



nextwork.org

Secure Packages with CodeArtifact

J

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Packages		Info	C	Delete package	View connection instructions			
<input type="text"/> Filter by package name prefix, format, namespace prefix, and origin controls								
< 1 2 3 4 > ⚙️								
Package name		Namespace	Format	Latest version	Latest publish date			
<input type="radio"/>	backport-util-concurrent	backport-util-concurrent	maven	3.1	6 minutes ago			
<input type="radio"/>	classworlds	classworlds	maven	1.1	6 minutes ago			
<input type="radio"/>	google	com.google	maven	1	6 minutes ago			
<input type="radio"/>	jsr305	com.google.code.findbugs	maven	2.0.1	6 minutes ago			
<input type="radio"/>	google-collections	com.google.collections	maven	1.0	6 minutes ago			
<input type="radio"/>	commons-cli	commons-cli	maven	1.0	6 minutes ago			
<input type="radio"/>	commons-logging-api	commons-logging	maven	1.1	6 minutes ago			



Introducing Today's Project!

In this project, I will demonstrate how to set up CodeArtifact as part of a CI/CD pipeline's artifact repo. I'm doing this to understand the importance and value of having an artifact repository.

Key tools and concepts

Services I used include CodeArtifact, Amazon EC2, IAM. Key concepts I learnt include include using artifact repositories, connecting maven with CodeArtifact, setting up IAM roles and policies to give EC2 instance the permission to access codeartifact

Project reflection

This project took me approximately 2hrs. The most challenging part was connecting maven to communicate with the code artifact. It was most rewarding to see code artifact filled up with packages when I ran the build.

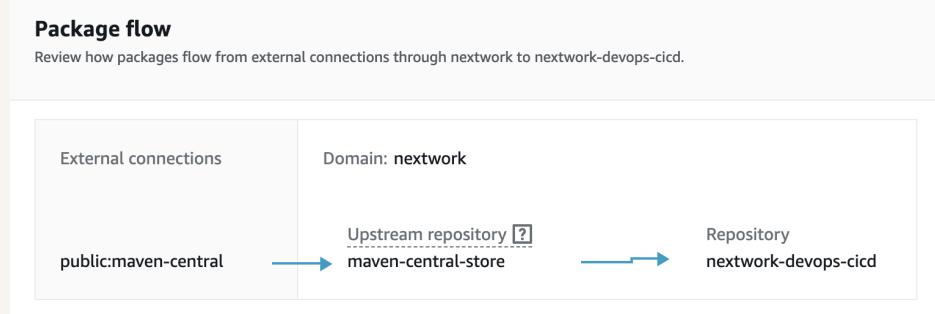
This project is part three of a series of DevOps projects where I'm building a CI/CD pipeline.

CodeArtifact Repository

CodeArtifact is a secure, central place to store all your software packages and dependencies. Engineering teams use artifact repositories for security, reliability and control. Your team can easily share and use the same versions of packages.

A CodeArtifact domain is like a folder that holds multiple repositories belonging to the same project or organization. They are helpful for setting permission settings for multiple repos. My domain is called nextwork.

A CodeArtifact repository can have an upstream repository, which means a public source of packages that the web app can visit if it can't find the local version. My repository's upstream repository is Maven Central Store - the largest Java repo.





CodeArtifact Security

Issue

To access CodeArtifact, we need an authentication token that allows EC2 instance to access code artifact for 12hrs. I ran into an error when retrieving a token because the EC2 instance doesn't have the permission to access AWS resources by default.

Resolution

To resolve the error with my security token, I setup an IAM policy that grants access to codeartifact and an IAM role I can attach to the EC2 instance. This resolved the error because the EC2 instance now has access to request an auth token from repo

It's security best practice to use IAM roles because IAM roles are more secured and scalable than hardcoded credentials which are more vulnerable to security attacks and getting misused.

The JSON policy attached to my role

The JSON policy I set up grants access to code artifact. It grants access to 3 key actions related to code artifact - retrieving and authorization token, finding the repo endpoint, and viewing the packages inside the repo.

```
Policy editor

1▼ {
2    "Version": "2012-10-17",
3    "Statement": [
4        {
5            "Effect": "Allow",
6            "Action": [
7                "codeartifact:GetAuthorizationToken",
8                "codeartifact:GetRepositoryEndpoint",
9                "codeartifact:ReadFromRepository"
10           ],
11           "Resource": "*"
12       },
13       {
14           "Effect": "Allow",
15           "Action": "sts:GetServiceBearerToken",
16           "Resource": "*",
17           "Condition": {
18               "StringEquals": {
19                   "sts:AWSServiceName": "codeartifact.amazonaws.com"
20               }
21           }
22       }
23   ]
24 }
```

Maven and CodeArtifact

To test the connection between Maven and CodeArtifact, I compiled my web app using `settings.xml`

The `settings.xml` file configures Maven to use the CodeArtifact repository. It supplies Maven with the name and authentication token to get access to code artifact repo and also sets up a profile section incase of multiple repos.

Compiling means the process of translating a web apps source code into something that machines can run. Maven is the compiler I'm using here.

```
<settings>
  <servers>
    <server>
      <id>nextwork-nextwork-devops-cicd</id>
      <username>aws</username>
      <password>${env.CODEARTIFACT_AUTH_TOKEN}</password>
    </server>
  </servers>

  <profiles>
    <profile>
      <id>nextwork-nextwork-devops-cicd</id>
      <activation>
        <activeByDefault>true</activeByDefault>
      </activation>
      <repositories>
        <repository>
          <id>nextwork-nextwork-devops-cicd</id>
```



Verify Connection

After compiling, I checked the CodeArtifact repo and I noticed 4 pages of packages inside. This tells me that I successfully stored the web apps dependecies in a artifact repository.

Packages [Info](#) [Delete package](#) [View connection instructions](#)

Filter by package name prefix, format, namespace prefix, and origin controls

< 1 2 3 4 >

Package name	Namespace	Format	Latest version	Latest publish date	Actions
backport-util-concurrent	backport-util-concurrent	maven	3.1	6 minutes ago	
classworlds	classworlds	maven	1.1	6 minutes ago	
google	com.google	maven	1	6 minutes ago	
jsr305	com.google.code.findbugs	maven	2.0.1	6 minutes ago	
google-collections	com.google.collections	maven	1.0	6 minutes ago	
commons-cli	commons-cli	maven	1.0	6 minutes ago	
commons-logging-api	commons-logging	maven	1.1	6 minutes ago	



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