

Contextual Pipeline Feedback in CloudBees CI

Slack/Microsoft Teams/GitHub/Bitbucket

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WORLD**
by CloudBees

What we'll talk about today

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Agenda

- Where we started off
- There must be a better way
- Slack: Our first baby
- Meet the rest of the family
- Demo time
- Moving forward

Where we started off

An impersonal view of the world



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Where we started off

- Build Status Notifications

- Very little detail
- Shared notification channel
- Go to Master to find real issue



This pull request is still a work in progress

Only those with [write access](#) to this repository can mark a draft pull request as ready for review.



All checks have failed

1 errored check

[Hide all checks](#)



continuous-integration/jenkins/pr-merge — This commit cannot be built

[Details](#)

Why was this a problem?

- Shared Notification Channels

- High Signal to Noise ratio
- I don't care about my teammates' builds...
- Ignore or Mark All Read!



CloudBeesBot APP 12:03

UNSTABLE: Hey your [PR](#) to Core on Traditional Platforms » Plugins » Others » cloudbees-github-reporting-plugin » PR-22 #2 has test failures.
I guess you tried YOLO mode and got caught out.
Go to the [test report](#) to see the test failure details.



CloudBeesBot APP 12:13

WOOT: Hey your [PR](#) to Core on Traditional Platforms » Plugins » Others » cloudbees-github-reporting-plugin » PR-22 #3 has passed.
You rock, now pester someone to review it and shipit!



CloudBeesBot APP 19:10

WOOT: Hey your [PR](#) to Core on Traditional Platforms » Plugins » Others » cloudbees-github-reporting-plugin » PR-27 #1 has passed.
You rock, now pester someone to review it and shipit!

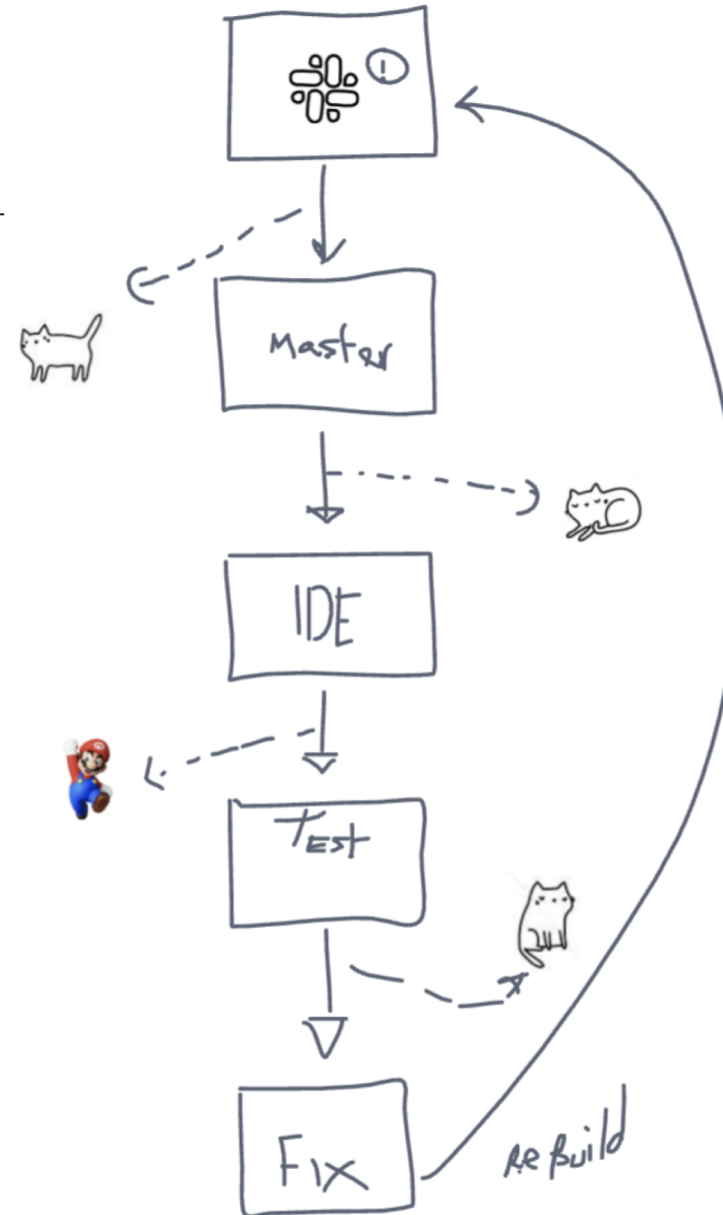


CloudBeesBot APP 23:06

FAILURE: Hey your [PR](#) to Core on Traditional Platforms » Plugins » Others » nectar-rbac-plugin » PR-101 #3 failed.
Go [here](#) to get more details and brush up your coding skills.

Why was this a problem?

- Lack of Detail / Master as source of truth
 - My build failed again???
 - Why?
 - Open Master
 - I ended up doing something else...
 - Let's start again
- This can be a slow and tedious loop



Of course you could build your own solution...

- Create a shared library or code snippet
- Test / Debug / Maintain
- Modify all of your pipelines to use it

```
121     post {
122         failure {
123             // https://issues.jenkins-ci.org/browse/JENKINS-42688
124             script {
125                 if (env.CHANGE_ID == null) {
126                     slackSend color: 'danger', channel: SLACK_CHANNEL, tokenCredentialId: 'cloudbees-slack-bot',
127                             message: "FAILURE: ${currentBuild.fullDisplayName}\nClick <${RUN_DISPLAY_URL}|here> to get more details."
128                 } else {
129                     String slackId = getSlackIdFromPRAuthorName()
130                     if (slackId != null) {
131                         slackSend color: 'danger', channel: "@${slackId}", tokenCredentialId: 'cloudbees-slack-bot',
132                                 message: """"FAILURE: Hey your <${CHANGE_URL}|PR> to ${currentBuild.fullDisplayName} failed.
133 Go <${RUN_DISPLAY_URL}|here> to get more details and brush up your coding skills.""
134                     }
135                 }
136             }
137         }
138     }
```


There must be a better way...

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Requirements for Success

- Make it personal
 - Direct Messages over Shared Notification Channels
 - Easy to configure and customize notifications



Requirements for Success

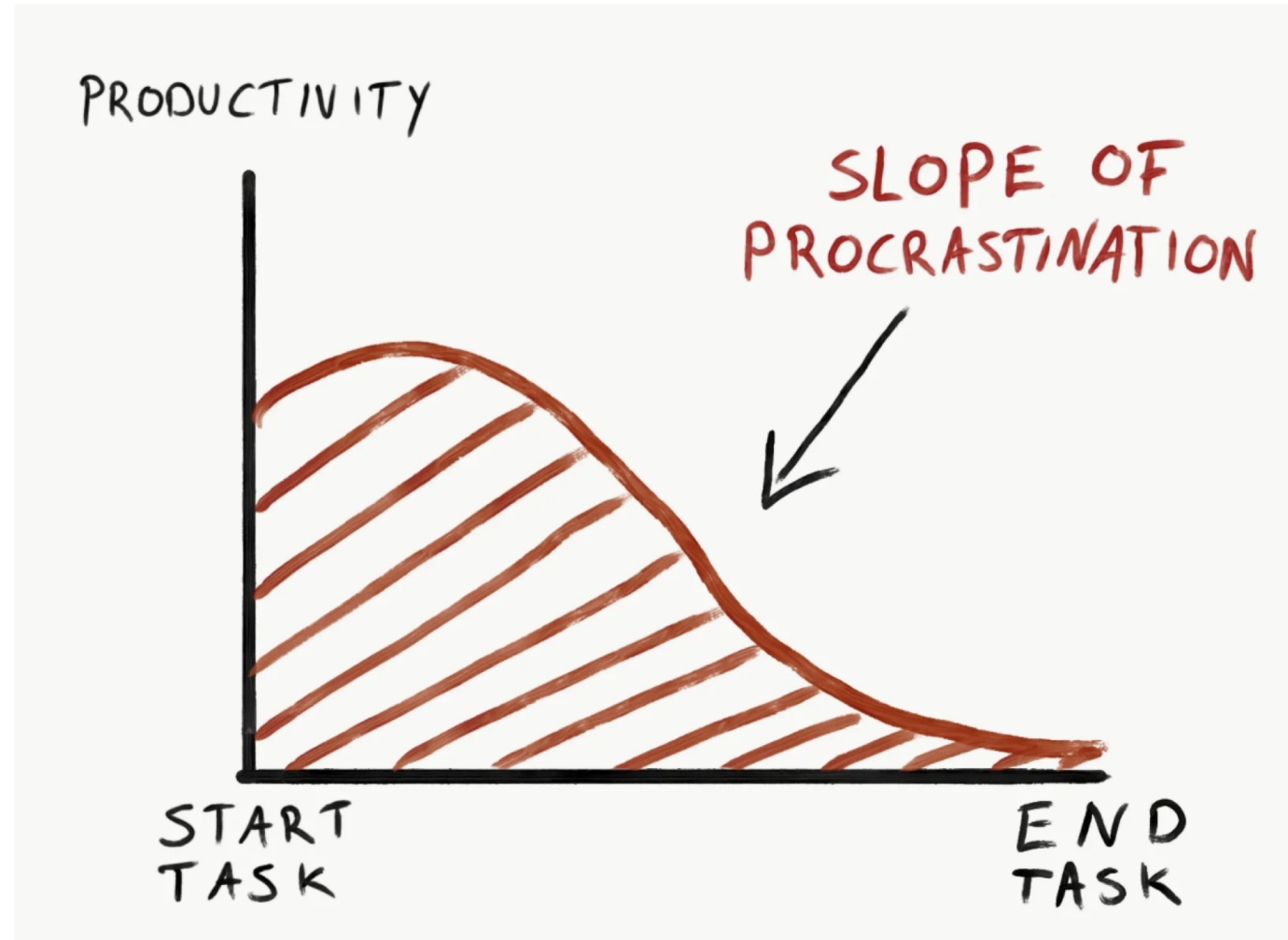
- Make it relevant
 - Accurate status information
 - Detailed information about what went wrong



Requirements for Success

- Reduce Context Switching

- Remove need to go to Master to find out what went wrong
- Name the line of code that broke the build



Requirements for Success

- No Pipeline Changes
 - No pipeline changes required to make it work
 - Easy and opinionated setup





Our first baby...

Personalized Slack Messaging

Actionable build status sent directly to the PR Author

- Direct Slack message
- Status followed by full details
- Next action is clear

7:00 Hi, 🙌 Build #1 has just finished.

beelive

PR#4 Update doSomething Method

⚠️ **Build unstable**

[Go to Build](#)

Provide feedback about the [CloudBees CI App](#)

Test results ❌

1 failed out of 1, 0 were skipped

- [com.cloudbees.demo.AppTest.test_fail](#)

[Go to Full Report](#)

SpotBugs Warnings ⚠️

Analysis with warnings

i Low Severity

- [App.java:9: RV_RETURN_VALUE_IGNORED](#)

Return value of String.equals(Object) ignored in com.cloudbees.demo.App.doSomething()

[Go to Full Report](#)

Detailed Information

Notifications about the status of your build containing:

- Build Status
- Reason for failures with links to more detailed information from:
 - Warnings NG
 - JUnit
 - Pipeline Policies

SpotBugs Warnings

SpotBugs analysis Failed.

Low Severity

NP_LOAD_OF_KNOWN_NULL_VALUE

Load of known null value in
com.example.demo.DemoApplication.someMethod

- [DemoApplication.java:16:](#)

Normal Severity

NP_LOAD_OF_KNOWN_NULL_VALUE

Load of known null value in
com.example.demo.DemoApplication.someMethod

- [DemoApplication.java:16:](#)

[Go to Full Report](#)

Java Warnings

Inactive

Test Results

1 failed out of 2, and 0 were skipped.

- [com.example.james.demo.DemoApplicationTests.fail](#)

- [com.example.james.demo.DemoApplicationTests.other](#)

[See All Executions](#)

CloudBees Internal Process

- One of the most heavily dog fooded features at CloudBees.
- Used Continuous Delivery to continually upload new versions of the plugin to our own internal masters after each PR.
- Huge amount of internal feedback.



GitHub, Microsoft Teams & Bitbucket

Meet the rest of the family



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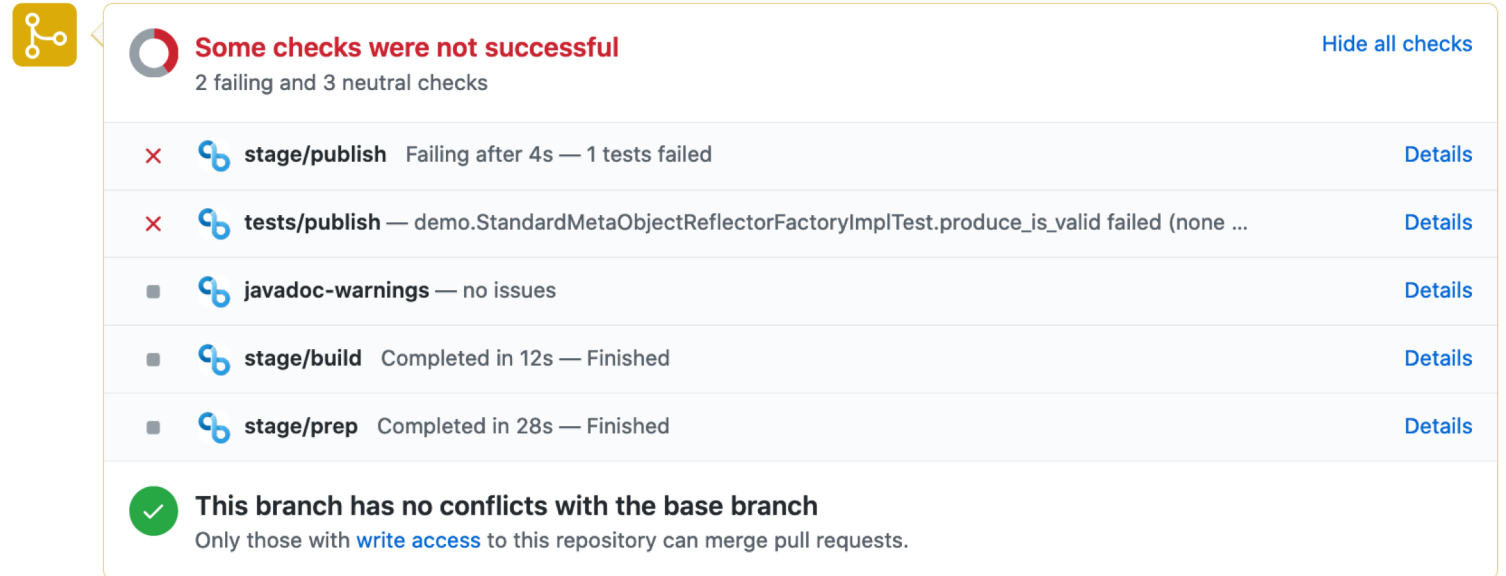
Next Steps

- GitHub
- Microsoft Teams
- Bitbucket



GitHub

- GitHub integration based on GitHub Checks API
- Real-time stage updates
- GitHub is a permanent record with permalinks to the results
- GitHub.com & GitHub Enterprise



A screenshot of the GitHub Checks API status panel. It features a yellow icon with a branching diagram on the left. The main panel has a header with a red circle icon, the text "Some checks were not successful", and a link "Hide all checks". Below the header, it states "2 failing and 3 neutral checks". The panel lists five checks in a table-like format, each with a status icon, a check name, a description, and a "Details" link.

Status	Check Name	Description	Action
✗	stage/publish	Failing after 4s — 1 tests failed	Details
✗	tests/publish	demo.StandardMetaObjectReflectorFactoryImplTest.produce_is_valid failed (none ...	Details
■	javadoc-warnings	no issues	Details
■	stage/build	Completed in 12s — Finished	Details
■	stage/prep	Completed in 28s — Finished	Details

At the bottom, a green checkmark icon is followed by the text: "This branch has no conflicts with the base branch" and "Only those with [write access](#) to this repository can merge pull requests."

Introducing a test failure which makes the build unstable #3

[Open](#) jglick wants to merge 1 commit into `cloudbees-sticky-dev:master` from `jglick:test-failure`[Conversation 0](#) [Commits 1](#) [Checks 5](#) [Files changed 1](#) Introducing a test failure which makes the build unstable 26cacb2

cloudbees-sticky-dev-test

✗ stage/publish

✗ tests/publish

■ javadoc-warnings

■ stage/build

■ stage/prepare

cloudbees-sticky-dev-test / tests/publish
failed 13 hours ago in 0s**demo.StandardMetaObjectReflectorFactoryImplTest.produce_is_valid failed (none passed)**CloudBees SCM Reporting 1.14. [Send us Feedback](#) / [Learn More](#)

DETAILS

demo.StandardMetaObjectReflectorFactoryImplTest.produce_is_valid

should produce something ==> expected: not <null>

▼ Stack trace

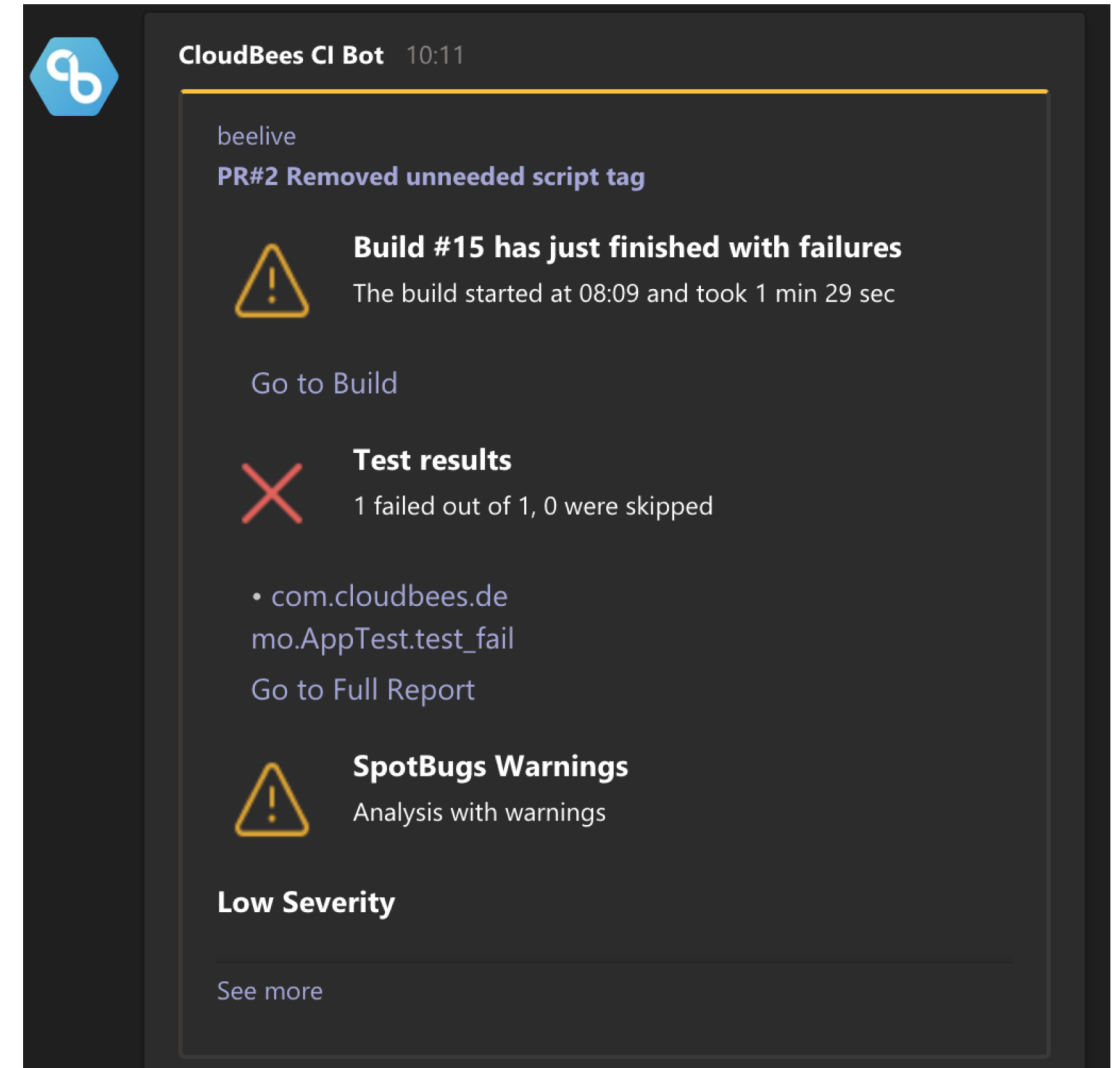
```
org.opentest4j.AssertionFailedError: should produce something ==> expected: not <null>
    at demo.StandardMetaObjectReflectorFactoryImplTest.produce_is_valid(StandardMetaObjectReflectorFactoryImplTest.java:10)
```

▼ Standard error

```
Jul 30, 2020 1:23:23 AM demo.StandardMetaObjectReflectorFactoryImpl <init>
INFO: constructing a standard implementation of the blah blah blah
```

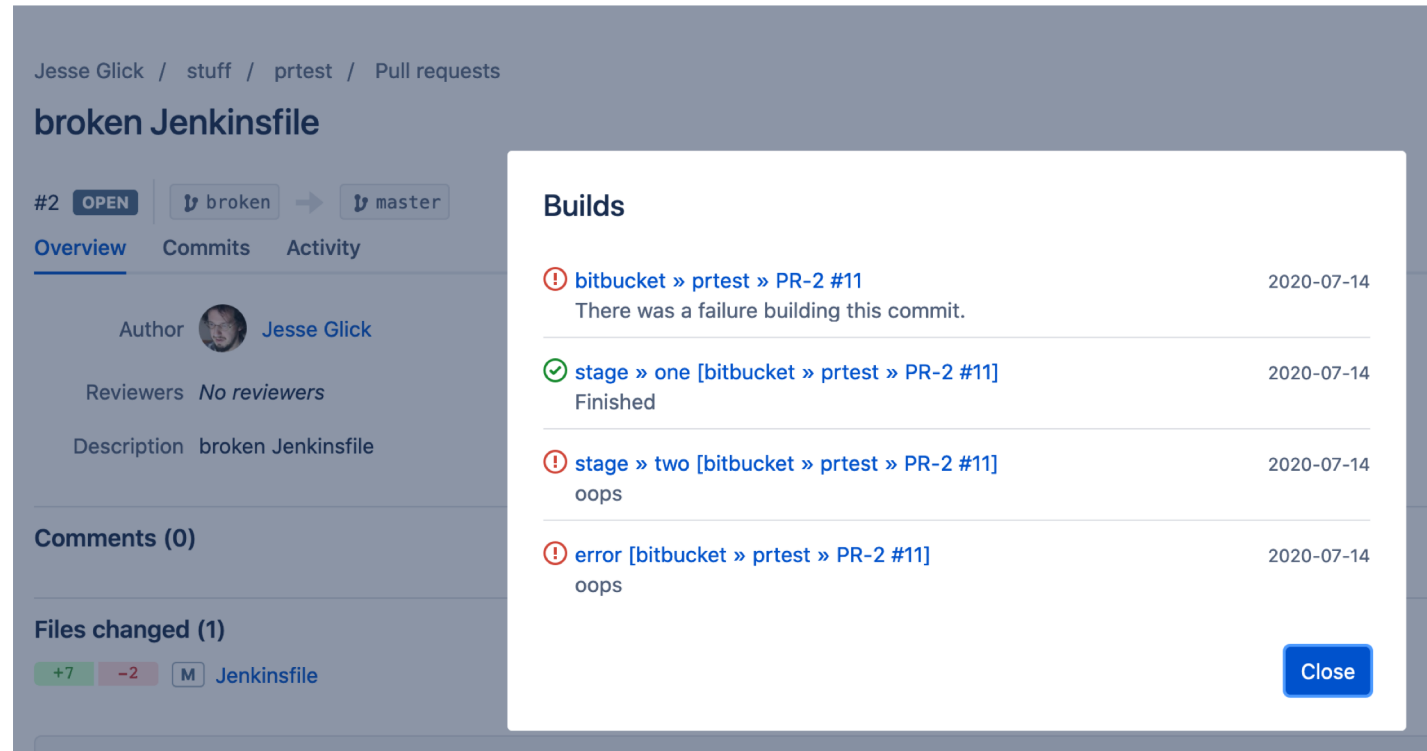

Microsoft Teams

- Microsoft Teams doesn't offer a Direct Messages API
- A virtual private Team is a viable solution



Bitbucket

- Bitbucket doesn't offer an equivalent to the GitHub Checks API.
- Bitbucket Cloud & Bitbucket Server



The screenshot displays a Bitbucket Pull Request interface for a repository named 'stuff' with a pull request titled 'broken Jenkinsfile'. The pull request is in the 'OPEN' state, comparing the 'broken' branch to the 'master' branch. The author is Jesse Glick. The description is 'broken Jenkinsfile'. The 'Builds' section on the right shows a list of build stages and their results:

Build	Status	Timestamp
bitbucket » prtest » PR-2 #11	Failed	2020-07-14
stage » one [bitbucket » prtest » PR-2 #11]	Finished	2020-07-14
stage » two [bitbucket » prtest » PR-2 #11]	Failed	2020-07-14
error [bitbucket » prtest » PR-2 #11]	Failed	2020-07-14

The 'Comments' section shows 0 comments. The 'Files changed' section shows 1 file changed: 'Jenkinsfile' with 7 additions and 2 deletions.

Demo Time

GitHub, Slack & Microsoft Teams



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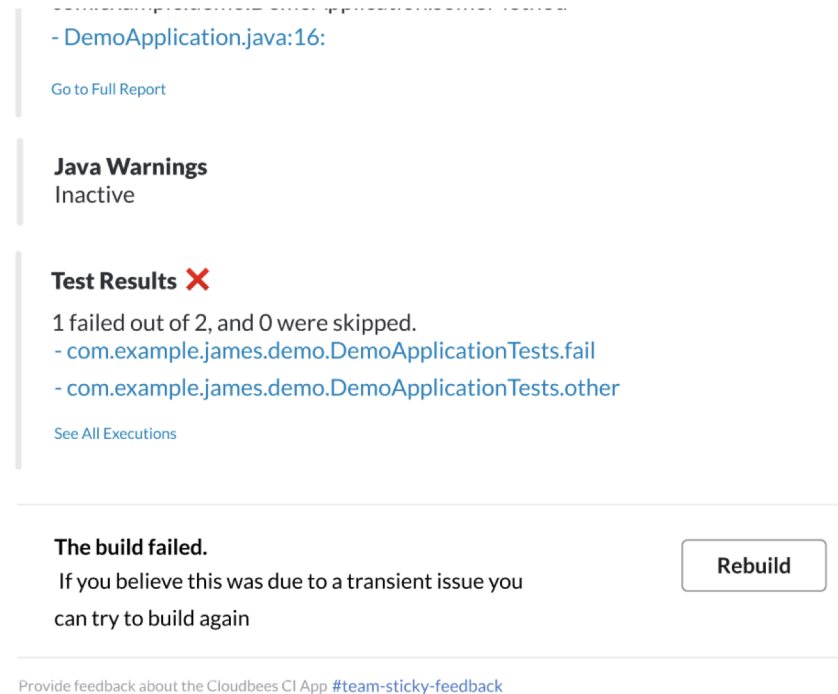
Moving Forward



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Two Way Communication

- ChatOps-like behavior
- Rebuild button
- We are open to other suggested actions



The screenshot displays a CI/CD interface with the following components:

- Build Log:** Shows a failure at `DemoApplication.java:16:` with a link to [Go to Full Report](#).
- Java Warnings:** Indicated as **Inactive**.
- Test Results:** Marked with a red **✗**, showing **1 failed out of 2, and 0 were skipped.** The failed tests are:
 - [- com.example.james.demo.DemoApplicationTests.fail](#)
 - [- com.example.james.demo.DemoApplicationTests.other](#)A link to [See All Executions](#) is provided.
- Build Status:** A message states **The build failed.** and suggests, **If you believe this was due to a transient issue you can try to build again**.
- Action:** A **Rebuild** button is located to the right of the build status message.
- Footer:** A link to [Provide feedback about the Cloudbees CI App #team-sticky-feedback](#).

ChatOps

- Full two way communication
- Use Slack/Teams/GitHub/Bitbucket as a command line for CloudBees CI
- What commands do you want most?

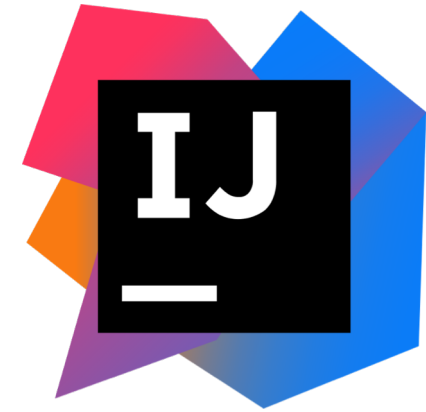


Other Potential End Points

- IDEs
 - Mattermost
 - GitLab
 - ServiceNow
-
- Where do you want to get this information?



Mattermost



Q & A

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Thank You

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