



JFrog Mission Control

Centralized Management of Global
Software Artifact Repositories

Executive Summary

JFrog Artifactory sits at the core of development ecosystems and is therefore, a mission-critical resource for developers and DevOps in any organization that develops software. As an organization scales, developers and DevOps tend to get bogged down with a common set of issues configuring and managing their binary artifact workflow in multiple Artifactory instances around the world. JFrog Mission Control addresses these issues by enabling enterprises to monitor and manage globally distributed instances of Artifactory in a single application.



Dashboard: Global system health at a glance; drill down for details

The Mission Control dashboard provides full visibility into the basic system health of all Artifactory instances at a glance, both as a grid and on a map. Clicking on any instance lets the administrator drill down and investigate it in greater detail.



Configuration: Centralized control with script-based management

JFrog Mission Control uses configuration scripts which embrace a “configuration as code” approach to managing Artifactory instances. Configuration scripts are reusable pieces of code that can be applied to multiple Artifactory instances simultaneously while allowing customization per instance as needed. They facilitate automation through REST API, promote reliability by replacing repeated manual configuration and enable enforcement of standards and consistency while allowing any degree of customization.



Instance Browser: From general information to binary artifact workflow

The Mission Control Instance Browser provides easy access to information on all managed instances. Selecting an instance exposes general information as well as details on repositories, system, license and HA status. A graphical representation of all replications and proxy relationships that the instance is involved in makes it easy to see how artifacts are flowing between the managed instances.



Monitoring: From outer space to inner space

JFrog Mission Control Monitor module provides online/offline status of all managed instances. Clicking on any instance exposes diagnostic information to help resolve issues it may be experiencing. This includes JVM parameters, memory usage, storage information, replication schedules and even data on Artifactory tasks running under-the-hood.



REST API: Automated management and control

JFrog Mission Control offers a REST API to automate everything from managing instances and repositories to managing users, groups, and permissions.

Summary

JFrog Mission Control helps organizations deliver software faster by providing centralized control, management, and monitoring of all of their Artifactory instances globally, giving IT and Ops leaders real-time visibility into their worldwide development, distribution and consumption of software packages.

Introduction

JFrog Artifactory sits at the core of development ecosystems and is, therefore, a mission-critical resource for developers and DevOps in any organization that develops software. An administrator must make sure that Artifactory is properly configured and running smoothly to serve the organization at all times. Artifactory provides extensive facilities for configuration, both in the UI and through the REST API. However, as an organization scales up to thousands of developers and engineers, leveraging multiple instances of Artifactory in data centers around the world, developers and DevOps tend to get bogged down with **a common set of issues:**

- **Maintaining a clear, real-time inventory of binary artifact repositories**
- **Managing binary artifact workflows among multiple global teams**
- **Locking down security, user entitlement, permissions and provisioning policies at global scale**
- **Ensuring highly reliable storage of, and access to, artifacts.**

JFrog Mission Control addresses these issues by enabling enterprises to monitor and manage globally distributed instances of Artifactory in a single application. With the thousands of binaries that often go into a software release and the explosion in binary artifact types, monitoring and managing each Artifactory instance separately has become a huge challenge. JFrog Mission Control offers a unique solution that saves time and effort with a unified dashboard and centralized control of multiple globally distributed instances of Artifactory.

JFrog Mission Control enables enterprises to monitor and manage globally distributed instances of Artifactory in a single application





Dashboard and Drill Down

Global system health at a glance; drill down for details

IT and Ops personnel responsible for managing multiple instances of Artifactory that serve mission-critical projects need to ensure that all systems are up and running at all times. Any downtime in an Artifactory instance can mean that development operations can grind to a halt. Therefore, an administrator needs an instant picture of all Artifactory instances in the organization to make sure they are all running smoothly.

The Mission Control Dashboard provides full visibility into the basic system health of all Artifactory instances at a glance. Grid view instantly shows you which instances are running and which are offline as well as their name, license, and version for easy identification. The geo-location map adds a geographic dimension showing the global network of Artifactory instances along with their replication relationships. In both views, the administrator managing the global Artifactory instances can click on any instance on the dashboard to drill down and investigate it in greater detail.

The screenshot displays the JFrog Mission Control dashboard. The top navigation bar includes the JFrog logo, the text "JFrog Mission Control", and user information: "+ Add Instance", "Welcome, admin (Log Out)", "Help", and a grid icon. The left sidebar contains navigation options: "Dashboard", "View", "Manage", and "Monitor".

The main content area shows a status message: "JFrog Mission Control is happily serving 5 instances" and "You are running Mission Control version 1.1". Below this, there are two sections:

- Online Instances:** A grid of four cards, each representing an online instance with a green status indicator. The instances are:
 - AF8082-Boston: License: HA, Version: 4.3.0
 - Amsterdam-Shani: License: HA, Version: 4.3.0
 - AR8083-4.5.2: License: HA, Version: 4.5.2
 - Melbourne: License: HA, Version: 4.6.0
- Offline Instances:** A single card representing an offline instance with a red status indicator: AF8081-Rio, License: HA, Version: 4.5.1.

The bottom right portion of the screenshot shows a map view of the same dashboard. The map displays the global locations of the instances: Boston, Amsterdam, Toulouse, Rio de Janeiro, and Melbourne. Blue lines connect Boston to Rio de Janeiro and Amsterdam to Toulouse, indicating replication relationships. The map includes a zoom-in (+) and zoom-out (-) control in the bottom right corner.



Configure once; apply everywhere

Centralized control with script-based management

Managing several dispersed Artifactory instances presents two opposing challenges. On the one hand, you want to keep all instances configured in a consistent manner for easy management. On the other hand, each instance needs some degree of customization to serve the particular group of developers that use it for artifact management.

JFrog Mission Control resolves the opposing drivers of consistency versus customization using configuration scripts. Sitting at the heart of Mission Control, configuration scripts embrace a “configuration as code” approach to managing many Artifactory instances. They are reusable pieces of code developed using the Mission Control DSL and can be applied to any number of Artifactory instances at a time to perform any configuration action from setting a new caching policy for remote repositories to configuring multi-push replication. Managing Artifactory instances through configuration scripts presents several benefits:

Automation:

Configuration scripts improve your efficiency by enabling you to automate your Artifactory configuration tasks. At the click of a button, or through REST API calls, an Artifactory instance, and its repositories may be configured to any degree of complexity. Developing configuration scripts in a DSL designed for Artifactory configuration is also easier than developing proprietary scripts.

```
1 localRepository('plugins-release-local') {
2   description 'Local repository for plugins'
3   notes ''
4   includesPattern '**/*'
5   excludesPattern ''
6   repoLayoutRef 'maven-2-default'
7   packageType 'maven'
8   debianTrivialLayout false
9   checksumPolicyType 'client-checksums'
10  handleReleases true
11  handleSnapshots false
12  maxUniqueSnapshots 0
13  snapshotVersionBehavior 'unique'
14  suppressPomConsistencyChecks true
15  blackedOut false
16  propertySets (['artifactory'])
17  archiveBrowsingEnabled false
18  calculateYumMetadata false
19  yumRootDepth 0
20 }
```

Reliability:

Configuration scripts are reusable and can simultaneously be applied to multiple Artifactory instances that may also be running on different runtime environments (development, staging, production). Since configuration scripts circumvent the need to perform repetitive and error-prone manual actions, they improve the reliability of your configuration tasks.

Flexible standardization:

Configuration scripts can be used to enforce standards for repository names, include/exclude patterns, caching policies and more. Moreover, scripts are a vehicle to replicate the configuration of one Artifactory instance in another. Mission Control can import the configuration of any Artifactory instance that is already set up into a configuration script, and then apply it to any other instance thereby replicating the configuration of the source instance in the target instance. While scripts are a way to standardize configuration across multiple Artifactory instances, they can also be customized with user input when being applied, thus providing the flexibility to adjust how any particular instance of Artifactory is configured.



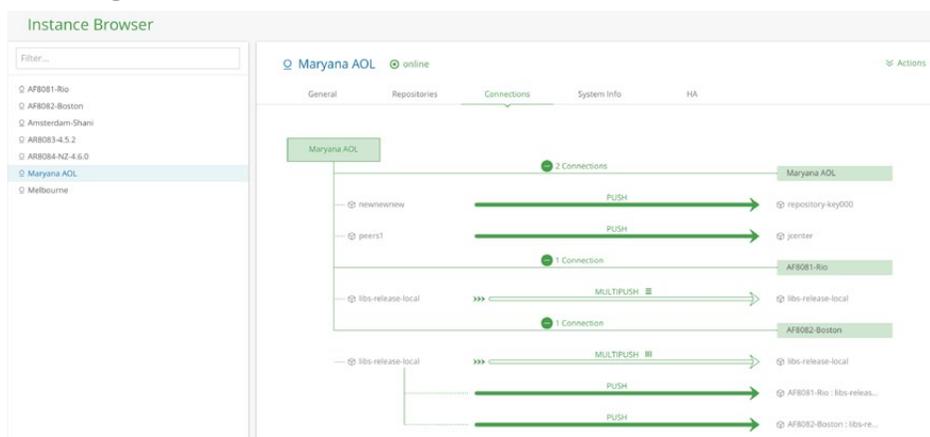
Instance Browser

From general information to binary artifact workflow

As organizations scale up to hundreds and thousands of developers, the number of Artifactory instances that need to be managed grows accordingly. A DevOps administrator may find herself logging into each instance separately, arranging several windows on her screen and constantly switching between the windows to manage all those Artifactory HA clusters. Not only is this kind of scenario confusing, it also does not provide the administrator with a clear picture of how artifacts are flowing from one HA cluster to another.

Mission Control consolidates all the information about Artifactory instances that it manages into the **Instance Browser**. Easily accessed in the **View** module, the instance browser lets the administrator navigate through the different Artifactory instances in the same intuitive way we are all used to navigating through our PC file systems. Upon selecting an Artifactory instance, the browser displays several information tabs that the administrator can view:

- **General:** General information including online status, location, version, and a clickable URL allowing the administrator to log on to the Artifactory instance directly.
- **Repositories:** A full list of repositories including the number and type of artifacts it hosts.
- **Connections:** The Connections tab provides a graphical representation of the replication and proxy relationships that the selected Artifactory instance has with others. This is the clearest picture of an organization's global binary workflow that a DevOps administrator can get when working with different [multi-site topologies](#).
- **System Info:** A full set of system properties and environment variables set for the selected Artifactory instance.
- **License:** Information on the license with which the Artifactory instance is activated including its owner organization, status, validity, type and hash value.
- **HA:** Information related to the HA configuration of the Artifactory instance including its ID, URL, last heartbeat, running state and role in the cluster.



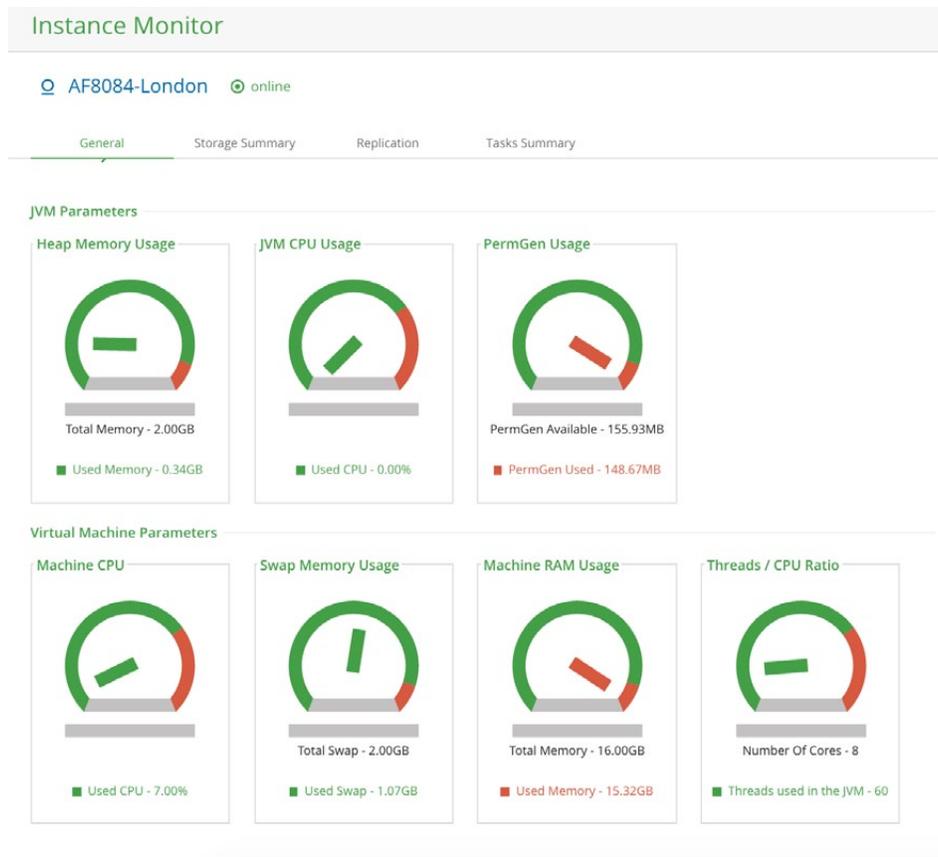


Monitoring

From outer space to inner space

JFrog Mission Control Dashboard gives an Artifactory administrator a coherent high-level view of her global systems' general condition. An instant "system health check" to look at first thing in the morning. However, for ongoing monitoring and maintenance, the dashboard is not enough. This is where Mission Control's **Monitor** module comes into play. The Monitor module's main screen displays a list of Artifactory instances managed by Mission Control with basic information like online status and license information, much like the dashboard, however, clicking on any instance lets you drill down to get an intimate view of the inner workings of the selected Artifactory instance in several information tabs:

- **General:** Shows a series of gauges that display visual information about the Artifactory instance's JVM parameters and about the container in which it is running.
- **Storage Summary:** Information about the number of binaries and the storage volume they occupy.
- **Replication:** Information about all replications in which the selected Artifactory instance is involved.
- **Task Summary:** Displays information on all running tasks. This information can be used for advanced analysis of events or issues that may occur in the selected instance.





REST API

Automated management and control

Automation is key to any administrator who has to deal with scale, and JFrog Mission Control REST API takes automation to the next level with endpoints for creating, listing and updating everything from instances and repositories, to users, groups and permissions. The extensive REST API enables automation of virtually every task that an Artifactory administrator may need to perform by applying configuration scripts in much the same way that the administrator would do using the UI. To support flexible standardization, the REST API accommodates scripts with variables that require user input thus allowing automated customization of Artifactory instances.

Summary

As companies scramble to deliver software faster, they share the pain of moving to modular software architecture to automate their continuous delivery pipeline. JFrog Mission Control greases the wheels of automation by providing enterprises with centralized control, management, and monitoring of all their Artifactory instances globally, giving IT and Ops leaders real-time visibility into their worldwide development, distribution and consumption of software packages.

Getting Started with JFrog Mission Control

The latest version of Mission Control is freely available for download from the [Mission Control Download Page](#).

To get started using Mission Control, please visit the [Mission Control User Guide](#).

White Paper: Learn how to configure replication to optimize the binary workflow between your Artifactory instances with [Using Artifactory to Manage Binaries Across Multi-Site Topologies](#).