch/bugfix environment for Prod |

## Repositories

This implementation is contained in 6 AWS CodeCommit repositories.

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Figure : AWS CodeCommit Repositories

## EDD Connect

The edd-connect repository contains the CDK application that deploys the base Connect instance.

## Virtual Callback

This is an implementation of the AWS blog post [Set up queued callback by creating flows, queues, and routing profiles](https://docs.aws.amazon.com/connect/latest/adminguide/setup-queued-cb.html).

## Lambda Deployments and Supporting Resources

The edd-infrastructure-backend-common repository contains:

* Lambda code called by Lex and Connect
* Lambda code that extends CloudFormation via [CloudFormation custom resources](https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/template-custom-resources.html)
* Typescript based Cloudformation Development Kit applications to deploy that Lambda code
* Build and deployment instructions in the [buildspec file](https://docs.aws.amazon.com/codebuild/latest/userguide/build-spec-ref.html) used to deploy the CloudFormation templates and the CDK application.

## Connect and Lex Deployments

The Connect and Lex deployments use scripts contained in the [connect-scripts](file:///C:\Users\bill\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\HOW9UBWT\connect-scripts\README.md) repository.

These scripts can be used to copy any Connect implementation to another Connect instance.

A screenshot of a computer screen

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Figure : Connect and Lex Deployment Detail

## Cross Account Code Pipeline

All Code and CodePipelines are stored in the shared account.

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Figure : Cross Account Code Pipeline Detail

For the most part we use standard git processes to perform branching, pull requests and merges. However, the process we use to deploy Connect and Lex resources is different.

We have scripts controlled by a separate pipeline that export code directly from the AWS Connect instance and the Lex console to the dev environment.

A diagram of a computer flowchart

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Figure : AWS Connect instance and Lex Console Export Pipeline

## Provisioning a Pipeline

We use [AWS Service Catalog](https://aws.amazon.com/servicecatalog/) to create our CodePipelines.

You can find more information in the [Service Catalog CodePipeline README](file:///C:\Users\bill\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\HOW9UBWT\codepipeline\README.md).

## How Pipelines Are Used to Deploy Code

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Figure : Code Deployment Pipeline

## Creating a New Environment.

### Add the Account to the Service Catalog Product

The name of the environment and account number need to be added to the Service Catalog Product.

Log in to the Shared Account ( ) and edit the [CodePipeline CloudFormation template](https://us-west-2.console.aws.amazon.com/codesuite/codecommit/repositories/service-catalog-framework-with-cross-account-codepipeline/browse/refs/heads/main/--/three-stage-cross-account-pipeline/cross-account-codepipeline.yml?region=us-west-2).

Add the environment and the AWS Account number of the target account.

Parameters:  
Repository:  
 Type: String  
 Description: Name of the CodeCommit repository that stores the application code.  
 TargetAccount:  
 Type: String  
 Description: The destination account  
 AllowedValues:  
 - dev/   
 - feature/   
 - qa/

After you make the change and save it, the associated CodePipeline will be initiated and the product will be updated.

The environment and account number values will be available as environment variables within CodeBuild - $Environment and $AccountNumber.

### Create Roles in the Target Account

There are two roles required in the target account.

* codebuild-connect - for now this account should have the Administrator Account policy attached and allow assumed role trust from the DevOps account ( ). This role is used by the CodePipelines to run commands in the account.
* AWSServiceRoleForLexV2Bots\_Common - this role should have the AmazonLexV2BotPolicy attached and is used by imported Lexbots

### Create Pipelines to Deploy to the Target Account

A pipeline needs to be created targeting the new account for each dependent repository.

* edd-connect - deploys the AWS Connect instance
* edd-infrastructure-backend-common - deploys the supporting AWS Lambdas and related infrastructure
* edd-virtual-callback-queue - supports scheduled callback
* edd-infrastructure-frontend-common - deploys the Lexbots and Connect content.
  + “full” - if a deployment type of full is specified, both the Lexbots and the Connect content will be deployed.
  + “partial” - if a deployment type of partial is specified, only the Connect content will be deployed.
* edd-dynamod-export-data - populates the target DynamoDB tables that were created as part of the backend common