



LEAPFROG TO THE FUTURE OF DEVOPS

Shortcuts to faster, better, less costly delivery

THE EARLY MAJORITY MOVES TO THE CLOUD



Two numbers are shaking the foundations of business:

>60% + **80%**

of businesses are adopting or expanding DevOps culture and processes

of businesses are now operating in the cloud¹

What do these two figures mean to your business? They mean that, odds are your competitive landscape is irrevocably changed—already.

To start, expectations for delivery speed for new products, services, and everything are faster. The new table stakes in the

DevOps world have raised the bar on collaboration, cross-organizational visibility, efficiency, even company culture. Another thing these two simple stats mean is that most businesses are already there, or heading there now.

So, the question is, how will you keep your delivery speeds out ahead of them with zero downtime?

We have an answer for you. JFrog is in the business of delivering quicker ways to more innovation, and in this e-book we'll share with you some of our best ideas to put you in the fast lane.

¹Forrester Research: 2018: *The Year Of Enterprise DevOps*; Robert Stroud, Principal Analyst, Oct 17, 2017

DEVOPS AND THE CLOUD— A NATURAL PAIR



Let's start with DevOps.

Forrester Research dubbed 2018 the year of DevOps. And it's no wonder, with over half of enterprises implementing or expanding existing DevOps practices. So why are they doing that? Here are a few good reasons to consider it:

DEVOPS OFFERS YOUR ORGANIZATION:

- **Greater productivity** and faster delivery of products
- **Greater visibility** and collaboration across projects, departments, and individuals
- **Less siloing** of workflows for more agile processes

So, DevOps removes friction; and as a practical environment for DevOps, the cloud just makes sense.

HOW THE CLOUD ENHANCES YOUR DEVOPS ORGANIZATION

- Greater flexibility
- Rapid deployment of new environments
- Reduced IT costs through subscription and SaaS (pay as you go) payment structures
- Moving from CapEx expenditures for hardware to OpEx expenses for SaaS
- Fast, agile scalability

So why the urgency to make these innovations? The truth is, they're not really innovative anymore. It's already happened. The bar has been raised and you need a new edge.

GAUGE YOUR DEVOPS PROGRESS

We recommend some goals you should have in mind to help accelerate your DevOps in the cloud. You may find untapped opportunities for progress.



Institute Agile practices that focuses on communication, collaboration, customer feedback, and small and rapid releases. Agile operations remove rigidity from your processes and allow for greater innovation, while keeping accountability and increasing goal focus



Deploy a multi-cloud strategy with Kubernetes or other intermediary layer for cloud-agnostic and resilient infrastructure



Build cloud-native systems for core products, with lift-and-shift for systems that don't require much scalability



Create microservices in containers over monolithic apps to increase your agility and your ability to innovate with less downtime

GETTING AHEAD OF THE DEVOPS AND CLOUD CURVE

Now that we have those newly-raised table stakes covered, let's talk about how to stand out and deliver faster than your cloud-based DevOps competition. To jump ahead of the tech herd, you need to provide your DevOps team tools that increase your software delivery speed, quality, and security.

To do that in this age of exploding data volumes and complex workflows, it's necessary to standardize and automate as many processes as possible, while gaining (or maintaining) full control of binary and dependency sets.

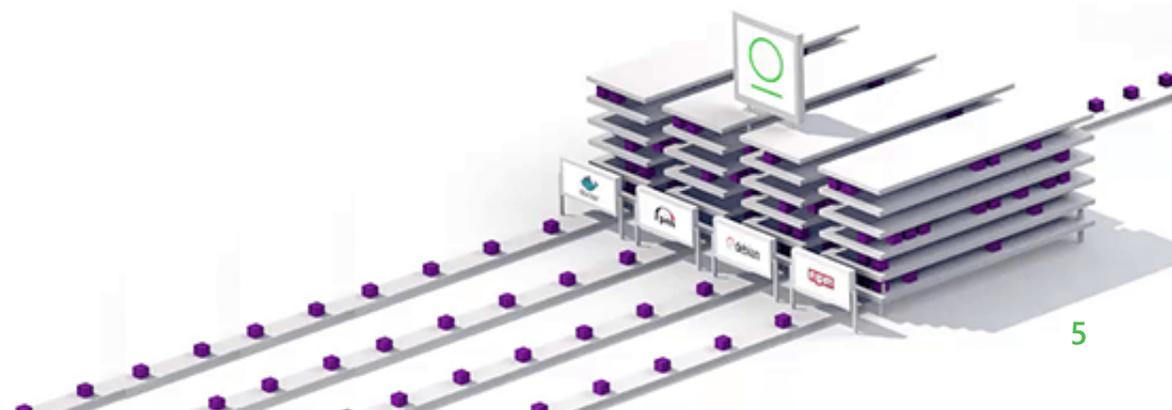
Automation is great, but not if it forces your developers to go back in and fix all the interconnections. Any solution to increase speed also needs to integrate instantly with tech your teams already use (with zero ramp-up).

In other words, the minute you deploy, you boost productivity immediately through integration with your ecosystem and DevOps tools. When you can do that, you also save time and money through easy management of the DevOps pipeline.

Can you see how this is all coming together?

Don't forget to make sure your solutions deliver business continuity with high availability, disaster recovery, and scalability. You can do all that and accelerate development through a "shift left" practice—reducing security and compliance risk (i.e., ability to identify security risks earlier in SDLC).

What we're describing here is **JFrog Artifactory**.



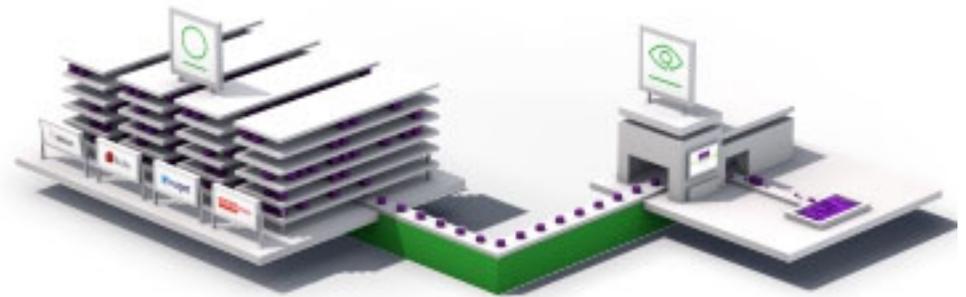
THE WORKINGS OF A SUPERIOR REPOSITORY MANAGER

To achieve all of the above, a universal binary repository manager like **JFrog Artifactory** gives developers a powerful tool to effectively automate as much of the DevOps process as possible. It provides a searchable and clickable repository for binaries, saving them hours, even days, reinventing the wheel.

But it's not that simple. It needs to be more than that.

To provide secure, efficient and cost-effective DevOps processes in the cloud, superior pipeline tools—like **Artifactory**—needs to natively integrate with security scanning and compliance solutions. Enter **JFrog Xray**.

Through a tool like **Xray**, you empower developers to identify and mitigate known security vulnerabilities and open source license violations. You give them the tools to provide impact and dependency analysis so they can quickly understand the effect new components have on your overall system.



It also lets them drill down to identify all dependencies of each build package and Docker layer using deep recursive scanning, allowing them to continuously govern and audit artifacts consumed and produced in your CI/CD pipeline.

And **Xray** does it all while protecting against open source security vulnerabilities using the most comprehensive vulnerabilities database in the industry.

THE 8 ADVANTAGES YOU SHOULD GET FROM A CLOUD-BASED REPOSITORY

There are a host of ways a binary repository manager like **Artifactory** supports better, faster, and less costly DevOps in the cloud. Here are what we consider the top eight you should look for:

1 A UNIVERSAL, END-TO-END SOLUTION FOR ALL BINARIES

- Compatibility with all build and integration tools on the marketplace. Management of binaries for all the different packaging formats and integrating with all the moving parts of the ecosystem
- Supports Maven, npm, Python, NuGet, Gradle, Helm, and all other major package formats (25+ and growing)
- Ground-up design to fit any dev ecosystem

2 SCALABILITY AND REDUNDANCY

- Cost efficiency and instant scalability from a pay-only-for-what-you-use cloud model
- Security that all data is stored in multiple locations

3 UNMATCHED STABILITY AND AVAILABILITY

- Easy deployment on a high availability cluster in the cloud
- Multiple configurations for high availability to match your resources

4 MANAGEMENT OF MANY BINARIES ACROSS DIFFERENT ENVIRONMENTS THAT SOLVES FOR...

- Maintenance cost control for multiple configurations and providers
- Traceability of binary files by origin
- Lack of metadata context
- Policy enforcement

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SECURITY, ACCESS, CONTROL AND TRACEABILITY

- Information access management through authenticated users and access control
- Full artifact traceability to fully reproduce a build and debug it
- Secure binaries by identifying vulnerabilities and analyzing artifacts and dependencies

6

RELIABLE REMOTE REPOSITORIES

- Consistent and reliable access to remote artifacts
- Local caching of artifacts eliminates the need to download them again as well as removes the dependency on unreliable networks and remote public repositories

7

ACTS AS A SECURE, ROBUST DOCKER REGISTRY

- Single access point to manage and organize Docker images
- Reliable, consistent, and efficient access to remote docker registries
- Distribution and sharing images are across your organization
- Smart search for images
- Full integration with your building ecosystem
- Security and access control

8

A KUBERNETES REGISTRY

- Additional insight to your code-to-cluster process while relating to each layer for each application
- As your main Kubernetes Docker registry, collects and manages artifacts in your containerized apps and trace content, dependencies and relationships with other Docker images which cannot be done using a simple Docker registry

CASE STUDY



AUTOMATING THE AUTOMATORS

Puppet provides solutions to automate the delivery and operation of software. They work to empower DevOps teams to automate the manual, error-prone processes across traditional infrastructure, cloud, containers, networking, and application development.

CHALLENGE

To deliver software products faster and more effectively, Puppet had to find a way to easily manage and maintain all the different types of repositories and programming languages used by their Engineering teams. This included a long, 10-year history of growth and change through different legacy solutions that prevented their software engineers from true scale and efficient productivity. Puppet needed an easier way to support Maven, npm, RubyGems, and other package types that could scale to support their distributed and growing DevOps teams.

SOLUTION

Based on Puppet's need for a universal repository manager that could support a multitude of repository types out of the box, plug-in support, and ensure secure releases, they chose **JFrog Artifactory** with **JFrog Xray**.

RESULTS

By using **JFrog Artifactory** and **Xray**, Puppet can now centralize the management of their disparate tools. As Puppet builds and releases thousands of packages each month, they can efficiently manage builds and better understand their entire lifecycle, tracking their build components with simplicity and confidence in their releases. This has resulted in:

- **Cost savings**, including thousands of dollars saved on storage disk space alone
- **Improved software quality** with quicker identification and remediation of security issues with dependencies
- **Faster development and release** through new efficiencies
- **Greater control** of CI/CD workflow

DEVOPS IN THE CLOUD: FASTER, BETTER, LOWER COST

We're JFrog. Some people call us the database of DevOps. Our clients see us as helping them leap ahead of the competition through automation that drives quantum improvements in dev speed and delivery. We've partnered with Microsoft Azure to enable you to keep your binaries on a powerful cloud infrastructure.

You get it all.

Artifactory provides complete control, insight, and binary management throughout the software development lifecycle. DevOps teams have transparency and control of their entire build and release process, all with the power of Azure cloud-based development.

[EXPLORE MORE](#)

