

# Jenkins Continuous Integration Build System



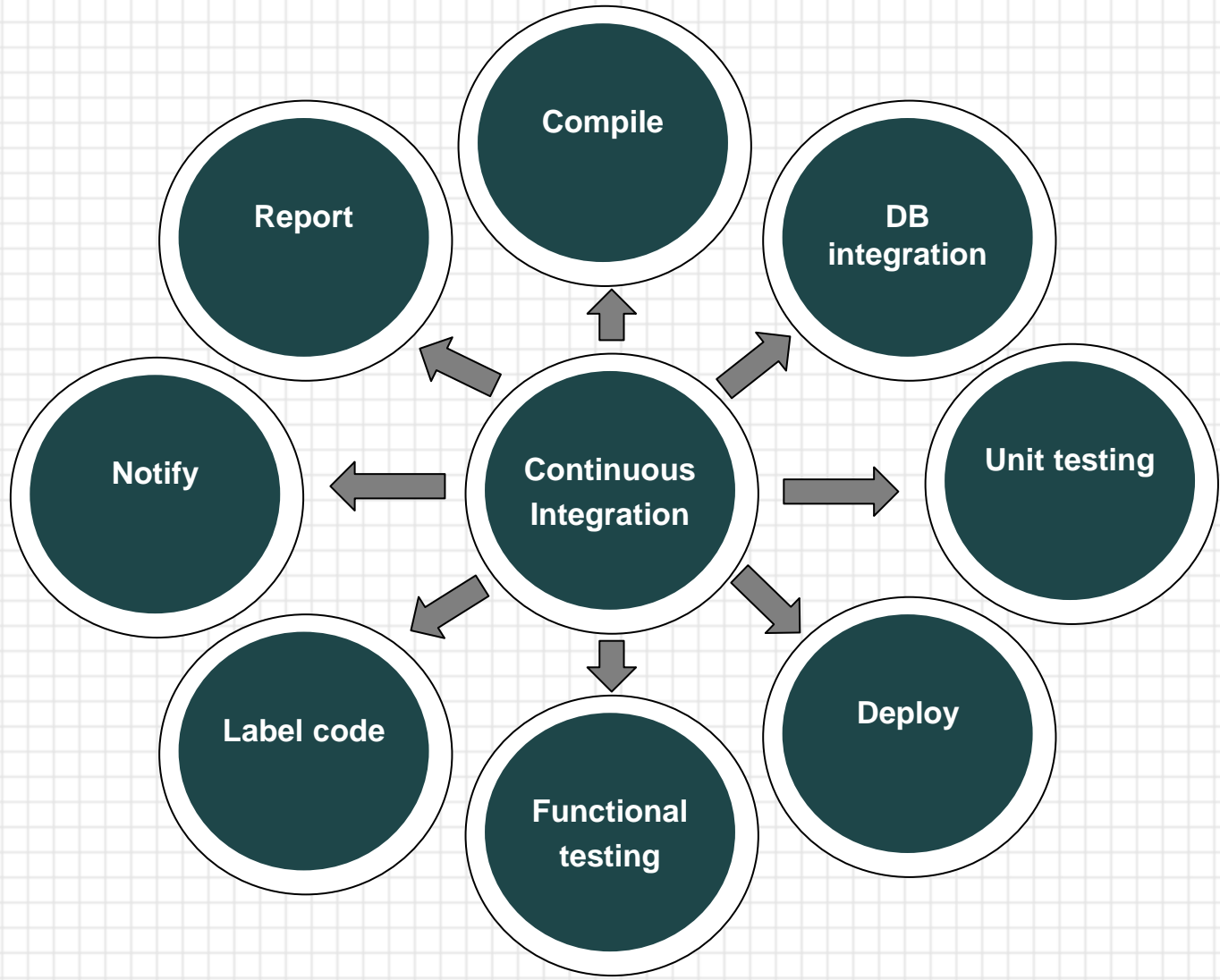
- **Integration problems**
- **Defects are detected very late**
- **Test execution and maintaining**
- **Relevance of testing environment**
- ...



- **CI is a development practice that requires developers/testers to integrate their work frequently into a shared repository several times a day.**
- **Each integration is performed by automated build**



Project Managers



Agile Developers



## Award-winning application that monitors executions of repeated jobs:

- Building/testing software projects continuously
- Monitoring executions of externally-run jobs

The screenshot displays the Jenkins web interface. On the left, there is a navigation menu with options: New Job, Manage Jenkins, People, Build History, Redmine, and My Views. Below the menu are sections for 'Build Queue' (showing 'No builds in the queue.') and 'Build Executor Status' (showing two executors in an 'Idle' state).

The main content area shows a table of jobs with the following columns: S, W, Job, Last Success, Last Failure, and Last Duration. The jobs listed are Project B, Project A, and Project C.

S	W	Job	Last Success	Last Failure	Last Duration
		<a href="#">Project B</a>	1 hr (#26)	2 hr (#24)	18 sec
		<a href="#">Project A</a>	1 mo 5 days (#31)	3 hr (#25)	4.2 sec
		<a href="#">Project C</a>	28 days (#32)	3 mo 0 days (#23)	3.5 sec

Below the table, there is a legend for RSS feeds: 'for all', 'for failures', and 'for just latest builds'. The footer of the page indicates 'Page generated: Jun 22, 2011 9:04:00 AM' and 'jenkins ver. 1.399'.

- **2005 – Hudson was first released by Kohsuke Kawaguchi of Sun Microsystems.**
- **2010 – Oracle bought Sun Microsystems**
  - **Due to a naming dispute, Hudson was renamed to Jenkins**
  - **Oracle continued development of Hudson (as a branch of the original)**





- **Easy install, upgrade and configure.**
- **Check out source code:**
  - CVS, Subversion, ClearCase, Mercurial, Accurev, Perforce, Git...
- **Do builds:**
  - Ant, Maven, shell script, NAnt, ..
- **Record and publish results.**
- **HTTP API.**
- **Tools integration:**
  - Findbugs, cobertura, emma, ...
- **Plugin support, update center, 400+ plugins**
- **Groovy script console, cli**

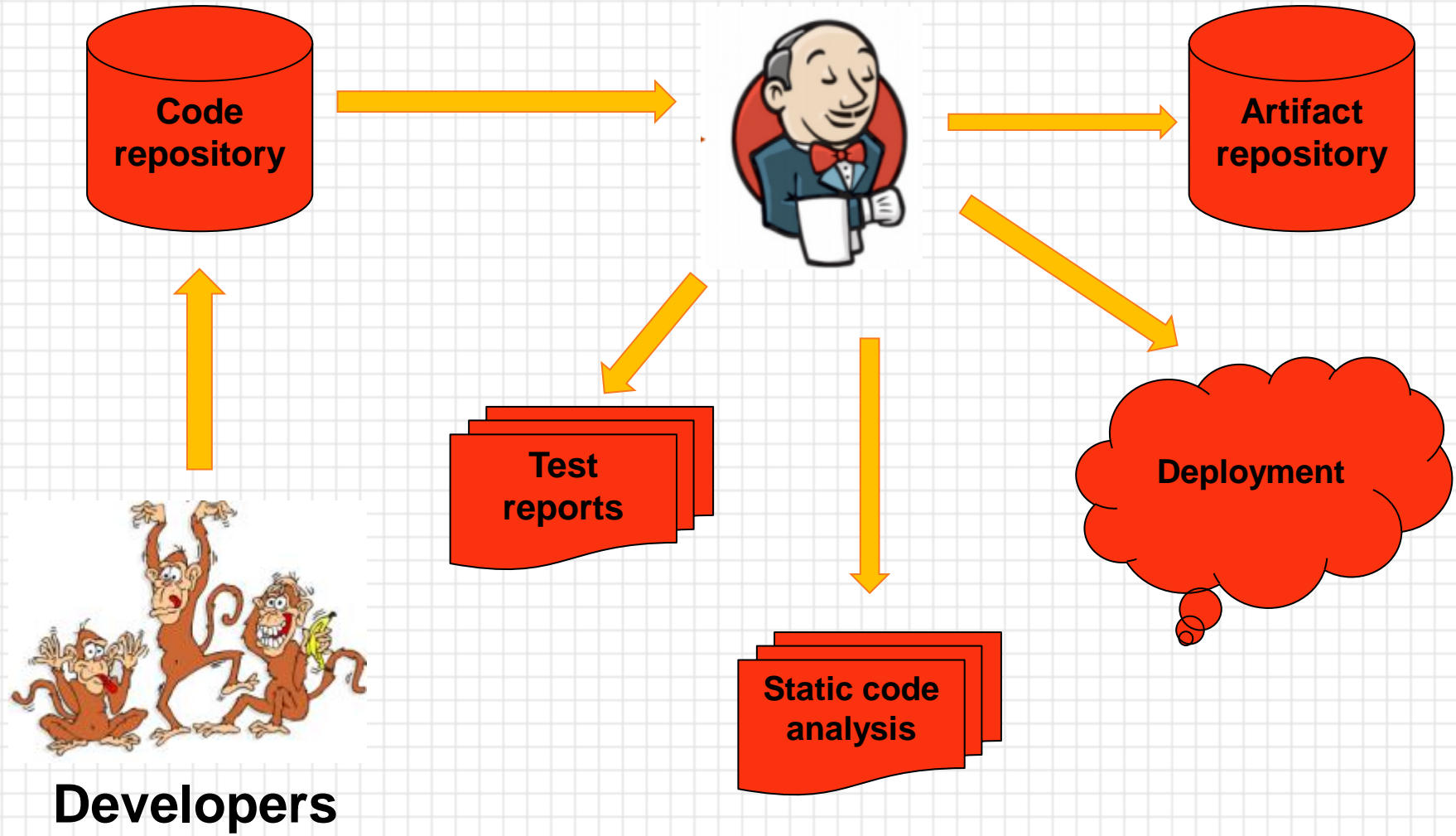


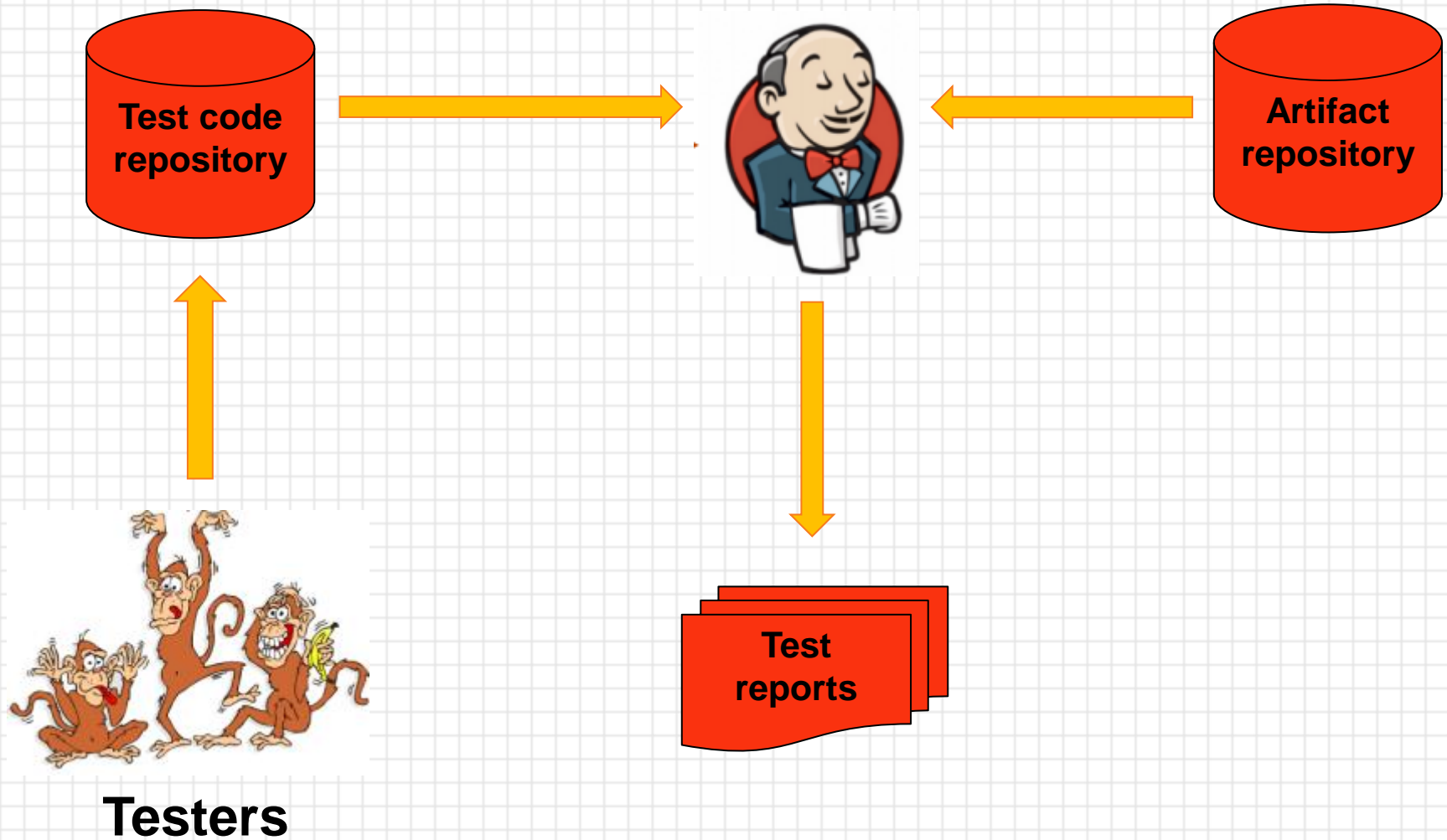
- **Authentication: LDAP, AD, OpenID, SQL,...**
- **Trac, GitHub, Jira, Remine: trackers**
- **Selenium, Sauce, Windmill: functional, click testing**
- **Libvert, VirtualBox, Vmware: test in VM**
- **Xvnc: UI testing**
- **Android emulation**
- **...**
- **You can extend Jenkins by yourself**



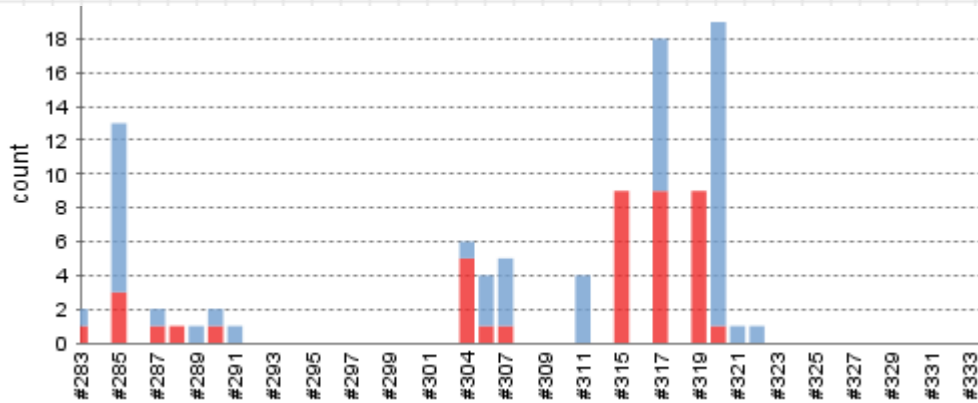


- **Master + slave nodes**
- **Start Master-only, add slaves later**
- **Slaves launched by ssh, WMI+DCOM custom script, Java Web Start(JNLP)**
- **Slaves can be on different platforms**
- **Allows build/testing on different OS**

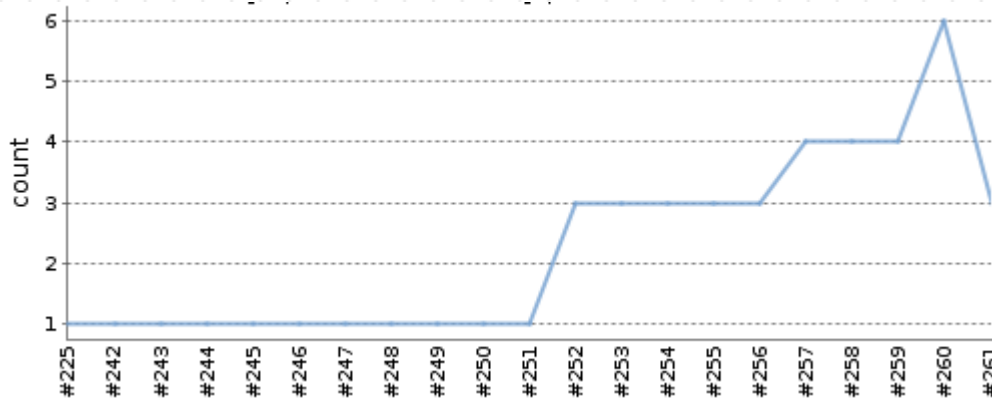




- **New and fixed warnings per build, fixed in blue, new in red**



- **Total number of warnings (with auto scaled range)**



- Warnings and source code visualization

```

0774         this.setButtonResetEnable(true);
0775         break;
0776     case STATUS_INPUT_VALID:
0777         this.setTreeViewEnable(true);
0778         this.setInputParameterEnable(true);
0779         this.setOutputParameterEnable(true);
0780         this.setButtonExecuteEnable(true);
0781         this.setButtonResetEnable(true);
0782         break;
0783     case STATUS_EXECUTED_FAILURE:
0784     case STATUS_EXECUTED_SUCCESS:
0785         this.setTreeViewEnable(true);
0786         this.setInputParameterEnable(true);
0787         this.setOutputParameterEnable(true);
0788         this.setButtonExecuteEnable(true);
0789         this.setButtonResetEnable(true);
0790         break;
0791     case STATUS_READY_FOR_USER_INPUT:

```

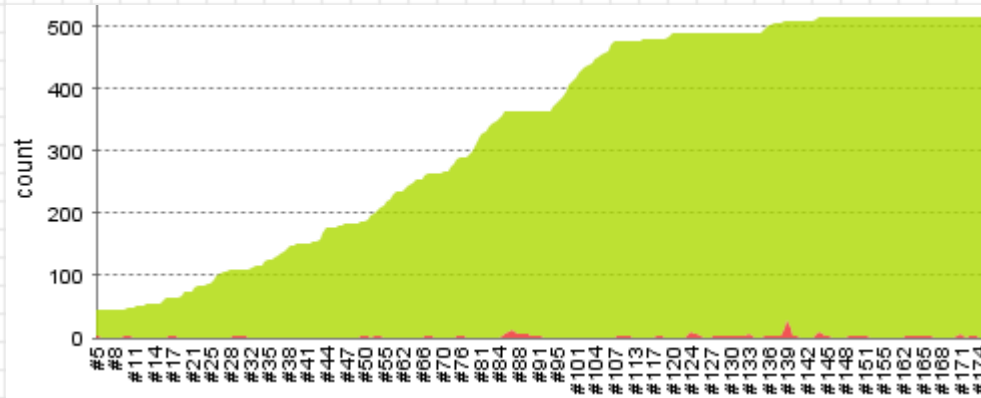
DB: Method com.avaaloq.adt.actioncall.presentationmodel.GenericActionCallModel.setStatus(int) uses the same code for two  
 This method uses the same code to implement two clauses of a switch statement. This could be a case of duplicate code, bu

```

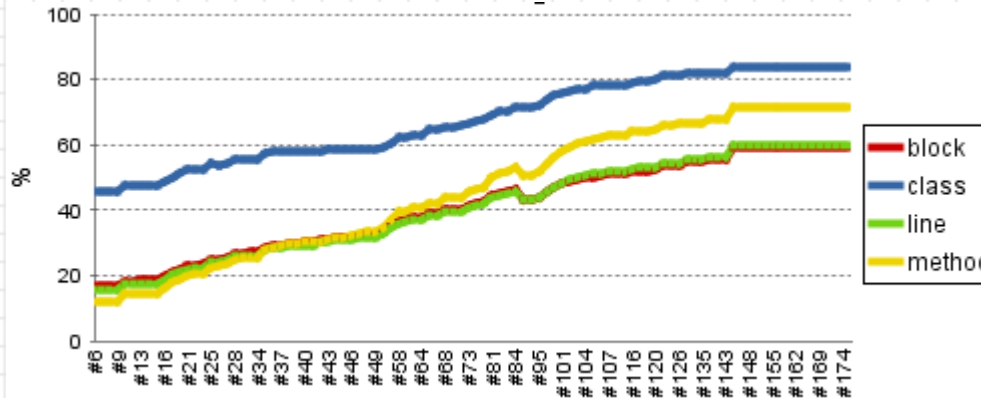
0796         Assert.fail("Status not defined.");
0797     }
0798
0799     // provide the status to the view

```

- **Test result trend**



- **Code coverage trend**

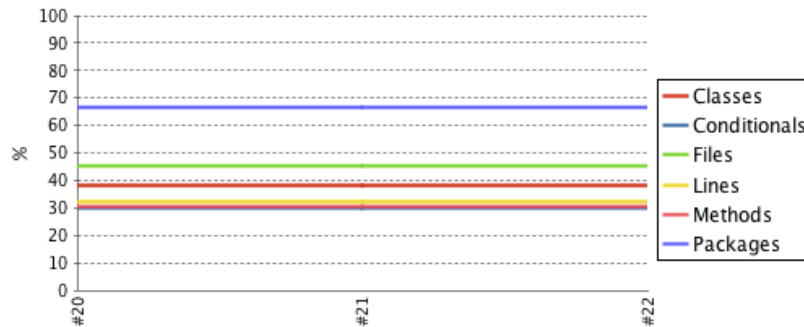










## Code Coverage

### Cobertura Coverage Report





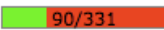



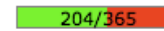
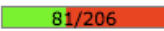



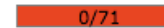

#### Trend

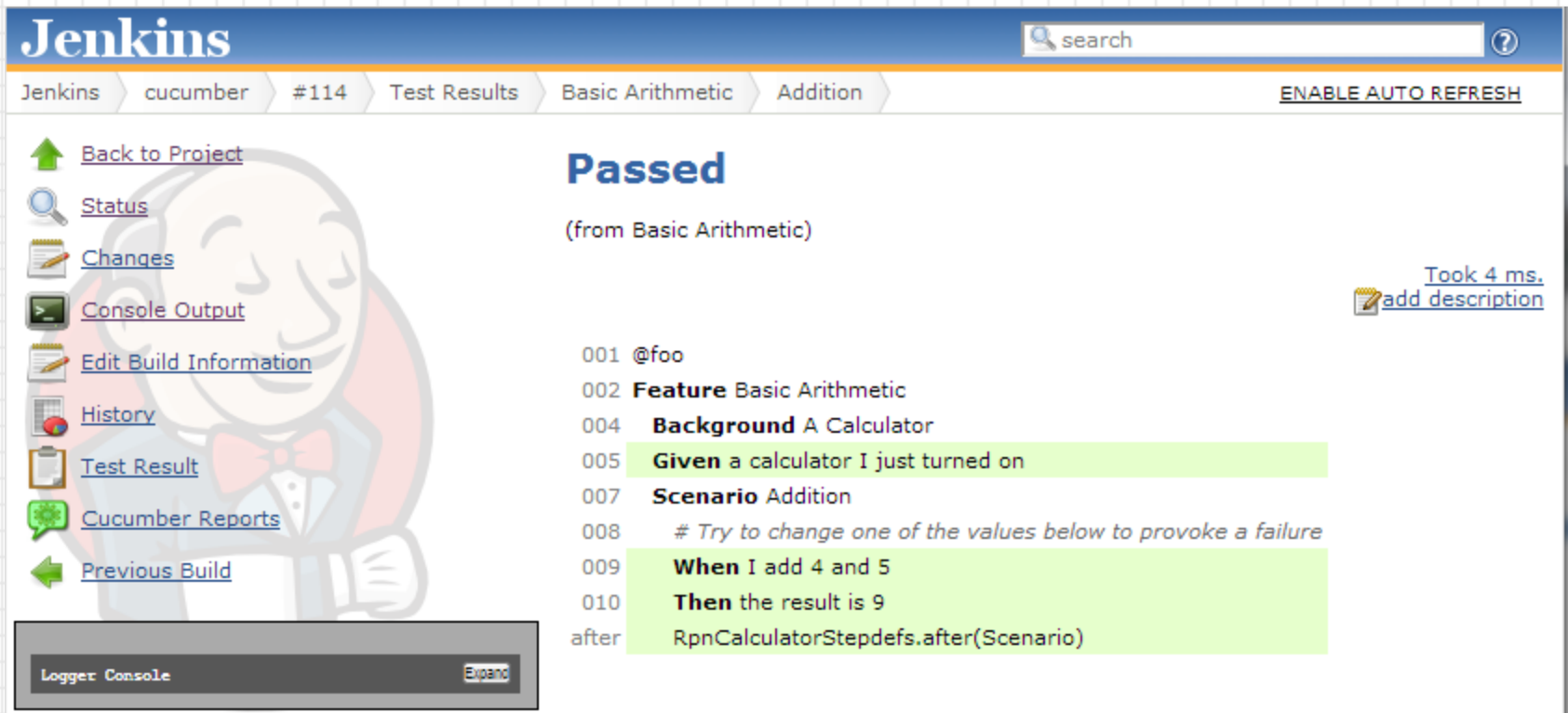


#### Project Coverage Summary

Name	Packages	Files	Classes	Methods	Lines	Conditionals
Cobertura Coverage Report	67% 	45% 	38% 	30% 	32% 	30% 

#### Coverage Breakdown by Package

Name	Files	Classes	Methods	Lines	Conditionals
<a href="#">hudson.plugins.cobertura</a>	18% 	16% 	15% 	23% 	27% 
<a href="#">hudson.plugins.cobertura.targets</a>	88% 	89% 	58% 	56% 	39% 
<a href="#">hudson.plugins.cobertura.renderers</a>	0% 	0% 	0% 	0% 	0% 



The screenshot shows the Jenkins web interface for a Cucumber test report. The breadcrumb navigation is: Jenkins > cucumber > #114 > Test Results > Basic Arithmetic > Addition. The main heading is "Passed" (from Basic Arithmetic). The test execution details are as follows:

- 001 @foo
- 002 **Feature** Basic Arithmetic
- 004 **Background** A Calculator
- 005 **Given** a calculator I just turned on
- 007 **Scenario** Addition
- 008 *# Try to change one of the values below to provoke a failure*
- 009 **When** I add 4 and 5
- 010 **Then** the result is 9
- after RpnCalculatorStepdefs.after(Scenario)

Additional information: Took 4 ms. [add description](#)

Left sidebar navigation: [Back to Project](#), [Status](#), [Changes](#), [Console Output](#), [Edit Build Information](#), [History](#), [Test Result](#), [Cucumber Reports](#), [Previous Build](#)

Bottom left: [Logger Console](#) [Expand](#)

- **Email-ext plugin usage**

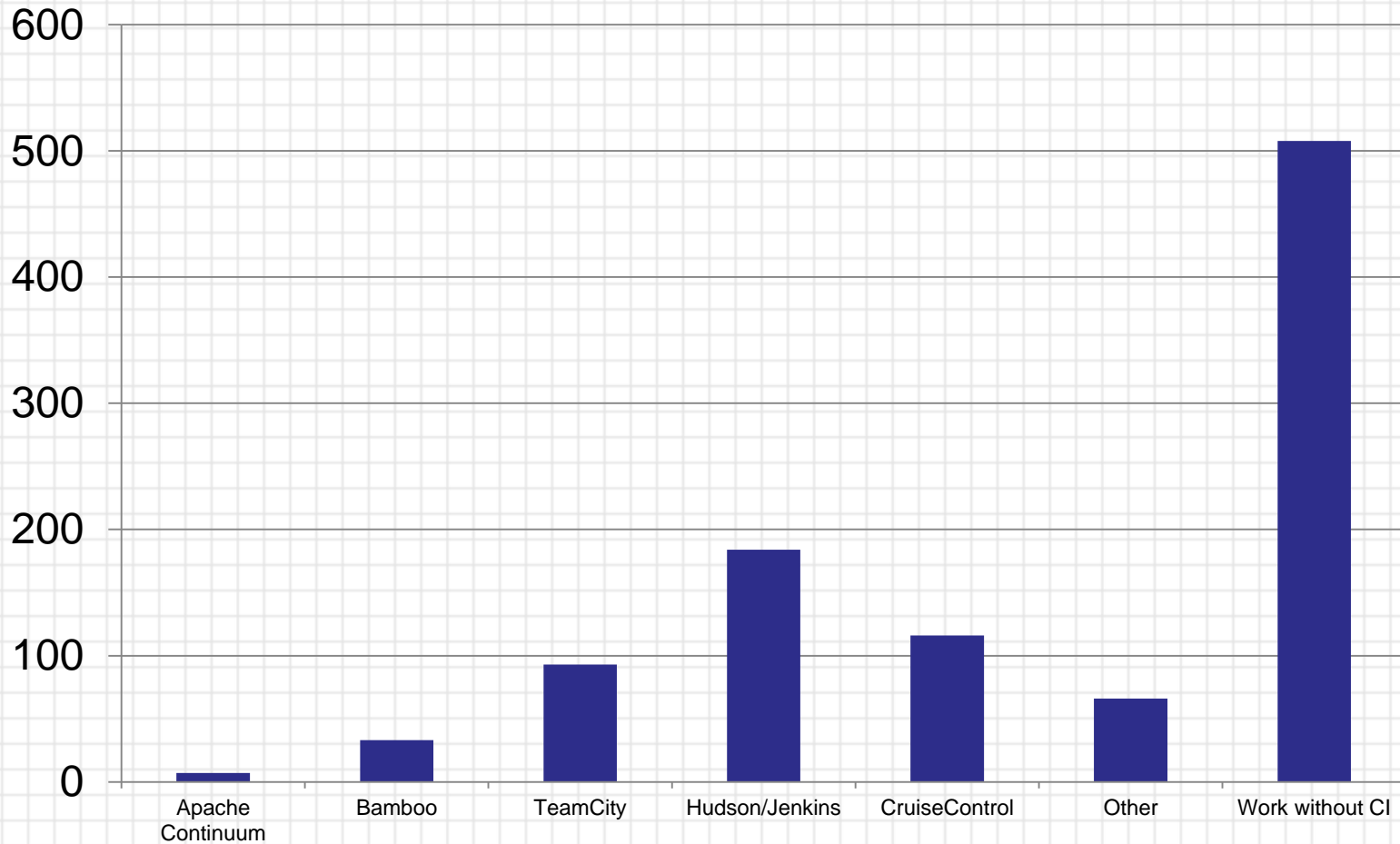
## Failed jobs 40(124) - 32.3% :

Test Case Name	Delta	Count	Notes
RS-Net-Test-Webmedia			Detected execution problems
RS-Net-Test-Outbound	1 / +1	285	
RS-Net-Test-Configuration	2 / -1	429	
RS-Java-Test-Webmedia	79 / ±0	97	High failure probability (44.9) %
RS-Java-Test-Voice	4 / ±0	413	
RS-Java-Test-Routing	1 / +1	174	
RS-Java-Test-Reporting	2 / +2	164	
RS-Java-Test-Openmedia	2 / ±0	153	
RS-Java-Test-Management	123 / +122	110	High failure probability (52.8) %
RS-Java-Test-Logging	1 / ±0	122	
RS-Java-Test-Contacts	1 / ±0	505	
RS-Java-Test-COM	3 / ±0	197	
RS-Java-Test-AppTemplate	2 / ±0	85	
RS-Java-LinuxRH54x64-Webmedia	79 / ±0	97	High failure probability (44.9) %
RS-Java-LinuxRH54x64-WarmStandby	1 / ±0	14	
RS-Java-LinuxRH54x64-Voice	2 / ±0	415	
RS-Java-LinuxRH54x64-Openmedia	103 / ±0	52	High failure probability (66.5) %
RS-Java-LinuxRH54x64-Management	0 / ±0	63	



and much more...

- ✓ **Good file configuration structure**
- ✓ **Fully customizable using web UI**
- ✓ **Completely free**
- ✓ **Quick critical bug fixing**
- ✓ **It's easy to write plugins**
  
- × **New version produces new defects**
- × **Downgrade troubles**
- × **Configuration effort**



Free voting at [habrahabr.ru](http://habrahabr.ru): 1007

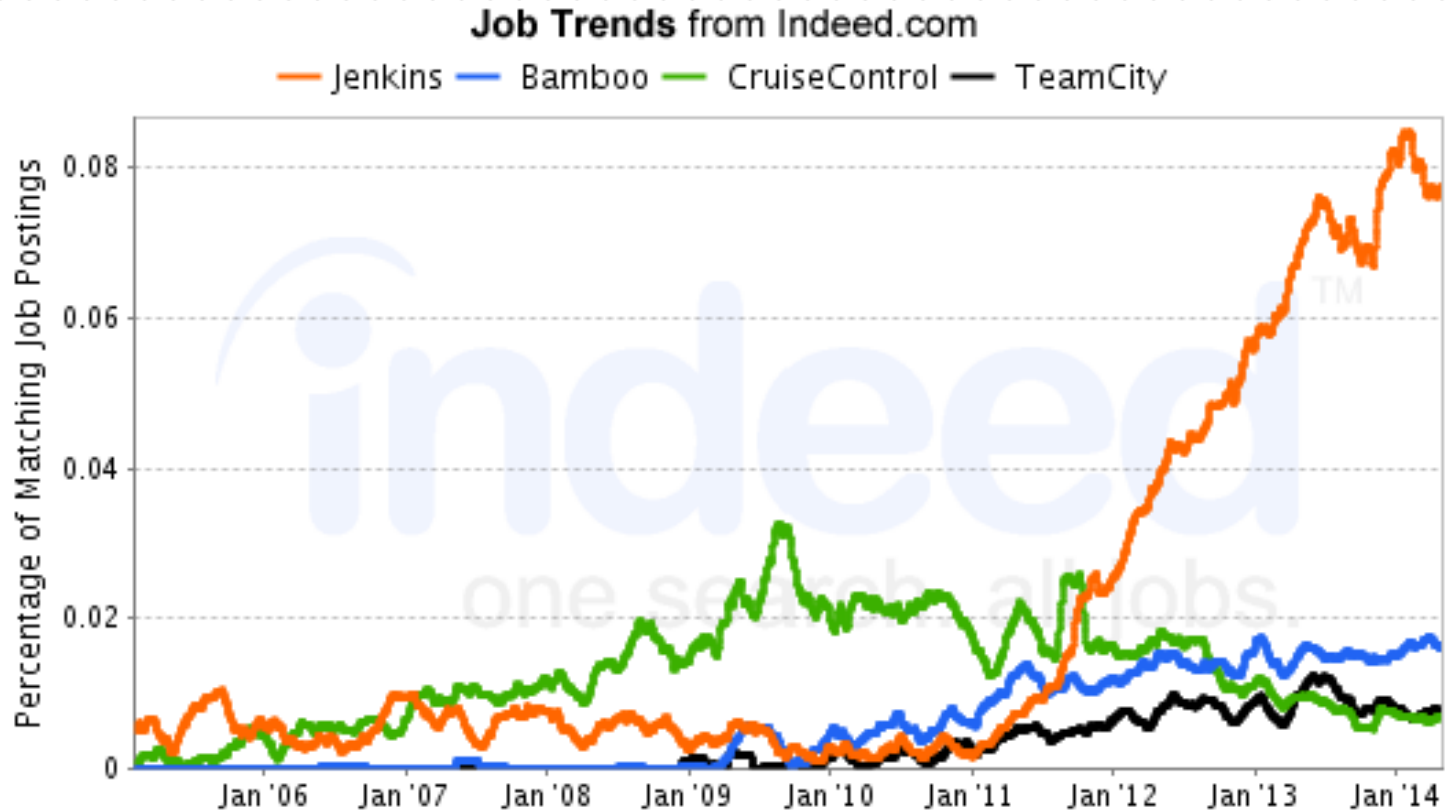


## Companies:

- **Avid**
- **Ebay**
- **Motorola**
- **Mobility(Google)**
- **Yahoo!**
- **GitHub**
- ...

## Open Source Projects:

- **Apache**
- **Jboss**
- **Ubuntu**
- **OpenSUSE**
- **Mozilla**
- **RH Openshift**
- **Jenkins**
- ...



Searching a job on [Indeed.com](https://www.indeed.com)



- <http://jenkins-ci.org/>
- <https://wiki.jenkins-ci.org/display/JENKINS/Plugins>
- <https://github.com/jenkinsci>
- [http://en.wikipedia.org/wiki/Comparison\\_of\\_continuous\\_integration\\_software](http://en.wikipedia.org/wiki/Comparison_of_continuous_integration_software)
  
- **K. Kawaguchi. 7 Ways to Optimize Jenkins/Hudson White Paper**  
<http://www.cloudbees.com/sites/default/files/whitepapers/7WaysToOptimizeJenkins.pdf>
- **O'Reilly. Jenkins: The Definitive Guide, 2011**  
<http://it-ebooks.info/book/576/>

