



Secure Packages with CodeArtifact



Gaurav Balpande

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Introducing Today's Project!

In this project, I will demonstrate the use of aws codeartifact and various other features related to it I'm doing this project to learn about package repositories and to be familiar with aws codeartifact. It gives us handson experience.

Key tools and concepts

Services I used were EC2 instance,vscode,github Key concepts I learnt include setting IAM roles to EC2 instance and creating codeartifact to store dependencies in the web app

Project reflection

This project took me approximately 2:30 hrs The most challenging part was It was most rewarding to'...

This project is part three of a series of DevOps projects where I'm building a CI/CD pipeline! I'll be working on the next project hopefully tomorrow.

CodeArtifact Repository

CodeArtifact is central repository for storing dependencies in aws Engineering teams use artifact repositories because they don't want other to download dependencies from unknown site or download other version It is for security and reliabilty

A domain is like a folder where dependencies of particular types are store It is beneficial as permission has to be applied to domain and not particular repository It is also used for grouping My domain is nextwork

A CodeArtifact repository can have an upstream repository, which means if the dependencies are not there in our codeartifact it will go to upstream repository My repository's upstream repository is maven-central-store

Package flow

Review how packages flow from external connections through nextwork to dray-devops-cicd.

External connections

Domain: **nextwork**

public:maven-central

Upstream repository [?](#)

maven-central-store

Repository

dray-devops-cicd

CodeArtifact Security

Issue

To access CodeArtifact, we need authorization token I ran into an error when retrieving a token because ec2 does not have the permission to directly connect with any aws services It need iam policies to get the desired permissions

Resolution

To resolve the error with my security token, I had created IAM policies for granting the permission of token then I haad created roles which has the policy then EC2 instance is modified with these roles This resolved the error because of the roles

It's security best practice to use IAM roles because it like a bunch of permission we have assigned to our EC2 instance It is considered for security purpose because the permissions which are there in roles are all grannted to EC2 instance.



The JSON policy attached to my role

The JSON policy I set up grants permission to get authentication tokens, find repository locations, and read packages from repositories. Also allows temporarily elevated access specifically for CodeArtifact operations.

The screenshot shows the AWS IAM Policy editor interface. At the top, there are tabs for 'Visual' (disabled), 'JSON' (selected), and 'Actions'. Below the tabs is a toolbar with icons for copy, paste, and delete. The main area is divided into two sections: 'Edit statement' on the left and 'Select a statement' on the right. The 'Edit statement' section contains a JSON policy document. The 'Select a statement' section has a button '+ Add new statement'.

```
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}  
25
```



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 as it has three section server,profiles and mirror. Server gives the information about codeartifact,Profiles tell about where to go for codeartifact and Mirror if for backup if it is not found in the repository

Compiling means converting the code into a language that is understandable by the machine Compiling simply means that our code is ready for work

```
<?xml version="1.0" encoding="UTF-8"?>
<settings>
    <server>
        <id>nextwork-dray-devops-cicd</id>
        <username>aws</username>
        <password>${env.CODEARTIFACT_AUTH_TOKEN}</password>
    </server>
    <profiles>
        <profile>
            <id>nextwork-dray-devops-cicd</id>
            <activation>
                <activeByDefault>true</activeByDefault>
            </activation>
            <repositories>
                <repository>
                    <id>nextwork-dray-devops-cicd</id>
                    <url>https://nextwork-590183705172.d.codeartifact.ap-south-1.amazonaws.com/maven/dr</url>
                </repository>
            </repositories>
        </profile>
    </profiles>
    <mirrors>
        <mirror>
            <id>nextwork-dray-devops-cicd</id>
            <name>nextwork-dray-devops-cicd</name>
            <url>https://nextwork-590183705172.d.codeartifact.ap-south-1.amazonaws.com/maven/dr</url>
            <mirrorOf></mirrorOf>
        </mirror>
    </mirrors>
</settings>
```



Verify Connection

After compiling, I checked the codertifact to be specified "dray-devops-cicd " I noticed that it has three pages of dependencies which are needed for the web apps.

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