



## Continuous Integration



# Plan

## 1. Why OME needs Continuous Integration?

1. OME Deliverables and Releases
2. OME source code management
3. Continuous Integration

## 2. OME Continuous Integration servers

1. Introduction
2. Travis CI
3. Jenkins CI

## 3. CI documentation

# OME releases: Deliverables



- OMERO.server / OMERO.clients
    - Windows, Linux, Mac OS X
    - Ice (3,3, 3.4, 3.5)
  - Tools/plugins
    - OMERO.imagej,
    - OMERO.matlab,
    - OMERO.py
  - OMERO Virtual appliance
  - Documentation
    - API documentation
    - Sphinx documentation
- Java ARchives (JAR)
    - loci\_tools.jar
    - ome\_tools.jar
    - ....
  - Bio-Formats Tools
    - Command-line tools
    - MATLAB toolbox
  - Documentation
    - API documentation
    - Sphinx documentation

# OME releases

- OME 4.4.x series (June 2012 – Jan 2014)
  - 12 releases in 19 months (1 major, 11 minor)
  - 3 **emergency** releases (4.4.1, 4.4.3, 4.4.8)
- Quality Assurance
  - Ensure quality standards are being met
  - Robustness/stability
  - Catching bugs early
- **Every code change must be tested and reviewed**

# Source code management

The screenshot shows a web browser window displaying the GitHub repository for the Open Microscopy Environment. The browser's address bar shows the URL `github.com/openmicroscopy`. The repository page features a search bar, a 'New repository' button, and a list of repositories. The first repository is `openmicroscopy/openmicroscopy`, which is a Java project with 54 stars and 52 forks. Its description states that OME develops open-source software and data format standards for biological light microscopy data. The second repository is `openmicroscopy/Imperial-FLIMfit`, a Matlab project with 4 stars and 3 forks. The third is `openmicroscopy/bioformats`, a Java project with 50 stars and 72 forks, described as a library for reading and writing data in life sciences image file formats. The fourth is `openmicroscopy/ome-release`, a CSS project with 0 stars and 3 forks, containing scripts for OME releases. On the right side of the page, there are sections for 'Members' (47 members), 'Teams' (7 teams), 'Owners' (7 members, 20 repositories), and 'Docs' (1 member, 5 repositories). A 'Create a team' button is located at the bottom of the Teams section.

Open Microscopy Environment

github.com/openmicroscopy

Open Microscopy Environment

Search or type a command

Explore Gist Blog Help

sbesson

## Open Microscopy Environment

http://www.openmicrosc...

Find a repository...

New repository

**openmicroscopy/openmicroscopy** Java ★ 54 🍴 52

OME (Open Microscopy Environment) develops open-source software and data format standards for the storage and manipulation of biological light microscopy data. A joint project between universities, research establishments and industry in Europe and the USA, OME has over 20 active researchers with strong links to the microscopy community. Funded by private and public research grants, OME has been a major force on the international microscopy stage since 2000.

Updated by sbesson about 1 hour ago

**openmicroscopy/Imperial-FLIMfit** Matlab ★ 4 🍴 3

Updated by seanwarren about 2 hours ago

**openmicroscopy/bioformats** Java ★ 50 🍴 72

Bio-Formats is a Java library for reading and writing data in life sciences image file formats. It is developed by the Open Microscopy Environment (particularly UW-Madison LOCI and Glencoe Software). Bio-Formats is released under the GNU General Public License (GPL); commercial licenses are available from Glencoe Software.

Updated by sbesson about 4 hours ago

**openmicroscopy/ome-release** CSS ★ 0 🍴 3

Scripts for OME releases.

Updated by joehmoore 40 minutes ago

### Members

47 >

Add a member by username

### Teams

7 >

Jump to a team

#### Owners

7 members · 20 repositories

#### devteam

42 members · 38 repositories

#### Docs

1 member · 5 repositories

Create a team

# Source code: Pull Requests

The screenshot shows a GitHub Pull Request (PR) page for the repository 'openmicroscopy/openmicroscopy'. The PR is titled 'assist #11091: refactor server DB queries for hierarchy navigation by mtbc' and is currently open. It shows 8 commits and 7 files changed. The PR description includes a link to a ticket and a summary of the changes, along with a Travis CI build status of 'All is well'.

**Open** mtbc wants to merge 8 commits into `openmicroscopy:develop` from `mtbc:trac-11091-hi...` 788 ■ ■ ■ ■ #2005

Conversation ← Commits 8 📁 Files Changed 7

mtbc opened this pull request a day ago Edit

**assist #11091: refactor server DB queries for hierarchy navigation**

No one is assigned ⚙️ No milestone ⚙️

Fixes step one of <http://trac.openmicroscopy.org.uk/ome/ticket/11091> and prepares the way for <http://trac.openmicroscopy.org.uk/ome/ticket/11019>. Batches and caches bulk DB queries for hierarchy navigation and has preprocessor and container service use the same query code. (Increases allocation of small Java objects to reduce traffic with DB and increase code reusability.)

To test, check for regressions in behavior that relies on graph traversal, including filesset splitting.

✓ All is well — The Travis CI build passed ([Details](#))

**Open** +577 additions -211 deletions

mtbc added some commits 13 days ago

mtbc	create a simple cache for storing model hierarchy lookups	<a href="#">eb1f4f7</a>
mtbc	create simple methods in a base class for model hierarchy navigation	<a href="#">c7e8c8a</a>
mtbc	create a wrapper for hierarchy navigation using different types	<a href="#">d0966e9</a>
mtbc	adjust PojosImpl to use hierarchy navigator	<a href="#">f18ddb5</a>
mtbc	change preprocessor to use hierarchy navigator	<a href="#">5e3d449</a>
mtbc	adjust do-all for change in preprocessor constructor	<a href="#">107ac1c</a>
mtbc	update preprocessor test class with latest changes	<a href="#">✓47691c2</a>
mtbc	remove weird rebase artifact	<a href="#">✓a83c300</a>

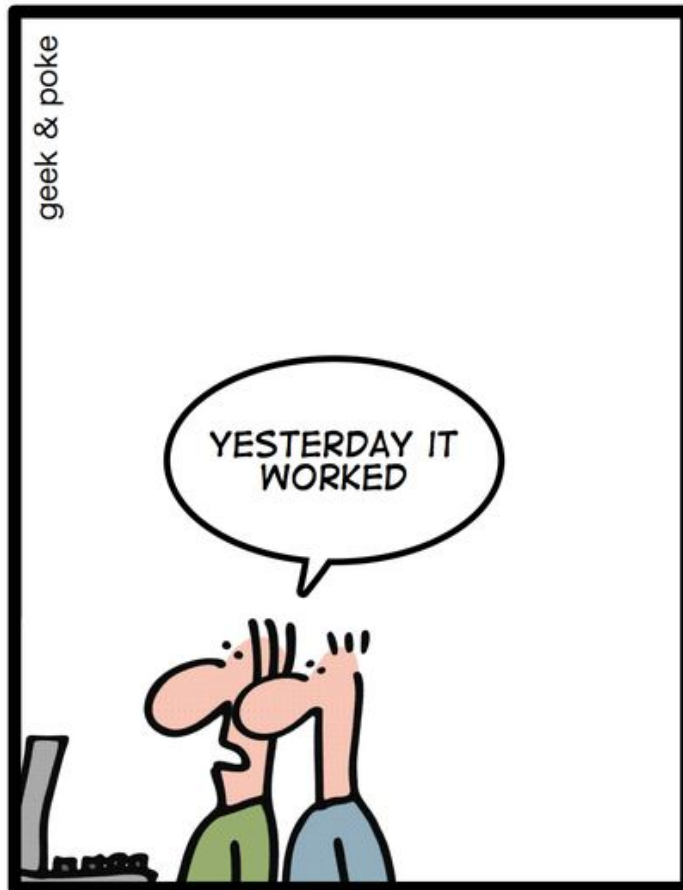
# Source code: changes frequency

	OMERO	Bio-Formats	Documentation	Scripts
Number of commits	5502	3033	1375	111
Number of merged Pull Requests	812	366	254	23
Number of unique authors	25	26	26	7
Number of merged Pull Requests/day	2	1	1	<1
Number of commits/day	11	6	3	<1

Changes on dev\_5\_0 branch between 25 Sept 2012 and 20 Jan 2014

# The problem

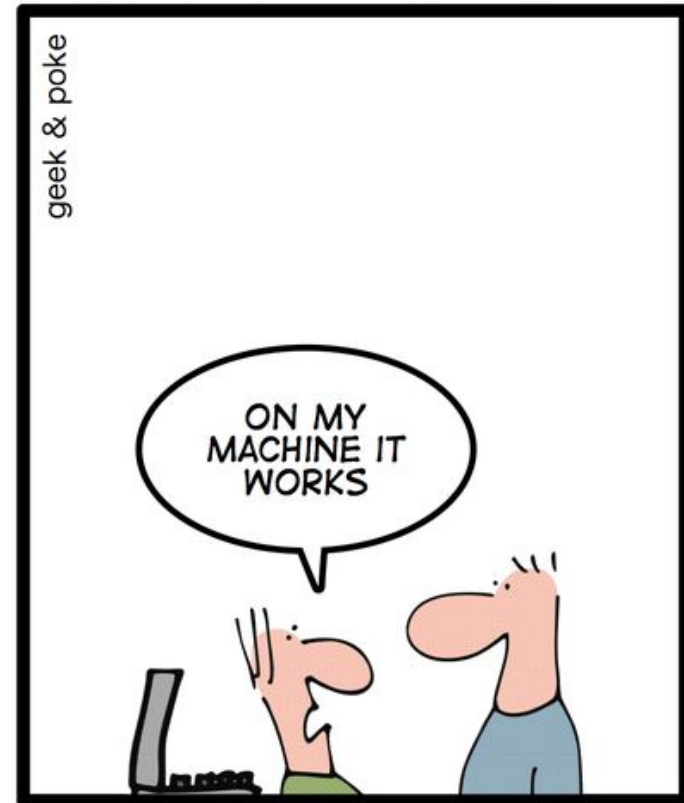
*WHEN YOU HEAR THIS:*



*YOU KNOW YOU'RE IN A SOFTWARE PROJECT*

*JUST IN CASE YOU'RE STILL NOT SURE WHETHER YOU'RE IN A SOFTWARE PROJECT*

*WAIT UNTIL YOU HEAR THIS:*

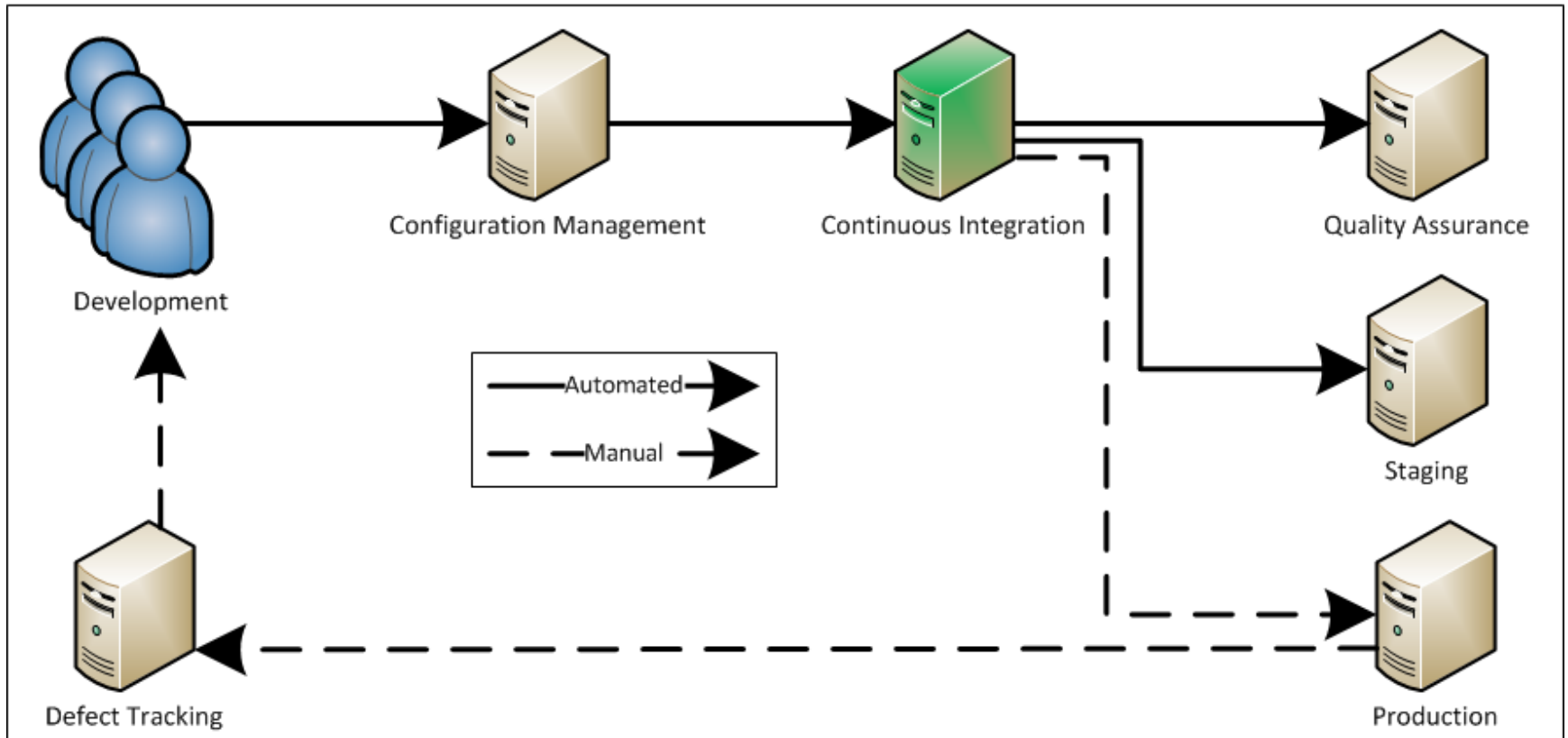




# Continuous integration

- Continuous integration: perform software integration frequently
- Automate the build
  - OMERO suite (server, clients...), Bio-Formats suite
  - OME Consortium products
- Automate the tests
  1. Run Bio-Formats automated tests against the data repository
  2. Run the OMERO.server integration tests of the OMERO.server
- Automate the deployment
  - Deploy all deliverables for PR review/ QA release
  - Deploy the latest version of the documentation

# Continuous integration server



Source: <http://www.appfoundation.com/ci/>

# Continuous integration server

## BENEFITS

- Automation (build, test, deployment)
- Integration with SCM
- Easy access to daily deliverables
- Time trigger/change polling
- Build history

## COSTS

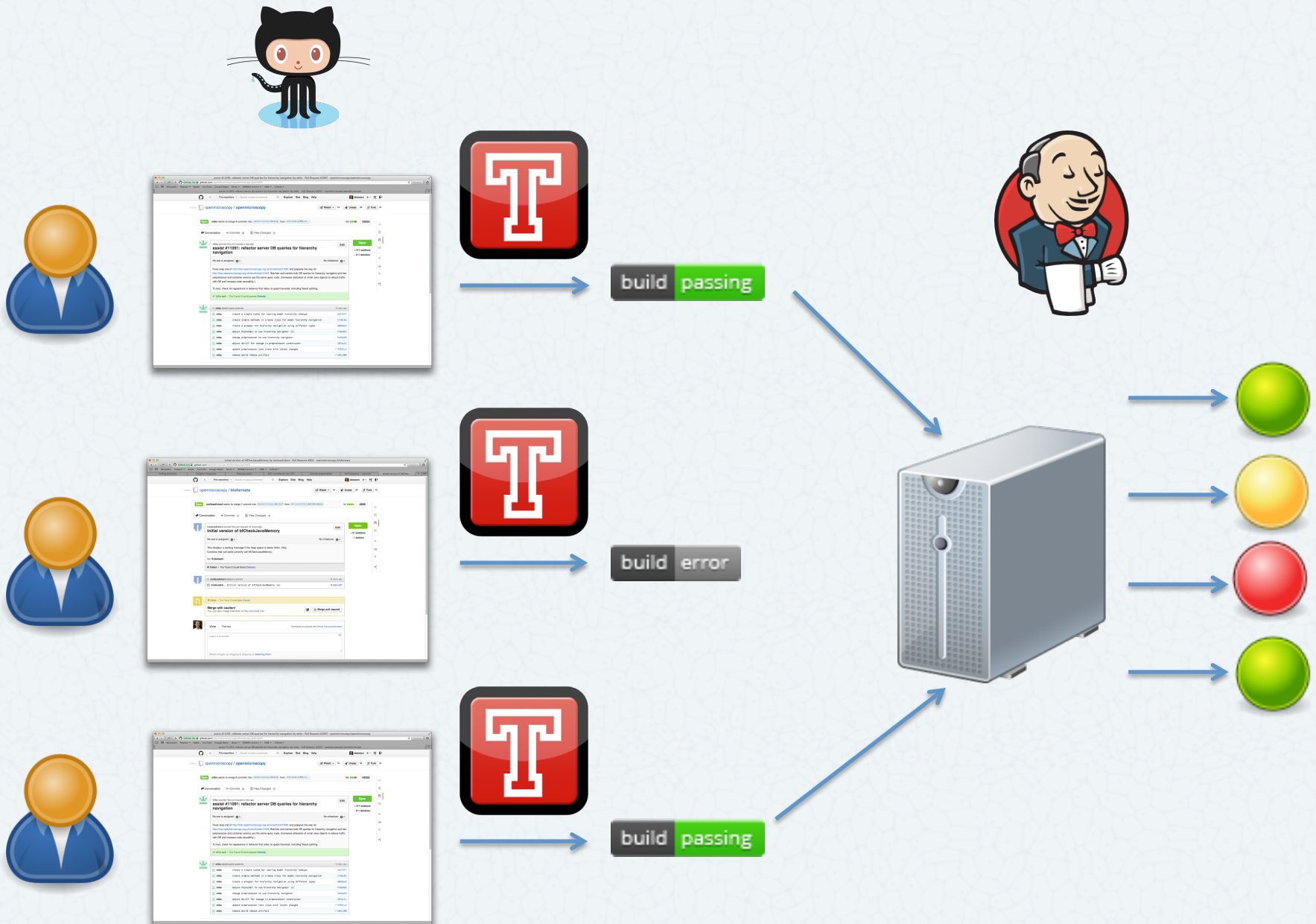
- Writing/maintenance of CI automated scripts
- Team resources
  - Server setup
  - Server maintenance
  - Individual job setup
- Team communication

# OME CI servers



- <http://about.travis-ci.org>
  - Externally hosted
  - Integration with GitHub
  - Support Java, Python, C+
  - Matrix jobs
  - Setup in .travis.yml
  - Build queues/ 50 min timeout
- <http://jenkins-ci.org>
  - Hosted by OME team
  - Integration via scc tools
  - Node-specific languages
  - Chained jobs
  - Build system (ant, build.py)
  - Control over node number/ throttling/time

# Typical CI workflow





# Travis CI : introduction

The screenshot shows the Travis CI web interface. The browser address bar displays the URL <https://travis-ci.org/openmicroscopy/openmicroscopy/builds/15033552>. The page title is "Travis CI - Free Hosted Continuous Integration Platform for the Open Source Community". The navigation bar includes "Home", "Blog", "Status", "Help", and "Travis CI for Private Repositories". The user profile "Sébastien Besson" is visible in the top right.

The main content area shows the repository "openmicroscopy/openmicroscopy" with a "build passing" status. A description of OME (Open Microscopy Environment) is provided. Below the description, there are tabs for "Current", "Build History", "Pull Requests", "Branch Summary", and "Build #3079". The "Build #3079" tab is active, showing build details:

Build	3079	Commit	4eba389 (develop)
State	Passed	Pull Request	#1878 Fs cleanups
Finished	a day ago	Author	jmoore
Duration	30 min 22 sec	Committer	jmoore
Message	Make memoizerWait configurable; 100ms default		

Below the build details is a "Build Matrix" table:

Job	Duration	Finished	Env	Jdk
3079.1	13 min 41 sec	a day ago	BUILD=py BUILD_TARGET="build-default" TEST_TARGET="-py test -Dtest.with.fail=true"	openjdk7
3079.2	16 min 41 sec	a day ago	BUILD=java BUILD_TARGET="build-default test-compile" TEST_TARGET="-p"	openjdk7

On the left side, there is a search bar and a list of repositories under "My Repositories":

- sbesson/openmicroscopy (296)
- sbesson/ome-documentation (194)
- openmicroscopy/openmicroscopy (3085)
- openmicroscopy/ome-documenta... (1202)
- openmicroscopy/bioformats (1547)

Activated for core OME source code repositories





# Travis CI: GitHub integration

Fs cleanups by joshmoore · Pull Request #1878 · openmicroscopy/openmicroscopy

07-38-49.111.log:2013-12-05 07:38:52,827 DEBUG [ loci.formats.Memoizer] (3-thread-...

meaning that multiple calls to `SDTReader.setId` were being made. For any file format which takes a substantial amount of time on the `setId`, this could be substantial large savings.

/cc @melissalinkert, @pwalczysko, @jburel

✓ All is well — The Travis CI build passed (Details)

snoopycrimocop commented a day ago

Conflicting PR.Removed from build OMERO-merge-develop#511. See the console output for more details.

joshmoore added some commits 9 days ago

- joshmoore Fail properly on import failure 3d474e9
- joshmoore Minor cleanup 2016090

joshmoore commented a day ago

Merging gh-1866 and rebasing.

joshmoore added a commit 2 days ago

- joshmoore Enable memoization for all server-side OMEROWrapper uses 54372ab

jburel commented on 54372ab a day ago

Sébastien Besson

build passing

mat standards for the storage and  
ties, research establishments and industry in  
microscopy community. Funded by private and  
by stage since 2000.

✓ sbesson/ome-documentation	194
○ 5 min 49 sec	
about 5 hours ago	
✓ openmicroscopy/openmicroscopy	3085
○ 39 min 15 sec	
about 17 hours ago	
✓ openmicroscopy/ome-documenta...	1202
○ 10 min 14 sec	
about 17 hours ago	
✓ openmicroscopy/bioformats	1547
○ 1 hr 44 min 51 sec	

Build	✓ 3079	Commit	4eba389 (develop)
State	Passed	Pull Request	#1878 Fs cleanups
Finished	a day ago	Author	jmoore
Duration	30 min 22 sec	Committer	jmoore
Message	Make memoizerWait configurable; 100ms default		

### Build Matrix

Job	Duration	Finished	Env	Jdk
✓ 3079.1	13 min 41 sec	a day ago	BUILD=py BUILD_TARGET="build-default" TEST_TARGET="-py test -Dtest.with.fail=true"	openjdk7
✓ 3079.2	16 min 41 sec	a day ago	BUILD=java BUILD_TARGET="build-default test-compile" TEST_TARGET="-p"	openjdk7



# Travis CI: OME usage

		Code validation	Build	Test
OMERO	py	flake8	./build.py build-default	./build.py -py test
	java		./build.py build-default test-compile	
Bio-Formats	maven		mvn	
	cpp		cmake + make	
	cppwrap		mvn + cmake + make	
	sphinx		make clean html latexpdf	
Documentation			make clean html latexpdf	
Scripts		flake8		

Source: .travis.yml



# OME Jenkins CI: main view

<http://ci.openmicroscopy.org>



5.0 [jenkins]

Wikipedia Popular Apple YouTube Google Maps News Omero servers OME Github

5.0 [jenkins]

Jenkins  sbesson | log out

Jenkins > [ENABLE AUTO REFRESH](#) [add description](#)

Continuous build & integration system for the Open Microscopy Environment project.

4.1 4.2 4.3 4.4 **5.0** 5.1 Bio-Formats Consortium Docs Experimental Failing Matlab Mgmt Omero Release Third-Party VMs Windows \_other +

S	W	Name	Last Success	Last Failure	Last Duration	Console	Cron Trigger
		<a href="#">BIOFORMATS-5.0-autogen-docs</a>	17 hr - <a href="#">#139</a>	2 mo 27 days - <a href="#">#102</a>	11 min		
		<a href="#">BIOFORMATS-5.0-daily</a>	9 hr 50 min - <a href="#">#712</a>	1 mo 22 days - <a href="#">#664</a>	11 min		Build periodically: H 3 ***
		<a href="#">BIOFORMATS-5.0-daily-cpp</a>	12 hr - <a href="#">#729</a>	22 days - <a href="#">#711</a>	30 min		Build periodically: H 0 ***
		<a href="#">BIOFORMATS-5.0-daily-ITK320</a>	12 hr - <a href="#">#714</a>	4 mo 20 days - <a href="#">#578</a>	5 min 1 sec		Build periodically: H 0 ***
		<a href="#">BIOFORMATS-5.0-daily-ITK4</a>	12 hr - <a href="#">#632</a>	N/A	4 min 0 sec		Build periodically: H 0 ***
		<a href="#">BIOFORMATS-5.0-latest</a>	18 hr - <a href="#">#4540</a>	1 mo 13 days - <a href="#">#4526</a>	32 min		Poll SCM: H * * * *
		<a href="#">BIOFORMATS-5.0-latest-cpp</a>	17 hr - <a href="#">#51</a>	3 mo 19 days - <a href="#">#2</a>	14 min		
		<a href="#">BIOFORMATS-5.0-latest-cppwrap</a>	17 hr - <a href="#">#430</a>	N/A	32 min		
		<a href="#">BIOFORMATS-5.0-latest-maven</a>	17 hr - <a href="#">#458</a>	N/A	3 min 7 sec		Poll SCM: H * * * *
		<a href="#">BIOFORMATS-5.0-merge-cpp</a>	15 hr - <a href="#">#173</a>	1 mo 22 days - <a href="#">#129</a>	15 min		
		<a href="#">BIOFORMATS-5.0-merge-daily</a>	16 hr - <a href="#">#689</a>	18 hr - <a href="#">#688</a>	1 hr 0 min		Build periodically: H 20 ***
		<a href="#">BIOFORMATS-5.0-merge-docs</a>	15 hr - <a href="#">#547</a>	N/A	22 min		
		<a href="#">BIOFORMATS-5.0-merge-full-repository</a>	1 day 16 hr - <a href="#">#631</a>	16 hr - <a href="#">#632</a>	12 hr		Build periodically: H 20 ***
		<a href="#">BIOFORMATS-5.0-merge-matlab</a>	15 hr - <a href="#">#219</a>	14 days - <a href="#">#204</a>	2 min 27 sec		
		<a href="#">BIOFORMATS-5.0-merge-openbytes-performance</a>	22 hr - <a href="#">#800</a>	13 days - <a href="#">#787</a>	1 hr 15 min		Build periodically: H 14 ***
		<a href="#">BIOFORMATS-5.0-merge-performance</a>	16 hr - <a href="#">#280</a>	1 mo 15 days - <a href="#">#234</a>	1 hr 29 min		Build periodically: H 20 ***
		<a href="#">BIOFORMATS-5.0-merge-test_images_good</a>	15 hr - <a href="#">#702</a>	N/A	26 min		Build periodically: H 20 ***
		<a href="#">BIOFORMATS-5.0-release</a>	1 mo 7 days - <a href="#">#8</a>	2 mo 20 days - <a href="#">#1</a>	23 min		
		<a href="#">BIOFORMATS-5.0-release-docs</a>	10 days - <a href="#">#112</a>	N/A	21 min		Poll SCM: H * * * * 1-5

**Build Queue**  
No builds in the queue.

**Build Executor Status**

#	Status
1	Idle <a href="#">10.12.0.47</a>
1	Idle <a href="#">10.12.2.157</a>
1	Idle <a href="#">10.2.1.194</a>
1	Idle
2	Idle
1	Idle <a href="#">adhoc-test-02</a>
2	Idle
3	Idle
4	Idle
1	Idle <a href="#">git.openmicroscopy.org</a>
1	Idle

# OME Jenkins CI: build view

<http://ci.openmicroscopy.org/job/JOBNAME>



**Project BIOFORMATS-5.0-latest**  
Builds the tools target of the loci svn along with javadocs.

[Back to Dashboard](#)  
[Status](#)  
[Changes](#)  
[Workspace](#)  
[Build with Parameters](#)  
[Delete Project](#)  
[Configure](#)  
[Trac](#)  
[GitHub](#)  
[Promotion Status](#)  
[Metadata](#)  
[Shelve Project](#)  
[Parameterized Builds Report](#)  
[Failure Cause Management](#)  
[Job Config History](#)  
[Javadoc](#)  
[Git Polling Log](#)

[Promotion Status](#)  
[Javadoc](#)  
[Workspace](#)  
[Last Successful Artifacts](#)  
[Recent Changes](#)  
[Latest Test Result](#) (no failures)

**Downstream Projects**

- BIOFORMATS-5.0-autogen-docs
- BIOFORMATS-5.0-latest-cpp
- BIOFORMATS-5.0-latest-cppwrap

**Permalinks**

- Last build (#4540), 18 hr ago
- Last stable build (#4540), 18 hr ago
- Last successful build (#4540), 18 hr ago
- Last failed build (#4526), 1 mo 13 days ago
- Last unsuccessful build (#4526), 1 mo 13 days ago
- Latest promotion:RELEASE (#4421), 7 mo 8 days ago

**Test Result Trend**

[\(just show failures\)](#) [enlarge](#)

**Build History** (trend)

Build Number	Date	Time
#4540	Jan 23, 2014	7:01:13 PM
#4539	Jan 17, 2014	11:01:13 PM
#4538	Jan 15, 2014	8:01:20 AM
#4537	Jan 14, 2014	9:01:20 PM
#4536	Jan 13, 2014	4:01:20 PM
#4535	Jan 10, 2014	4:00:40 PM
#4534	Dec 18, 2013	10:06:12 AM
#4533	Dec 17, 2013	10:06:10 PM
#4532	Dec 16, 2013	4:06:17 PM
#4531	Dec 15, 2013	5:06:17 PM
#4530	Dec 13, 2013	5:06:25 PM
#4529	Dec 12, 2013	8:06:18 PM

# Jenkins CI: job naming scheme

- **\$COMPONENT-\$VERSION-\$TYPE-\$DESCRIPTION**,  
e.g. OMERO-5.0-merge-integration
- **COMPONENT**: deliverable name
  - OMERO, BIOFORMATS, Consortium or third-party deliverable
- **VERSION**: version number e.g. 5.0
- **TYPE**: usually merge, latest, release
- **DESCRIPTION**:
  - Short description (2-3 words max)
  - Allows to create personal views <http://ci.openmicroscopy.org/pview/>

# Jenkins CI: views

Continuous build & integration system for the Open Microscopy Environment project.  
Builds of each project as they are defined in their own SCMs. Libraries are taken as defined in their own build and not from other builds. For such interactions, see "Integ

4.1	4.2	4.3	4.4	5.0	5.1	Bio-Formats	Consortium	Docs	Experimental	Failing	Matlab	Mgmt	OMERO	Release	Third-Party	VMs	Windows	_other	+
S	W	Name ↓				Last Success				Last Failure				Last Durat					
		<a href="#">BIOFORMATS-5.1</a>				1 day 12 hr - <a href="#">#8</a>				4 days 1 hr - <a href="#">#2</a>				11 min					

## ○ Versions

- 4.4, 5.0, 5.1: for OME main products (OMERO, Bio-Formats)

## ○ Components

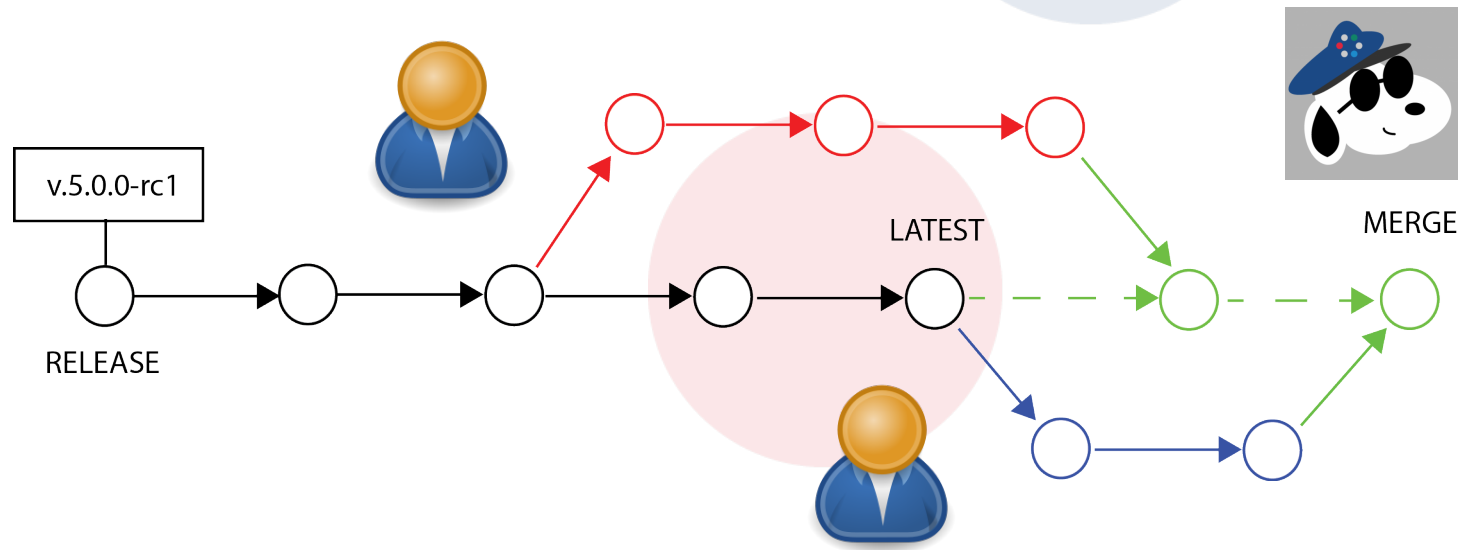
- OMERO/Bio-Formats
- Consortium
- Third Party (Pytables, ITK, Zlib,...)
- Mgmt

## ○ Experimental

## ○ Failing

- all non-Experimental jobs with failing/unstable status

# Jenkins CI: job types



- **LATEST** jobs  
built from the HEAD of the development branch, i.e. `origin/dev_5_0`
- **MERGE** jobs  
built from the HEAD of a development branch with Pull Requests merged in, i.e. `snoopycrimecop/merge/dev_5_0/latest`
- **RELEASE** jobs  
associated with a tag, e.g. `5.0.0-rc1`

# Jenkins CI: chained jobs

## ○ Morning jobs

- merge Pull Requests
- build artifacts
- deploy merge server
- import data
- run integration tests
- build and deploy staging documentation

The screenshot shows the Jenkins web interface for the project 'OMERO-5.0-merge-daily'. The browser address bar shows 'ci.openmicroscopy.org/job/OMERO-5.0-merge-daily/'. The page title is 'Jenkins' and the breadcrumb is 'Jenkins > OMER0-5.0-merge-daily >'. On the left sidebar, there are links for 'Back to Dashboard', 'Status', 'Changes', 'Trac', 'GitHub', 'Promotion Status', 'Metadata', 'Parameterized Builds Report', and 'Javadoc'. The main content area is titled 'Project OMER0-5.0-merge-daily' and includes a link to 'Contributing' documentation. Below this, there are links for 'Promotion Status', 'Javadoc', 'Last Successful Artifacts', 'Recent Changes', and 'Latest Test Result'. The 'Build History' section shows a list of builds from #535 to #555, with dates and times. The 'Downstream Projects' section lists several other Jenkins jobs. The 'Permalinks' section provides links to the last build, last stable build, last successful build, last failed build, and last unsuccessful build.

OMERO-5.0-merge-daily

ci.openmicroscopy.org/job/OMERO-5.0-merge-daily/

Wikipedia Popular Apple YouTube Google Maps News OMER0 servers OME Github

## Jenkins

Jenkins > OMER0-5.0-merge-daily >

[Back to Dashboard](#)

[Status](#)

[Changes](#)

[Trac](#)

[GitHub](#)

[Promotion Status](#)

[Metadata](#)

[Parameterized Builds Report](#)

[Javadoc](#)

### Project OMER0-5.0-merge-daily

For more info, see the "[Contributing](#)" documentation.

[Promotion Status](#)

[Javadoc](#)

[Last Successful Artifacts](#)  
+ View

[Recent Changes](#)

[Latest Test Result](#) (no tests)

#### Build History (trend)

#555	Jan 24, 2014 5:22:07 AM
#554	Jan 23, 2014 5:22:07 AM
#553	Jan 22, 2014 8:07:44 AM
#552	Jan 22, 2014 5:22:07 AM
#551	Jan 21, 2014 5:22:07 AM
#550	Jan 20, 2014 5:22:07 AM
#549	Jan 17, 2014 5:22:07 AM
#548	Jan 16, 2014 5:22:14 AM
#547	Jan 15, 2014 7:17:33 AM
#546	Jan 15, 2014 6:29:23 AM
#545	Jan 15, 2014 5:22:15 AM
#544	Jan 14, 2014 5:22:14 AM
#543	Jan 13, 2014 5:21:58 AM
#542	Jan 10, 2014 10:54:24 AM
#541	Jan 6, 2014 5:01:09 AM
#540	Jan 4, 2014 7:48:07 PM
#539	Jan 2, 2014 5:01:05 AM
#538	Jan 1, 2014 5:01:05 AM
#537	Dec 31, 2013 5:01:05 AM
#536	Dec 30, 2013 5:01:05 AM
#535	Dec 27, 2013 8:35:46 PM

#### Downstream Projects

- OMERO-5.0-merge-autoimport
- OMERO-5.0-merge-docs
- OMERO-5.0-merge-ice33
- OMERO-5.0-merge-ice34
- OMERO-5.0-merge-ice35
- OMERO-5.0-merge-integration
- OMERO-5.0-merge-matlab
- OMERO-5.0-merge-robotframework
- OMERO-5.0-merge-training

#### Permalinks

- Last build (#555), 1 day 15 hr ago
- Last stable build (#555), 1 day 15 hr ago
- Last successful build (#555), 1 day 15 hr ago
- Last failed build (#546), 10 days ago
- Last unsuccessful build (#546), 10 days ago

# Jenkins CI: deployment servers

Series	Development branch	Server name
4.4.x	dev_4_4	howe.openmicroscopy.org.uk
5.0.x	dev_5_0	gretzky.openmicroscopy.org.uk
5.1.x	develop	trout.openmicroscopy.org

- One node associated to each development branch
- Multiple OMERO instances running on different ports
  - 4064: merge server for PR review
  - 14064: latest server
  - 24064: integration server for integration tests

# Continuous integration documentation

The screenshot shows a web browser window displaying the OME Contributing Developer Documentation page. The browser's address bar shows the URL [www.openmicroscopy.org/site/support/contributing/](http://www.openmicroscopy.org/site/support/contributing/). The page features a dark blue header with the OME logo and navigation links for Home, Products, Documentation, Community, About, FAQ, and Help. The main content area is titled "Contributing Developer Documentation" and includes an introductory paragraph, a list of links to various developer topics, and information about OME-specific documentation. A right-hand sidebar contains a "Next topic" section with a link to "Checking out the source code", a "Quick search" box, and a "This Page" section with a "Show Source" link. The footer contains a copyright notice and the Sphinx version used for generation.

Contributing Developer Documentation — OME Contributing Developer documentation

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## Contributing Developer Documentation

This documentation is for developers who want to contribute code to OME consortium projects. It includes internal developer practices and workflows, standard procedures for tasks such as release, and other information which may be valuable to a wider audience.

- [Checking out the source code](#)
- [Using Git](#)
- [Code contributions](#)
- [Team communication](#)
- [Team workflow summary](#)
- [Continuous integration branches and jobs](#)
- [Continuous integration \(scc\) scripts](#)
- [Release process](#)
- [Development standards](#)

Information specific to developing OMERO, the OME Data Model and file formats, and Bio-Formats can be found in their respective developer documentation sections:

- [OMERO developer documentation](#)
- [Bio-Formats developer documentation](#)
- [OME Data Model, OME-TIFF and OME-XML documentation](#)

If you have any questions, please see our [Community support page](#) for ways to get in touch.

OME Contributing Developer documentation » [next](#) | [index](#)

Next topic

[Checking out the source code](#)

Quick search

Enter search terms or a module, class or function name.

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# Continuous integration documentation

Continuous integration branches and jobs — OME Contributing Developer documentation

www.openmicroscopy.org/site/support/contributing/continuous-integration.html

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Continuous integration branches and jobs — OME Contributing Developer documentation

## Continuous integration server

The OME project uses [Jenkins](#) as a continuous integration server. To access the OME Jenkins server, bring up a web browser and go to <http://ci.openmicroscopy.org>.

The following sections summarize the main continuous integration jobs used for the development of OMERO, Bio-Formats and the OME documentation sets. Note this is not an exhaustive list of all jobs in the project. To know more about a particular job, click on the *Configure* button on the left-side panel of the job window.

## OMERO jobs

Job task	4.4.x series	5.0.x series
Build OMERO	<a href="#">OMERO-4.4-latest-ice33</a> / <a href="#">OMERO-4.4-latest-ice34</a> / <a href="#">OMERO-4.4-latest-ice35</a>	<a href="#">OMERO-5.0-latest-ice33</a> / <a href="#">OMERO-5.0-latest-ice34</a> / <a href="#">OMERO-5.0-latest-ice35</a>
Build an OMERO Virtual Appliance	<a href="#">OMERO-4.4-latest-virtualbox</a>	<a href="#">OMERO-5.0-latest-virtualbox</a>
Run the daily merge builds	<a href="#">OMERO-4.4-merge-daily</a>	<a href="#">OMERO-5.0-merge-daily</a>
Review OMERO PRs	<a href="#">OMERO-4.4-merge-ice33</a> / <a href="#">OMERO-4.4-merge-ice34</a> / <a href="#">OMERO-4.4-merge-ice35</a>	<a href="#">OMERO-5.0-merge-ice33</a> / <a href="#">OMERO-5.0-merge-ice34</a> / <a href="#">OMERO-5.0-merge-ice35</a>
Review OMERO PRs using a Virtual Appliance	<a href="#">OMERO-4.4-merge-virtualbox</a>	<a href="#">OMERO-5.0-merge-virtualbox</a>
Run the integration tests	<a href="#">OMERO-4.4-merge-integration</a>	<a href="#">OMERO-5.0-merge-integration</a>
Collect the OmeroJava integration test results	<a href="#">OMERO-4.4-merge-integration-java</a>	<a href="#">OMERO-5.0-merge-integration-java</a>
Collect the OmeroPy integration test results	<a href="#">OMERO-4.4-merge-integration-python</a>	<a href="#">OMERO-5.0-merge-integration-python</a>
Collect the broken integration test results	<a href="#">OMERO-4.4-merge-integration-broken</a>	<a href="#">OMERO-5.0-merge-integration-broken</a>
Run the robot framework tests	<a href="#">OMERO-4.4-merge-robotframework</a>	<a href="#">OMERO-5.0-merge-robotframework</a>
Update submodules	<a href="#">OMERO-4.4-latest-submods</a>	<a href="#">OMERO-5.0-latest-submods</a>
Install OMERO using Homebrew	<a href="#">OME-4.4-merge-homebrew</a>	<a href="#">OME-5.0-merge-homebrew</a>

## 4.4.x series

The branch for the 4.4.x series of OMERO is dev\_4\_4. All jobs are listed under the [4.4](#) view tab of Jenkins.

[OMERO-4.4-latest-ice33](#)  
[OMERO-4.4-latest-ice34](#)  
[OMERO-4.4-latest-ice35](#)

These jobs are used to build the dev\_4\_4 branch of OMERO with Ice 3.3, 3.4 or 3.5

1. Builds the OMERO.server and the clients using [OMERO.sh](#)
2. Archives the build artifacts
3. If the build is promoted, copies the artifacts to s3.amazonaws.com

Enter search terms or a module, class or function name.

This Page

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# Continuous Integration: future directions

- Lots of progress in the last 6 months
  - Cleanup of the job (integration tests)
  - Server maintenance and stabilization
  - Rationalization/organization
- Future steps
  - Refactoring of Consortium projects
  - Integration tests in Travis build
  - Maintenance/improvements of the [CI documentation](#)
  - Refactoring of the 5.0 jobs using new 5.1 jobs



# CI Agent: Snoopy Crime Cop

- GitHub user
  - <https://github.com/openmicroscopy/snoopycrimecop>
  - Member of openmicroscopy and ome organizations
- Perform actions
  - Performs local PR merging using GitHub API
  - Open PRs for submodule bumps
  - Push merge/branches release tags to his forks
- Forks of main repositories
  - see <https://github.com/snoopycrimecop/openmicroscopy>
  - used for pushing merge branches/ staging release tags