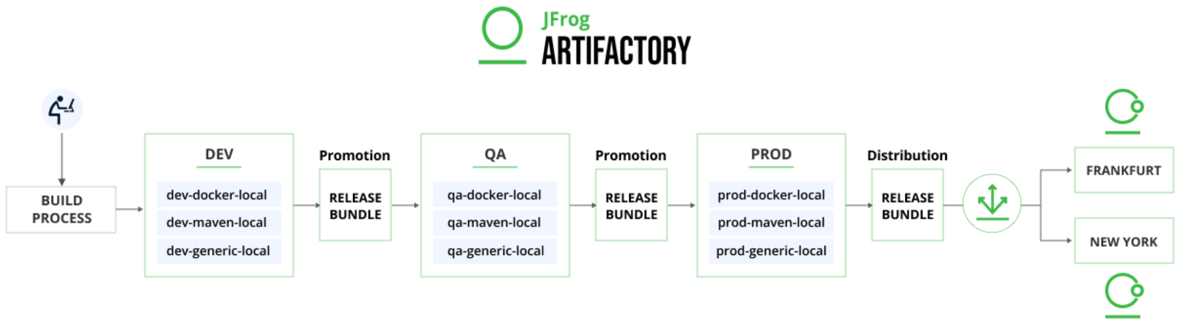
JFTD-113 JFrog Release LifeCycle Management

Hands-on Labs Walk-Through



Reference Materials

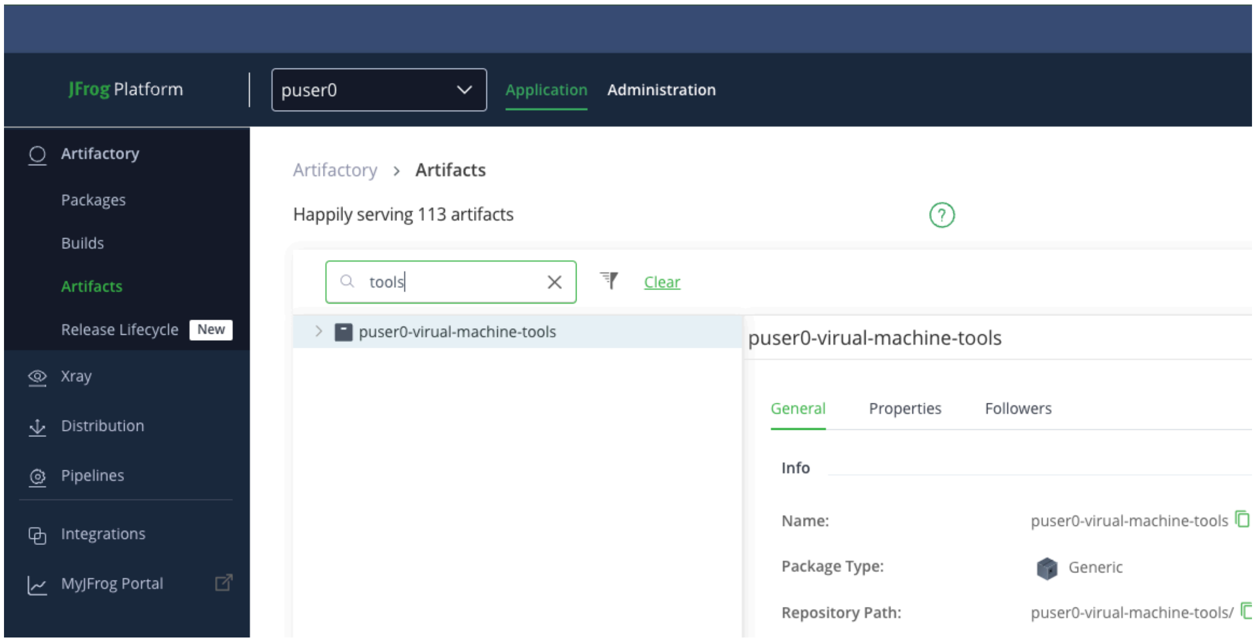
This section is a link to documentation and examples that are used both in the lab and also post SwampUp

- JFrog Help Center
- Repository Management
- Jfrog Environments
- Release Lifecycle Management
- JFrog CLI Download
    - JFrog CLI Wiki

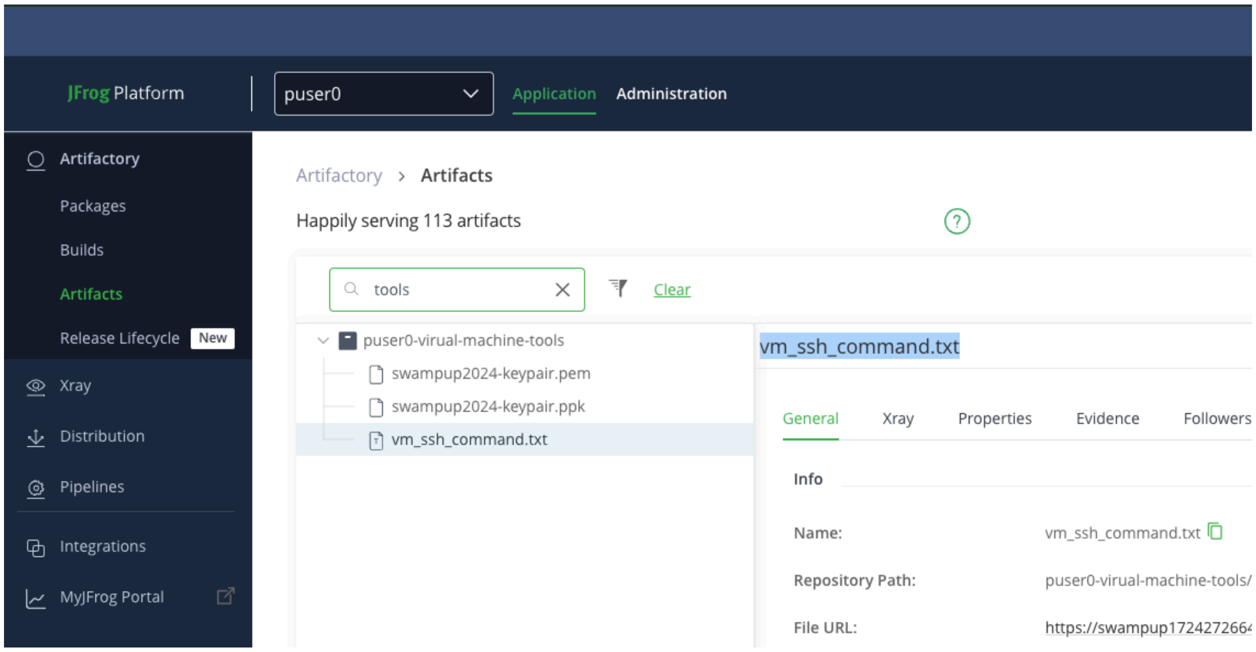
Setting up you SSH session for Labs

- Login to you JFrog Platform instance and note your Project name (puserX)
- Navigate to Artifactory > Artifacts
- In the search bar type ‘tools’

- You will see the virtual repository puserX-virtual-machine-tools

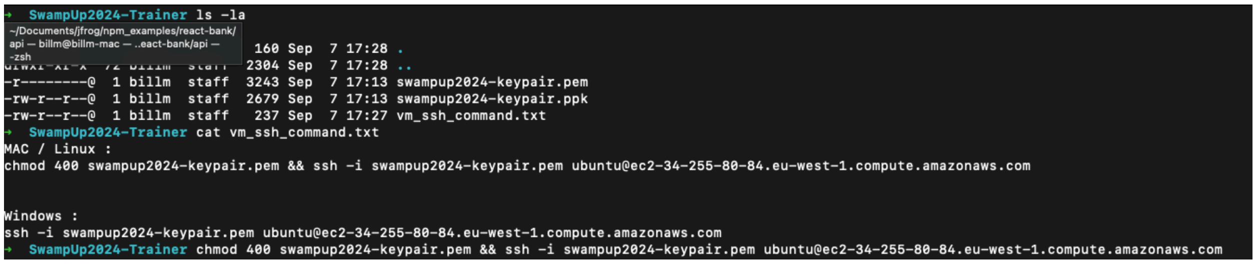


  - Note that the X is you numeric designator, the example is user puser0
- Expand the repository and download the file swampup2024-keypair.pem and vm_ssh_command.txt



- Now using in your terminal, run the following commands that are in vm_ssh_command.txt

- Ensure that your terminal is pointing to where you downloaded the two files



```
→  SwampUp2024-Trainer ls -la
~/Documents/jfrog/npm_examples/react-bank/
api — billm@billm-mac — ..eact-bank/api —
-zsh                                          160 Sep  7 17:28 .
                                             2304 Sep  7 17:28 ..
-r--------@  1 billm  staff  3243 Sep  7 17:13 swampup2024-keypair.pem
-rw-r--r--@  1 billm  staff  2679 Sep  7 17:13 swampup2024-keypair.ppk
-rw-r--r--@  1 billm  staff   237 Sep  7 17:27 vm_ssh_command.txt
→  SwampUp2024-Trainer cat vm_ssh_command.txt
MAC / Linux :
chmod 400 swampup2024-keypair.pem && ssh -i swampup2024-keypair.pem ubuntu@ec2-34-255-80-84.eu-west-1.compute.amazonaws.com


Windows :
ssh -i swampup2024-keypair.pem ubuntu@ec2-34-255-80-84.eu-west-1.compute.amazonaws.com
→  SwampUp2024-Trainer chmod 400 swampup2024-keypair.pem && ssh -i swampup2024-keypair.pem ubuntu@ec2-34-255-80-84.eu-west-1.compute.amazonaws.com
```

- Now you should be able to connect and follow along with the class

<u>Lab 1: UI - Release Bundle Creation / Distribution / Xray Quality Gate (Prod)</u>

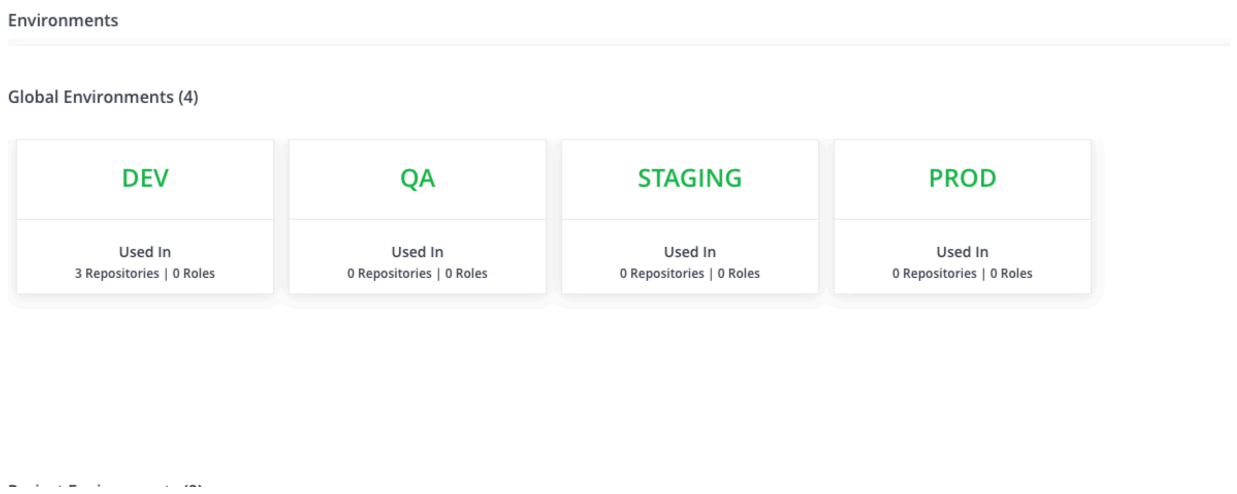
Purpose: The purpose of this lab is to show how using the JFrog Platform UI, how to create and distribute a Release Bundle from 3 different builds being stored in Artifactory that act as a single release.

Prerequisites:
- Access to the JFrog Platform
- Understanding the Repositories from which the Binaries for the Release Bundles are coming from
- Coveration
  - Generation with BuildInfo
  - Indexing for Release Bundle - Attached to Prod
  - Policy for release blockting
  - Second example: add evidence

Explanation:
- We will be creating a Release Bundle with three elements inside from three different repo types
  - Docker
    - dev-docker-local
  - Helm
    - dev-helm-local
  - Maven
    - dev-Maven-local
- We will then promote the Release Bundle from one environment to another
  - Dev > QA
  - QA > Staging
  - Staging > Production
    - Xray Gate for Scanning pre-Production
-

Process(Step by Step UI walk-through):

- Validate that the required Environments are available for promoting our Release Bundle
  - Dev
  - QA
  - STAGING
  - PROD

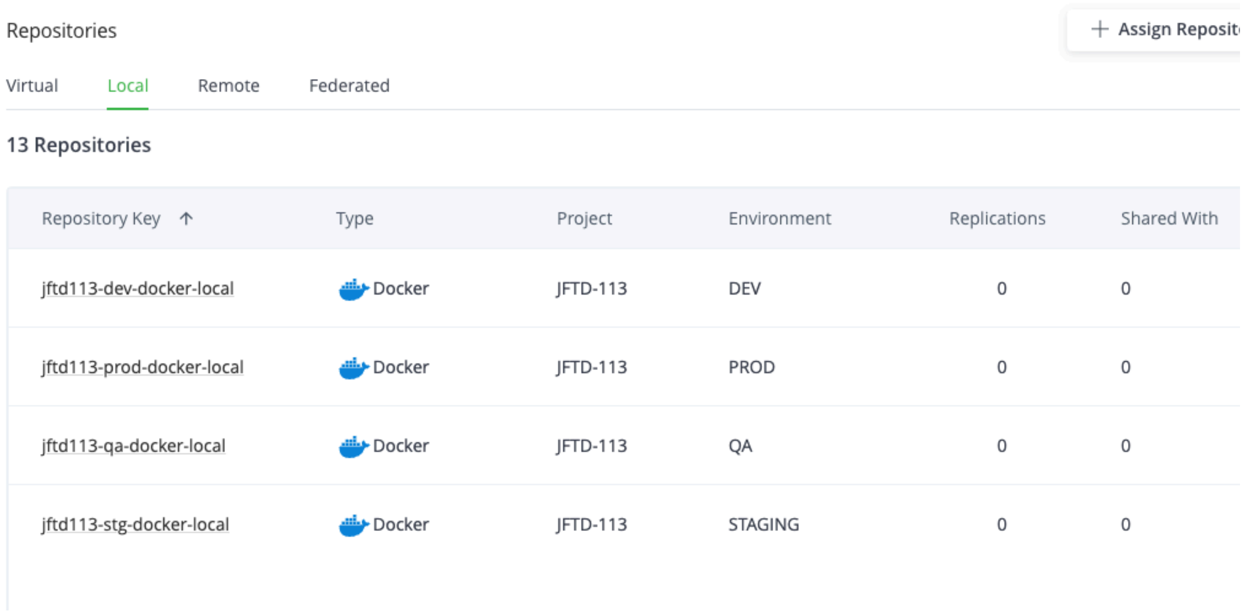

Environments

Global Environments (4)

DEV	QA	STAGING	PROD
Used In 3 Repositories | 0 Roles	Used In 0 Repositories | 0 Roles	Used In 0 Repositories | 0 Roles	Used In 0 Repositories | 0 Roles

- Validate that you have the Repositories in your instances that are required for this lab - these will be these repositories and will have their corresponding Environments associated with the Builds and the location where the builds we are using for the Release bundles are located.

  Local Repositories
  - Docker
    - dev-docker-local
    - prod-docker-local
    - staging-docker-local
    - prod-docker-local

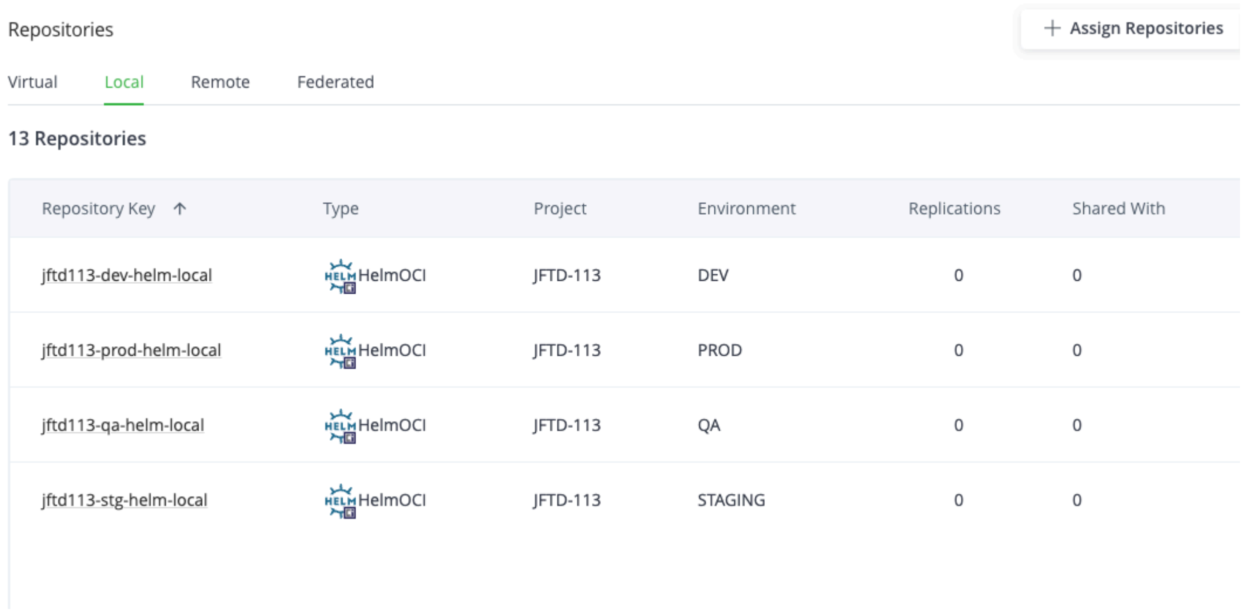


Repositories

13 Repositories

Repository Key ↑	Type	Project	Environment	Replications	Shared With
jftd113-dev-docker-local	Docker	JFTD-113	DEV	0	0
jftd113-prod-docker-local	Docker	JFTD-113	PROD	0	0
jftd113-qa-docker-local	Docker	JFTD-113	QA	0	0
jftd113-stg-docker-local	Docker	JFTD-113	STAGING	0	0

- Helm
  - dev-helm-local
  - qa-helm-local
  - staging-helm-local
  - prod-helm-loc

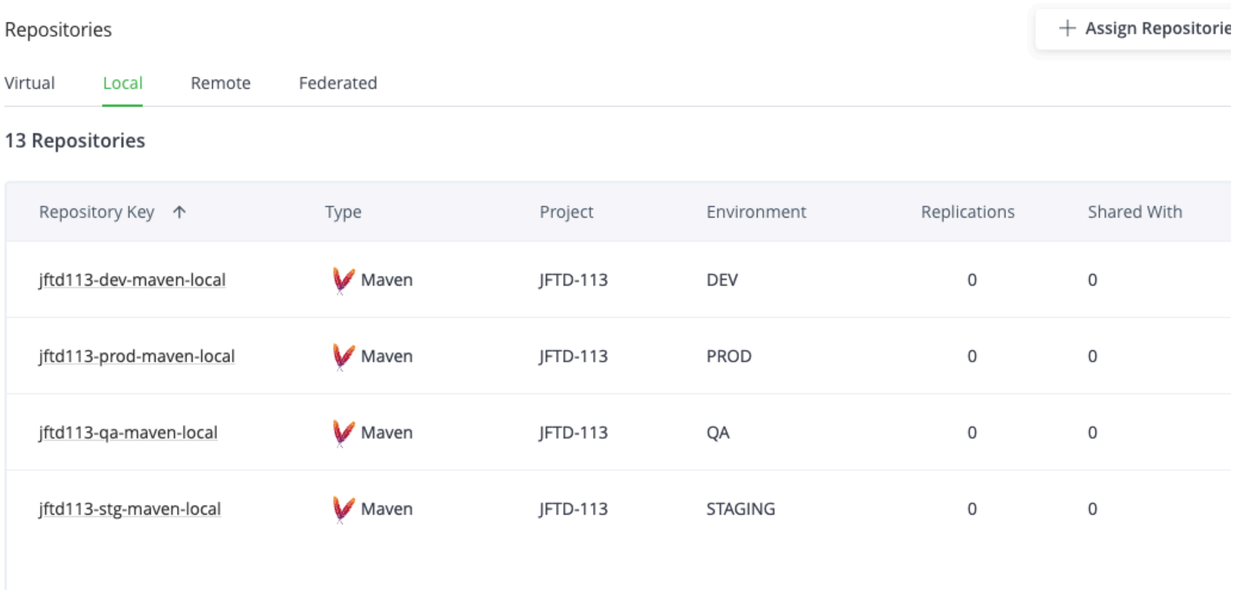


Repositories

13 Repositories

Repository Key ↑	Type	Project	Environment	Replications	Shared With
jftd113-dev-helm-local	HelmOCI	JFTD-113	DEV	0	0
jftd113-prod-helm-local	HelmOCI	JFTD-113	PROD	0	0
jftd113-qa-helm-local	HelmOCI	JFTD-113	QA	0	0
jftd113-stg-helm-local	HelmOCI	JFTD-113	STAGING	0	0

- Maven
  - dev-Maven-local
  - qa-Maven-local
  - staging-Maven-local
  - prod-Maven-local


Repositories

Assign Repositorie

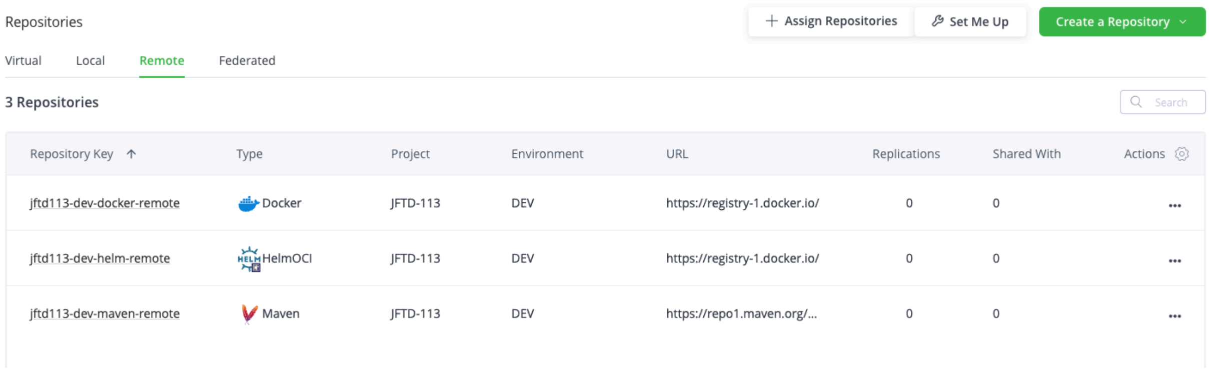
Virtual Local Remote Federated

13 Repositories

Repository Key	Type	Project	Environment	Replications	Shared With
jftd113-dev-maven-local	Maven	JFTD-113	DEV	0	0
jftd113-prod-maven-local	Maven	JFTD-113	PROD	0	0
jftd113-qa-maven-local	Maven	JFTD-113	QA	0	0
jftd113-stg-maven-local	Maven	JFTD-113	STAGING	0	0

Remote Repositories

These are utilities for the transitive dependencies for the builds


Repositories

Assign Repositories | Set Me Up | Create a Repository

Virtual Local Remote Federated

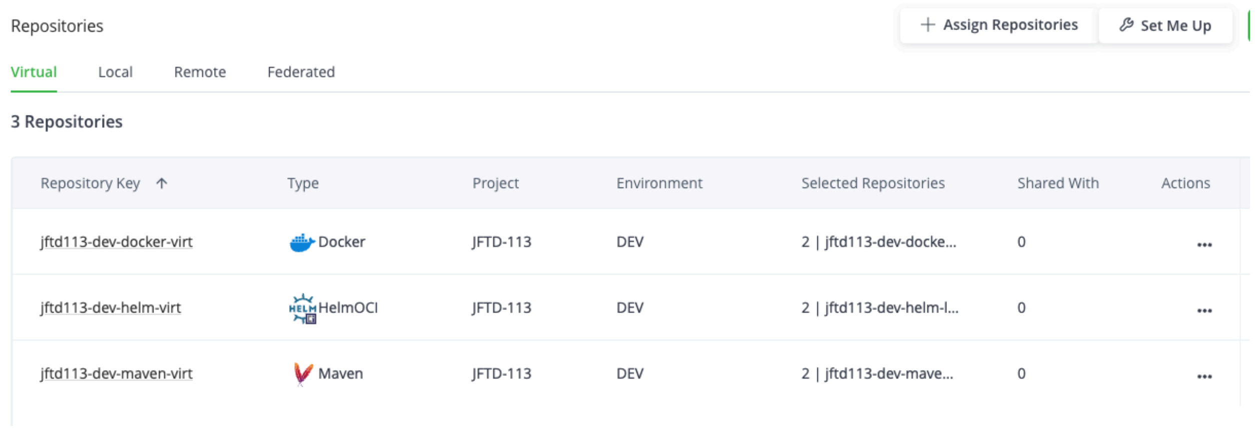
3 Repositories

Search

Repository Key	Type	Project	Environment	URL	Replications	Shared With	Actions
jftd113-dev-docker-remote	Docker	JFTD-113	DEV	https://registry-1.docker.io/	0	0	...
jftd113-dev-helm-remote	HelmOCI	JFTD-113	DEV	https://registry-1.docker.io/	0	0	...
jftd113-dev-maven-remote	Maven	JFTD-113	DEV	https://repo1.maven.org/...	0	0	...

Virtual Repositories

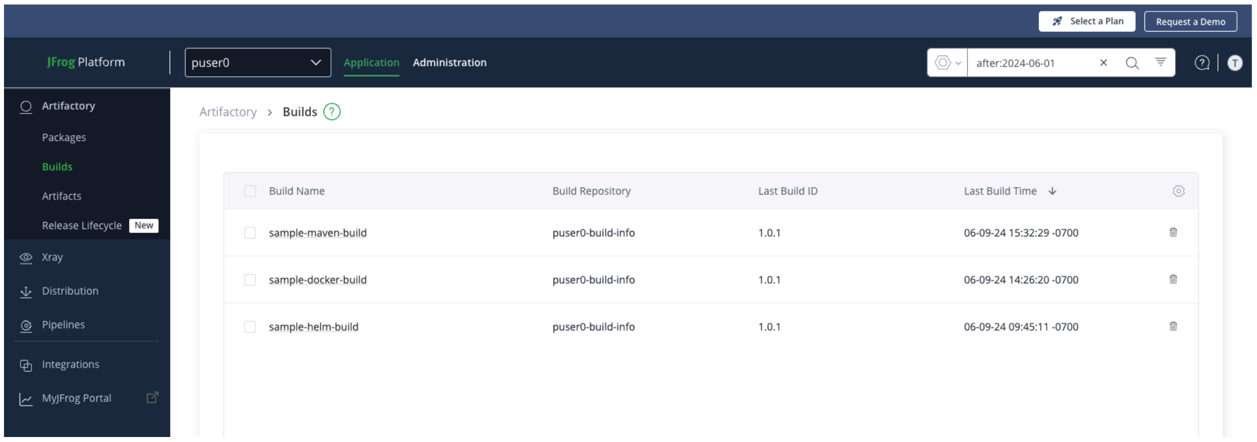
These are combination of both the Local and Remote repositories that are being used for the builds


Repositories

3 Repositories

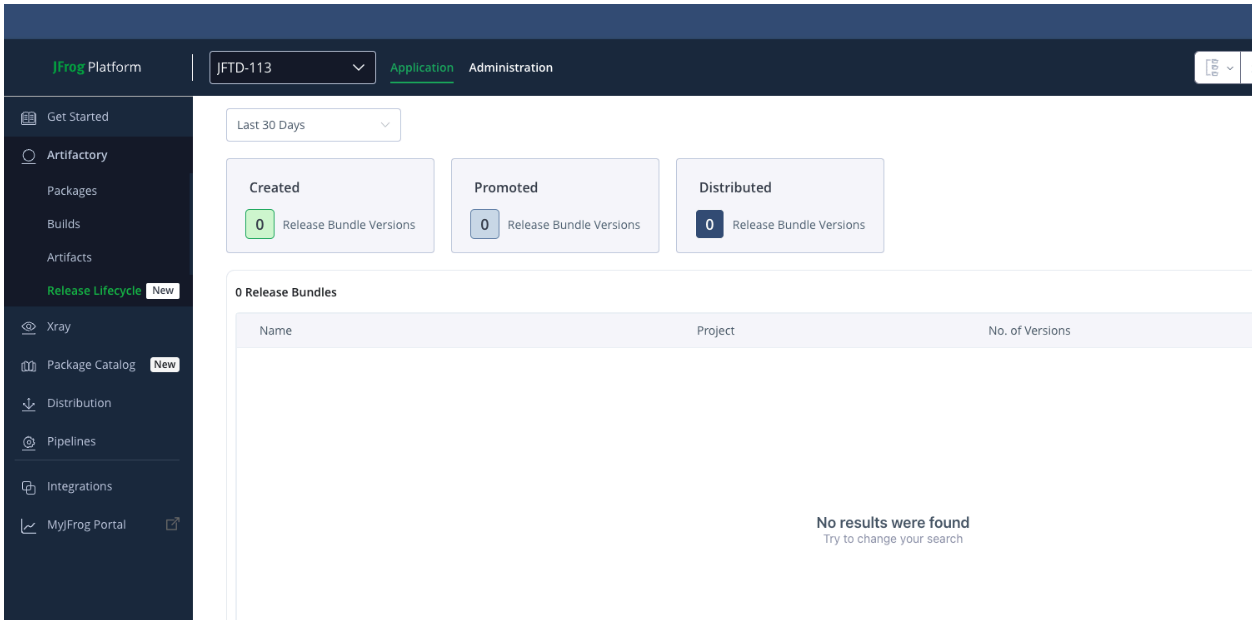
Repository Key	Type	Project	Environment	Selected Repositories	Shared With	Actions
jftd113-dev-docker-virt	Docker	JFTD-113	DEV	2 | jftd113-dev-docke...	0	...
jftd113-dev-helm-virt	HelmOCI	JFTD-113	DEV	2 | jftd113-dev-helm-l...	0	...
jftd113-dev-maven-virt	Maven	JFTD-113	DEV	2 | jftd113-dev-mave...	0	...

- Let's all validate that we have artifacts in the repositories that we are using for the Release Bundle, we will have 2 Artifacts (Maven = Jar, Helm = Template) and 1 Build (Docker)
  - Helm, Maven and Docker build instructions are located in the git project in the helm, maven, and docker folders and view the README

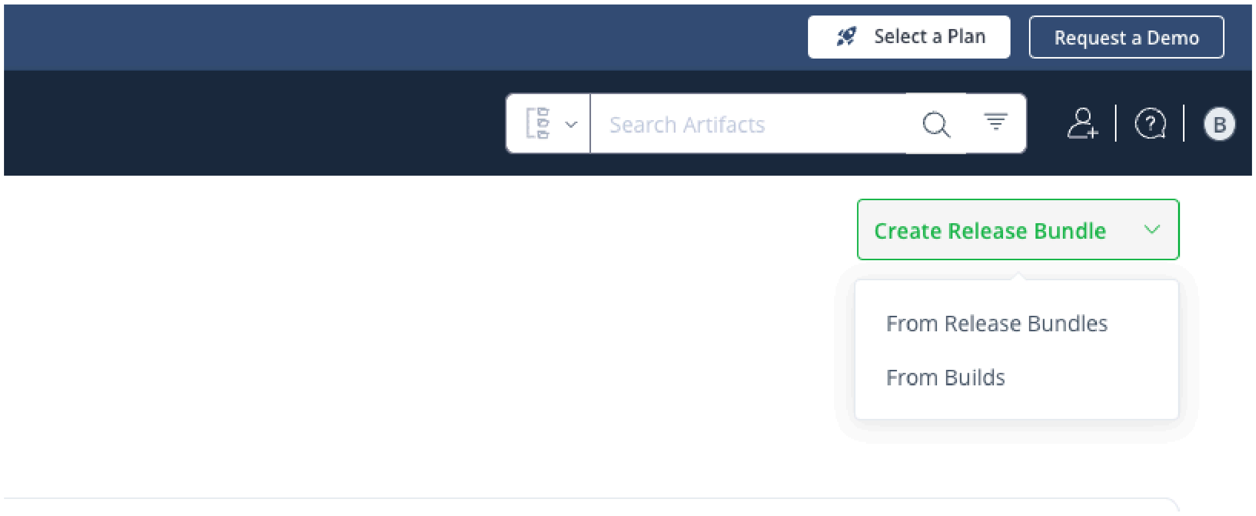


Build Name	Build Repository	Last Build ID	Last Build Time
sample-maven-build	puser0-build-info	1.0.1	06-09-24 15:32:29 -0700
sample-docker-build	puser0-build-info	1.0.1	06-09-24 14:26:20 -0700
sample-helm-build	puser0-build-info	1.0.1	06-09-24 09:45:11 -0700

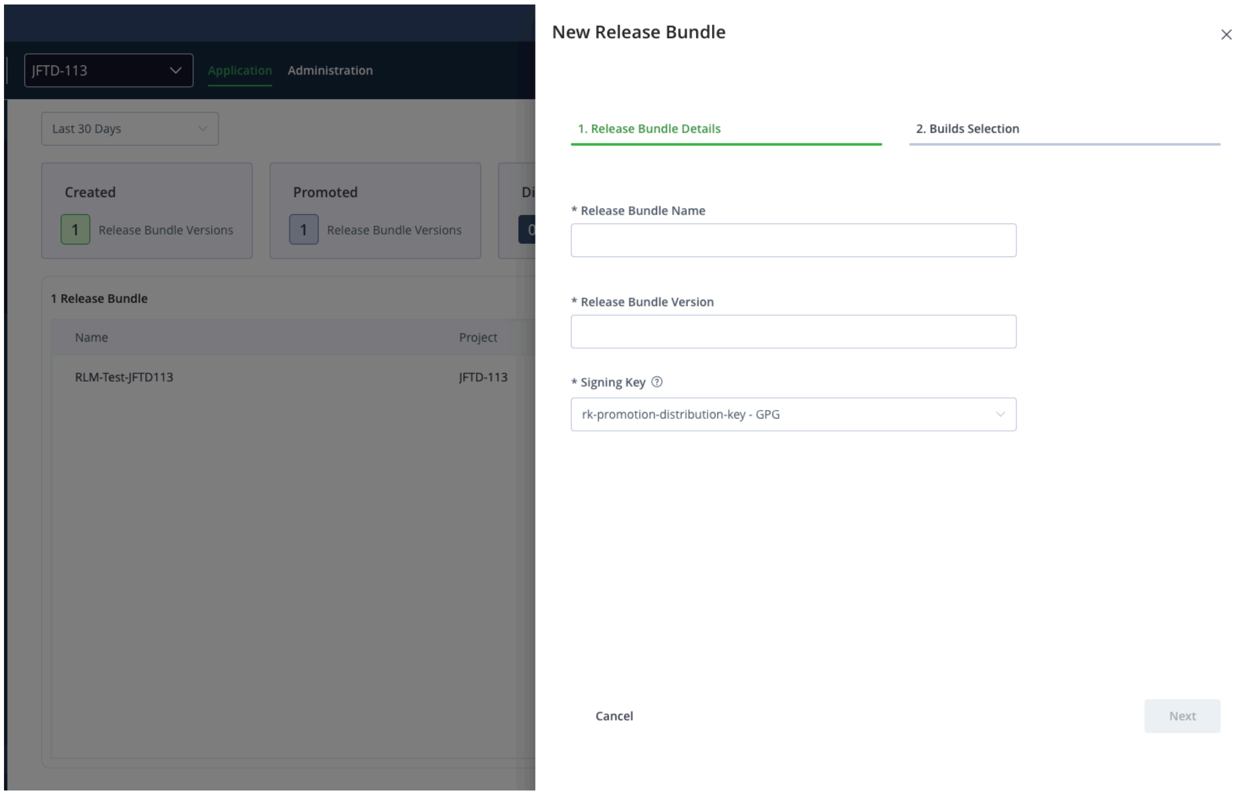
- Next we will navigate to Release Lifecycle located at Application > Artifactory > Release Lifecycle



- Now on the far right hand side of the panel, click the "Create Release Bundle" and select "From Builds"

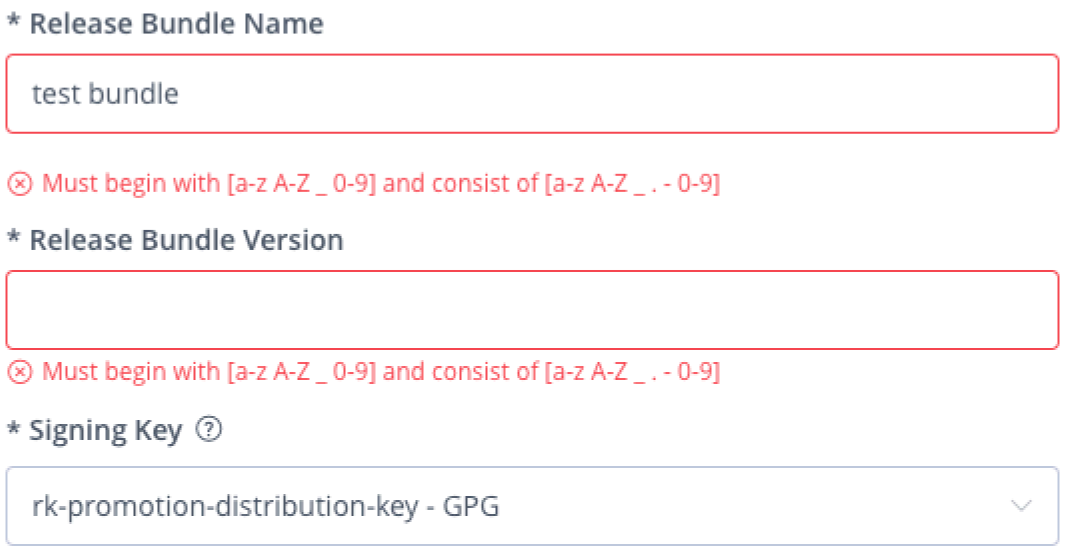


- You will be presented with a pop out where we will create the Release Bundle from the builds



- We will fill in the following fields
  - Release Bundle Name - This can be any but it can not have space
  - Release Bundle Version - This can be any designator you desire

This is WRONG



* Release Bundle Name

test bundle

Must begin with [a-z A-Z _ 0-9] and consist of [a-z A-Z _ . - 0-9]

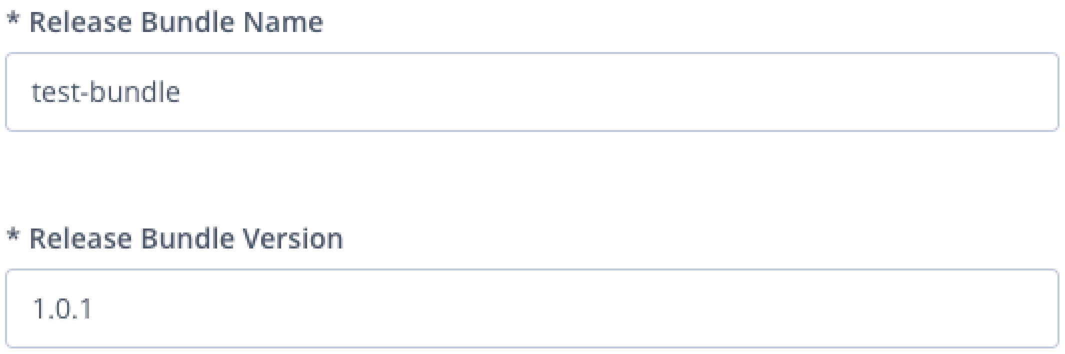
* Release Bundle Version

Must begin with [a-z A-Z _ 0-9] and consist of [a-z A-Z _ . - 0-9]

* Signing Key

rk-promotion-distribution-key - GPG

This is CORRECT



* Release Bundle Name

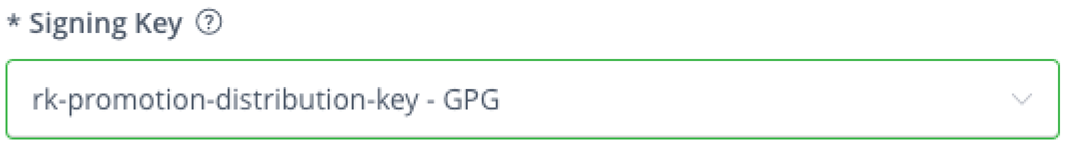
test-bundle

* Release Bundle Version

1.0.1

We will also need to select a Signing Key that we wish to create the Release Bundle with, Release Bundles are immutable

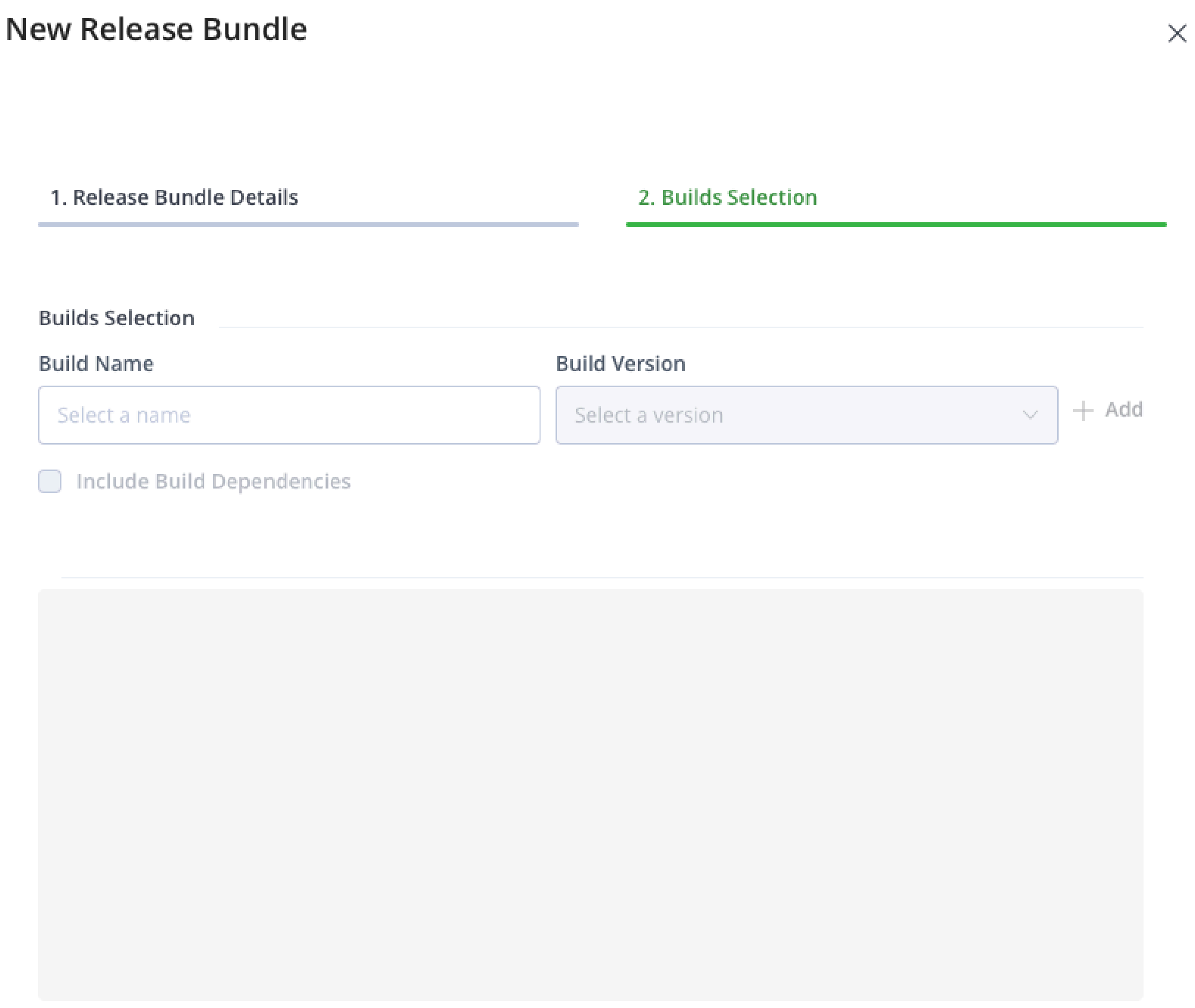
Note - you can change a Signing Key when we get the promotion phase



* Signing Key

rk-promotion-distribution-key - GPG

- Now press the “Next” button on the bottom right


New Release Bundle

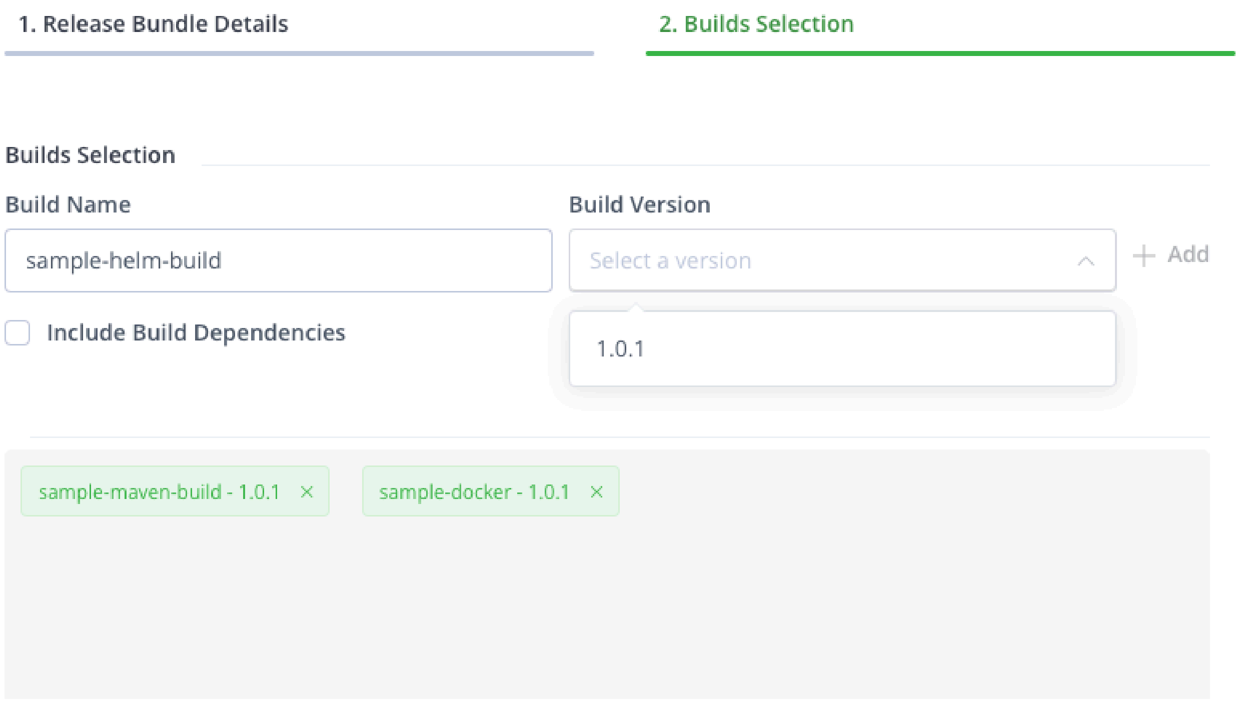
1. Release Bundle Details

2. Builds Selection

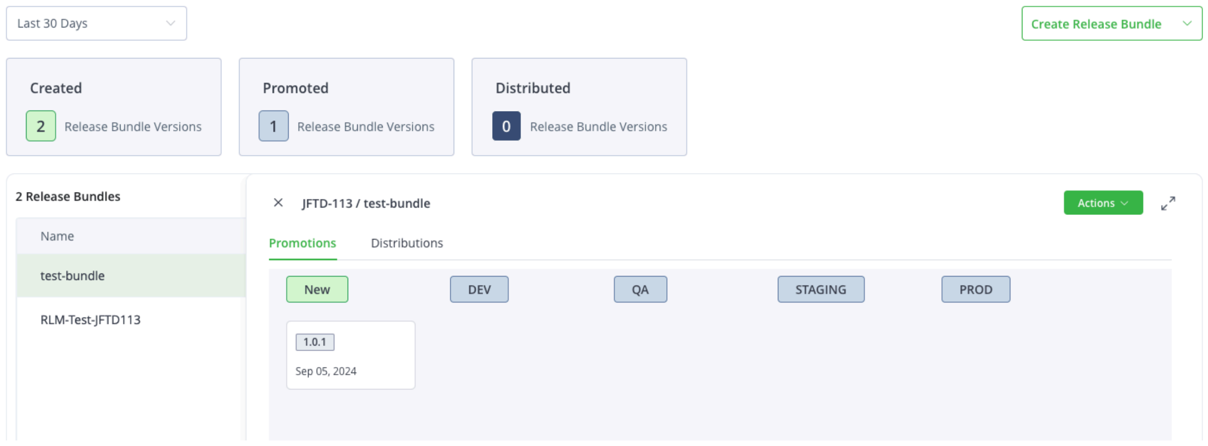
Builds Selection

Build Name	Build Version
Select a name	Select a version

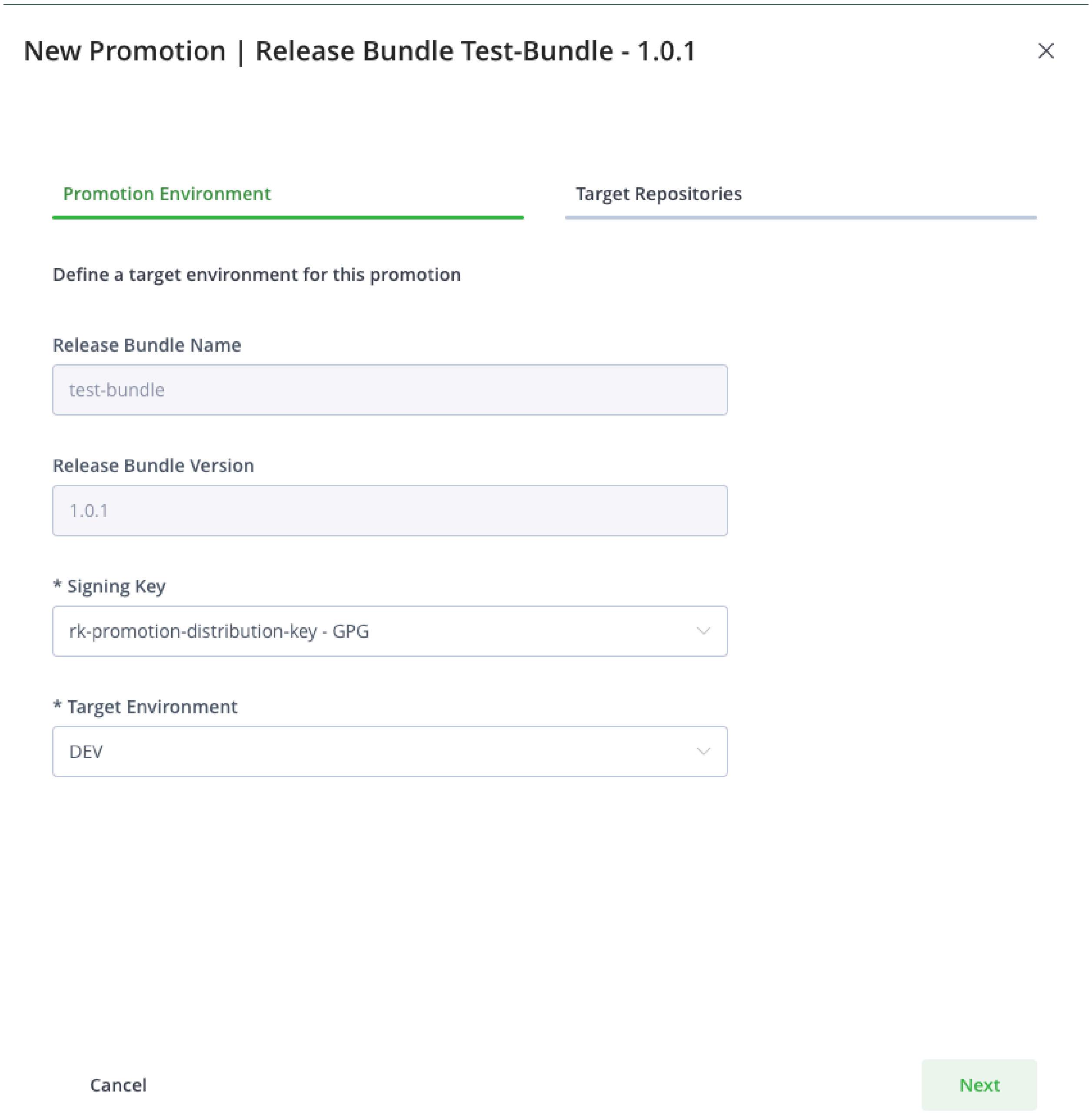
- You will be presented with area where you can select the Builds and Versions that you wish to include in the Release Bundle - We will choose the 3 Builds we have in Artifactory - Maven, Helm, and Docker



- When you are satisfied with your Build selection, press the “Next” button on the lower right hand side.



- You are presented with with the Kanban view of Release Bundle(s) and the various stage of your Release Lifecycle that you are defined in your environments
- Now you will Promote the Release Bundle to your target Environment
- Simple drag the Release Bundle to the desired Environment


New Promotion | Release Bundle Test-Bundle - 1.0.1

Define a target environment for this promotion

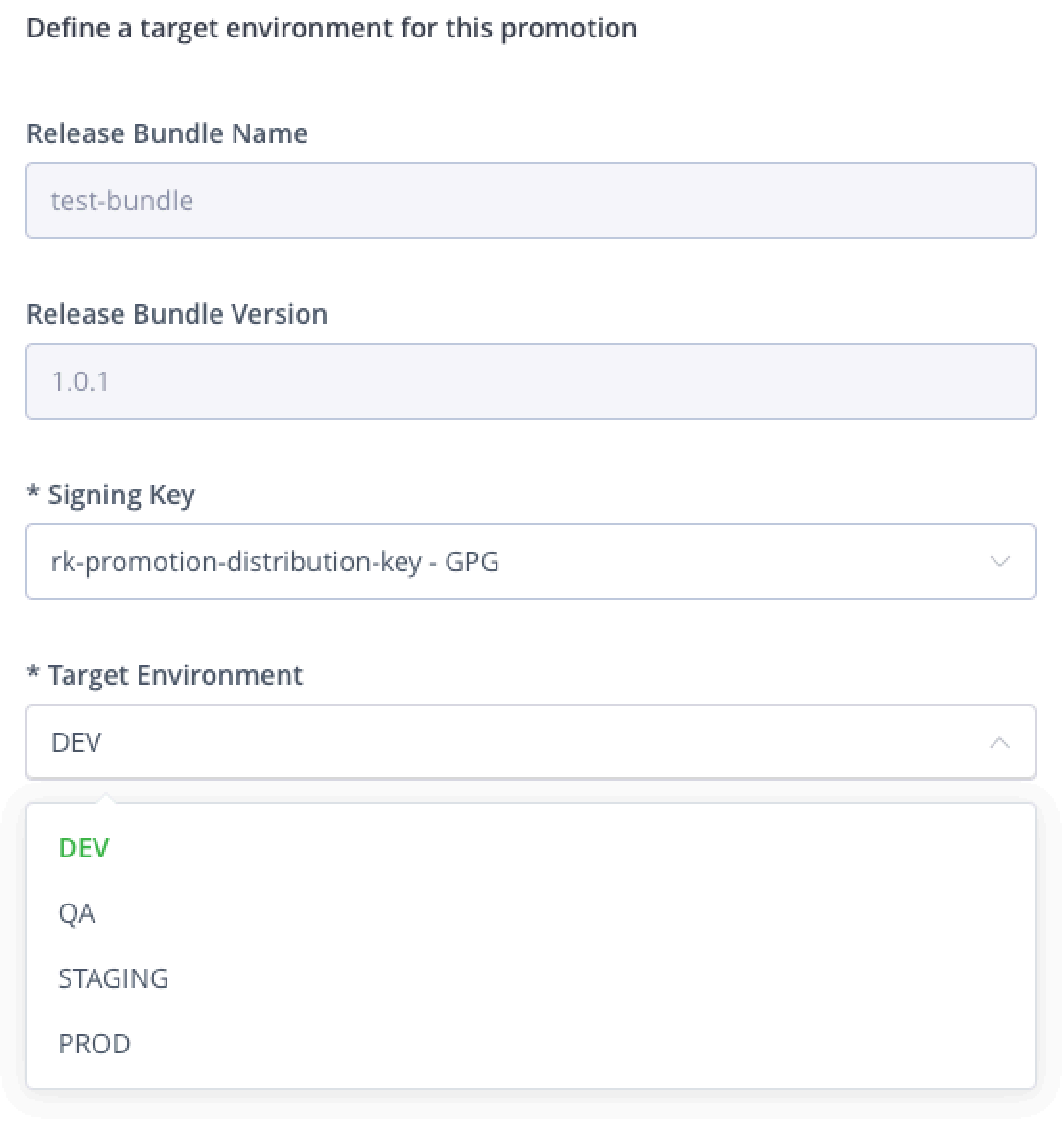
Release Bundle Name: test-bundle

Release Bundle Version: 1.0.1

* Signing Key: rk-promotion-distribution-key - GPG

* Target Environment: DEV

- You will be presented with a popout where you can now perform the Promotion


Define a target environment for this promotion

Release Bundle Name

test-bundle

Release Bundle Version

1.0.1

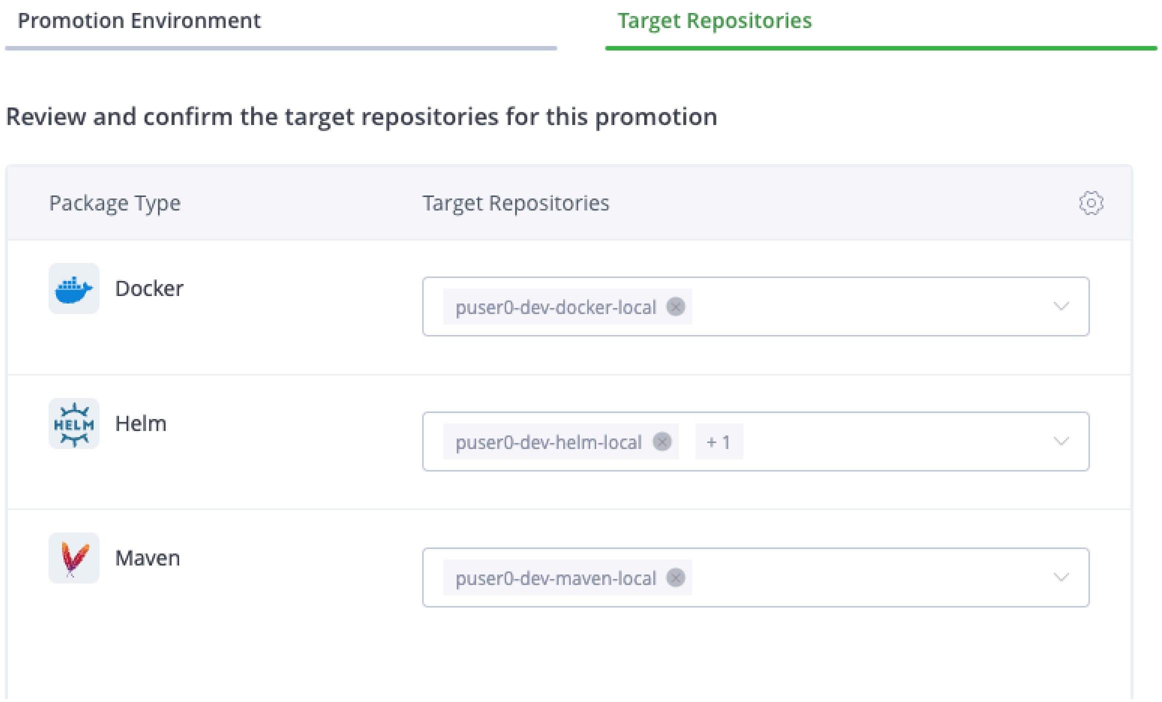
* Signing Key

rk-promotion-distribution-key - GPG

* Target Environment

DEV

- Select the Environment that you want to Promote to and click “Next” on the bottom right hand side

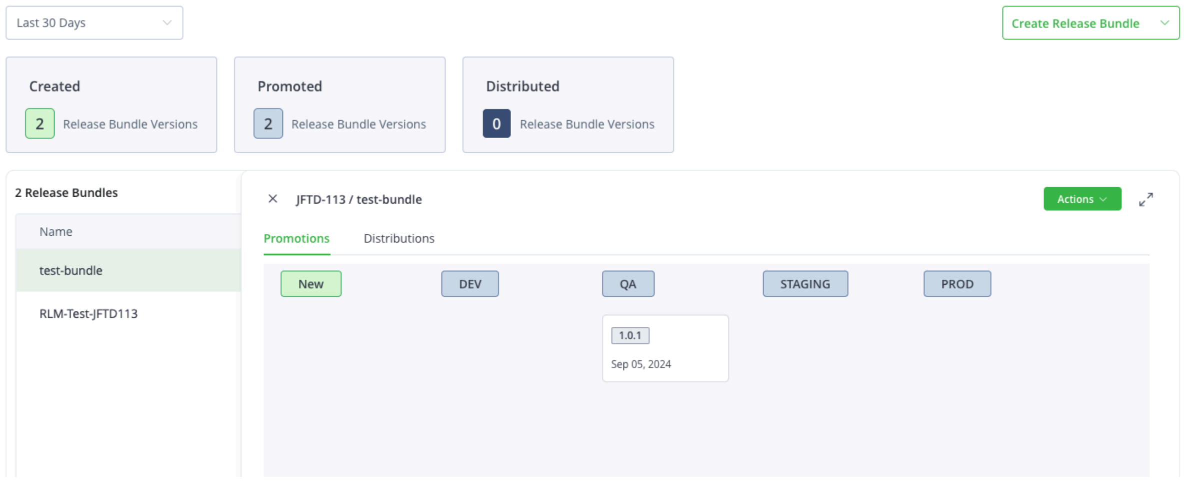

Promotion Environment

Target Repositories

Review and confirm the target repositories for this promotion

Package Type	Target Repositories
Docker	puser0-dev-docker-local
Helm	puser0-dev-helm-local + 1
Maven	puser0-dev-maven-local

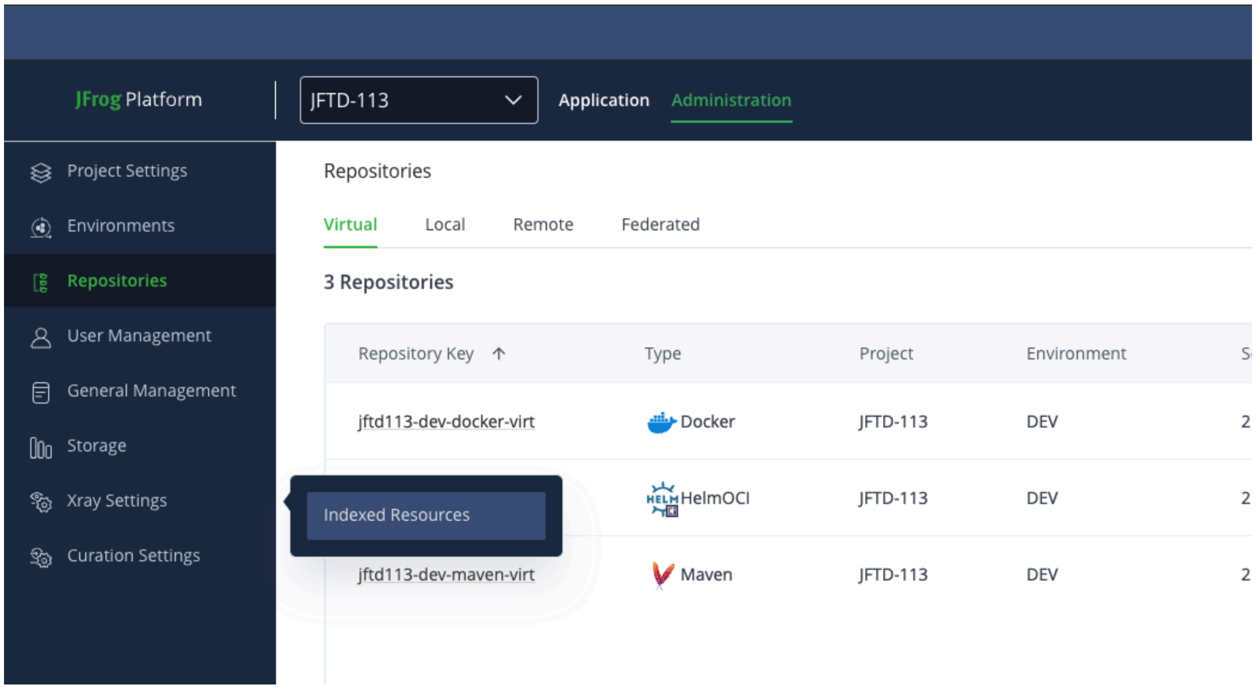
- You will be presented with the Target Repository associated with the Environment
- Then you will click “Promote” on the bottom right hand corner



- The Release Bundle has now been Promoted to the next Environment

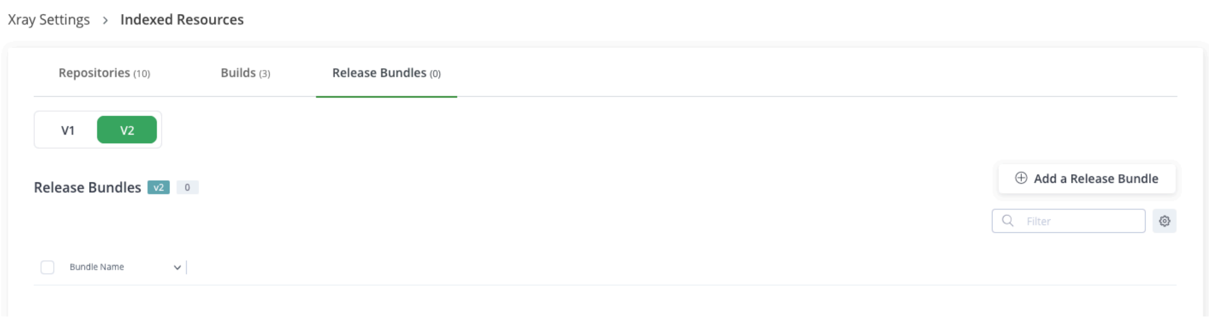
JFrog Xray as a Quality Gate for Promotion / Distribution
Now let’s create a Xray Policy that will Scan a Release Bundle and act a gate between promotion steps

- First navigate Administration > Xray Settings > Indexed Resources

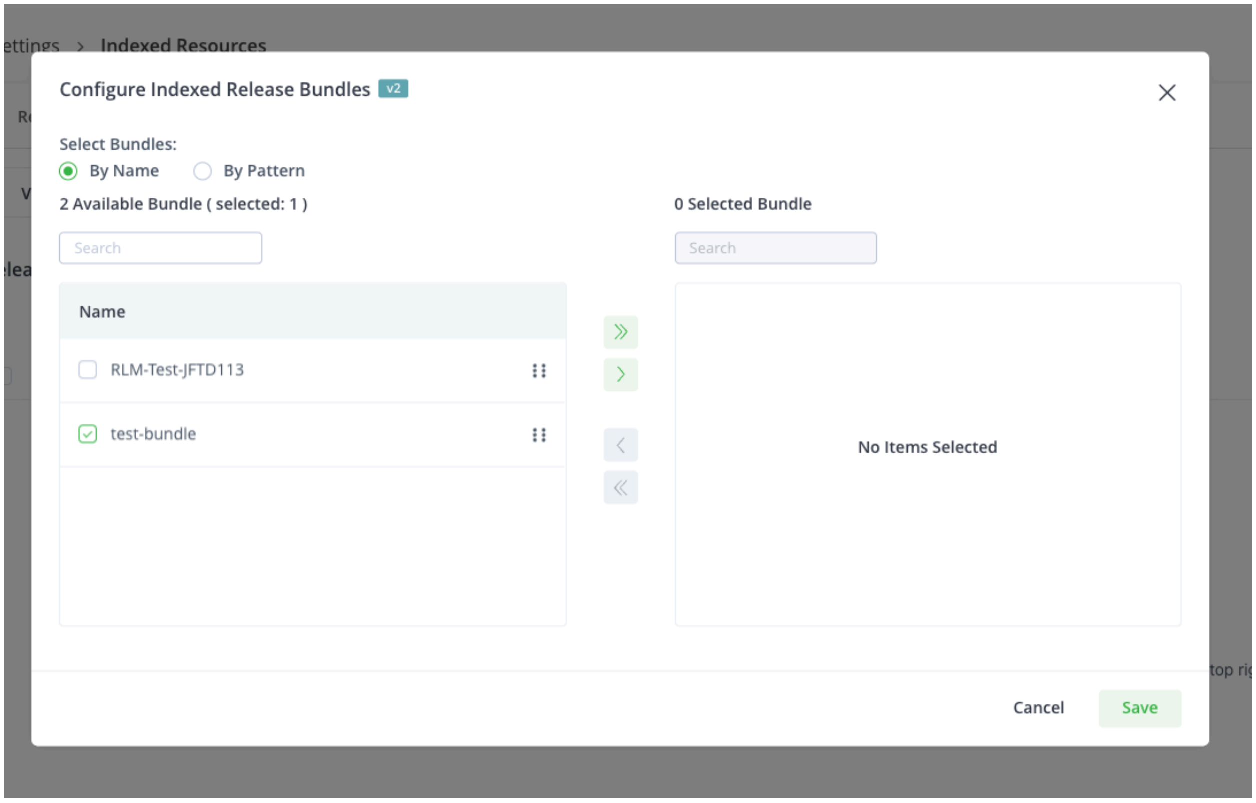


Repository Key	Type	Project	Environment
jftd113-dev-docker-virt	Docker	JFTD-113	DEV
	HelmOCI	JFTD-113	DEV
jftd113-dev-maven-virt	Maven	JFTD-113	DEV

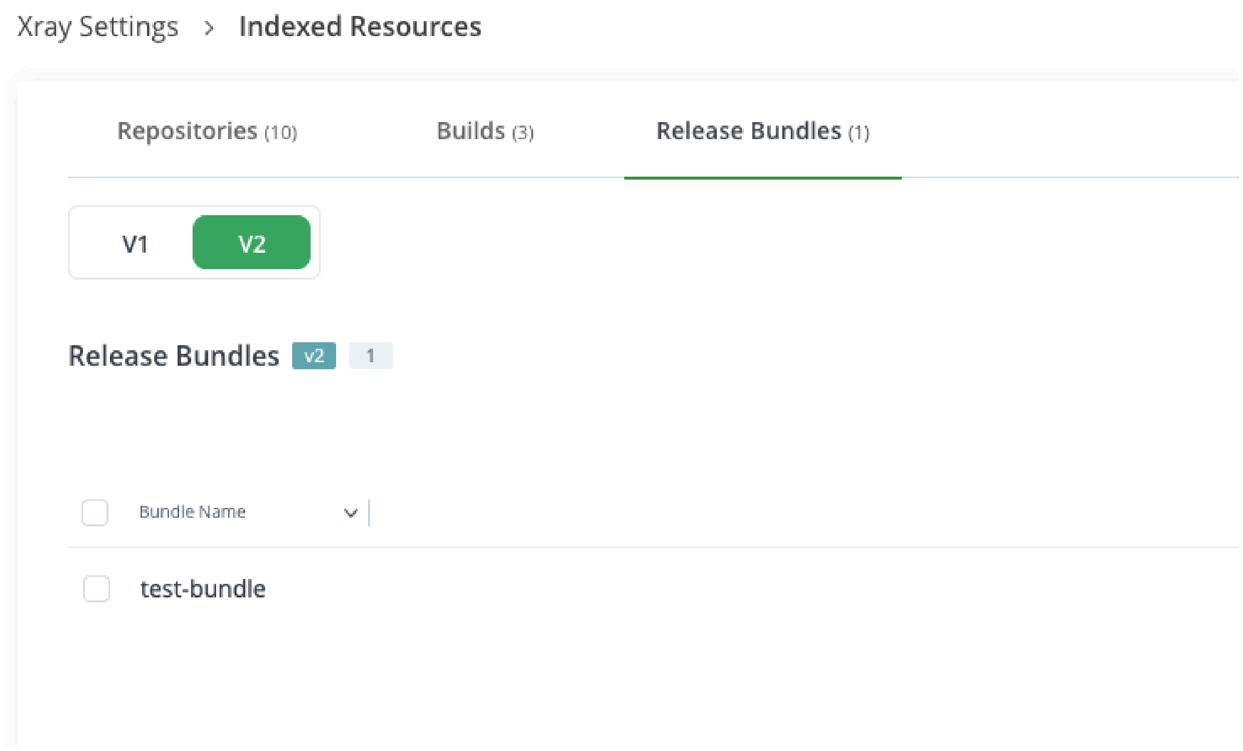
- Select ‘V2’ from Release Bundle type and then press the “Add a Release Bundle” button



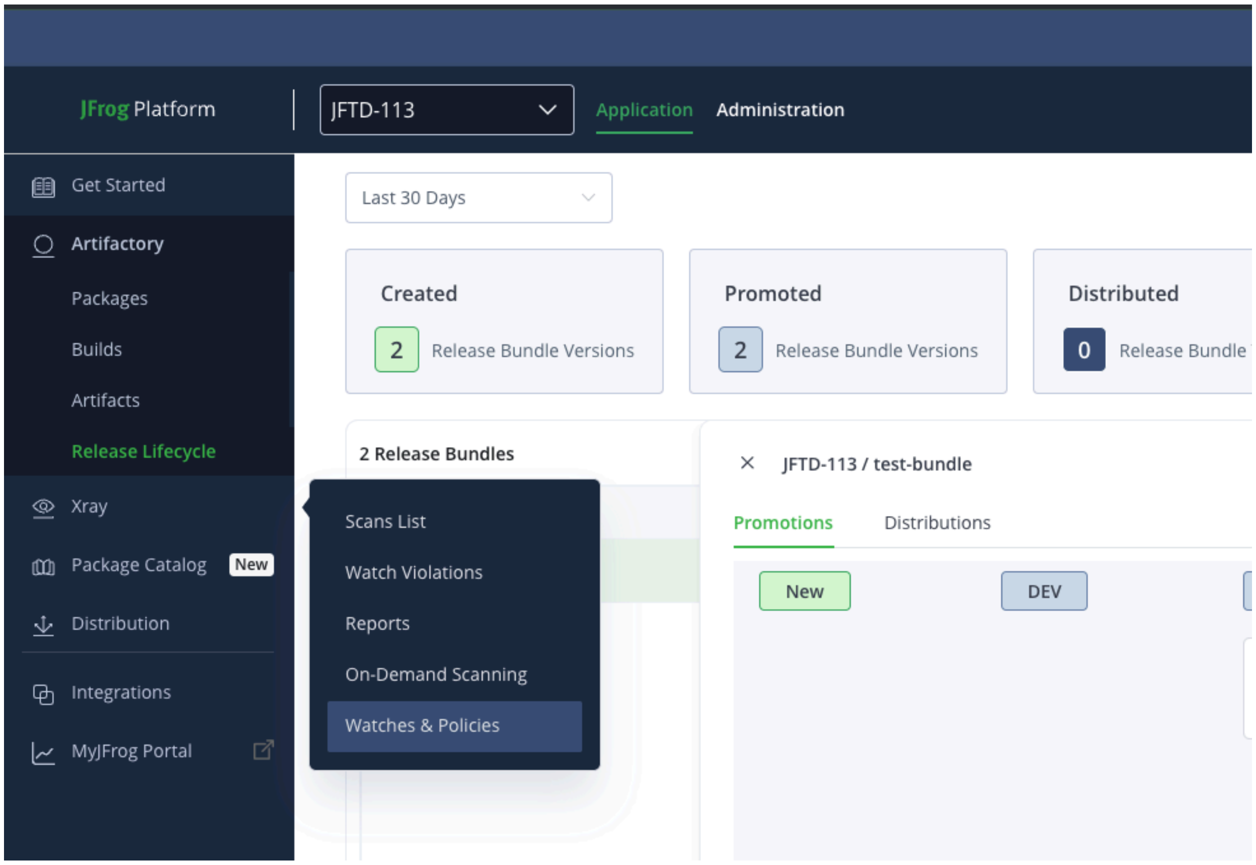
- Select the Release Bundle you want to apply Xray Policies to and click “Save”



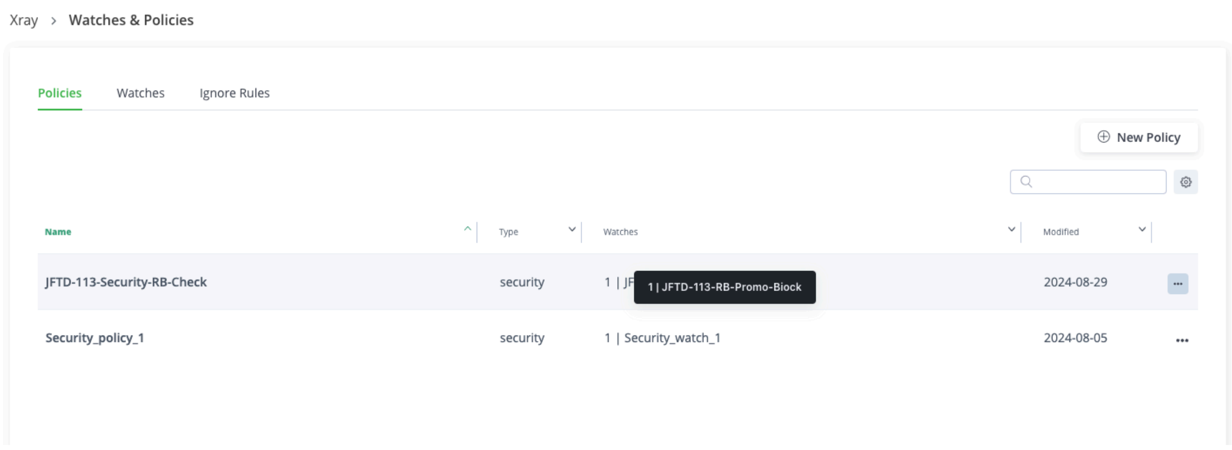
- The Release Bundles is now ready to create Xray Policies against



- Now Navigate to Application > Xray > Watches and Policies

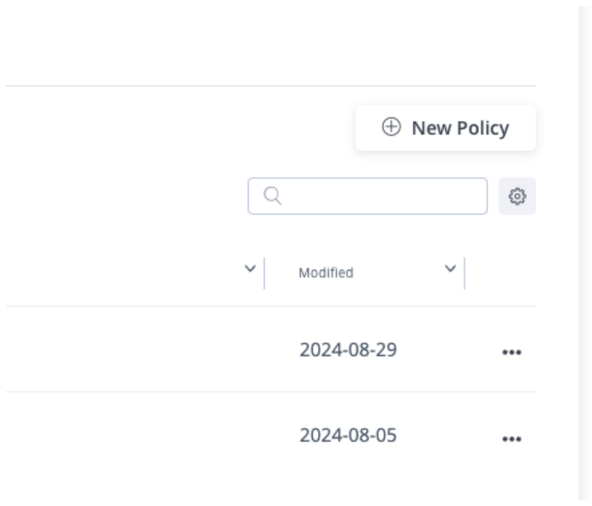


- You are going to create your Xray Policy and Xray Watch (for more detailed information please follow the links)



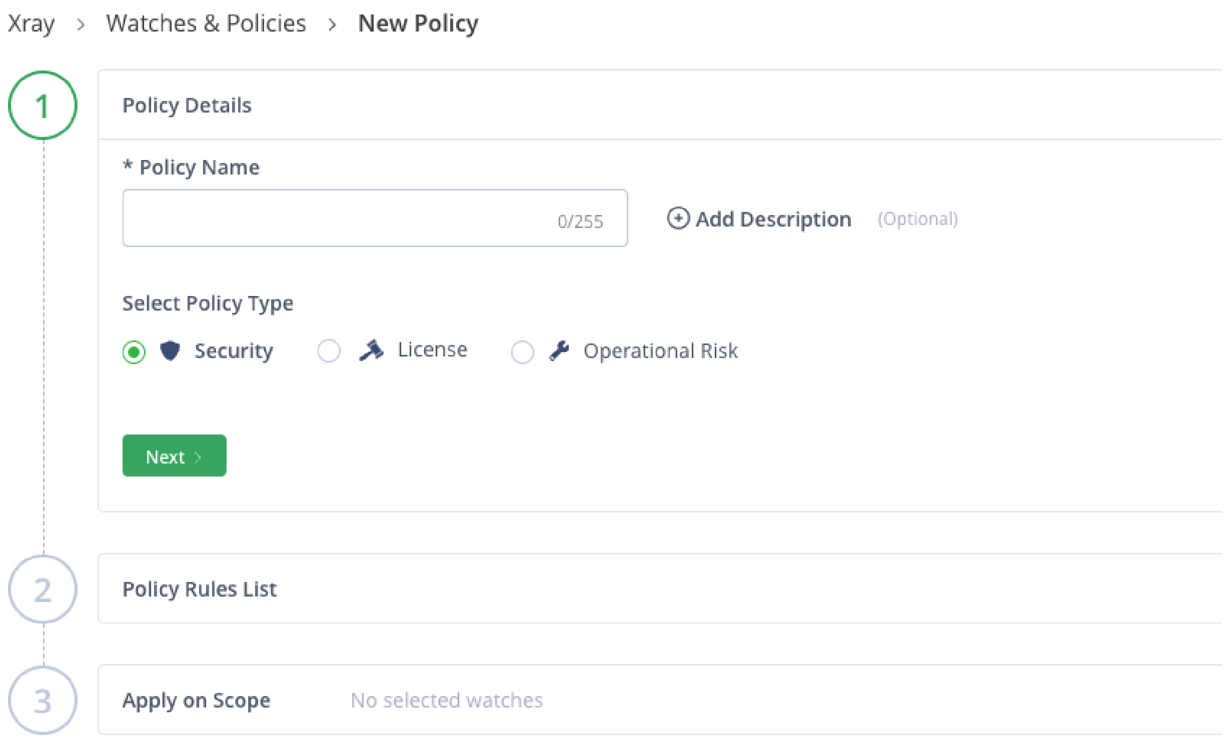
Name	Type	Watches	Modified
JFTD-113-Security-RB-Check	security	1 | JF 1 | JFTD-113-RB-Promo-Block	2024-08-29
Security_policy_1	security	1 | Security_watch_1	2024-08-05

- Let's create 2 Policies first - these can be any of you choosing
  - One Security Policy
    - We will stop the Release Bundle Promotion on Critical CVEs
  - One License Policy
    - We will stop the Release Bundle Promotion if the "" License is found
- Start by clicking "New Policy" on the right handside



Modified
2024-08-29
2024-08-05

- You will be presented with the Create New Policy popup
  - Follow the instruction for this here: [Create an Xray Policy]



Xray > Watches & Policies > New Policy

1 Policy Details

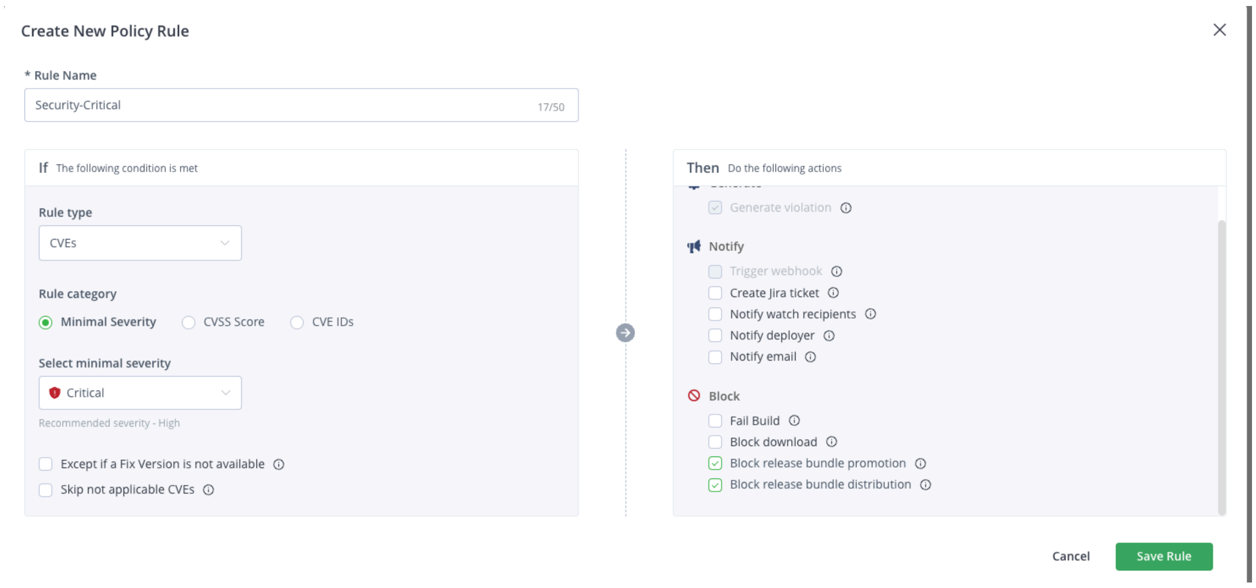
* Policy Name: 0/255 — Add Description (Optional)

Select Policy Type: [✓ Security] License Operational Risk

2 Policy Rules List

3 Apply on Scope — No selected watches

- One important part once you have defined your Policy Rules list based on type (either [Security, License] or [Operational Risk]) you need define [Policy Violation Automatic Actions]


Create New Policy Rule

* Rule Name

Security-Critical 17/50

If The following condition is met

Rule type: CVEs

Rule category: [✓ Minimal Severity] CVSS Score CVE IDs

Select minimal severity: Critical

Recommended severity - High

- [ ] Except if a Fix Version is not available
- [ ] Skip not applicable CVEs

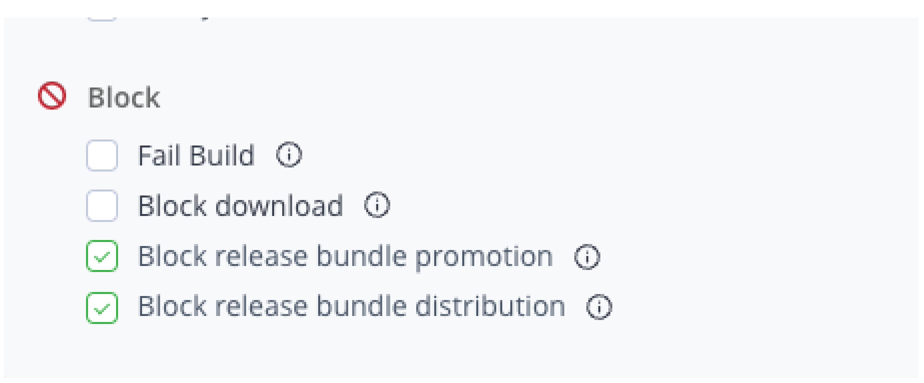
Then Do the following actions

- [✓] Generate violation

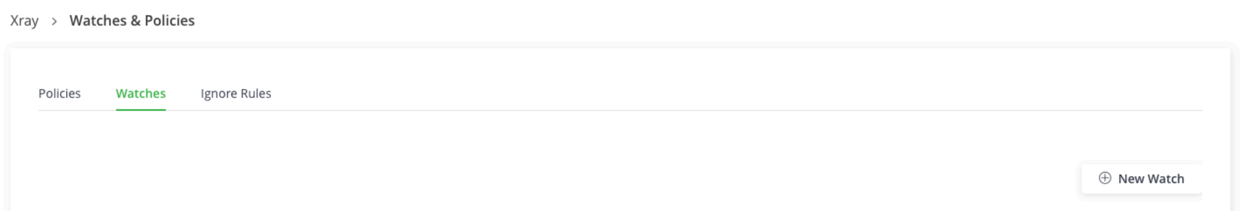
Notify
- [ ] Trigger webhook
- [ ] Create Jira ticket
- [ ] Notify watch recipients
- [ ] Notify deployer
- [ ] Notify email

Block
- [ ] Fail Build
- [ ] Block download
- [✓] Block release bundle promotion
- [✓] Block release bundle distribution

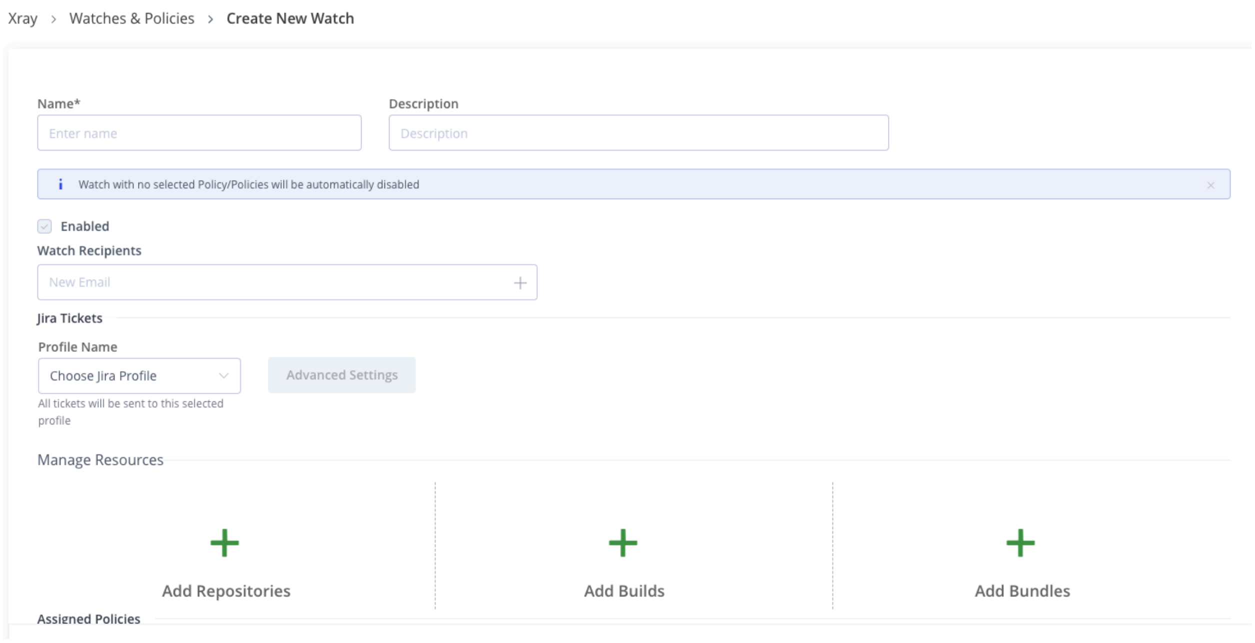
- We will focusing on the two following Automatic Actions


Block
- [ ] Fail Build
- [ ] Block download
- [✓] Block release bundle promotion
- [✓] Block release bundle distribution

- These will prevent either the Promotion or Distribution of a Release Bundle
- Once you have completed defining your Xray Policies, you need to apply them with Xray Watch
- Navigate back to Xray > Watches & Policies > Watches



- Click “New Watch”


Xray > Watches & Policies > Create New Watch

Name*: Enter name
Description: Description

Watch with no selected Policy/Policies will be automatically disabled

Enabled

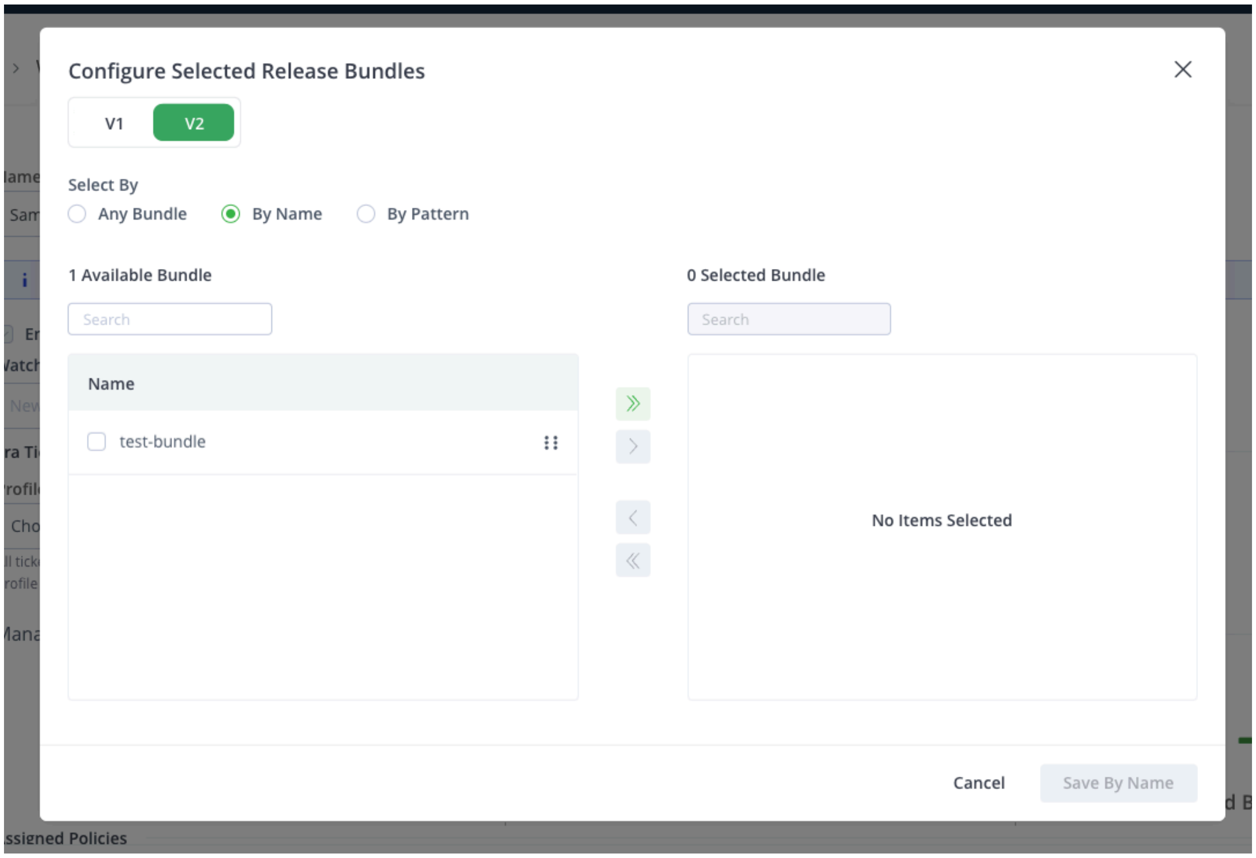
Watch Recipients: New Email

Jira Tickets

Profile Name: Choose Jira Profile

All tickets will be sent to this selected profile

- Follow the information for [Create a Watch]()
- We are going to focus apply the Policy to a Specific Release Bundle


Configure Selected Release Bundles

V1 | V2

Select By: Any Bundle [✓ By Name] By Pattern

1 Available Bundle

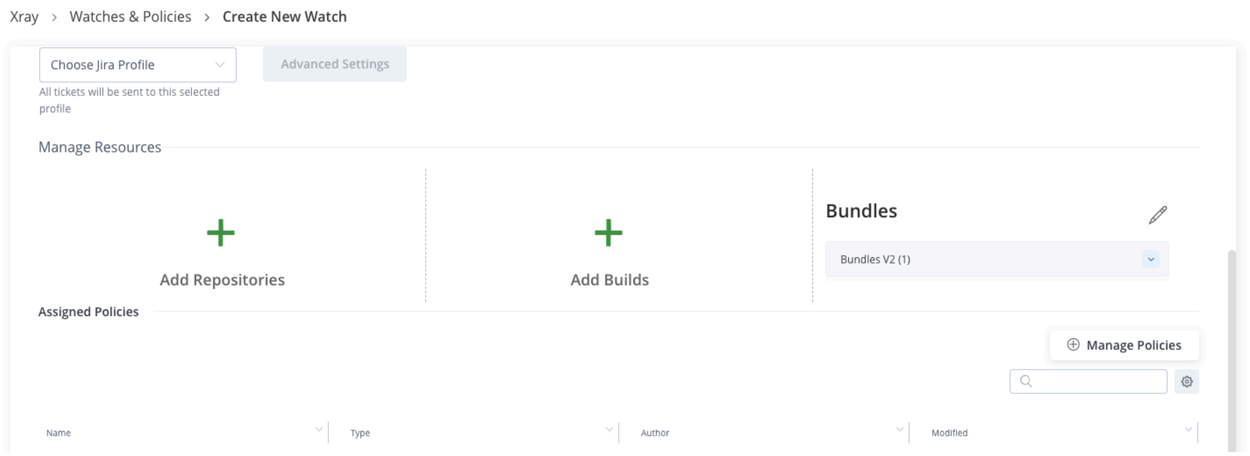
Name
test-bundle

0 Selected Bundle

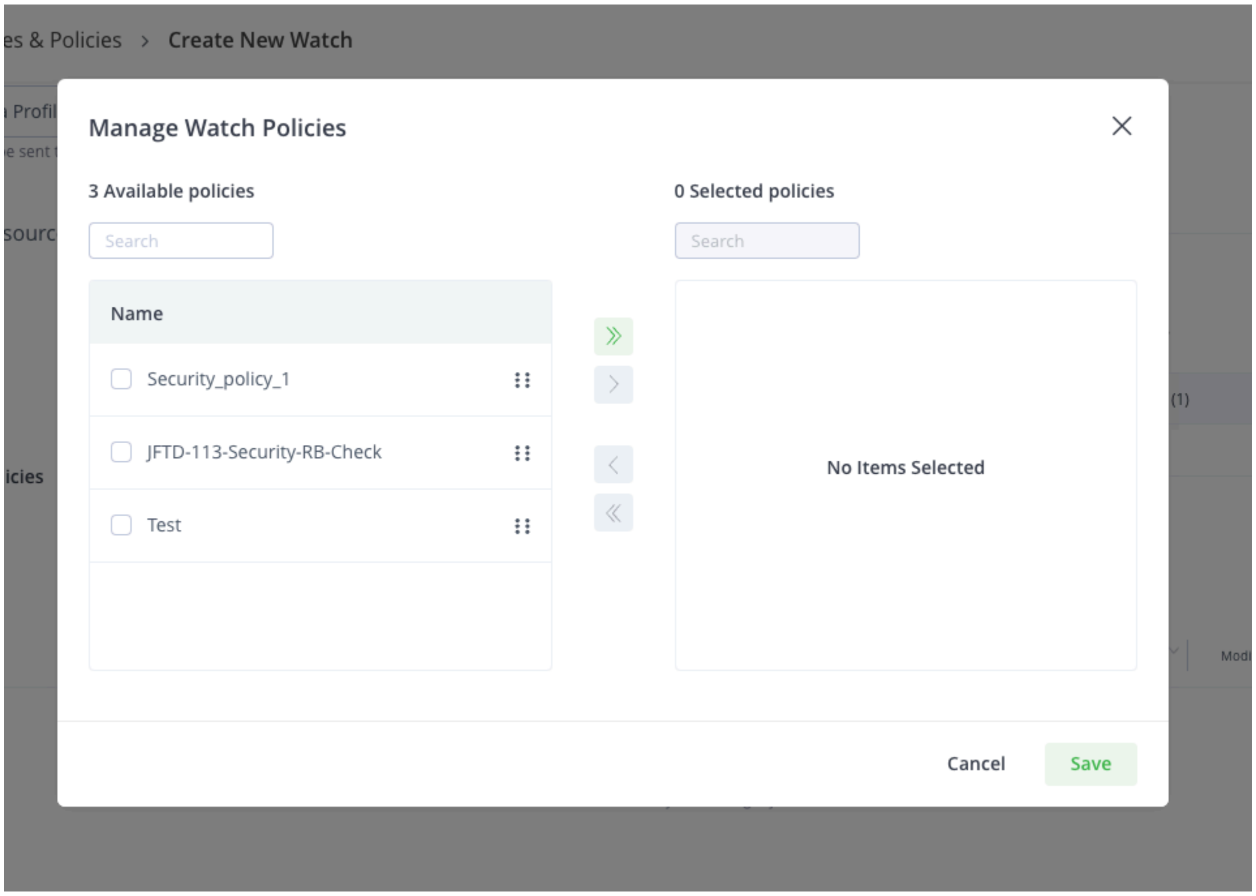
No Items Selected

- Select the Release Bundle you wish to apply to and click “Save by Name”

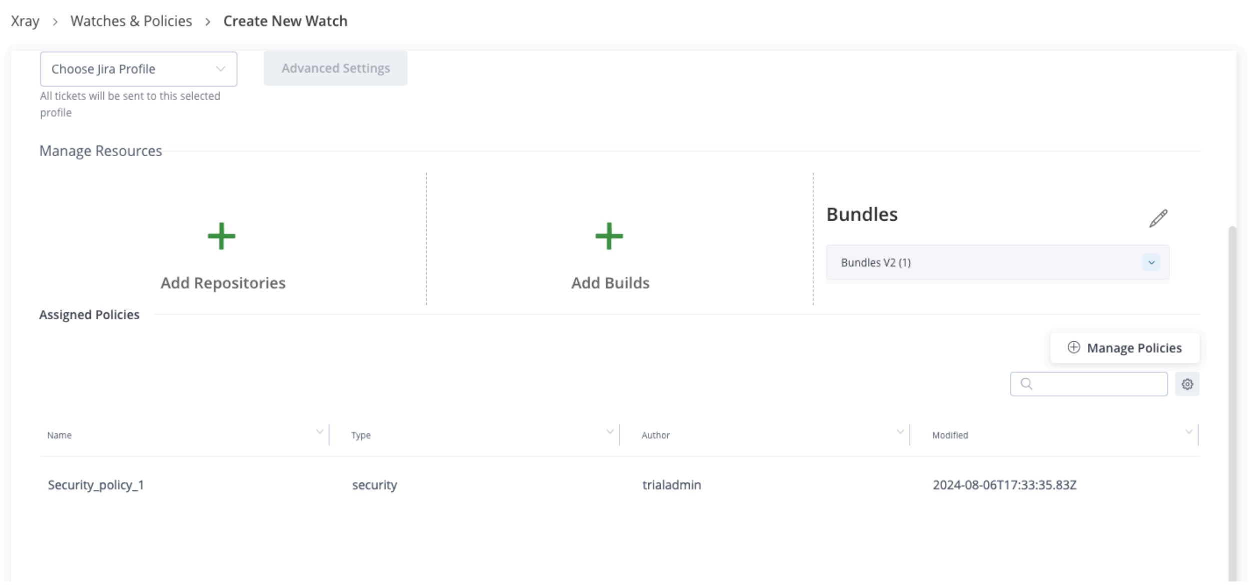
    - If you don't see you Release Bundle make sure you select V2
- Now you should see your Release Bundle in the Watch list and the scroll up slightly



- Now we are going to apply the Policy or Policies that were created earlier
    - Click the Manage Policies button

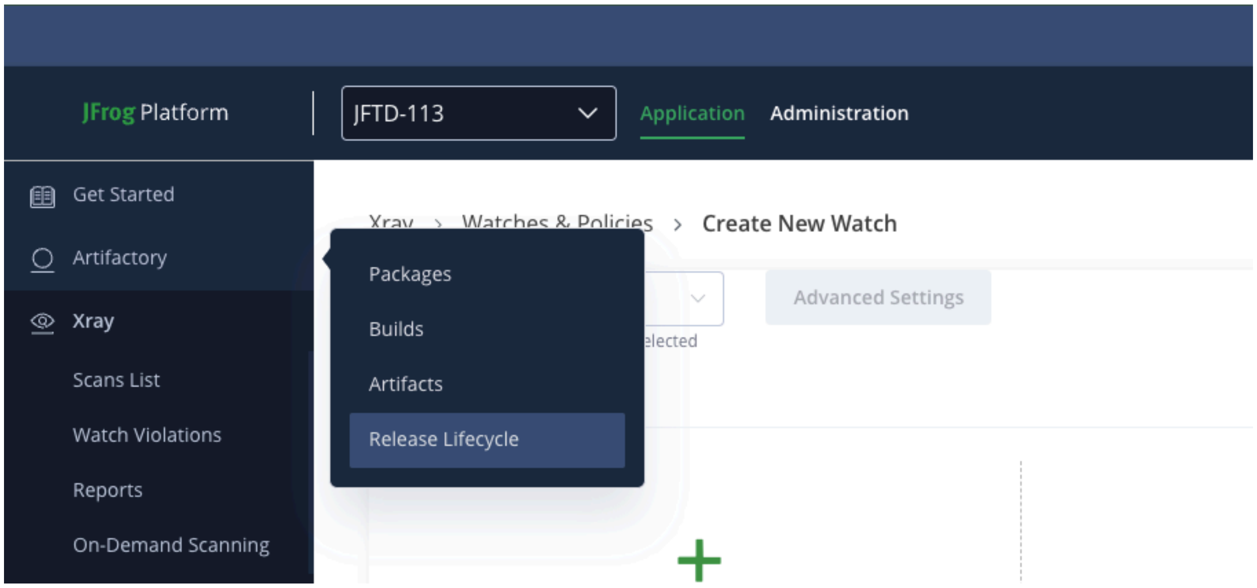


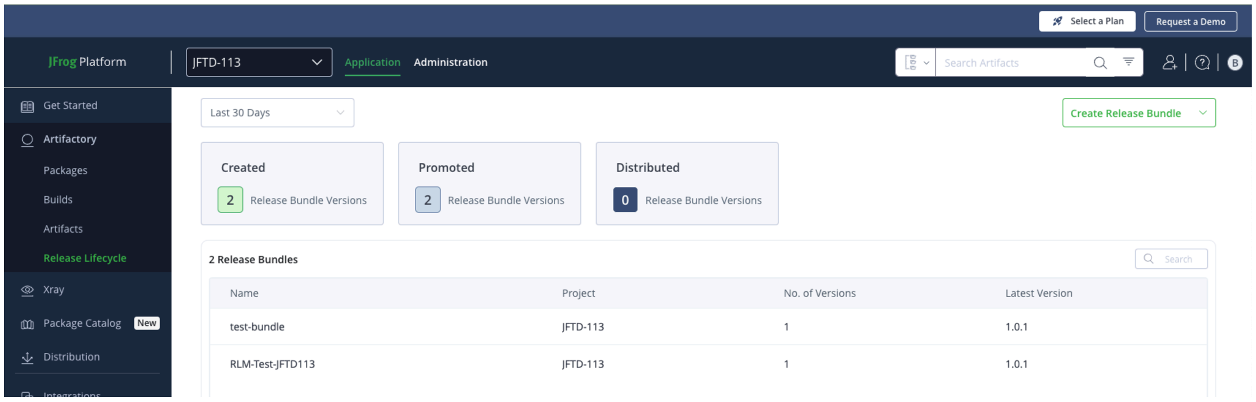
- You will see the Polices you created earlier and drag or use the arrows the ones you have selected from Left to Right and click "Save"



Name	Type	Author	Modified
Security_policy_1	security	trialadmin	2024-08-06T17:33:35.83Z

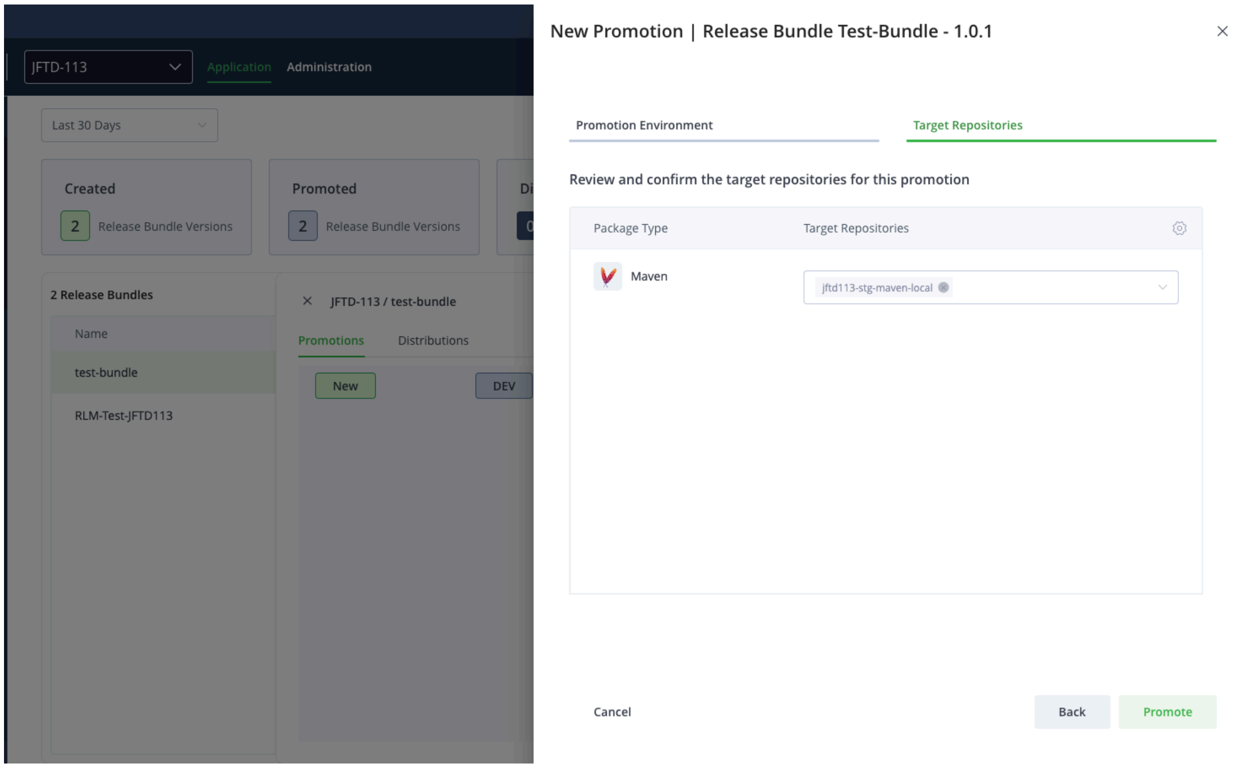
- Now click “Save” and we are ready to test
- Now navigate back to Artifactory > Release Lifecycle





Name	Project	No. of Versions	Latest Version
test-bundle	JFTD-113	1	1.0.1
RLM-Test-JFTD113	JFTD-113	1	1.0.1

- Select the Release Bundle that you created the Watches and Policies for and we are going to do the Promote step again but this time from wherever Environment it is currently located to a different Environment



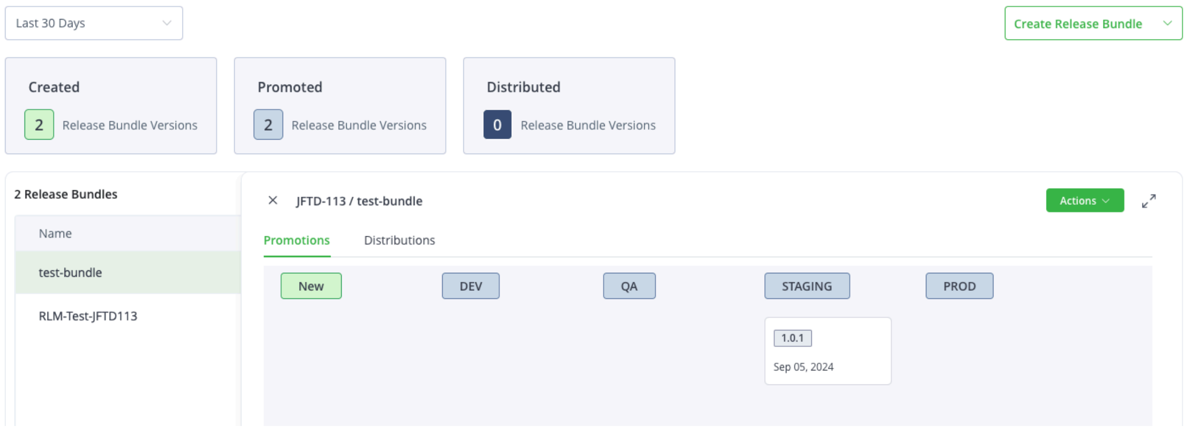
New Promotion | Release Bundle Test-Bundle - 1.0.1

Promotion Environment | Target Repositories

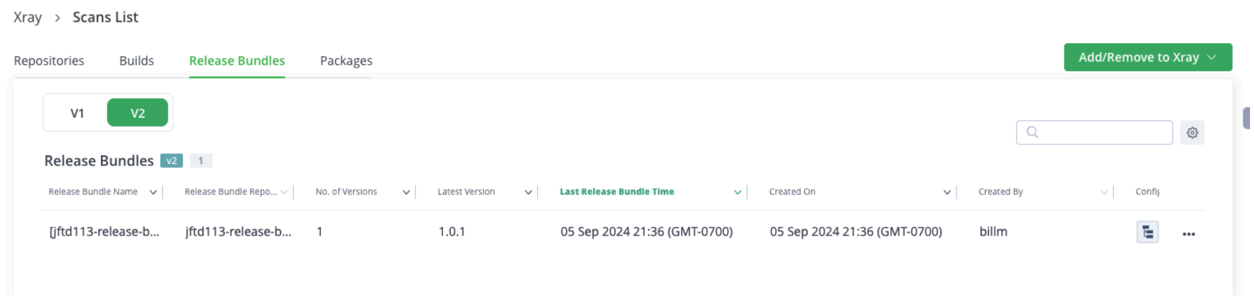
Review and confirm the target repositories for this promotion

Package Type	Target Repositories
Maven	jftd113-stg-maven-local

- If your Xray Watches and Polices are triggered you will receive a notification that it can't promote but itf it is promoted you will receive a notification that it was successful



- Additionally, you can also navigate to Xray > Scan List > Release Bundles


Xray > Scans List

Repositories | Builds | Release Bundles | Packages

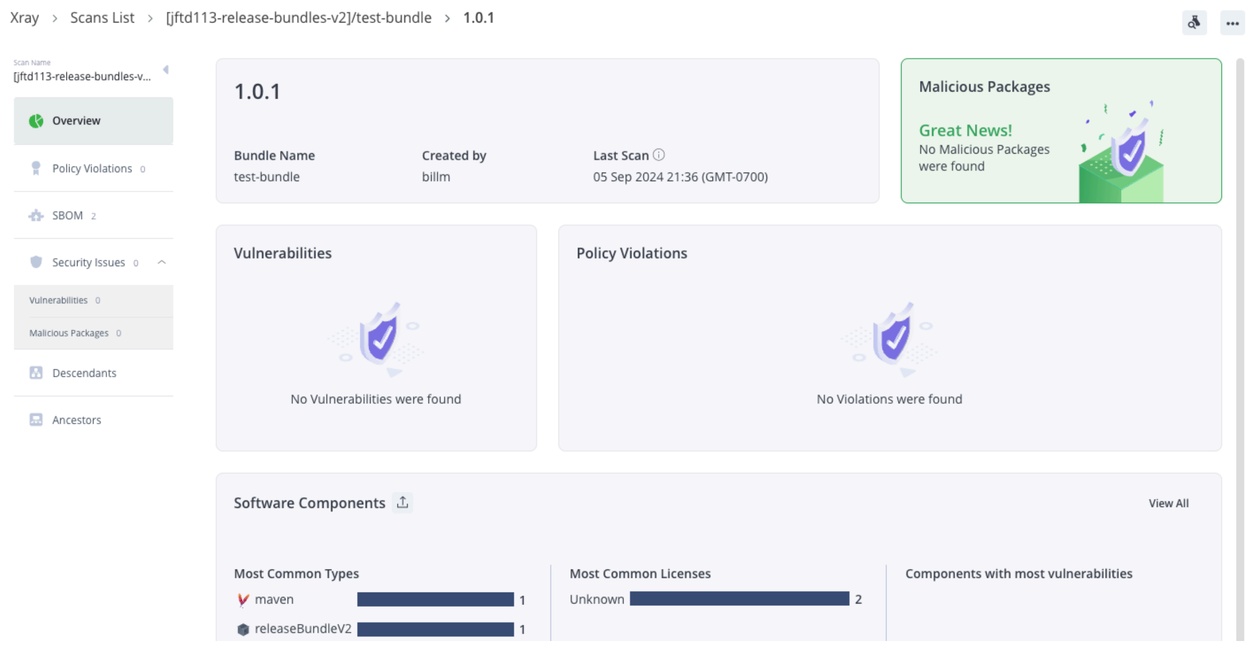
Add/Remove to Xray

V1 | V2

Release Bundles v2 1

Release Bundle Name	Release Bundle Repo...	No. of Versions	Latest Version	Last Release Bundle Time	Created On	Created By	Confi
[jftd113-release-b...	jftd113-release-b...	1	1.0.1	05 Sep 2024 21:36 (GMT-0700)	05 Sep 2024 21:36 (GMT-0700)	billm	

- Select the Release Bundle you wish to see the Xray scan results for and see all the information collected on an CVEs or other security information was associated with it


Xray > Scans List > [jftd113-release-bundles-v2]/test-bundle > 1.0.1

Scan Name
[jftd113-release-bundles-v...

Overview
Policy Violations 0
SBOM 2
Security Issues 0
Vulnerabilities 0
Malicious Packages 0
Descendants
Ancestors

1.0.1

Bundle Name: test-bundle
Created by: billm
Last Scan: 05 Sep 2024 21:36 (GMT-0700)

Malicious Packages
Great News!
No Malicious Packages were found

Vulnerabilities
No Vulnerabilities were found

Policy Violations
No Violations were found

Software Components — View All

Most Common Types
maven 1
releaseBundleV2 1

Most Common Licenses
Unknown 2

Components with most vulnerabilities

Outcome:

- You have now done the following:
  - Have Repositories and Environments for your Release Bundle
  - Created a Release Bundle from 3 builds
  - Promoted a Repository from one Environment to another
  - Created a Xray Policy to act as a quality gate between Staging and Production

<u>Lab 2: Evidence - JFrog CLI Examples</u>

Purpose: The purpose of this lab is to write, using the JFrog CLI to add Evidence to a Release Bundle

Prerequisites:

- The JFrog CLI - we will be using this for our lab
- A Private Key which you will need to generate

Explanation:

- The JFrog CLI enables the creation of custom evidence, which is then deployed to Artifactory.
- JFrog CLI uses the following syntax for evidence:

```
jf evd create --key PRIVATE_KEY --key-alias CI-RSA-KEY  --release-bundle
BUNDLE_NAME --release-bundle-version VERSION --project PROJECT --predicate
./policy.json --predicate-type https://jfrog.com/evidence/approval/v1
```

Process:

- First make sure that your JFrog CLI is configured for the JFrog Platform
    - JFrog CLI Configuration
- Find the Release Bundle you wish to attach the Evidence in the JFrog Platform UI
    - Navigate to Artifactory > Release Lifecycle
- Now open a terminal and run the command above and fill in the information