# **TeamCity Artifactory Plug-in**

### Overview

Artifactory provides tight integration with TeamCity CI Server through the TeamCity Artifactory Plug-in. Beyond managing efficient deployment of your artifacts to Artifactory, the plug-in lets you capture information about artifacts deployed, dependencies resolved, environment data associated with the TeamCity build runs and more, that effectively provides full traceability for your builds.

From version 2.1.0 the TeamCity Artifactory Plug-in provides powerful features for release management and promotion. For details please refer to TeamCity Artifactory Plugin - Release Management.



#### Before you begin

Please refer to the general information about **Artifactory's Build Integration** before using the TeamCity Artifactory Plugin.



### Source Code Available!

The TeamCity Artifactory Plugin is an open source project on GitHub which you can freely browse and fork.

### **Build Runner Support**

The TeamCity Artifactory plugin supports most build runner types, including: Maven2, Maven 3, Ivy/Ant (with Ivy modules support), Gradle, NAnt, MSBuild, FxCop and Ipr.

### **Page Contents**

- Overview
  - Build Runner Support
- Installing the Plugin
- Configuration
  - Configuring System-wide Artifactory Servers
  - Configuring Project-specific Runners
    - Editing Project-specific Configuration
    - Triggering Build Retention in Artifactory
    - Scanning Builds with JFrog Xray
    - Running License ChecksGeneric Build Integration
    - Generic Build in
    - File Specs
    - Legacy Patterns (deprecated)
    - Attaching Searchable Parameters to Build-Info and to Published Artifacts
    - Black Duck Code Center Integration (deprecated)
    - Viewing Project-specific Configuration
- Running a Build with the Artifactory Plugin
- Triggering Builds in Reaction to Changes in Artifactory
- Proxy Configuration
- Licence
- Change Log

#### **Read More**

• TeamCity Artifactory Plugin - Release Management

Plugins are deployed to TeamCity by placing the packaged plugin into the \$<TeamCity Data Directory>/plugins directory and restarting TeamCity. You can also accomplish this via the TeamCity UI via Administration | Plugins List | Upload Plugin Zip and choosing the zip-file from your file-system. You will need to restart TeamCity (tomcat) for the plugin to take effect.

Download the latest version of the plugin:



#### Remove older versions

If you have an older version of the plug-in, be sure to remove it before upgrading to a newer one

## Configuration

To use the TeamCity Artifactory plugin you first need to configure your Artifactory servers in TeamCity's server configuration. You can then set up a project build runner to deploy artifacts and Build Info to a repository on one of the Artifactory servers configured.

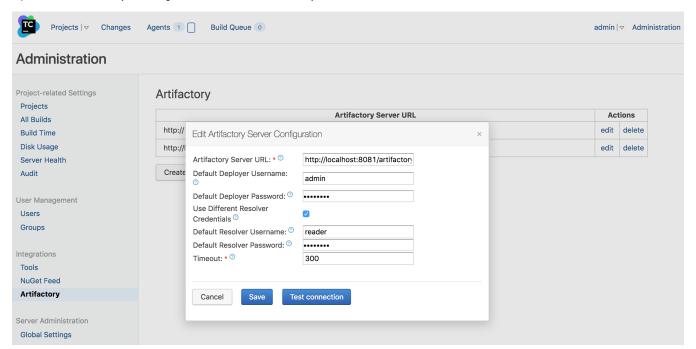
### Configuring System-wide Artifactory Servers

To make Artifactory servers globally available to project runner configurations, they must be defined in Administration | Integrations | Artifactory.

Select Create new Artifactory server configuration and fill in the URL of the Artifactory server.

Deployer credentials can be set at the global level for all builds, but they can also be overridden and set at a project build level.

Specifying a username and password for the resolver repository is optional. It is only used when querying Artifactory's REST API for a list of configured repositories and then only if the target instance does not allow anonymous access.



### **Configuring Project-specific Runners**

### **Editing Project-specific Configuration**

To set up a project runner to deploy build info and artifacts to Artifactory go to Administration | Projects and select the project you want to configure.

Then, under the Build Configurations section, click the Edit link for the build you want to configure.

Under Build Configuration Settings, select the relevant Build Step and click the Edit link for the build step you want to configure.

When you select a value in the **Artifactory server URL** field, the selected server is queried for a list of configured repositories (using the credentials configured in the corresponding **Artifactory Server Configuration**). This populates the **Target Repository** field with a list of repositories to which you can select to deploy.

Clicking on the **Free-text mode** checkbox enables you to type in repository name as free text. You may also include variables as part of the text. For example: libs-%variableName%



### Configuration errors

If the **Target Repository** list remains empty, check that the specified Artifactory server URL, credentials and proxy information (if provided) are valid.

Any information about communication errors that might occur can be found in the TeamCity server logs.

Deales, Autificate To Autificates.	
Deploy Artifacts To Artifactory	
Artifactory server URL:	Inttp://localhost:8081/artifactory  Select an Artifactory server.
Target repository:	[libs-release-local ▼  □Free-text mode Specify a target deployment repository.
Target snapshot repository:	libs-snapshot-local ▼  □Free-text mode Specify a target deployment.
Override default deployer credentials:	€ Use different deployer user name and password than the default ones defined in the Artifactory settings under the administrative system configuration page. If no global defaults are defined and no user name and password are given here anonymous deployment will be attempted.
Deployer username:	admin  Name of a user with deployment permissions on the target repository.
Deployer password:	The password of the user entered above.
Deploy Maven artifacts:	Uncheck if you do not wish to deploy Maven artifacts from the plugin (a more efficient alternative to Mavens own deploy goal).
Deployment include patterns:	Comma or space-separated list of Ant-style patterns of files that will be included in publishing. Include patterns are applied on the published file path before any exclude patterns.
Deployment exclude patterns:	Comma or space-separated list of Ant-style patterns of files that will be excluded from publishing. Exclude patterns are applied on the published file path after any include patterns.
Publish build info:	Uncheck if you do not wish to deploy build information from the plugin.
Include Environment Variables:	Check if you wish to include all environment variables accessible by the builds process.
Run license checks:	Check if you wish automatic license scanning to run after the build is complete. (Requires Artifactory Pro).

## **Triggering Build Retention in Artifactory**

You can trigger build retention when publishing build-info to Artifactory.

Discard Old Builds:	Check if you wish to include discard old buils.	
Days To Keep Builds:	If not empty, builds are only kept up to this number of days.	▤
Max # Of Builds To Keep:	If not empty, only up to this number of builds are kept.	≣
Exclude Builds:	Comma or space-separated list of build numbers to be exclude during the re	ention procedure.
Delete Artifact:	Check for deleting artifacts during the build retention procedure.	
Async Build Retention:	Check for asynchronous build retention.	

## **Scanning Builds with JFrog Xray**

The TeamCity Artifactory Plugin is integrated with JFrog Xray through JFrog Artifactory, allowing you to have build artifacts and dependencies scanned for vulnerabilities and other issues. If issues or vulnerabilities are found, you may choose to fail a build job. The scan result details are always printed into the build log. This integration requires **JFrog Artifactory v4.16** and above and **JFrog Xray v1.6** and above.

Run Xray scan on build:	
Fail build if found vulnerable:	Uncheck if you do not wish to fail the build if found vulnerable.

### **Running License Checks**

If you are using Artifactory Pro, you can benefit from the License Control feature to discover and handle third party dependency licensing issues as part of the build.

If you check the **Run License Checks** checkbox, Artifactory will scan and check the licenses of all dependencies used by this build. You can also specify a list of recipients who should receive any license violation notifications by email.

### **Generic Build Integration**

Generic build integration provides Build Info support for the following runner types:

- · Command Line
- FxCop
- MSBuild
- Rake
- Powershell
- XCode Project
- NuGet Publish
- NAnt
- Visual Studio (sln)
- Visual Studio 2003
- · SBT, Scala build tool

This allows the above builds to:

- 1. Upload any artifacts to Artifactory, together with custom properties metadata, and keep published artifacts associated with the TeamCity build.
- 2. Download artifacts from Artifactory that are required by your build.

You can define the artifacts to upload and download by either using "File Specs" or "Legacy Patterns".

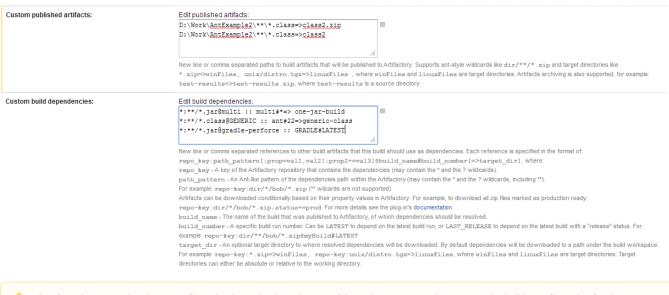
### **File Specs**

File Spec are specified in JSON format. You can read the File Spec schema here.

## **Legacy Patterns (deprecated)**

Legacy patterns are deprecated since version 1.8.0 and will be removed in future releases.

Custo m publis hed artifacts	Allows you to specify which artifact files produced by the build should be published to Artifactory. At the end of the build the plugin locates artifacts in the build's checkout directory according to the specified artifact patterns, and publishes them to Artifactory to one or more locations, optionally applying a mapping for the target path of each deployed artifact. The pattern and mapping syntax for Published Artifacts is similar to the one used by TeamCity for Build Artifacts.
Custo m build depen dencies	Allows you specify dependency patterns for published artifacts that should be downloaded from Artifactory before the build is run. You can have detailed control over which artifacts are resolved and downloaded by using query-based resolution, adding to your artifact paths a query with the properties that the artifact should have before it can be downloaded. For further information read here about Resolution by Properties.



**ك** 

As of version 2.1.4, the above configuration is not backward compatible and you may need to re-save the builds configuration for them to run properly.

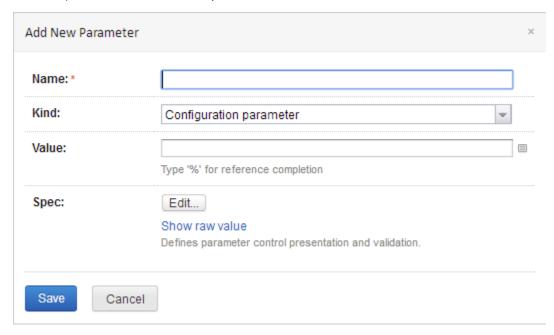


If no matching artifacts are found, remember that these parameters may be case sensitive depending on the operating system, the agent and the server they are running on.

### Attaching Searchable Parameters to Build-Info and to Published Artifacts

In the **Build Configuration Settings** you can select **Parameters** to define system properties or environment variables that should be attached to artifacts and their corresponding build info.

To define a parameter click on the Add new parameter button.



FIII in the corresponding fields.

Parameters relevant for builds run through Artifactory are:

- buildInfo.property.\* All properties starting with this prefix are added to the root properties of the build-info
- artifactory.deploy.\* All properties starting with this prefix are attached to any deployed produced artifacts

You can specify all the properties in a single file, and then define another property pointing to it.

To point the plugin to a properties file, define a property called buildInfoConfig.propertiesFile and set its value to the absolute path of the properties file.

It is also possible to point the plugin to a properties file containing the aforementioned properties.



The properties file should be located on the machine running the build agent, not on the server!

+ Add new parameter

### Configuration Parameters

Configuration parameters are not passed into build, can be used in references only.

None defined

### System Properties (system.)

System properties will be passed into the build (without system. prefix), they are only supported by the build runners that understand the property notion. <sup>®</sup>

Name	Value		
system.buildinfo.property.bob.number	%system.build.vcs.number%	Edit	Delete
system.buildInfoConfig.propertiesFile	this/is/a/path.properties	Edit	Delete

## Environment Variables (env.)

Environment variables will be added to the environment of the processes launched by the build runner (without env. prefix).

Name	Value		
env.buildInfoConfig.deploy.foo	%maven.project.name%	Edit	Delete

### **Black Duck Code Center Integration (deprecated)**

This feature is no loner supported since version 5 of Artifactory.

If you are using Artifactory Pro and have an account with Black Duck Code Center, you can run the build through an automated, non-invasive, open source component approval process, and monitor for security vulnerabilities.

Run Black Duck Code Center compliance checks:	Check if you wish that automatic Black Duck Code Center compliance checks will occur after the build is completed. (Requires Artifactory Pro).	
Code Center application name:	Pulse API The existing Black Duck Code Center application name.	
Code Center application version:	1.0 The existing Black Duck Code Center application version.	
Send compliance report email to:	legal@jfrog.com  Input recipients that will receive a report email after the automatic Black Duck Code Center compliance checks finished.	
Limit checks to the following scopes:	compile runtime  A list of dependency scopes/configurations to run Black Duck Code Center compliance checks on.  If left empty all dependencies from all scopes will be checked.	
Include published artifacts:	Include the build's published module artifacts in the Black Duck Code Center compliance checks if they are also used as dependencies for other modules in this build.	
Auto-create missing component requests:	■             Auto create missing components in Black Duck Code Center application after the build is completed and deployed in Artifactory.	
Auto-discard stale component requests:	Auto discard stale components in Black Duck Code Center application after the build is completed and deployed in Artifactory.	

### **Viewing Project-specific Configuration**

Existing project configuration can be viewed in Settings under Projects | \$PROJECT\_NAME | \$BUILD\_NAME:

## Build Step: Maven edit »

### Step 1:

Runner type: Maven (Runs Maven builds)

Execute: 1 If all previous steps finished successfully (zero exit code)

POM file path: maven-example/pom.xml

Goals: clean install Maven used: default

Additional Maven command line parameters: none specified

User settings provided by default Maven metadata disabled: false Use own local artifact repository: false

Build only modules affected by changes (incremental building): false

JDK home path: not specified
Build working directory: not specified

JVM command line parameters: not specified

## Deploy artifacts to Artifactory: enabled

Artifactory server: http://10.0.0.235:8080/artifactory

Target repository: libs-release-local

Target snapshot repository: libs-snapshot-local

Deployer username: admin Deploy artifacts: true

Deployment include patterns: not specified Deployment exclude patterns: not specified

Publish Build Info: true

Include Environment Variables: true

Environment Variables Include Patterns: not specified Environment Variables Exclude Patterns: \*password\*,\*secret\*

Run license checks (Requires pro): true

License violation notifications recipients: none specified Limit checks to the following scopes: none specified

Include published artifacts: false

Disable automatic license discovery: false Enable Artifactory release management: true

VCS tags base URL/name: none

Git release branch name prefix: REL-BRANCH-

Alternative Maven goals: none

Alternative Maven command line parameters: none Default module version configuration: Global

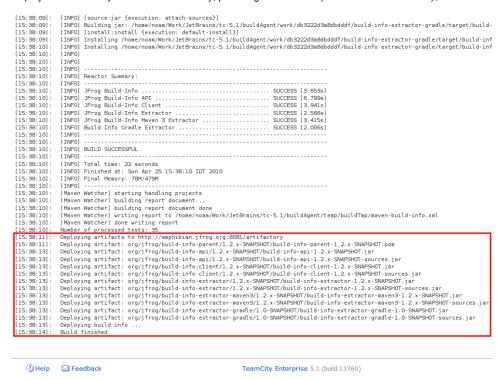
Java code coverage: disabled

## Running a Build with the Artifactory Plugin

Once you have completed setting up a project runner you can run a project build. The Artifactory plugin takes effect at the end of the build and does the following:

- 1. For all build runner types Publishes the specified Published Artifacts to the selected target repository and applies corresponding path mappings.
- 2. For Maven or Ivy/Ant build runner Deploys all artifacts to the selected target repository together at the end of the build (as opposed to deploying separately at the end of each module build as done by Maven and Ivy).

3. Deploys the Artifactory BuildInfo to Artifactory, providing full traceability of the build in Artifactory, with links back to the build in TeamCity.



You can also link directly to the build information in Artifactory from a build run view:



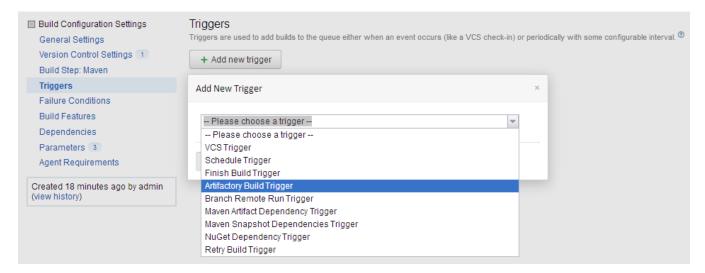
## Triggering Builds in Reaction to Changes in Artifactory

The plugin allows you to set a new type of trigger that periodically polls a path in Artifactory, a folder or an individual file. Whenever a change is detected in the polled element, the TeamCity build is triggered. For example, the build could be triggered when new artifacts have been deployed to the specified path in Artifactory.



To configure a new build trigger, under Administration, select \$PROJECT\_NAME | \$BUILD\_NAME. Then, select Triggers.

Click the Add new trigger button to select an Artifactory Build Trigger



### Select the Artifactory Server URL and the Target repository.

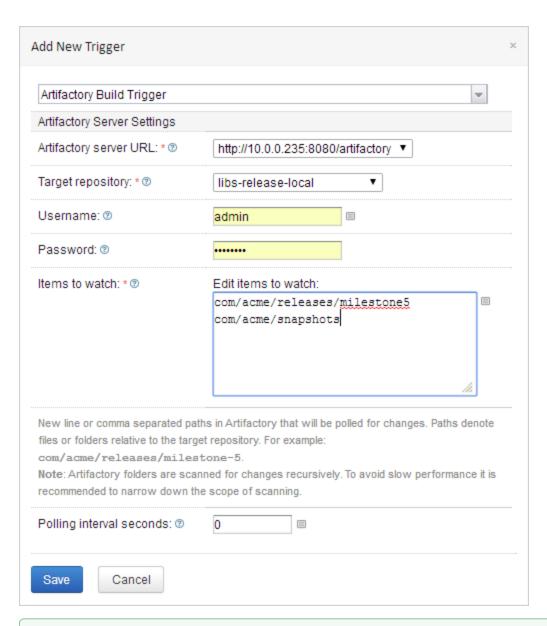
Complete the username and a password fields of a valid deployer for the selected repository.



### **Deploy permssion**

The specified user must have deploy permissions on the repository

Then, in Items to watch, specify the paths in the selected repository in which a change should automatically trigger a build.





### Be as specific as possible in Items to watch

In order to establish if there has been a change, Artifactory must traverse all the folders and their sub-folders specified in **Items to watch**. If the specified folders have a lot of content and sub-folders, this is a resource intensive operation that can take a long time.

Therefore, we recommend being as specific as possible when specifying folders in Items to watch.

## **Proxy Configuration**

If the Artifactory server is accessed via a proxy, you need to configure the proxy by setting the following properties in the  $\texttt{STEAMCITY\_USER\_HOME/.}$  BuildServer/config/internal.properties file. If the file does not exist, you'll need to create it.

```
org.jfrog.artifactory.proxy.host
org.jfrog.artifactory.proxy.port
org.jfrog.artifactory.proxy.username
org.jfrog.artifactory.proxy.password
```

Since version 2.5.0, you can also define a proxy for specific build agents. You do that by adding the TeamCity agent name to the end of the above property names.

For example, if you wish to configure a proxy for the "my-agent" agent, the proxy properties configuration should look as follows:

```
org.jfrog.artifactory.proxy.host.my-agent
org.jfrog.artifactory.proxy.port.my-agent
org.jfrog.artifactory.proxy.username.my-agent
org.jfrog.artifactory.proxy.password.my-agent
```



In case your build agent name contains a white-space, you should replace the white-space in the property name with \u0020.

For example, here's how you define the proxy host for the "Default Agent":

org.jfrog.artifactory.proxy.host.Default\u0020Agent

### Licence

The TeamCity Artifactory plugin is available under the Apache v2 License.

## Change Log

### 2.6.0 (9 Apr 2018)

- 1. Files larger than 5mb are downloaded concurrently using range-requests (TCAP-312)
- 2. Bug fixes (TCAP-305, TCAP-306, TCAP-307, TCAP-309, TCAP-311, TCAP-314)

### 2.5.0 (28 Sep 2017)

- 1. Allow proxy configuration per agent (TCAP-237)
- 2. Support pattern exclusion in File Specs (TCAP-300)
- 3. File specs AQL optimizations (TCAP-302)
- 4. Bug fixes (TCAP-297, TCAP-299, TCAP-301, TCAP-303)

### 2.4.0 (29 Jun 2017)

- 1. Support for retention policy within TeamCity Plugin (TCAP-283)
- 2. Support Xray build scan (TCAP-292)
- 3. Add upload and download from file specs support to generic jobs (TCAP-294)
- 4. Allow to extract supported formats using file specs (TCAP-295)
- 5. Bug fixes (TCAP-167, TCAP-293, TCAP-296)

### 2.3.1 (23 Jan 2017)

- 1. Support full path in specs (TCAP-287)
- 2. Add to file spec the ability to download artifact by build name and number (TCAP-288)
- 3. Change file Specs pattern (TCAP-285)

### 2.3.0 (13 Nov 2016)

1. Upload and download File Specs support to generic jobs (TCAP-284)

### 2.2.1 (19 May 2016)

1. Bug fix (TCAP-214)

### 2.2.0 (21 March 2016)

1. Bug fixes (TCAP-238, TCAP-239, TCAP-241, TCAP-244, TCAP-245, TCAP-247, TCAP-250, TCAP-258, TCAP-236)

### 2.1.13 (4 May 2015)

- 1. Support multi Artifactory Build Triggers (TCAP-222)
- 2. Support SBT build tool (TCAP-223)
- 3. Bug fix (<u>TCAP-214</u>)

### 2.1.12 (12 Mar 2015)

1. Adding support for free text repository configuration (TCAP-217)

### 2.1.11 (7 Dec 2014)

- 1. Compatibility with Gradle 2.x (TCAP-211)
- 2. Bug Fixed (TCAP-205)

### 2.1.10 (8 May 2014)

1. Bug Fixed (TCAP-206, TCAP-72)

### 2.1.9 (17 Apr 2014)

- 1. Adding Version Control Url property to the Artifactory Build Info JSON. (TCAP-203)
- 2. Support for TeamCity 8.1 Release management feature issues
- 3. Support working with maven 3.1.1
- 4. Bug Fixed (TCAP-197, TCAP-161)

### 2.1.8 (15 Jan 2014)

- 1. Allow remote repository caches to be used for build triggering TCAP-196
- 2. Bug Fixes

### 2.1.7 (18 Dec 2013)

1. Add support for blackduck integration - TCAP-185

### 2.1.6 (03 Sep 2013)

- 1. TeamCity 8.0.x full compatability issue TCAP-172
- 2. Global and build credentials issue TCAP-153
- 3. Repositories refreshed by credential issue TCAP-166
- 4. Generic deploymentresolution on Xcode builds TCAP-180
- 5. Working directory in Gradle build issue TCAP-125

### 2.1.5 (07 Jul 2013)

- 1. Fix security issue TCAP-172
- 2. Improve generic resolution BI-152

### 2.1.4 (21 Aug 2012)

- 1. Compatible with TeamCity7.1.
- 2. Bug Fixes

## 2.1.3 (30 May 2012)

- 1. Compatible with TeamCity7.
- 2. Support 'Perforce' in release management.
- 3. Support multiple deploy targets for the same source pattern in generic deploy.
- 4. Support for custom build dependencies resolution per build.

### 2.1.2 (12 Dec 2011)

1. Compatible with Gradle 1.0-milestone-6.

## 2.1.1 (09 Aug 2011)

- 1. Support for Gradle milestone-4
- 2. Better support for releasing nested Maven projects
- 3. Fixed minor Maven deployments discrepancies

### 2.1.0 (14 Jul 2011)

- 1. Release management capabilities
- 2. Bug fixes

### 2.0.1 (9 Jan 2011)

- 1. Auto Snapshot/Release target repository selection
- 2. Add ivy/artifact deploy patterns
- 3. Improved Gradle support
- 4. Bug fixes

## 2.0.0 (5 Dec 2010)

- Support for Gradle builds
   Support for maven3 builds
   Default deployer add resolver credentials
   Support for muti steps builds

## 1.1.3 (21 Nov 2010)

1. Include/exclude pattern for artifacts deployment

### 1.1.2 (7 Nov 2010)

- Control for including published artifacts when running license checks
   Limiting license checks to scopes
   Control for turning off license discovery when running license checks