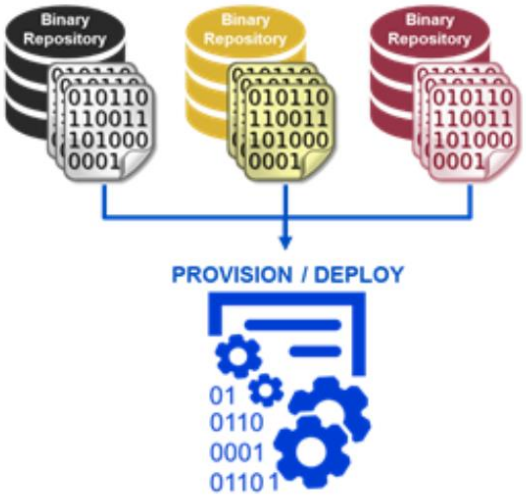
# What is Repository Manager?

## Introduction to Artifact Repository

An **artifact repository** (which also can appear as binary artifact repository or binary repository) is used for **storing building blocks** of a project in **binary code** along with other data that gives information such as **dependencies, versions, and build promotions** that describe the development status of the software. When the project is uploaded to an artifact repository, there is no need to rebuild that project every time it is needed because it is already built when it is uploaded to the artifact repository.



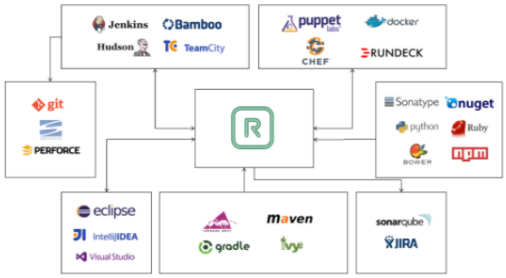

Computers understand and execute binary code. Thus, when you build the project that you have developed, binary codes are generated. Instead of the actual code, binary code is stored in Artifact Repositories which reveals the reason behind why an Artifact Repository is also called a **Binary repository**.

> **Tip:** Artifact repositories, also called binary repositories, are used for managing builds of projects.

## What is Repository Manager?

So far binary artifact repositories were discussed. To be able to use these artifact repositories efficiently there are some important tools called **Repository Managers**. A repository manager is a dedicated server application designed to manage repositories of binary components. A repository manager is a server application that helps manage repositories for artifacts (binary components). The Repository Managers have mainly 2 important features:

- They are used as proxies for the remote repositories which reduced the bandwidth and time required for retrieving an artifact from the remote repository.
- They are hosts for artifacts providing organizations a target for deployment of the artifacts.




## Reasons to Use a Repository Manager

There are many benefits of a binary repository. Some of the most important of them are as follows;

- Some repository managers (Nexus, Artifactory, etc.) can also be used as a **Maven repository** which is a widely used Java dependency management and build tool.
- Binary repository managers **save up time** as the downloaded files are already cached in the local and it is not necessary to download the binary files again each time you are going to work on them.
- It is guaranteed that the binaries and the metadata that are uploaded to the release repository **do not change**. This means **predictable and repeatable** builds.
- It helps with the **standardization** of the software by helping you track the versions of your software components. Also, it checks the licenses of third party components that are used in your software.
- Since you can share the components with other teams with the binary repository, it increases the **collaboration**.

## Binary Repository vs. Version Control Repository

The main difference between a binary artifact repository and version control repository is that you store your **development process** on a version control repository and your **build process** in an artifact repository. Other important differences are as follows:

- Binary files are much larger in size and need metadata to be stored with them such as file name, version, license, etc.
- Binary files do not need to be cloned the way source code is cloned.
- Repository managers reduce risk compared to version control repositories since it is much easier to inject malicious code into libraries in version control systems.

> **Tip:** "You manage what you code in Git, and what you build in Nexus."

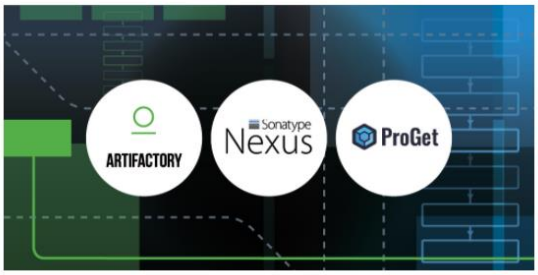
## What is Nexus Repository?

Nexus Repository is one of the widely used repository managers. It is ranked #1 in the top repository managers list of the IT Central Station. Thanks to its Universal Control it supports all of the popular build tools.

- You can store and distribute Maven/Java, npm, NuGet, Hel, Docker, P2, OBR, APT, GO, R, Conan components, and many more.
- Manage components such as binaries, containers assemblies, and completed products.
- It has advanced support for the Java Virtual Machine ecosystem. This includes Gradle, Ant, Maven, and Ivy.
- It is compatible with popular tools like Eclipse, IntelliJ, Hudson, Jenkins, Puppet, Chef, Docker, and more.


It also has features such as **health monitor of your software supply chain**, **scaling development as much as you like without additional costs**, **rich documentation and support**, and many more.

## Why Nexus Repository?




These are some featured strengths of Nexus compared to the other repository managers.

- **Easy installation and configuration**. Thanks to Nexus' rich documentation and support it is quite easy to understand and install and configure it.
- **More capabilities when it comes to hosted and proxy repositories**.
- **Storing and sharing of components**.
- **Searching**. It has a fast and effective search for the artifacts.
- **Ability to manage multiple central repositories**. It is possible to manage multiple requirements from multiple domains.

## Nexus Repository Manager Installation

In this tutorial, you are going to see 2 ways to install and use the Nexus Repository. The first one is downloading and installing the Nexus Repository into your local computer and running from there. And the second will be running it from cloud formation.

Follow the link for the installation files. Find the appropriate link for your operating system. Download files in the following link are in the following table:

| Operating System | File to Download |
|---|---|
| Unix archive | https://download.sonatype.com/nexus/3/latest-unix.tar.gz ( ASC , MD5 , SHA1 ) |
| Windows archive | https://download.sonatype.com/nexus/3/latest-win64.zip ( ASC , MD5 , SHA1 ) |
| OSX archive | https://download.sonatype.com/nexus/3/latest-mac.tgz ( ASC , MD5 , SHA1 ) |

### Unix Local Installation

Once you have downloaded and extracted the zipped file, go to the directory where the folder that you have extracted is located. Then proceed to the folder that has the name "nexus-3.26.0-04 (numbers may differ depending on the version you have installed at the time)/bin". Finally, enter the command "***./nexus run***". After a couple of seconds, the shell will prompt "***Started Sonatype Nexus***...". This method will leave the repository manager running in the current shell and display the log output. To access the web application of the user interface, type in the URL: ***http://localhost:8081/***. Username for sign in by default is admin and your default password is located in the /sonatype-work/nexus3/admin.password file. You can stop the running application with CTRL+C.

### Windows Local Installation

After downloading the zipped file from the link provided, extract the file someplace other than program files so that you avoid problems with windows file registry virtualization. After doing so, from the command prompt go to the directory that you have extracted the files, go inside the nexus-3.26.0-04 folder/bin and run nexus.exe by typing "nexus.exe /run". To access the web application of the user interface, type in the URL: ***http://localhost:8081/*** in the browser. Username for sign in by default is admin and your default password is located in the /sonatype-work/nexus3/admin.password file. You can stop the running application with CTRL+C.

### AWS Cloud Formation Setup

If you are not already subscribed to the CentOS7 image, please do so from the following link:

https://aws.amazon.com/marketplace/pp/B00O7WM7QW

Sign in to your AWS account and click the "Continue to Subscribe" button. Proceed and click accept terms after reviewing the price terms.

**Single Instance Setup** From the following link, scroll down to "Single Instance" and choose the template that fits your region and click launch. Details on whether to choose Detailed Template or Minimal Template is provided above the table in the link.

https://help.sonatype.com/integrations/cloud-deployments/cloudformation---repository-manager

Do not forget to specify your key pair and finally check the **I acknowledge that AWS CloudFormation might create IAM resources with custom names** box and accept the other defaults. Then, click the Create Button.

It will take a couple of minutes to build the stack. Once it's built, you can find the website link to the Nexus Repository Interface in the Outputs section of your CloudFormation Stack. On the website, on the top right corner of the page, you can see the sign-in button. Your default username is admin and your default password is located in admin.password at $data-dir directory of your EC2 instance.