



nextwork.org

Secure Packages with CodeArtifact



Oleg Kawałko

Packages [info](#)

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

< 1 2 3 4 > @

	Package name	Namespace	Format	Latest version	Latest publish date	Publish	Upstream
<input type="radio"/>	backport-util-concurrent	backport-util-concurrent	maven	3.1	8 minutes ago	Block	Allow
<input type="radio"/>	classworlds	classworlds	maven	1.1	9 minutes ago	Block	Allow
<input type="radio"/>	google	com.google	maven	1	8 minutes ago	Block	Allow
<input type="radio"/>	junit	com.google.code.findbugs	maven	2.0.1	8 minutes ago	Block	Allow
<input type="radio"/>	google-collections	com.google.collections	maven	1.0	8 minutes ago	Block	Allow
<input type="radio"/>	commons-cli	commons-cli	maven	1.0	9 minutes ago	Block	Allow
<input type="radio"/>	commons-logging-api	commons-logging	maven	1.1	8 minutes ago	Block	Allow
<input type="radio"/>	junit	junit	maven	3.8.2	8 minutes ago	Block	Allow
<input type="radio"/>	log4j	log4j	maven	1.2.12	8 minutes ago	Block	Allow
<input type="radio"/>	apache	org.apache	maven	5	8 minutes ago	Block	Allow
<input type="radio"/>	maven	org.apache.maven	maven	2.2.1	8 minutes ago	Block	Allow
<input type="radio"/>	maven-artifact	org.apache.maven	maven	2.2.1	8 minutes ago	Block	Allow
<input type="radio"/>	maven-artifact-manager	org.apache.maven	maven	2.2.1	8 minutes ago	Block	Allow



Introducing Today's Project!

I'm doing this project to learn code artifact

Key tools and concepts

Services I used were IAM Policies, IAM Roles, EC2, git, github, VS Code Server, Code Artifact Key concepts I learnt include setting up, connecting to CodeArtifact, granting specific IAM Roles for AWS Services, making custom packets, and publishing the

Project reflection

This project took me approximately several hours

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

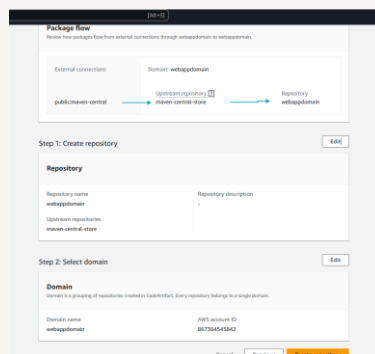


CodeArtifact Repository

CodeArtifact is managed repo to store app dependencies in secure way, it provide control, and managing it

A domain is webappdomain, it stores my repos in central place

My repository's upstream repository is Maven Central Store, it is backup library, so if my app need some dependeties and there arent in my repo, it search in uptream repo





CodeArtifact Security

Issue

To access CodeArtifact, we need to access code artifact in cli

Resolution

To resolve the error with my security token, i created IAM Role for ec2 instance, to grant permissions

It's security best practice to use IAM roles because it consist with least privilege principle - grant only access service need



The JSON policy attached to my role

The JSON policy I set up grants access to STS token, allows retrieving the endpoint for a CodeArtifact repository, allow reading from repo, allow publishing packages, allow putting package metadata such as version type, show to which group package is

```
Policy editor
2 version: 2012-10-17
3 "Statement": [
4 {
5   "Sid": "Statement1",
6   "Effect": "Allow",
7   "Action": [
8     "codeartifact:GetAssociatedPackageGroup",
9     "codeartifact:GetRepositoryEndpoint",
10    "codeartifact:ReadFromRepository",
11    "codeartifact:GetAuthorizationToken",
12    "codeartifact:PublishPackageVersion",
13    "codeartifact:PutPackageMetadata"
14  ],
15   "Resource": [
16     "*"
17   ]
18 },
19 {
20   "Sid": "Statement2",
21   "Effect": "Allow",
22   "Action": [
23     "sts:GetServiceBearerToken"
24   ],
25   "Resource": [
26     "*"
27   ]
28 },
29 {
30   "Condition": {
31     "StringEquals": {
32       "sts:AWSServiceName": "codeartifact.amazonaws.com"
33     }
34   }
35 }
+ Add new statement
```



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 work with CodeArtifact by granting synergy between them, so maven firstly look at CodeArtifact repo

Compiling means translating project code into language that computer understand, it makes app ready to work

```
1 <settings>
2 <servers>
3   <server>
4     <id>webappdomain-webappdomain</id>
5     <username>aws</username>
6     <password>${env.CODEARTIFACT_AUTH_TOKEN}</password>
7   </server>
8 </servers>
9 <profiles>
10  <profile>
11    <id>webappdomain-webappdomain</id>
12    <activation>
13      <activeByDefault>true</activeByDefault>
14    </activation>
15    <repositories>
16      <repository>
17        <id>webappdomain-webappdomain</id>
18        <url>https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/maven/webappdomain</url>
19      </repository>
20    </repositories>
21  </profile>
22 </profiles>
23 <mirrors>
24   <mirror>
25     <id>webappdomain-webappdomain</id>
26     <name>webappdomain-webappdomain</name>
27     <url>https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/maven/webappdomain</url>
28     <mirrorOf>*</mirrorOf>
29   </mirror>
30 </mirrors>
31 </settings>
```



Verify Connection

After compiling, I checked both repos, and the dependencies are in both,

Packages

Info

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

<

1

2

3

4

>

Package name

Namespace

Format

Latest version

Latest publish date

Publish

Upstream

backport-util-concurrent

backport-util-concurrent

maven

3.1

8 minutes ago

Block

Allow

classworlds

classworlds

maven

1.1

9 minutes ago

Block

Allow

google

com.google

maven

1

8 minutes ago

Block

Allow

jsr305

com.google.code.findbugs

maven

2.0.1

8 minutes ago

Block

Allow

google-collections

com.google.collections

maven

1.0

8 minutes ago

Block

Allow

commons-cli

commons-cli

maven

1.0

9 minutes ago

Block

Allow

commons-logging-api

commons-logging

maven

1.1

8 minutes ago

Block

Allow

junit

junit

maven

3.8.2

8 minutes ago

Block

Allow

log4j

log4j

maven

1.2.12

8 minutes ago

Block

Allow

apache

org.apache

maven

5

8 minutes ago

Block

Allow

maven

org.apache.maven

maven

2.2.1

8 minutes ago

Block

Allow

maven-artifact

org.apache.maven

maven

2.2.1

8 minutes ago

Block

Allow

maven-artifact-manager

org.apache.maven

maven

2.2.1

8 minutes ago

Block

Allow

Custom packages, And publishing them

To add custom packages to CodeArtifact i used mvn deploy, so that CodeArtifact as a tool is handy for all over managing packagedges to our apps

```
ubuntu@ip-172-31-91-89: ~/d  X + v
[INFO] --- maven-install-plugin:2.4:install (default-install) @ nextwork-web-project ---
[INFO] Installing /home/ubuntu/devops/nextwork-web-project/target/nextwork-web-project-1.0.war to /home/ubuntu/.m2/repository/com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.war
[INFO] Installing /home/ubuntu/devops/nextwork-web-project/pom.xml to /home/ubuntu/.m2/repository/com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.pom
[INFO]
[INFO] --- maven-deploy-plugin:2.7:deploy (default-deploy) @ nextwork-web-project ---
Uploading to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.war
Uploaded to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.war (2.3 kB at 2.2 kB/s)
Uploading to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.pom
Uploaded to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/1.0/nextwork-web-project-1.0.pom (973 B at 1.9 kB/s)
Downloading from webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/maven-metadata.xml
Downloaded from webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/maven-metadata.xml (294 B at 842 B/s)
Uploading to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/maven-metadata.xml
Uploaded to webappdomain-webappdomain: https://webappdomain-867364545842.d.codeartifact.us-east-1.amazonaws.com/nextwork/app/nextwork-web-project/maven-metadata.xml (350 B at 872 B/s)
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 5.062 s
[INFO] Finished at: 2025-10-17T16:03:17Z
[INFO] -----
ubuntu@ip-172-31-91-89: ~/devops/nextwork-web-project$
```

com.nextwork.app:nextwork-web-project

Delete package

Edit origin controls

Origin controls

Upstream: [Block](#) Publish: [Allow](#)

Latest version details

Package description	Latest version	Publish date	Origin	License
-	1.0	1 minute ago	webappdomain	-

com.nextwork.app:nextwork-web-project versions [Info](#)

🔄

Action ▼

🔍 Filter by status or origin type

< 1 > 🛡️

Package version	Package status	Origin	Origin type
<input type="radio"/> 1.0 Latest	Published	webappdomain	Internal
<input type="radio"/> 1.0-SNAPSHOT	Published	webappdomain	Internal
<input type="radio"/> 1.0-20251017.134934-2	Unlisted	webappdomain	Internal
<input type="radio"/> 1.0-20251017.134751-1	Unlisted	webappdomain	Internal

