



Continuous Integration for Node.js with Jenkins

Baruch Sadogursky

JFrog

@jbaruch

June 18, 2014

#jenkinsconf

Developer who?

github.com/jbaruch

[@jbaruch](https://twitter.com/jbaruch)

[linkd.in/jbaruch](https://www.linkedin.com/in/jbaruch)



Baruch Sadogursky

J*, G* and Public Speaking Geek with JFrog FTW.
Israel | Computer Software

Current

Developer Advocate at JFrog Ltd



Developer who?

Job Description:

1. Hang out
with DevOps

2. Talk about it

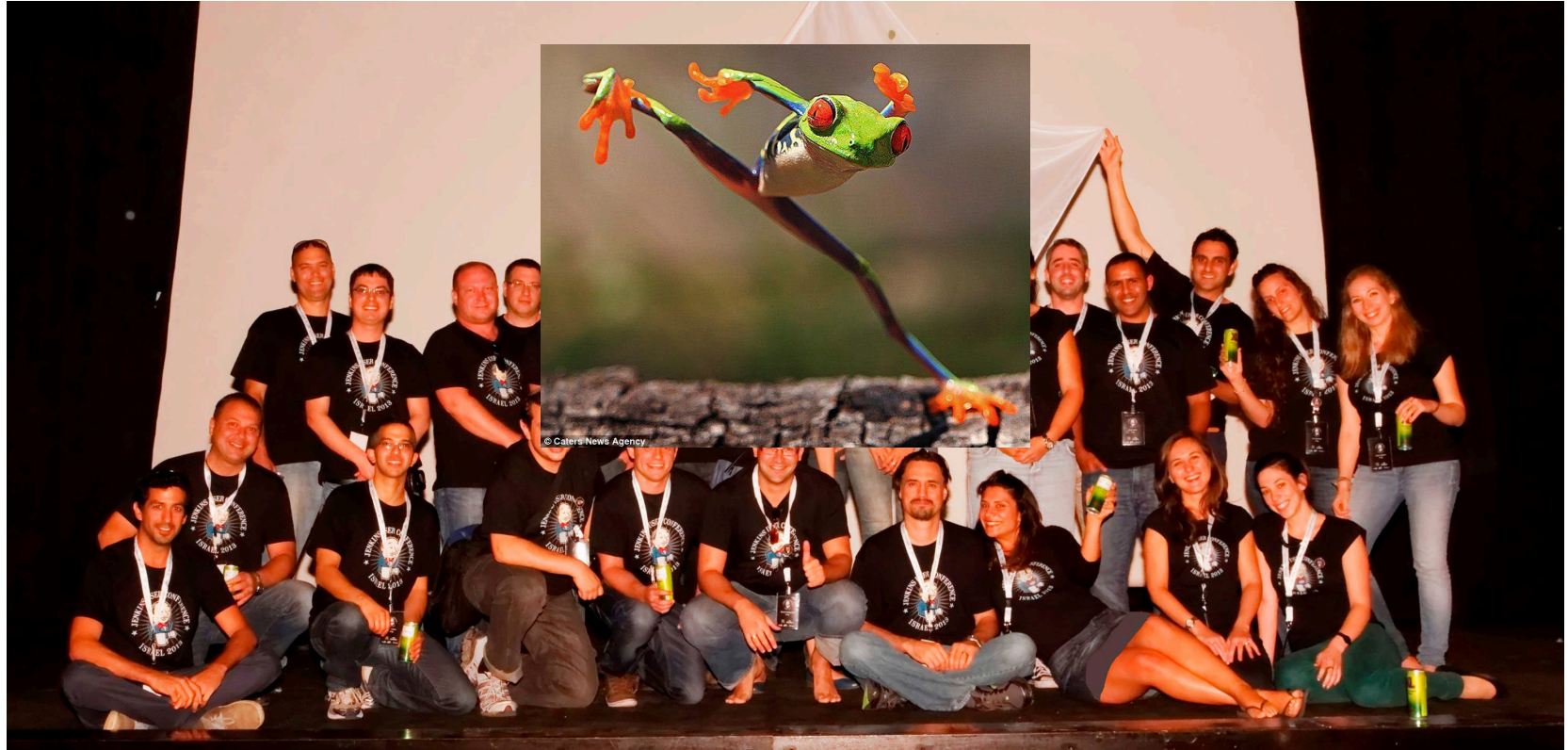
Developer who?



What Frog?



What Frog?



What Frog?



What Frog?



Node.js and Jenkins



NodeJS Plugin

4 Added by [Cliffano Subagio](#), last edited by [fcambor](#) - on Feb 10, 2014 ([view change](#))

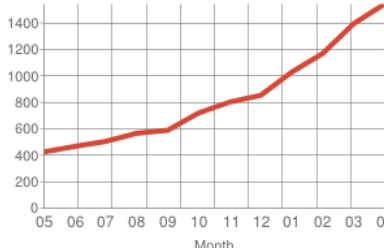
Jenkins

- Home
- Mailing lists
- Source code
- Bugtracker
- Security Advisories
- Donation
- Commercial Support
- Wiki Site Map

Documents

- Meet Jenkins
- Use Jenkins
- Extend Jenkins
- Plugins
- Servlet Container Notes

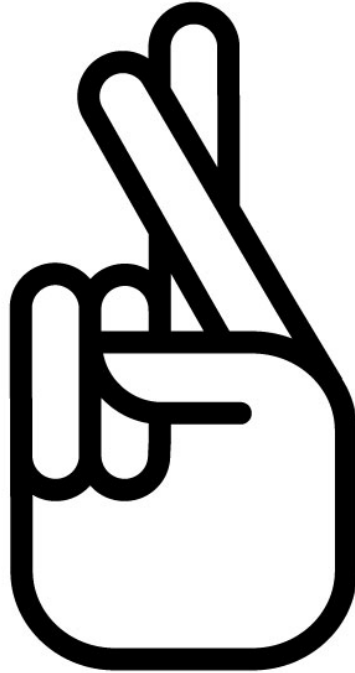
Plugin Information

Plugin ID	nodejs	Changes	In Latest Release Since Latest Release																											
Latest Release	0.2.1	Source Code	GitHub																											
Latest Release Date	Feb 10, 2014	Issue Tracking	Open Issues																											
Required Core	1.509	Maintainer(s)	Cliffano Subagio (id: cliffano) Frédéric Cambor (id: fcambor)																											
Usage	<p>nodejs - installations</p>  <table><tr><th>Month</th><th>Installations</th></tr><tr><td>05</td><td>425</td></tr><tr><td>06</td><td>467</td></tr><tr><td>07</td><td>505</td></tr><tr><td>08</td><td>566</td></tr><tr><td>09</td><td>589</td></tr><tr><td>10</td><td>720</td></tr><tr><td>11</td><td>802</td></tr><tr><td>12</td><td>853</td></tr><tr><td>01</td><td>1028</td></tr><tr><td>02</td><td>1169</td></tr><tr><td>03</td><td>1394</td></tr><tr><td>04</td><td>1543</td></tr></table>		Month	Installations	05	425	06	467	07	505	08	566	09	589	10	720	11	802	12	853	01	1028	02	1169	03	1394	04	1543	Installations	2013-May 425 2013-Jun 467 2013-Jul 505 2013-Aug 566 2013-Sep 589 2013-Oct 720 2013-Nov 802 2013-Dec 853 2014-Jan 1028 2014-Feb 1169 2014-Mar 1394 2014-Apr 1543
Month	Installations																													
05	425																													
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12	853																													
01	1028																													
02	1169																													
03	1394																													
04	1543																													

Provides Jenkins integration for NodeJS & npm packages.



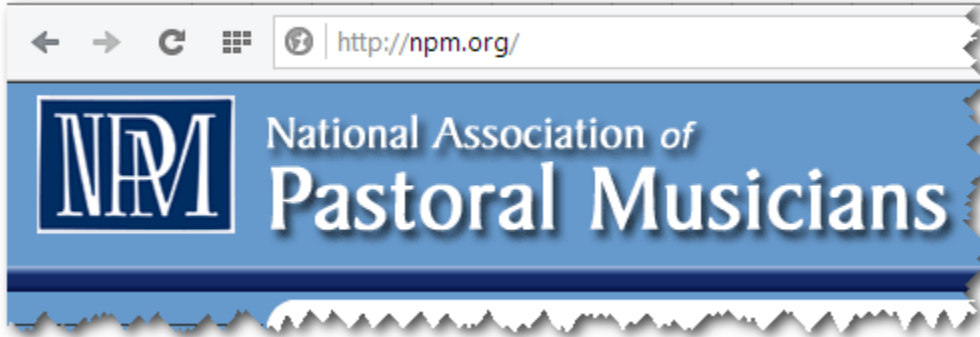
Demo Time!



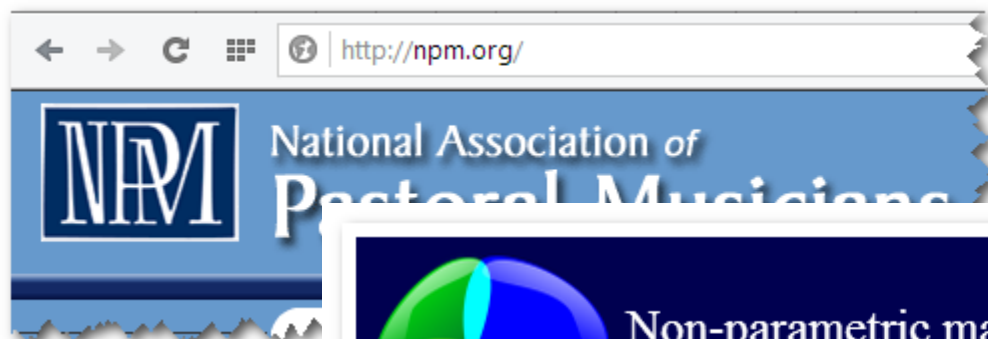
WAIT A SECOND...

**BUT WHAT IF I WANT
DEPENDENCIES?!**

Here comes NPM



Here comes NPM



Non-parametric mapping

Notes

My non-parametric mapping software (NPM) is a open source tool for rapidly analyzing brain imaging data. It offers you the ability to try new statistical tests such as the Brunner Munzel test and Firth's Penalized Logistic E

You can [download](#) NPM for Windows, Linux or Macintosh OSX.

Here comes npm

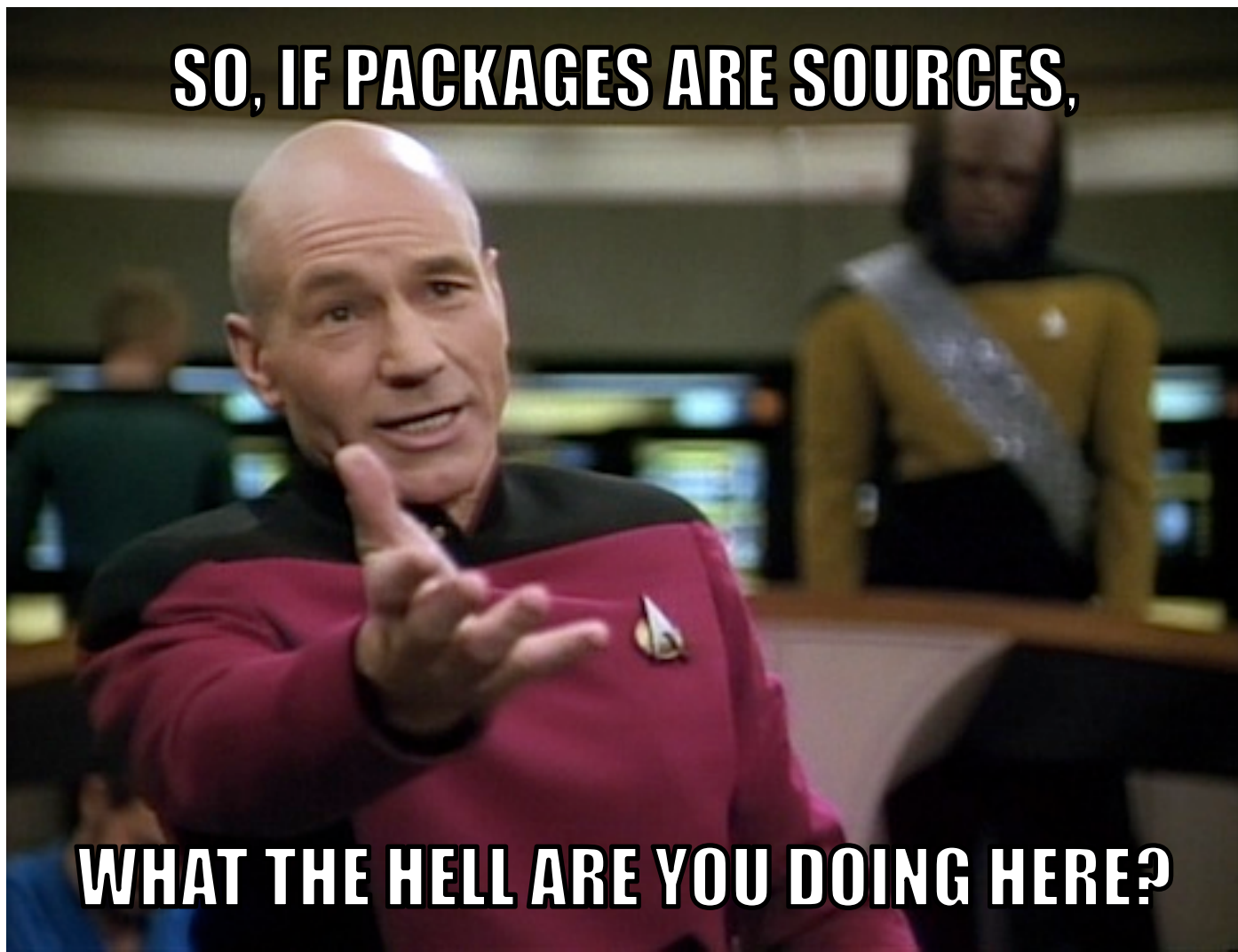
Contrary to the belief of many, "npm" is not in fact an abbreviation for "Node Package Manager". It is a recursive bacronymic abbreviation for "npm is not an acronym". (If it was "ninaa", then it would be an acronym, and thus incorrectly named.)

What is package?

- a) a folder containing a program described by a package.json file

SO, IF PACKAGES ARE SOURCES,

WHAT THE HELL ARE YOU DOING HERE?

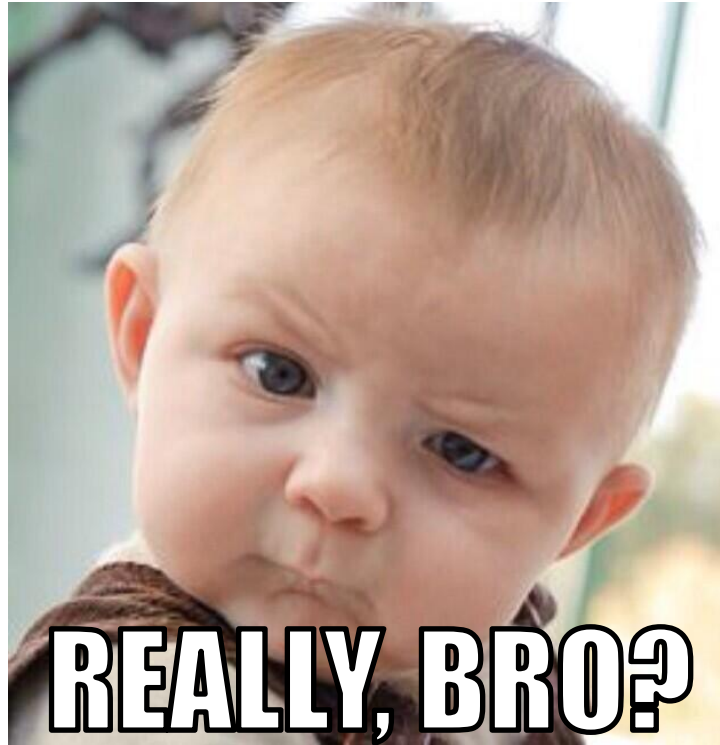


What is package?

- a) a folder containing a program described by a package.json file
- b) a gzipped tarball containing (a)

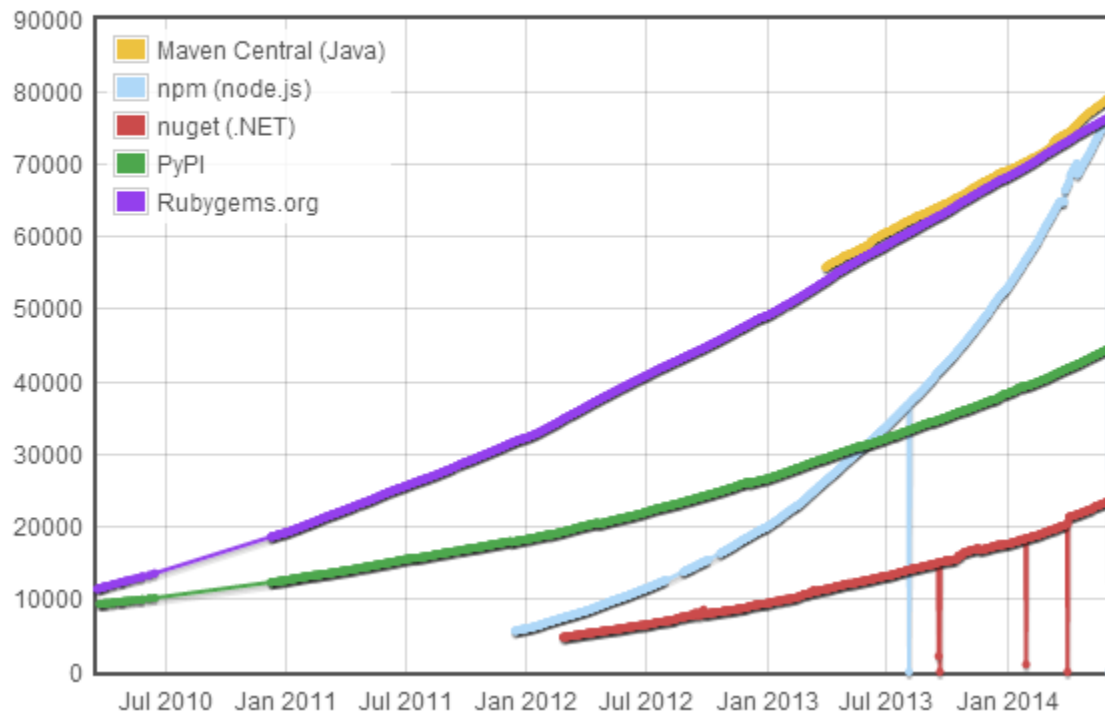
Why zips are better

Why zips are better



This 'binaries' thingy is popular!

Module Counts





JFrog Ltd

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Artifactory Repository Manager

Product Overview

The First Binary Repository Manager

Artifactory, JFrog's flagship product. It is an enterprise-grade **Binary Repository Manager** that centralizes all aspects of managing software binaries. It is deployed per server serving teams of developers.

artifactory

Let's build some npms!

Recipe

1. Take sources

Recipe

1. Take sources – OK

Recipe

1. Take sources – OK
2. Bring dependencies

Recipe

1. Take sources – OK
2. Bring dependencies – where from?

Recipe

1. Take sources – OK
2. Bring dependencies – where from?
3. Build binaries

Recipe

1. Take sources – OK
2. Bring dependencies – where from?
3. Build binaries – OK

Recipe

1. Take sources – OK
2. Bring dependencies – where from?
3. Build binaries – OK
4. ...

Recipe

1. Take sources – OK
2. Bring dependencies – where from?
3. Build binaries – OK
4. ... - now what?

**HERE COMES THE BINARY
REPOSITORY**

What is Binary Repository



Binary Repository as Modules Source

RECIPE

1. Take sources – OK

2. Bring dependencies – where from?

Remember?

 [HOME](#)



[API](#)



[BLOG](#)



[NODE.JS](#)



[JOBS](#)



[WHO'S HIRING](#)

[NEWSCRED](#)

[+ 5 MORE...](#)



Node Packaged Modules

Total Packages: 75 668

11 369 823 downloads in the last day

63 176 924 downloads in the last week

282 871 687 downloads in the last month

Patches welcome!

Any package can be installed by using `npm install`.

Add your programs to this index by using `npm publish`.

Recently Updated

- 3m [asynquence](#)
- 4m [silent](#)
- 4m [eggshell](#)

Most Depended Upon

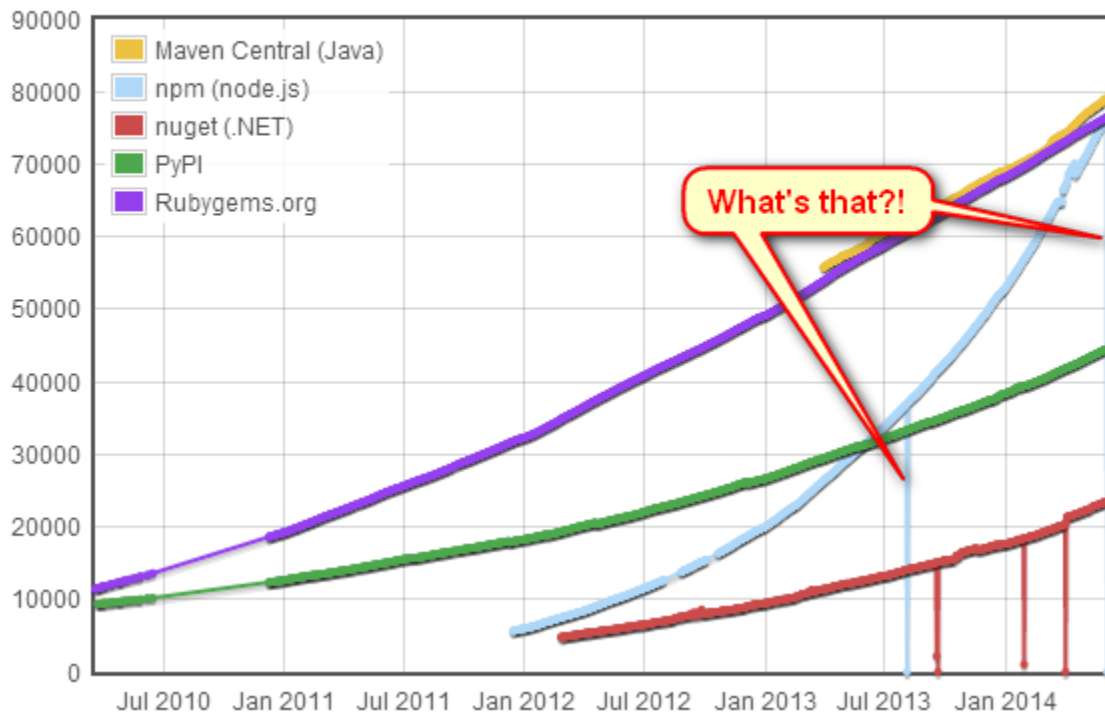
- 6062 [underscore](#)
- 5361 [async](#)
- 4451 [request](#)



ISSUES? WHAT ISSUES?!

Remember?

Module Counts





SUBSCRIBE TO UPDATES

May 2014

Registry 500s

From 2118 to 2220 yesterday the registry was serving 500s for ~1% of requests. This was a networking issue affecting a ...

May 29, 16:11 UTC

fastly 503s

All of the essential services are back online and working, and 100% of packages are available.

May 27, 20:37-21:28 UTC

April 2014

www downtime

The website was unavailable for 10 minutes as a result of a deployment error; we pulled a box out of rotation for upgrade ...

Apr 28, 23:16 UTC

www outage

The npmjs.org website was unavailable for about 10 minutes this morning while our master Redis server failed to save its...

Apr 23, 18:37 UTC

[Scheduled] Manta maintenance

The scheduled maintenance has been completed.

Apr 21, 20:00-22:00 UTC

Website Outage

The npm website was down for approximately 30 minutes unexpectedly. The master Redis instance was failing to persis...



Henry Ruhs
@redaxmedia

@npmjs Build on Travis CI hang up while fetching from registry.npmjs.org. Whats wrong? travis-ci.org/redaxmedia/redaxmedia

Reply Retweet Favorite More



npmbot
@npmjs

seeing a lot of publish errors. we apologize for this crappiness. @izs and @ceejbot and @jacques are actively working on it.

Reply Retweet Favorite More



npmbot
@npmjs

users in some locations are seeing 503s right now. investigating.

Reply Retweet Favorite More



Fedor Indutny
@indutny

Again 503 on @npmjs

View translation

Reply Retweet Favorite More



npmbot @npmjs · Mar 25
so looks like the last half hour was a networking issue quite a monday.

Expand

Reply



npmbot @npmjs · Mar 25
more 503s right now. investigating. today has not

Expand

Reply



npmbot @npmjs · Mar 24
we're throwing a ton of 503s right now due to som doing. should fix itself shortly.

Expand

Reply



npmbot @npmjs · Mar 24
we had 8 minutes of 503s due to a networking ev good now, please try again.

Expand

Reply



Oleg Aleynik
@oaleynik

@npmjs Still facing issues with npm...
pic.twitter.com/2tkIOilzyE

Reply Retweet Favorite More



SUBSCRIBE TO UPDATES

May 2014

Registry 500s

From 2118 to 2220 yesterday the registry was serving 500s for ~1% of requests. This was a networking issue affecting a ...
May 29, 16:11 UTC

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Apr 23, 18:37 UTC

[Scheduled] Manta maintenance

The scheduled maintenance has been completed.
Apr 21, 20:00-22:00 UTC

Website Outage

The npm website was down for approximately 30 minutes unexpectedly. The master Redis instance was failing to persis...

Why is npm giving 500 and 503 errors: “registry error parsing json”?



Trying to do `npm install steroids -g` and running into lots of errors of two types:

10

First: 500



3

```
npm ERR! registry error parsing json
npm http 500 https://registry.npmjs.org/cardinal
npm ERR! registry error parsing json
npm http 500 https://registry.npmjs.org/glob
npm ERR! registry error parsing json
```

npm ERR! 403 (Forbidden)

Varnish cache server

Does this mean the npm registry is down? or do I have strange behavior on my machine?

Running node v.0.10.24 & npm v.1.3.21

[node.js](#) [npm](#) [steroids](#)

[share](#) | [edit](#) | [close](#) | [flag](#)

edited Mar 9 at 17:26



[Brett DeWoody](#)

3,134 ● 1 ● 16 ● 37

asked Jan 14 at 19:59



[alnafie](#)

1,326 ● 3 ● 11 ● 24

2 [npm does go down from time to time. The load it is under is extraordinary. It's worth checking its Twitter feed at \[twitter.com/npmjs\]\(https://twitter.com/npmjs\).](#) — [juanpaco](#) Jan 14 at 20:03

1 I have the same problem... — [danielvt](#) Jan 14 at 20:07

NPM registry alternative to <http://registry.npmjs.org/npm>



unfortunately <http://registry.npmjs.org/npm> is down resulting in

7



```
$ npm install mime
npm ERR! Error: ucs {bad_utf8_character_code8
npm ERR! /home/rsi/projects/activiti.enricher/npm-debug.log
npm not ok
```

is there an alternative public repository, or any other way to continue working? Maybe using git clone for the dependencies?

Ralf

[node.js](#)

[npm](#)

[share](#) | [edit](#) | [close](#) | [flag](#)

edited Sep 1 '11 at 12:13



[Morten Siebuhr](#)

2,791 ● 2 ● 11 ● 34

asked Jun 17 '11 at 9:34



[Ralf Sigmund](#)

115 ● 1 ● 8

[add comment](#)

[start a bounty](#)

1 Answer

[active](#)

[oldest](#)

[votes](#)



3



There aren't any public alternatives, that I know of. At my company, we ended up doing an internal mirror, where we also publish our internal NPM packages.

I'm told it's not quite trivial - but definitely doable.



[share](#) | [edit](#) | [flag](#)

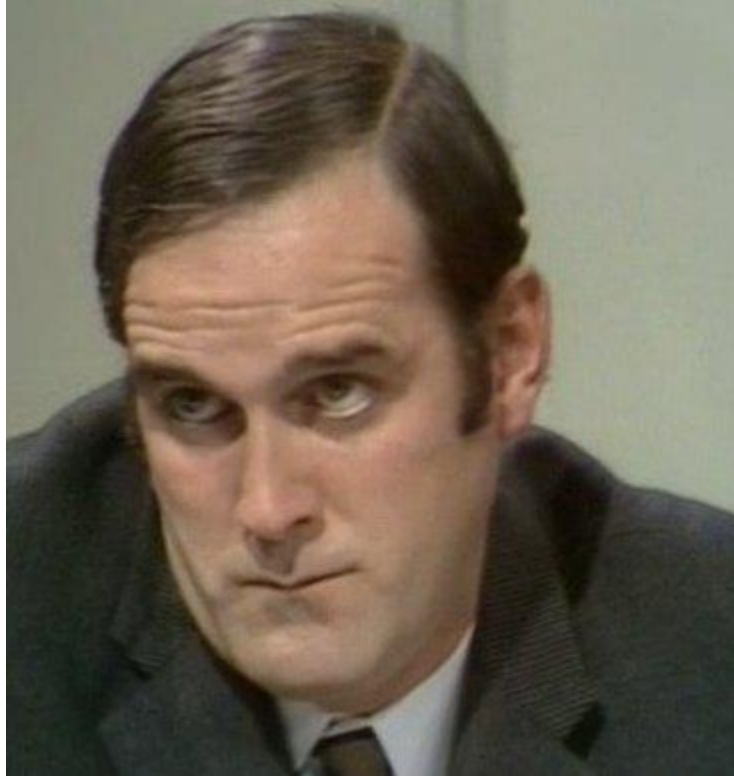
answered Sep 1 '11 at 12:10



[Morten Siebuhr](#)

2,791 ● 2 ● 11 ● 34

Now you should go like:



Can I run my own private registry?

Yes!

The easiest way is to replicate the couch database, and use the same (or similar) design doc to implement the APIs.

If you set up continuous replication from the official CouchDB, and then set your internal CouchDB as the registry config, then you'll be able to read any published

← → ↻ ☰ ⓘ http://isaacs.iriscouch.com/registry

```
{  
  db_name: "registry",  
  doc_count: 78460,  
  doc_del_count: 374,  
  update_seq: 284933,  
  purge_seq: 0,  
  compact_running: false,  
  disk_size: 483589562503,  
  data_size: 124400377123,  
  instance_start_time: "1398664385587493",  
  disk_format_version: 6,  
  committed_update_seq: 284933  
}
```

Digital Storage ▾

483589562503

Byte ▾

=


450.378

Gigabyte ▾



LOOK, GUYS, USEFUL MODULE!



 [HOME](#)



[API](#)



[BLOG](#)



[NODE.JS](#)



[JOBS](#)



[WHO'S HIRING](#)

[DASH](#)

[+ 5 MORE...](#)



Search Results

hello_test_nick

0  0 

a hello world package

Hello, world

0.0.1 by [nickwong](#)

hello_test_yofine

0  0 

A hello world package

Hello, world

0.0.1 by [yofine](#)

hello_eric

0  0 

this is hello,eric package for testing.

hello, eric

0.0.1 by [eric.xiao](#)

hello_text_yww

0  0 

A Hello World package

ios

0 0 ★

test

hello world

0.0.1 by xiaosheng

helloshw

0 0 ★

hello shanghw

1.1.2 by kaka

ec

0 0 ★

hello ec

0.0.1 by errorrik

zhizhunbao995

0 0 ★

hello name

0.0.1 by zhizhunbao995

ericzyhello

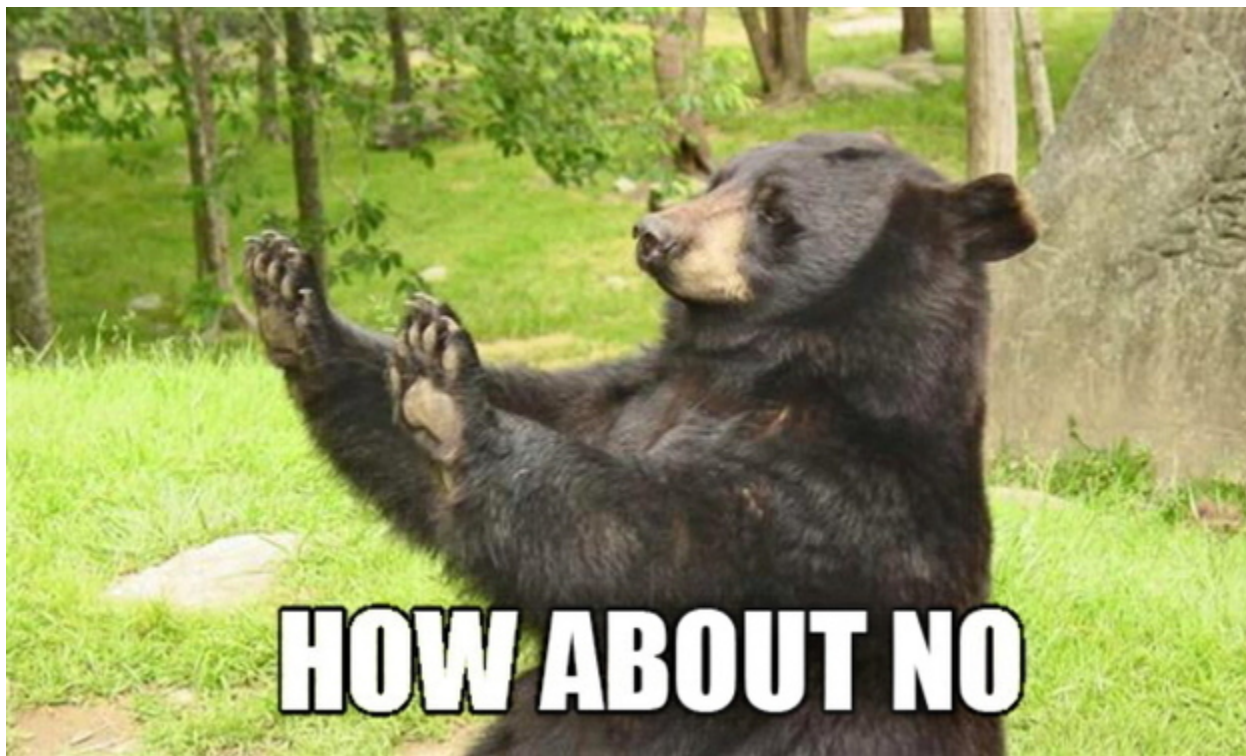
0 0 ★

hello world

nodejs

1.0.0 by eric_zyh

You got the idea,
you can't rely on npm registry



Let's try it again...

RECIPE

1. Take sources – OK

2. Bring dependencies – where from?

Remember?

Binary Repository as Modules Source

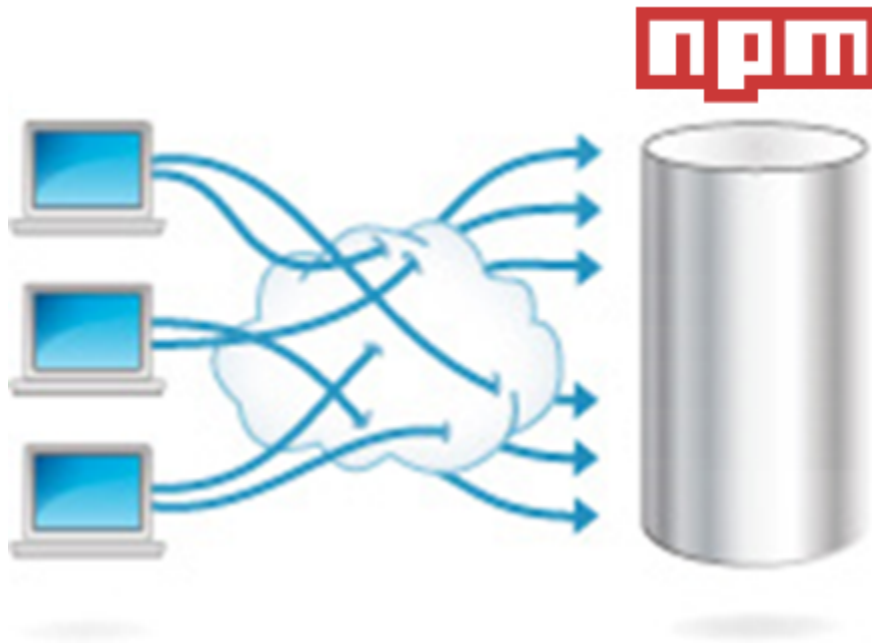


Hint!

Binary Repository as Modules Source



Before



After



Binary Repository as Deployment Target

RECIPE

1. Take sources – OK
2. Bring dependencies – where from?
3. Build binaries – OK
4. ... - now what?

Remember?

Binary Repository as Deployment Target



WAIT A MINUTE!

**WHAT'S WRONG WITH MY
SOURCE CONTROL SYSTEM?!**

WAIT A MINUTE!

THE WORD 'SOURCE'

**IT HAS MEANING, YOU
KNOW**

**WHAT'S WRONG WITH MY
SOURCE CONTROL SYSTEM?!**

Sources vs. Binaries

Sources	Binaries
---------	----------

Sources vs. Binaries

Sources	Binaries
Text	Blob

Sources vs. Binaries

Sources	Binaries
Text	Blob
Diffable	Not diffable

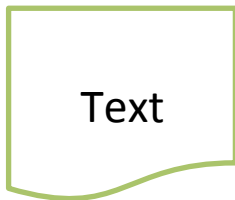
Sources vs. Binaries

Sources	Binaries
Text	Blob
Diffable	Not diffable
Versioned by content	Versioned by name

Sources vs. Binaries

Sources	Binaries
Text	Blob
Diffable	Not diffable
Versioned by content	Versioned by name
Stored by override	Should never override

Versioning By Content



MyPoem.txt
(rev. 01)

Versioning By Content



MyPoem.txt
(rev. 02)

Versioning By Content



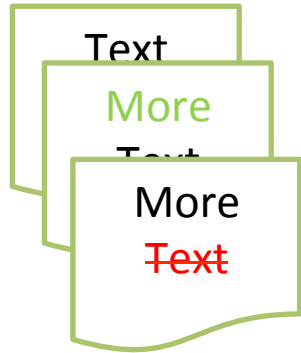
MyPoem.txt
(rev. 03)

Versioning By Content



MyPoem.txt
(HEAD)

Mismatch



MyPoem.txt

VS.

Diagram illustrating the structure of MyBook-1.0.zip. It shows a single rectangular block with a green border containing three lines of binary data:

```
0100110  
1010011  
0110101
```

MyBook-1.0.zip

Diagram illustrating the structure of MyBook-1.1.zip. It shows a single rectangular block with a green border containing three lines of binary data:

```
0100110  
1001101  
1011010
```

MyBook-1.1.zip

Diagram illustrating the structure of MyBook-2.0.zip. It shows a single rectangular block with a green border containing three lines of binary data:

```
1010011  
1010011  
0110101
```

MyBook-2.0.zip



SOMEONE WILL STAND UP...



SOMEONE WILL STAND UP...



**AND SAY THAT GIT
DOESN'T STORE DIFFS!**

quiddkram.com



Git is a Distributed System



The screenshot shows a Stack Overflow page for the question "Is there any way to clone a git repository's sub-directory only?". The question has 122 votes and 40 stars. It was asked by Nick Sergeant on Mar 1 '09 and edited by Steven Penny on Feb 5. The question includes a code block with a git command and tags for git, github, and checkout. There are 5 answers, with the top one by Nick Sergeant stating "No, that's not possible in Git." and having 119 votes. A green checkmark icon is overlaid on the bottom left of the answer section.

stackoverflow Questions Tags Users Badges Unanswered

Is there any way to clone a git repository's sub-directory only?

122

40

When this was in beta, (ffcc0000) was checked out in one place, while (ffcc0000) was checked out elsewhere. We so

git github checkout

share | improve this question

edited Feb 5 at 5:52 Steven Penny 4,000 ● 5 ● 13 ● 43

asked Mar 1 '09 at 16:46 Nick Sergeant 2,474 ● 6 ● 14 ● 35

5 Answers

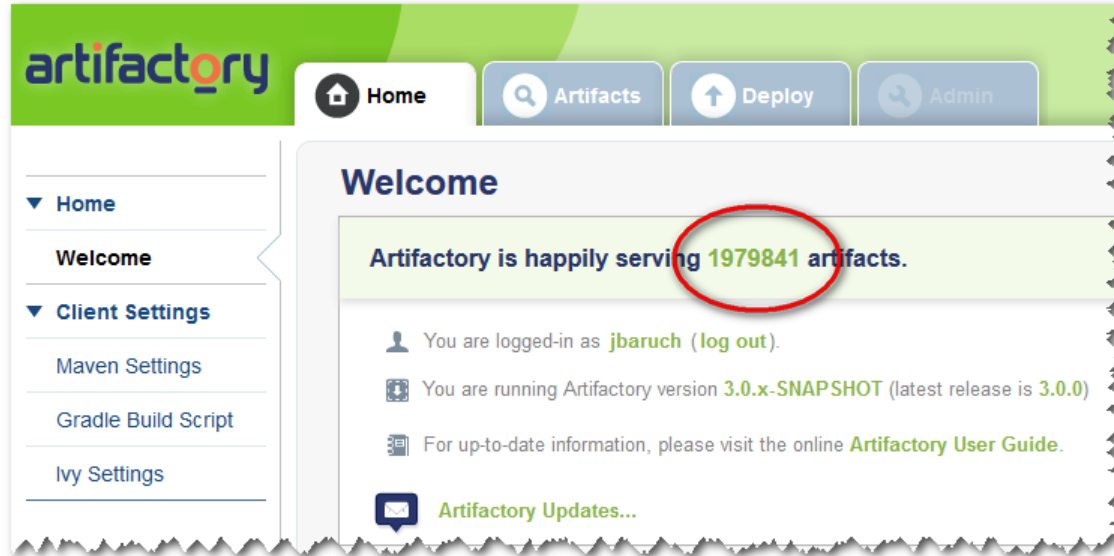
active oldest votes

119

No, that's not possible in Git.

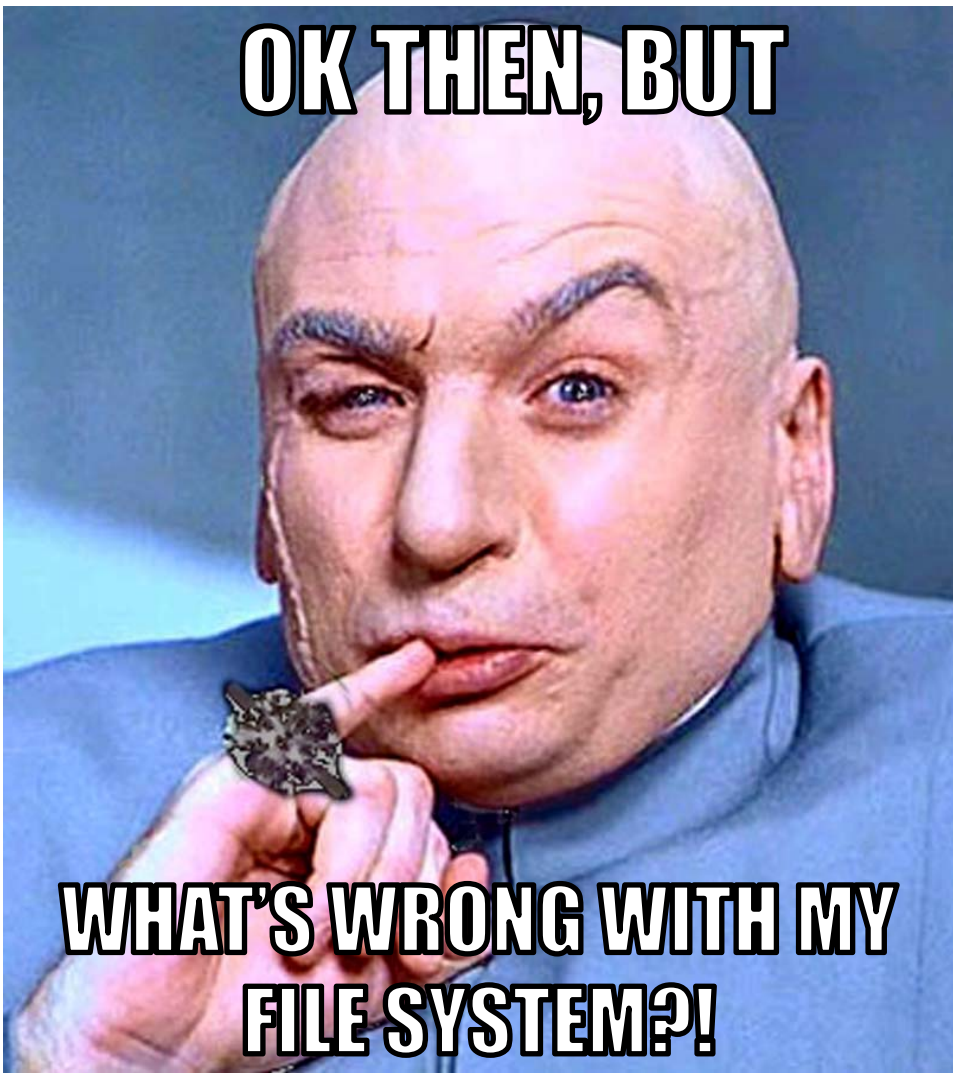
Representing something like this in Git would be a substantial effort and it would mean that the integrity of the distributed repository could no longer be guaranteed. If you are interested, search for discussions "sparse checkout" and "sparse fetch" in the git mailinglist.

R U SURE U WANT 2 CLONE IT ALL?



OK THEN, BUT

**WHAT'S WRONG WITH MY
FILE SYSTEM?!**



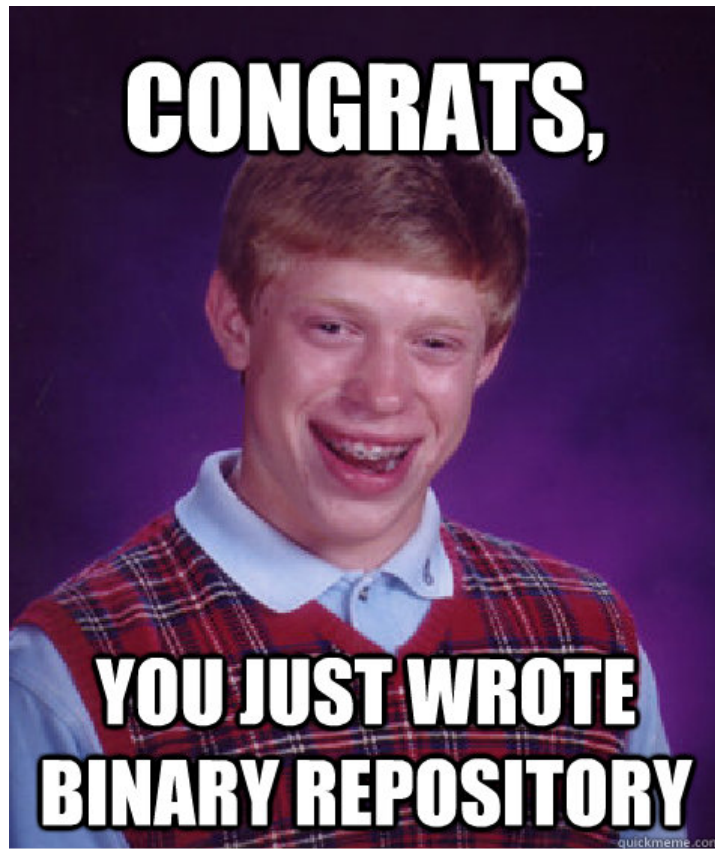
Can I run my own private registry?

Yes!

The easiest way is to replicate the couch database, and use the same (or similar) design doc to implement the APIs.

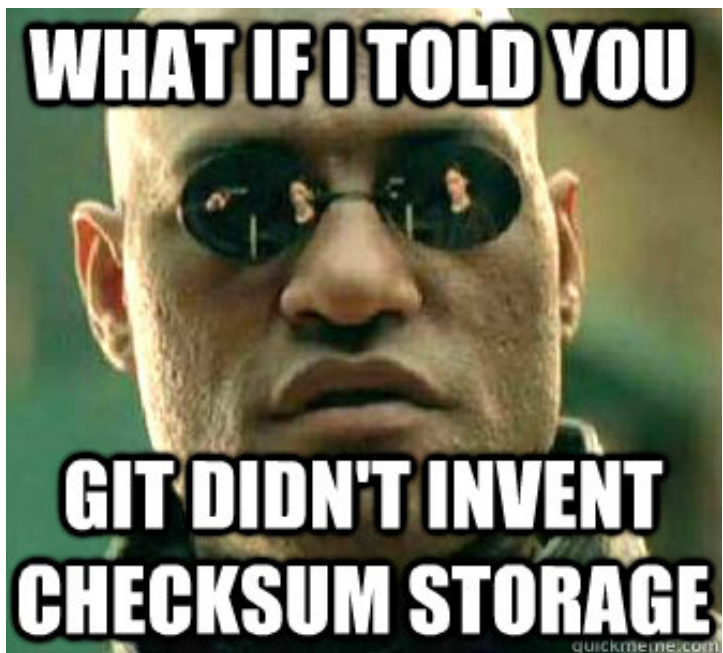
If you set up continuous replication from the official CouchDB, and then set your internal CouchDB as the registry config, then you'll be able to read any published

- Easy setup
- Lazy or eager Proxy of other repositories
- Managing artifact lifecycle
- Optimize storage size
- Enforce security and access control
- Search by name, context and content
- Expose REST API
- Serve all binary needs in org

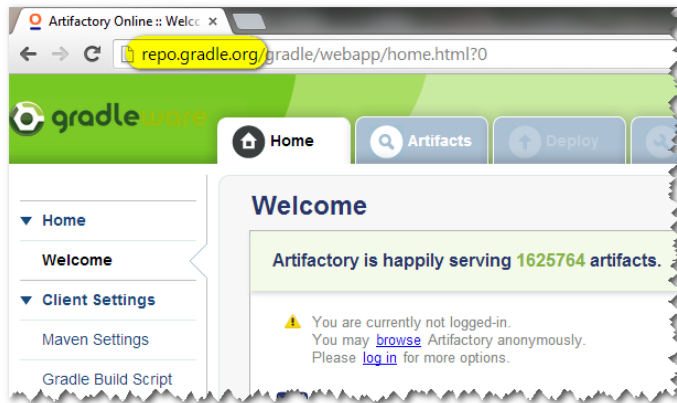
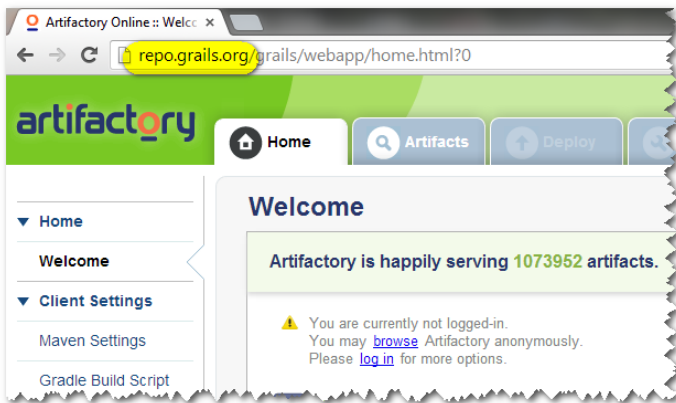
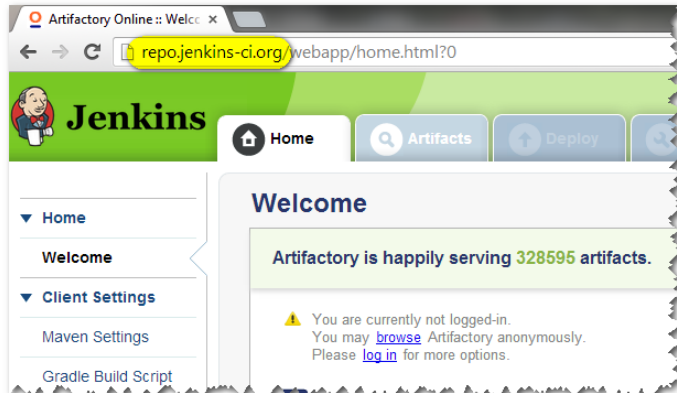
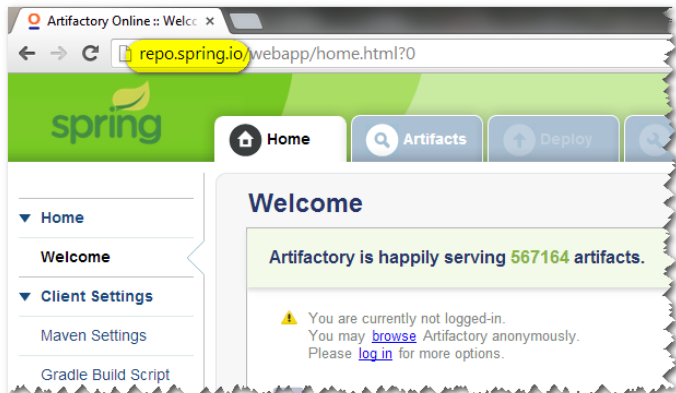


BTW, How Many Years It Took?

- Easy setup
- Lazy or eager Proxy of other repositories
- Managing artifact lifecycle
- Optimize storage size
- Enforce security and access control
- Search by name, context and content
- Expose REST API
- Serve all binary needs in org



Meet Artifactory



Meet Artifactory

Ohloh by BLACK DUCK

Follow @Ohloh

Ohloh Meta

Sign In

Join Now

Projects

People

Organizations ^{Beta}

Tools

Code

Projects Search...

Q



Artifactory

Settings | Report Duplicate

Analyzed about 18 hours ago based on code collected about 18 hours ago.

Project Summary

Artifactory is a Maven 2 compatible repository. It offers advanced security, caching and security features to provide a robust, scalable and independent build environment when using Maven. Artifactory is being used by clients ranging from small startup teams to international corporate teams employing distributed development. This repository for development experience for both of thousands of developers. Artifactory supports a robust artifact management system using both Maven 2 and can be set up either with a single "single user" or "group" user.

Tags

maven2 ajax development maven nexus server build_tools manager apache ivy repository component ant deployment java build artifact components repository_browser archiva automation

Quick Reference

Project Links: [Homepage](#)

[Download](#)

Code Locations: <http://subversion.frog.org/arti...>

Licenses: Apache-2.0

Similar Projects: [Apache Ant](#) [Apache Archiva](#)

[Apache Conti...](#) [EBuild](#)

Managers: [freddy33](#) and [yoavl](#)

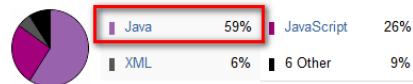
[Browse Code](#)

In a Nutshell, Artifactory...

...has had 11 commits made by 5 contributors representing 237,817 lines of code

...is mostly written in Java with an average number of source code comments

Languages



Lines of Code

Java? Yuck!

Ohloh by BLACK D

Projects

People



Artifact

Settings | R

Project Summary

Artifact Hub is a Maven 2 artifact repository and security scanner. It provides a central location for storing and retrieving artifacts, and it also provides a security scanner that can detect vulnerabilities in your artifacts. It is a free and open source project, and it is supported by the community.

Tags

maven2 ajax development
manager apache ivy
build artifact component

In a Nutshell, Artifact Hub

...has had 11 commits
representing 237,811

...is mostly written in Java
with an average number of

Lines of Code

Sign In

Join Now

Search

collected about 18 hours ago.

org/arti...

Apache Archiva

EBuild

cript 26%

er 9%

– Slow?

- Fast!

- on modern HotSpot

- Fast!
 - on modern HotSpot
- Complicated?

- Fast!
 - on modern HotSpot
- Sophisticated!
 - Dependency management
done right since 2007

- Sophisticated!
 - Dependency management done right since 2007
- Enterprisy?

– Young and kicking!







npms



Jars



npm

npm Registry

Jars

Maven Central



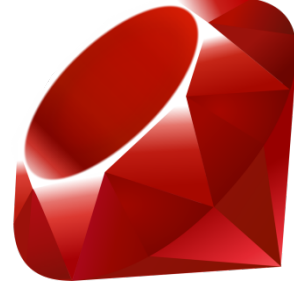
npm

npm Registry
Artifactory

Jars

Maven Central
Artifactory

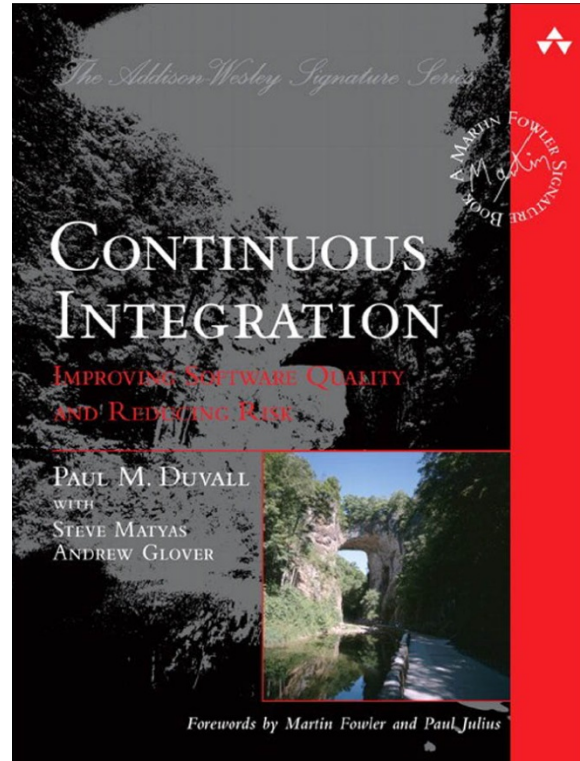
- Easy setup
- Lazy or eager Proxy of other repositories
- Managing artifact lifecycle
- Optimize storage size
- Enforce security and access control
- Search by name, context and content
- Expose REST API
- Serve all binary needs in org



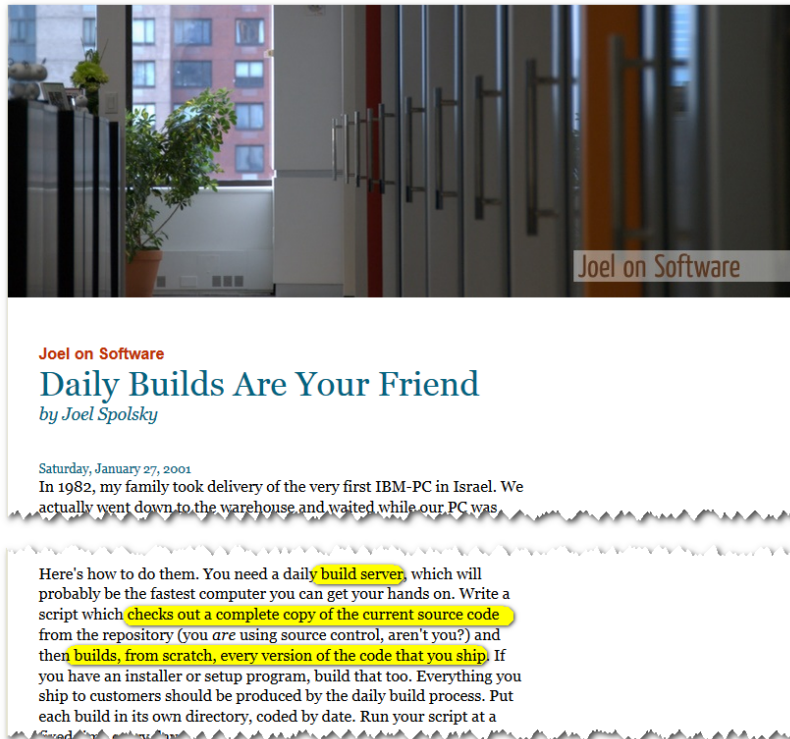
CIA



Continuous Integration Automation



CI servers check out code , run build tools...



...and show Chuck Norris Quotes.

 **Build #15 (Sep 10, 2009** Started 18 min ago
Took [10 sec](#)
12:02:44 AM)

 [add description](#)

 No changes.

 Started by user [anonymous](#)

 Chuck Norris's beard can type 140 wpm.

Permalinks

- [Build number](#)



[Hudson ver. 1.317](#)



Most Important



Why do I care?



Reason #1

TRACEABILITY

The Time Machine



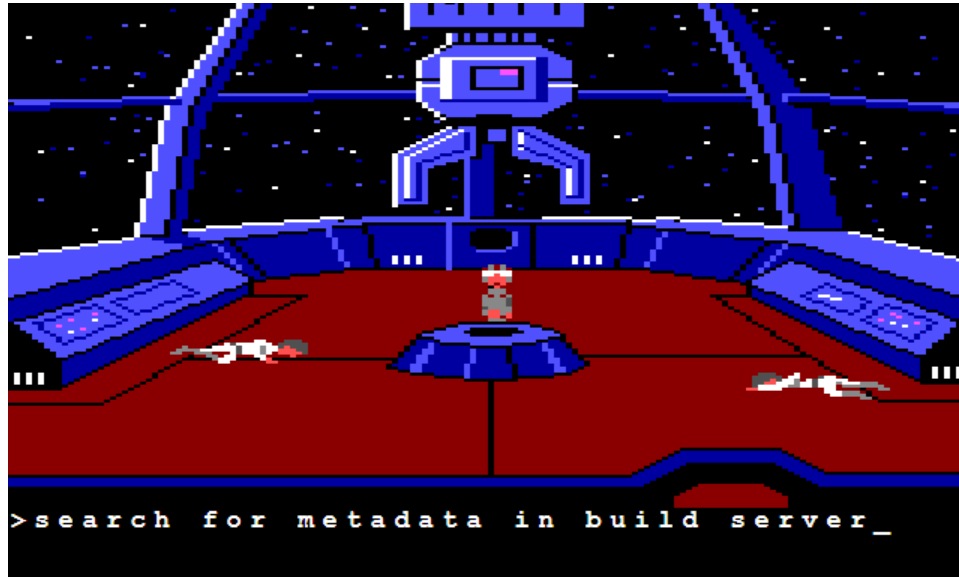
Quest for Traceability



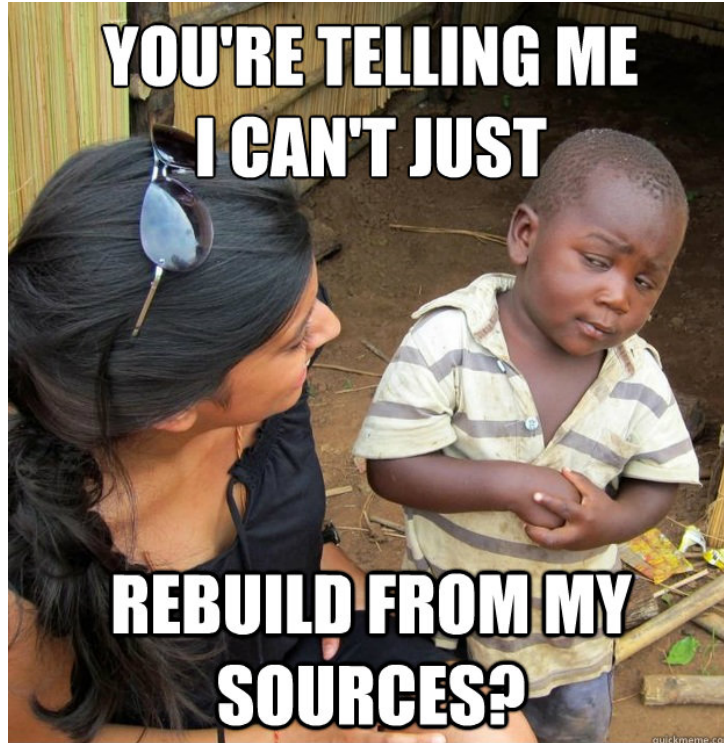
Quest for Traceability



Quest for Traceability



What's the problem?



- Checkout branch/tag/revision

- Checkout branch/tag/revision
- Build

- Checkout branch/tag/revision
- Build
- Done

- Checkout branch/tag/revision

- Build

Won't work!

- Done

- Checkout branch/tag/revision

- Build

Won't work!

- Done

- Time consuming

- Checkout branch/tag/revision

- Build

Won't work!

- Done

- Time consuming

- Unstable

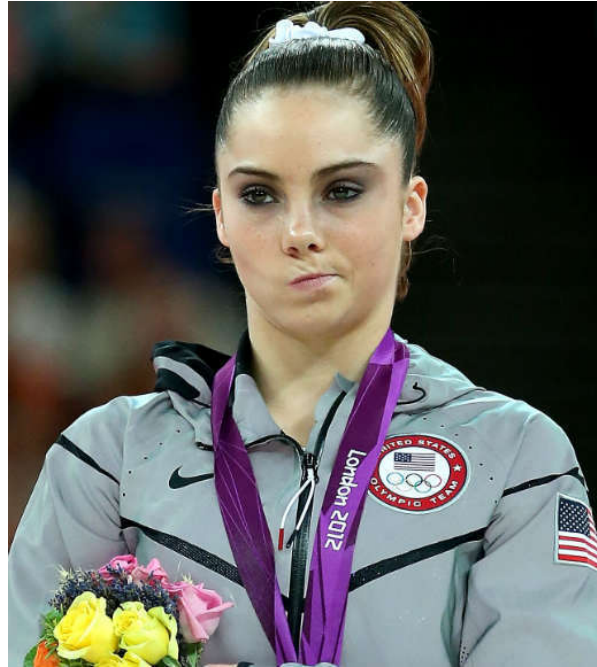
Dependencies Lie



Evil Dependencies Resolution



We can do better!



Remember? Build Server:



It knows it all!



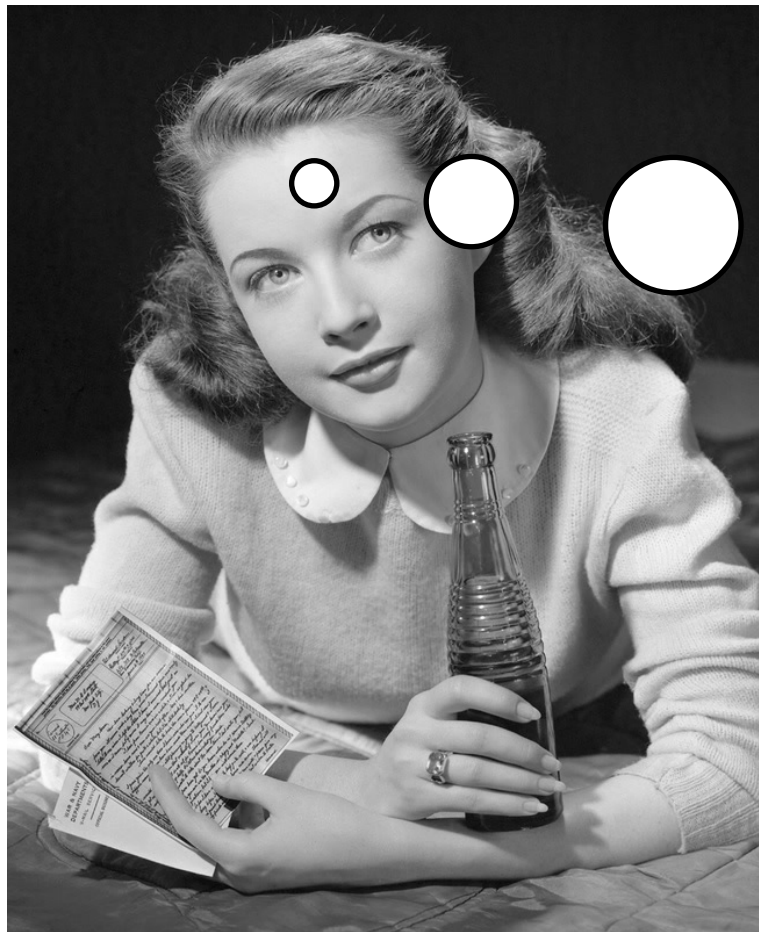
The image is a screenshot of a Wikipedia article page. The page layout includes a sidebar on the left with the Wikipedia logo and navigation links, a top navigation bar with tabs for 'Article', 'Talk', 'Read', 'Edit', and 'View history', and a search bar. The main content area displays the article title 'Single Source of Truth' in a yellow highlighted box. A red callout box with the text 'Actual term!' points to this title. Below the title, the text 'From Wikipedia, the free encyclopedia' is visible. A warning box with an open book icon and a red question mark states: 'This article **does not cite any references or sources**. Please help [improve this article](#) by [adding citations to reliable sources](#). Unsourced material may be challenged and [removed](#). (December 2009)'. The article text begins with 'In [Information Systems](#) design and theory, as instantiated at the *Enterprise Level*, **Single Source Of Truth** (SSOT) refers to the practice of structuring information models and associated schemata such that every data element is stored exactly once (e.g., in no more than a single row of a single table). Any possible linkages to this data element (possibly in other areas of the relational schema or even in distant [federated databases](#)) are by reference only. Thus, when any such data element is updated, this

Single Source of Truth

From Wikipedia, the free encyclopedia

This article **does not cite any references or sources**. Please help [improve this article](#) by [adding citations to reliable sources](#). Unsourced material may be challenged and [removed](#). (December 2009)

In [Information Systems](#) design and theory, as instantiated at the *Enterprise Level*, **Single Source Of Truth** (SSOT) refers to the practice of structuring information models and associated schemata such that every data element is stored exactly once (e.g., in no more than a single row of a single table). Any possible linkages to this data element (possibly in other areas of the relational schema or even in distant [federated databases](#)) are by reference only. Thus, when any such data element is updated, this



Wouldn't it be
dreamy if
there was a
way to capture
this truth?

Binary Repository and CI/CD



CI Server is the Single Source of Truth

IT KNOWS IT ALL!



Remember?

Binary Repository is The Single Target of Truth



Save the Truth!



WITH BINARIES!

memegenerator.net

Make Strange Binary Love

Binaries + Build Info

=

2gEttler 4eVA!!11

[illegible]

All together now!



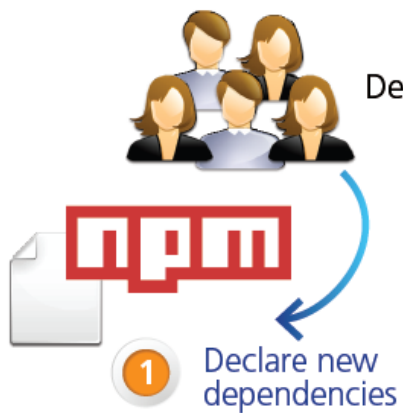


Development
Team



1

Declare new
dependencies





Version Control
System



2

Commit
the changes



Development
Team



1

Declare new
dependencies

artifactory



www.npmjs.org

Version Control
System



3 Take
VCS
changes



Jenkins

2 Commit
the changes



Development
Team



1 Declare new
dependencies

artifactory



www.npmjs.org

Version Control
System



3

Take
VCS
changes



Jenkins

4

Build



www.npmjs.org

2

Commit
the changes



Development
Team

artifactory

1

Declare new
dependencies



Version Control System



3

Take VCS changes



Jenkins

4

Build



5

Fetch artifacts



www.npmjs.org

2

Commit the changes



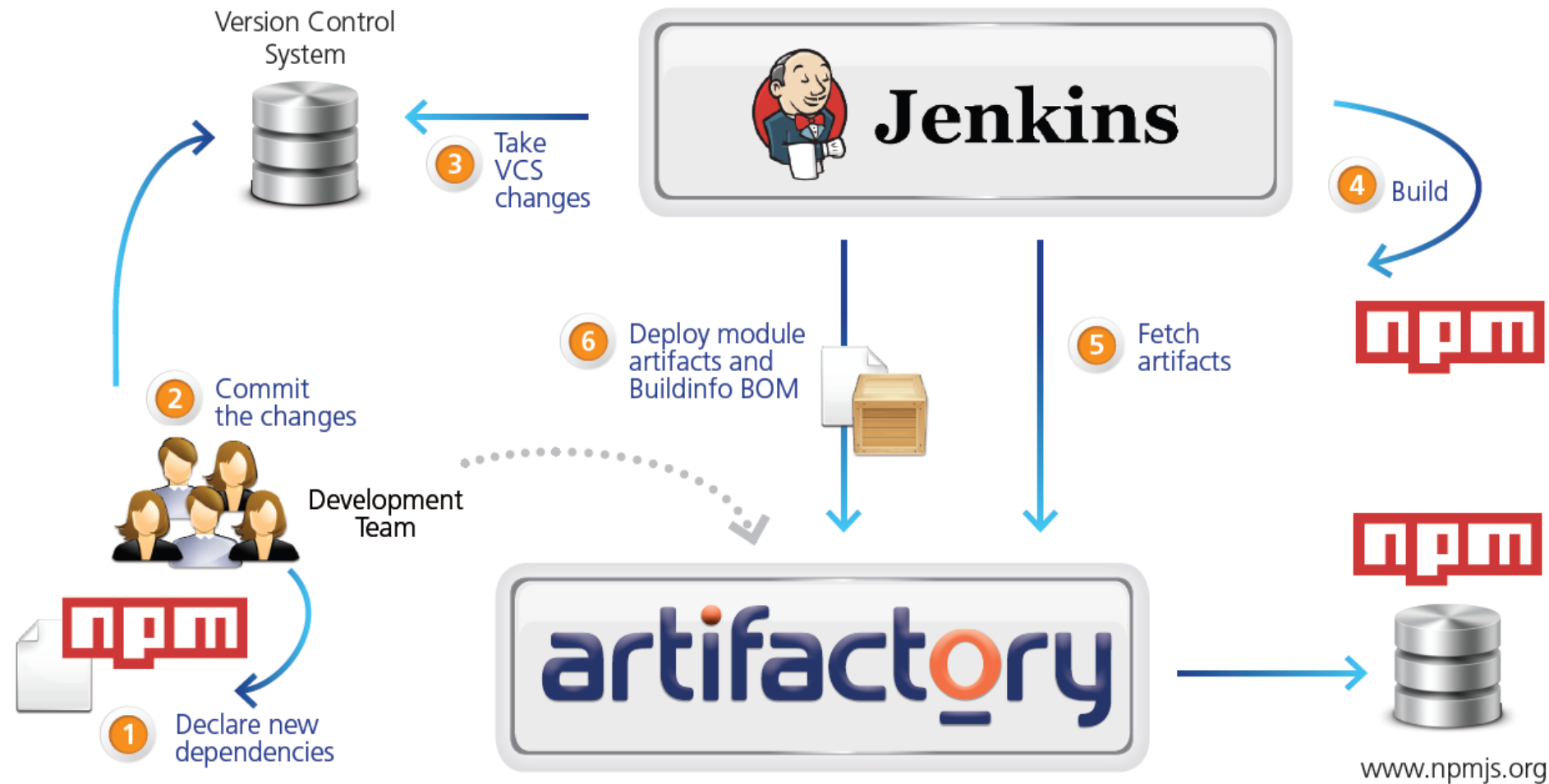
Development Team

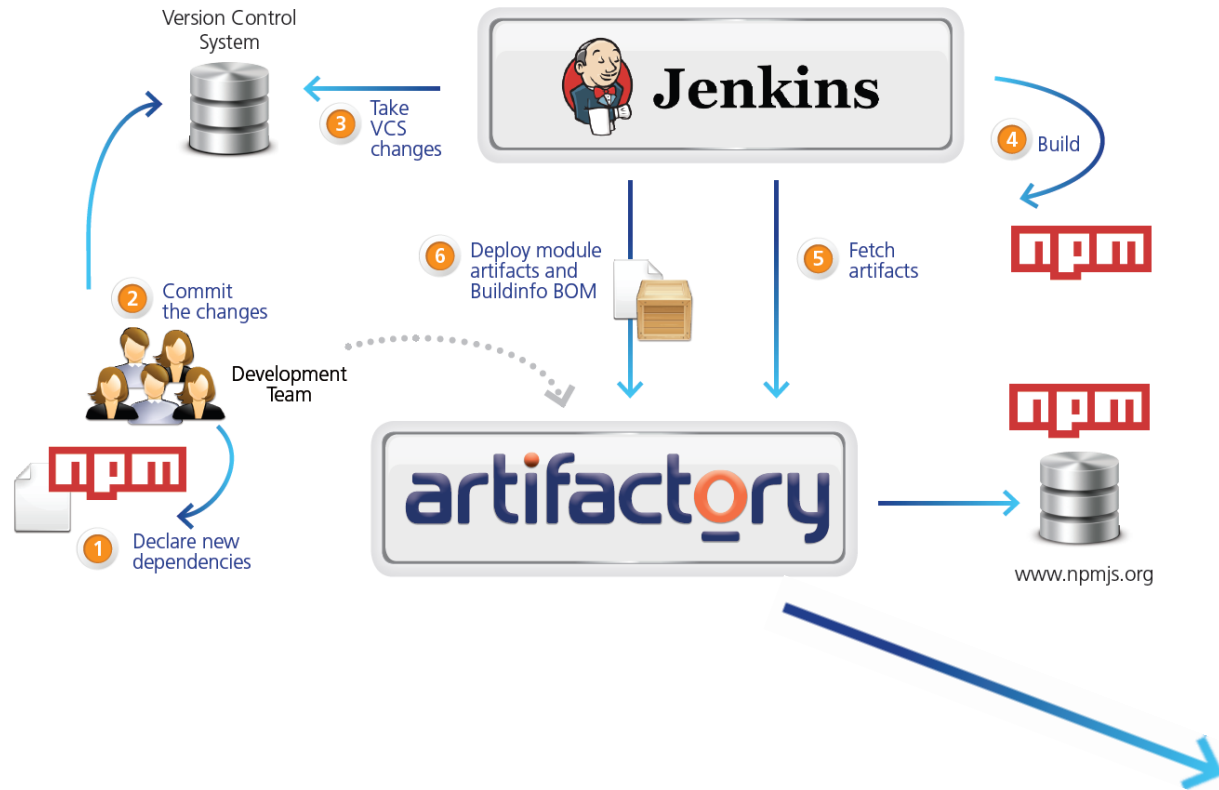


1

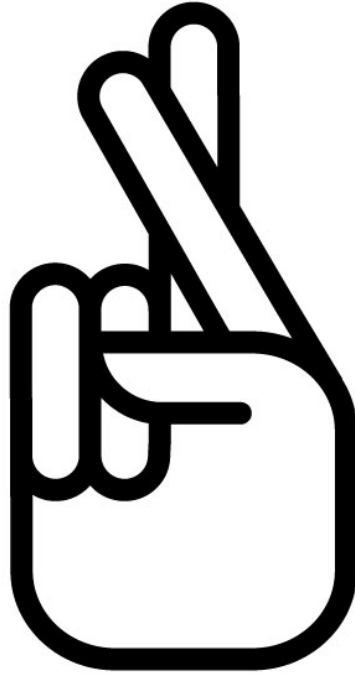
Declare new dependencies







Demo Time!



Thank You To Our Sponsors

Platinum



Gold



Silver

