



# DEVOPS PIPELINE

BY

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UNDER THE GUIDANCE OF :

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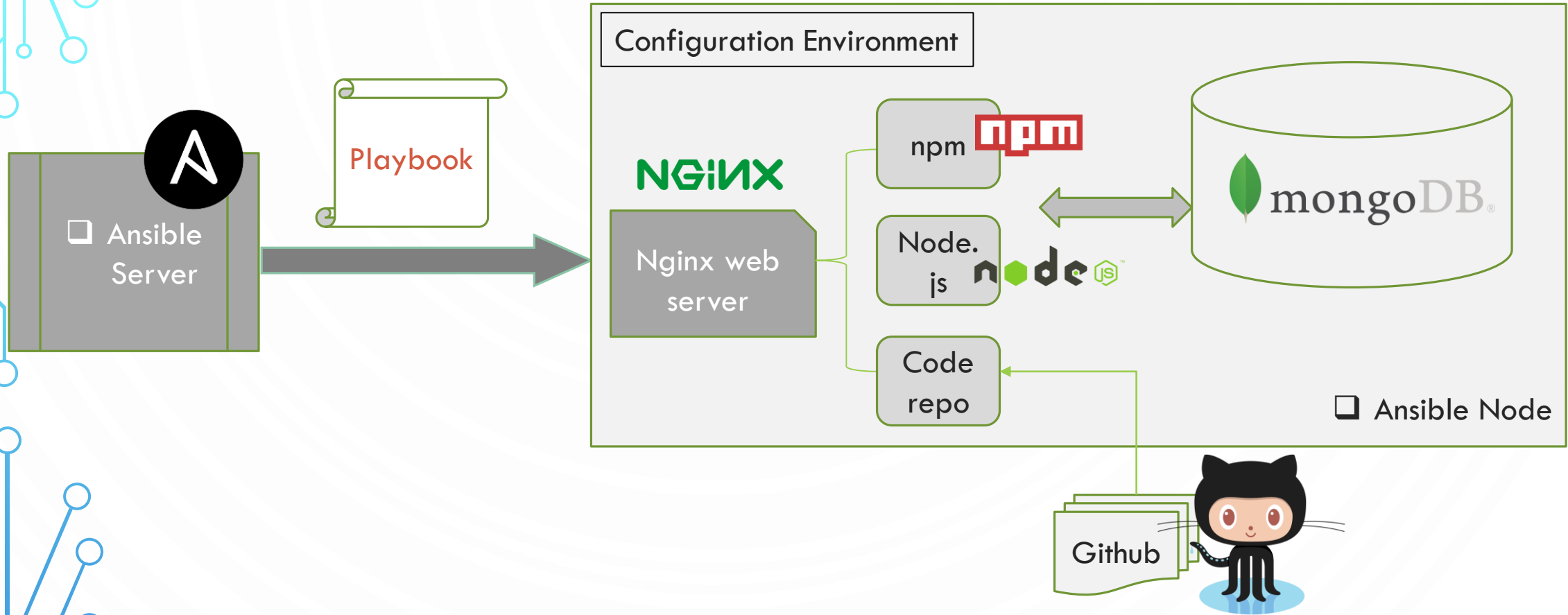
# DEVOPS PIPELINE

Sr	Milestones	Checkbox.io	iTrust
Mile 1	Configuration management	<ul style="list-style-type: none"><li>Configuring the environments</li></ul>	<ul style="list-style-type: none"><li>Configuring the environments</li></ul>
Mile 2	Build, Test & Analysis	<ul style="list-style-type: none"><li>Jenkins build server</li><li>Code analysis</li></ul>	<ul style="list-style-type: none"><li>Jenkins build server</li><li>Test coverage</li><li>Test fuzzer</li><li>Useless test detector</li></ul>
Mile 3	Deploy	<ul style="list-style-type: none"><li>Deployment on AWS EC2 instance</li><li>Load balancer</li><li>Canary Release</li><li>Feature Flag</li></ul>	<ul style="list-style-type: none"><li>Deployment on EC2 instance</li><li>Rolling updates</li></ul>



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# CHECKBOX.IO




checkbox.io

Developers

Researchers


Studies



## Developers

Be heard, get rewarded.


Study participants are eligible for prizes such as Amazon giftcards, BrowserStack memberships, Microsoft Surface RT, Starbucks gift cards, and [more](#).



## Researchers

Host experiments, get results.

Studies can be run in a [linode instance](#) for the lifetime of the study or co-host a node.js service. Studies, such as surveys can be authored in markdown, and results distributed in .json.




## Open science

See data and results.

We are dedicated to sharing and [disseminating science results](#). Participants will be able to see graphs, papers, and blog posts related to research they had participated in.


checkbox.io is a step toward connecting researchers and developers. It is not unlike how psychology departments use a pool of experiments and participants where students can pick studies and earn class credits.

### Host Studies



#### Code Snippet Su

This is an invited study. If you are interested made commits on [github](#) to a C# project invited.

 **Award: Github store swag: Tiered bas**

### Easy surveys

	Read	Write
Blog posts	<input type="checkbox"/>	<input type="checkbox"/>
Stack Overflow	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>

### Include code snippets

```
$(document).ready( function()
{
    ko.applyBindings(new TaskViewModel());


    var converter = new Markdown.Converter();
    document.write(converter.makeHtml("**I am bold**"));
});
```


☐ Choice A

☐ Choice B

☐ Choice C

192.168.33.40/researchers.html

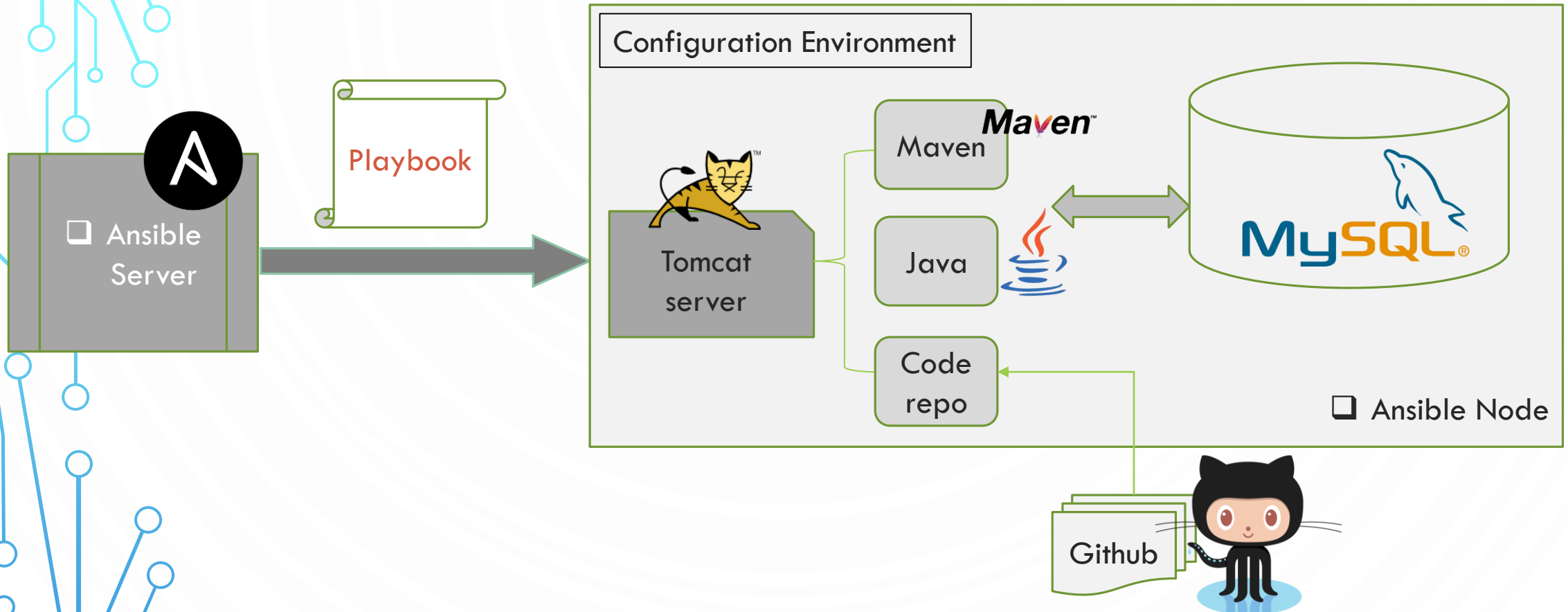
 BrowserStack



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# ITRUST



Password

Login

### Sample Users

Patient 1

### Patient 5

HCP 1

HCP 7

ER

Admin

ObHCP0

OphHCP0

LT 2

### Patient 2

### Patient 22

HCP 3


UAP

PHA

Tester

OptHCP0

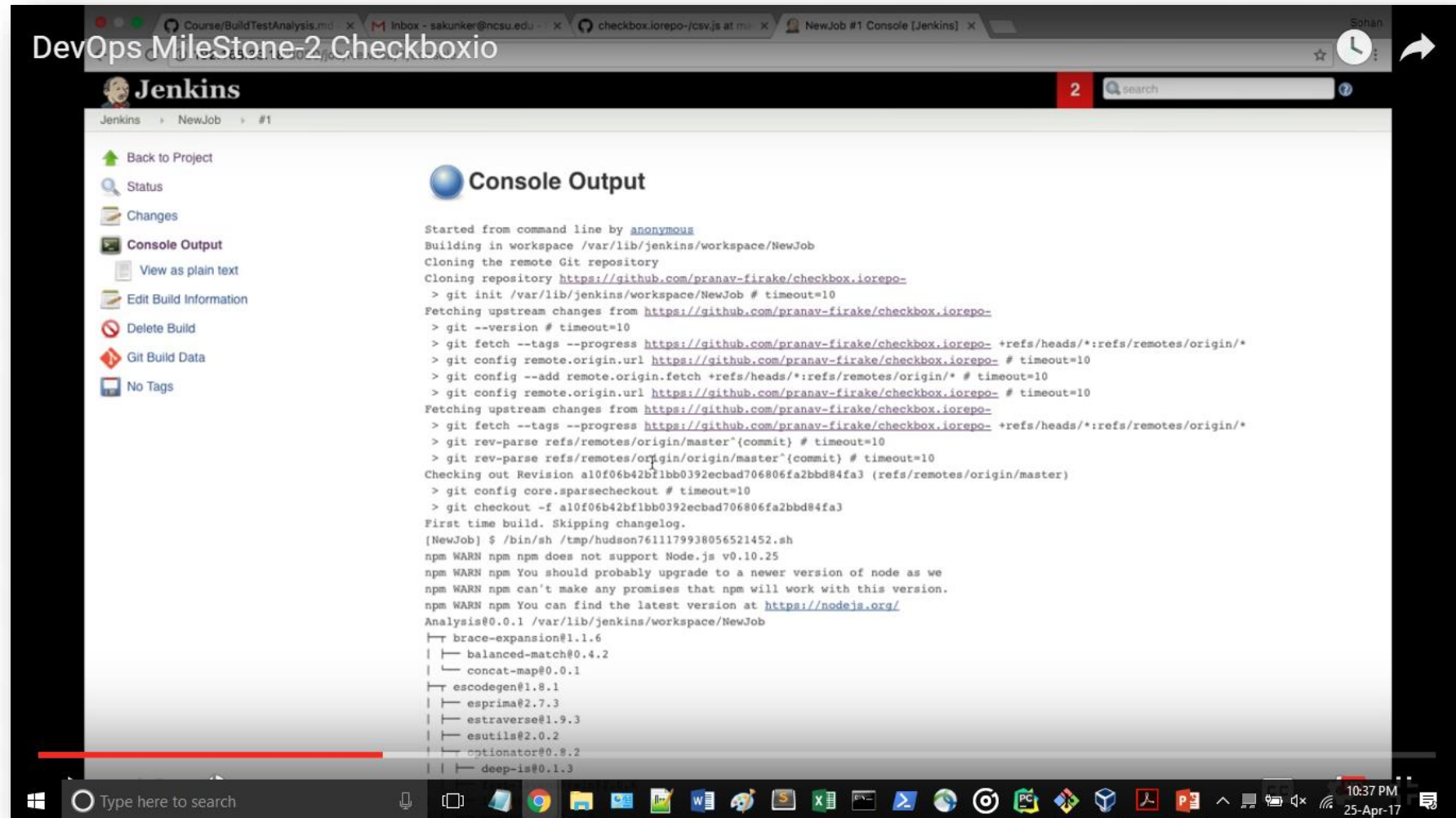




Sr	Milestones	Checkbox.io	iTrust
Mile 2	Build, Test & Analysis	<ul style="list-style-type: none"><li>• Jenkins build server</li><li>• Code analysis</li></ul>	<ul style="list-style-type: none"><li>• Jenkins build server</li><li>• Test coverage</li><li>• Test fuzzer</li><li>• Useless test detector</li></ul>

# CHECKBOX.IO

## - JENKINS BUILD SERVER



The screenshot displays the Jenkins web interface in a browser window. The browser's address bar shows the URL `checkbox.io/repo-jenkins`. The Jenkins page title is "DevOps MileStone-2 Checkboxio". The left sidebar contains navigation links: "Back to Project", "Status", "Changes", "Console Output" (selected), "View as plain text", "Edit Build Information", "Delete Build", "Git Build Data", and "No Tags". The main content area is titled "Console Output" and shows the following text:

```
Started from command line by anonymous
Building in workspace /var/lib/jenkins/workspace/NewJob
Cloning the remote Git repository
Cloning repository https://github.com/pranav-firake/checkbox.io-repo-
> git init /var/lib/jenkins/workspace/NewJob # timeout=10
Fetching upstream changes from https://github.com/pranav-firake/checkbox.io-repo-
> git --version # timeout=10
> git fetch --tags --progress https://github.com/pranav-firake/checkbox.io-repo- +refs/heads/*:refs/remotes/origin/*
> git config remote.origin.url https://github.com/pranav-firake/checkbox.io-repo- # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/pranav-firake/checkbox.io-repo- # timeout=10
Fetching upstream changes from https://github.com/pranav-firake/checkbox.io-repo-
> git fetch --tags --progress https://github.com/pranav-firake/checkbox.io-repo- +refs/heads/*:refs/remotes/origin/*
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision a10f06b42b1bb0392ecbad706806fa2bbd84fa3 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f a10f06b42b1bb0392ecbad706806fa2bbd84fa3
First time build. Skipping changelog.
[NewJob] $ /bin/sh /tmp/hudson7611179938056521452.sh
npm WARN npm npm does not support Node.js v0.10.25
npm WARN npm You should probably upgrade to a newer version of node as we
npm WARN npm can't make any promises that npm will work with this version.
npm WARN npm You can find the latest version at https://nodejs.org/
Analysis@0.0.1 /var/lib/jenkins/workspace/NewJob
├─ brace-expansion@1.1.6
├─ balanced-match@0.4.2
├─ concat-map@0.0.1
├─ escodegen@1.8.1
├─ esprima@2.7.3
├─ estraverse@1.9.3
├─ esutils@2.0.2
├─ optionator@0.8.2
└─ deep-is@0.1.3
```

The Windows taskbar at the bottom shows the time as 10:37 PM on 25-Apr-17.

# CHECKBOX.IO

## - CODE ANALYSIS

```
10 //console.log( questionLength );
11
12 for( var i=0; i < items.votes.length; i++ )
13 {
14     var vote = items.votes[i];
15     //for maxconditions > 8
16
17     | if( i==1 || i==2 || i==2 || i==2 || i==2 || i==2 || i==2 || i==2 || i==2 ) {}
18
19
20     var row = [];
21     var questionPos = {};
22     var len = 0;
23     for( var q in questionLength )
24     {
```

### DevOps MileStone-2 Checkboxio

Jenkins


Jenkins > NewJob > #2

- Back to Project
- Status
- Changes
- Console Output
- View as plain text
- Edit Build Information
- Delete Build
- Git Build Data
- No Tags
- Previous Build

### Console Output

```
Started from command line by anonymous
Building in workspace /var/lib/jenkins/workspace/NewJob
> git rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/pranav-firake/checkbox.io-repo- # timeout=10
Fetching upstream changes from https://github.com/pranav-firake/checkbox.io-repo-
> git --version # timeout=10
> git fetch --tags --progress https://github.com/pranav-firake/checkbox.io-repo- +refs/heads/*:refs/remotes/origin/*
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision be147a391e018216697739f035589fb3e901bd15 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f be147a391e018216697739f035589fb3e901bd15
> git rev-list a10f06b42bf1bb0392ecbad706806fa2bbd84fa3 # timeout=10
[NewJob] $ /bin/sh /tmp/hudson5133477863023542289.sh
npm WARN npm npm does not support Node.js v0.10.25
npm WARN npm You should probably upgrade to a newer version of node as we
npm WARN npm can't make any promises that npm will work with this version.
npm WARN npm You can find the latest version at https://nodejs.org/
FileName: ./server-side/site/routes/csv.js      formatJsonAsCSV(): 3
=====
Maximum Conditions: 9    Number of Lines: 77    Big Oh Complexity: 3    Status:Failure
```

```
Build step 'Execute shell' marked build as failure
[CHECKSTYLE] Skipping publisher since build result is FAILURE
Finished: FAILURE
```



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Mile 2	Build, Test & Analysis	<ul style="list-style-type: none"><li>• Jenkins build server</li><li>• Code analysis</li></ul>	<ul style="list-style-type: none"><li>• Jenkins build server</li><li>• Test coverage</li><li>• Test fuzzer</li><li>• Useless test detector</li></ul>

# ITRUST

## - JENKINS BUILD SERVER

Demo for creating Jenkins job for iTrust and Jacoco code coverage, Test suite

Jenkins > buildJob > #1

```
Running edu.ncsu.csc.itrust.unit.HtmlEncoderTest
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.006 sec - in edu.ncsu.csc.itrust.unit.HtmlEncoderTest
Running edu.ncsu.csc.itrust.unit.exception.FormValidationExceptionTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.003 sec - in
edu.ncsu.csc.itrust.unit.exception.FormValidationExceptionTest
Running edu.ncsu.csc.itrust.unit.exception.AddPatientFileExceptionTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.04 sec - in
edu.ncsu.csc.itrust.unit.exception.AddPatientFileExceptionTest
Running edu.ncsu.csc.itrust.unit.ParameterUtilTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0 sec - in edu.ncsu.csc.itrust.unit.ParameterUtilTest
Running edu.ncsu.csc.itrust.logger.TransactionLoggerTest
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.05 sec - in edu.ncsu.csc.itrust.logger.TransactionLoggerTest
Results :
```

Tests run: 1164, Failures: 0, Errors: 0, Skipped: 0

```
[INFO]
[INFO] --- maven-war-plugin:2.6:war (default-war) @ iTrust ---
[INFO] Packaging webapp
[INFO] Assembling webapp [iTrust] in [/var/lib/jenkins/jobs/buildJob/workspace/iTrust/target/iTrust-23.0.0]
[INFO] Processing war project
[INFO] Copying webapp resources [/var/lib/jenkins/jobs/buildJob/workspace/iTrust/WebRoot]
[INFO] Webapp assembled in [1571 msecs]
[INFO] Building war: /var/lib/jenkins/jobs/buildJob/workspace/iTrust/target/iTrust-23.0.0.war
[INFO]
[INFO] --- jacoco-maven-plugin:0.7.8:report (jacoco-site) @ iTrust ---
[INFO] Loading execution data file /var/lib/jenkins/jobs/buildJob/workspace/iTrust/target/jacoco.exec
[INFO] Analyzed bundle 'iTrust' with 305 classes
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 03:14 min
```

# ITRUST

## - TEST COVERAGE









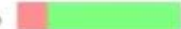





















### Coverage Report

**JACOBO**  
Java Code Coverage

### Overall Coverage Summary

name	instruction	branch	complexity	line	method	class
all classes	66%  M: 24981 C: 48609	42%  M: 4156 C: 3042	47%  M: 3192 C: 2879	84%  M: 1842 C: 9766	87%  M: 307 C: 2132	93%  M: 21 C: 284

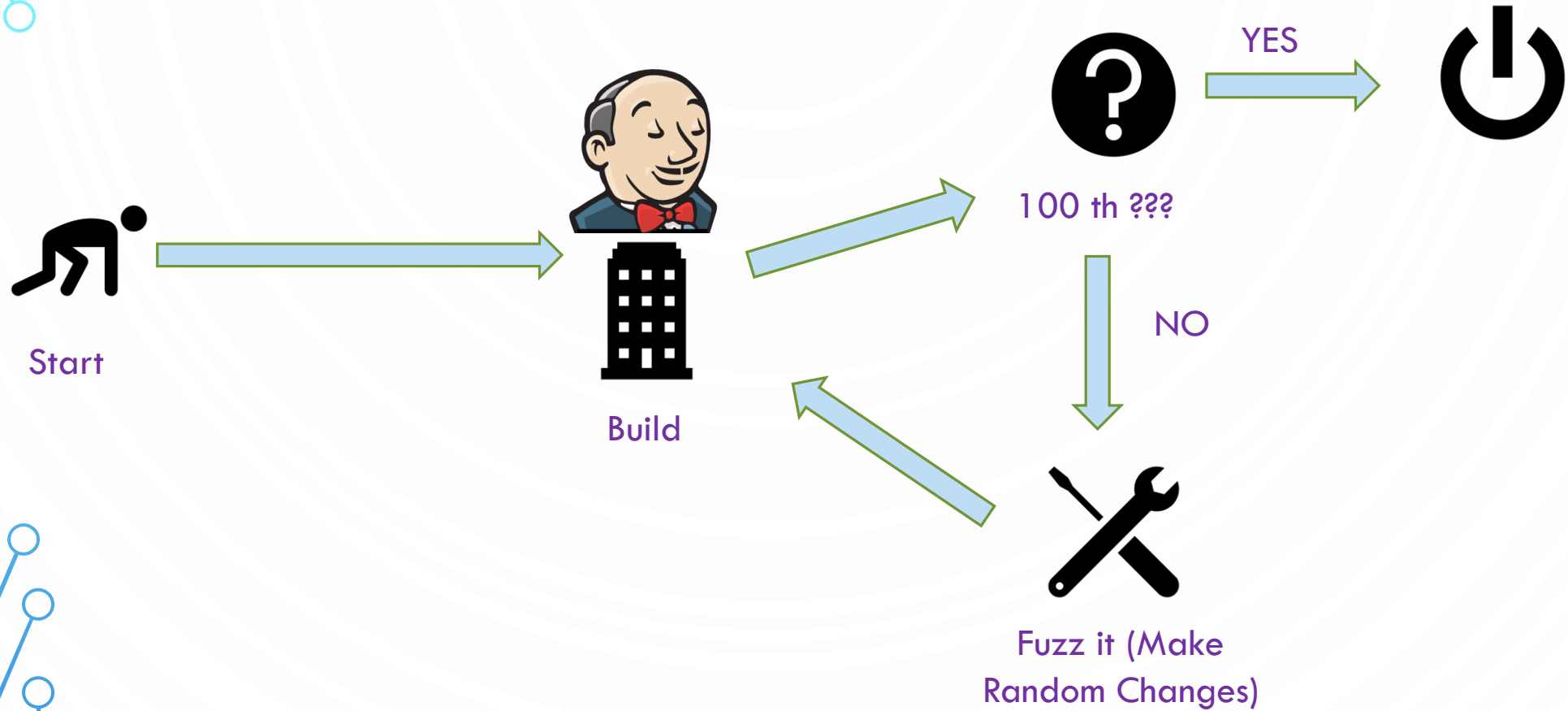
### Coverage Breakdown by Package


name	instruction	branch	complexity	line	meth
<a href="#">edu.ncsu.csc.itrust</a>	M: 170 C: 692 80% 	M: 18 C: 54 75% 	M: 22 C: 57 72% 	M: 33 C: 154 82% 	M: 11 C: 32 74% 
<a href="#">edu.ncsu.csc.itrust.action</a>	M: 1410 C: 7944 85% 	M: 172 C: 531 76% 	M: 192 C: 467 71% 	M: 369 C: 1659 82% 	M: 46 C: 248 84% 
<a href="#">edu.ncsu.csc.itrust.action.base</a>	M: 6 C: 87 94% 	M: 0 C: 4 100% 	M: 2 C: 7 78% 	M: 2 C: 21 91% 	M: 2 C: 5 71% 
<a href="#">edu.ncsu.csc.itrust.action.base</a>	M: 133 C: 63 81% 	M: 30 C: 3 100% 	M: 31 C: 8 100% 	M: 43 C: 33 85% 	M: 10 C: 8 100% 
<a href="#">edu.ncsu.csc.itrust.action.base</a>	M: 0 C: 81 0% 	M: 0 C: 1 0% 	M: 5 C: 1 0% 	M: 5 C: 51 0% 	M: 5 C: 2 0% 
<a href="#">edu.ncsu.csc.itrust.action.base</a>	M: 0 C: 81 0% 	M: 0 C: 1 0% 	M: 5 C: 1 0% 	M: 5 C: 51 0% 	M: 5 C: 2 0% 



# ITRUST

## - TEST FUZZER

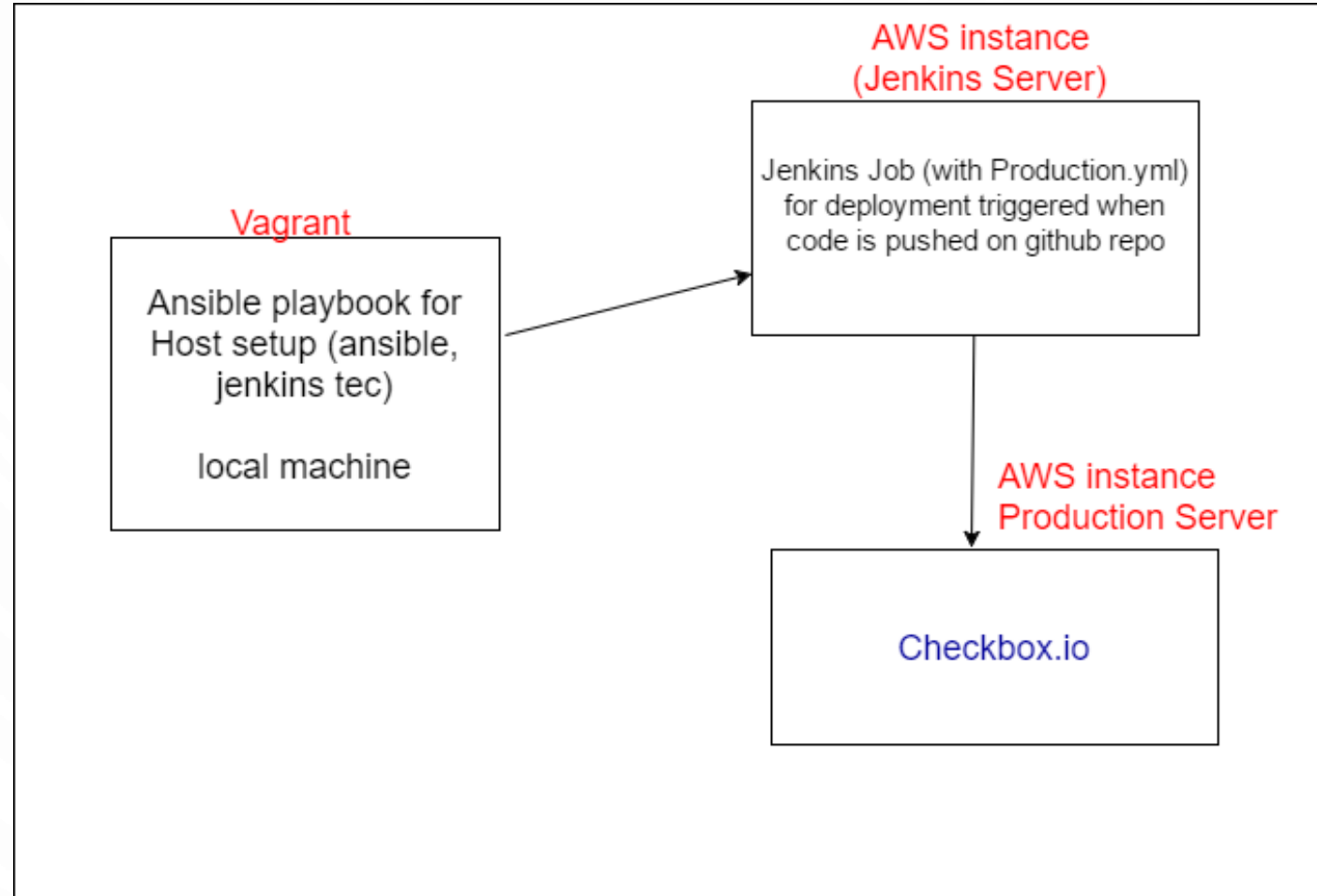




Sr	Milestones	Checkbox.io	ITrust
Mile 3	Deploy	<ul style="list-style-type: none"><li>• Deployment on Cloud</li><li>• Load balancer</li><li>• Canary Release</li><li>• Feature Flag</li></ul>	<ul style="list-style-type: none"><li>• Deployment on Cloud</li><li>• Rolling updates</li></ul>

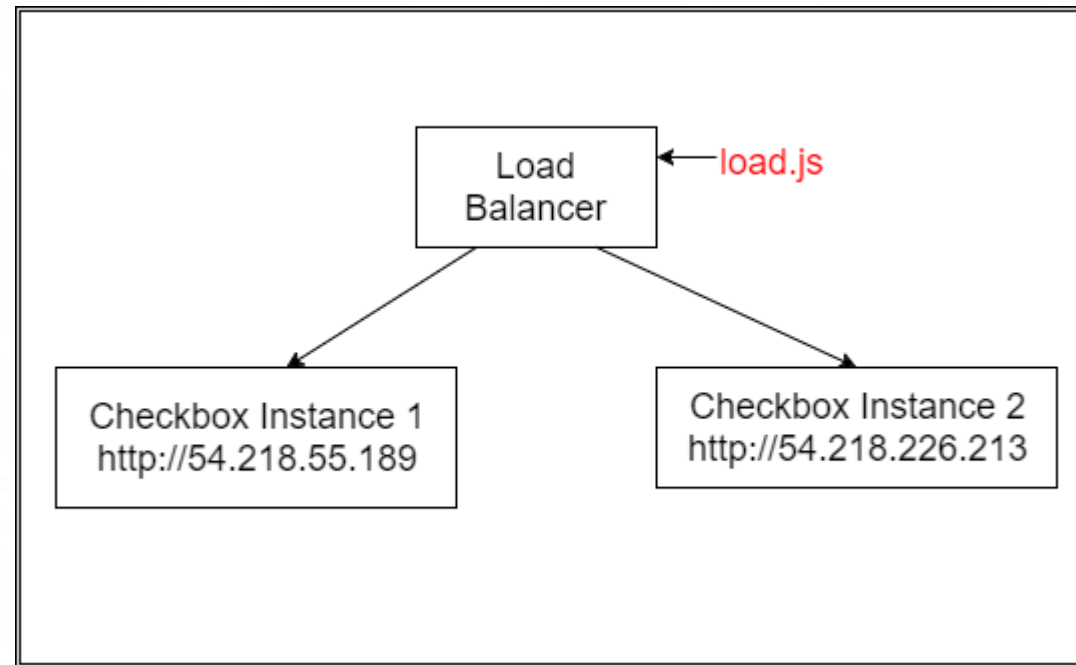
# CHECKBOX.IO

## - DEPLOYMENT ON AWS

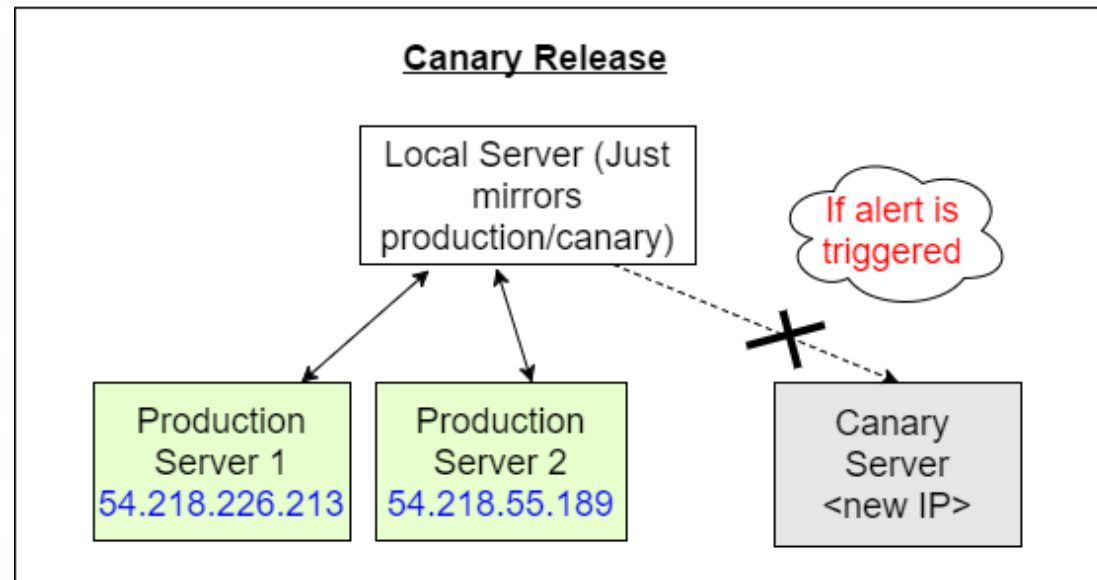
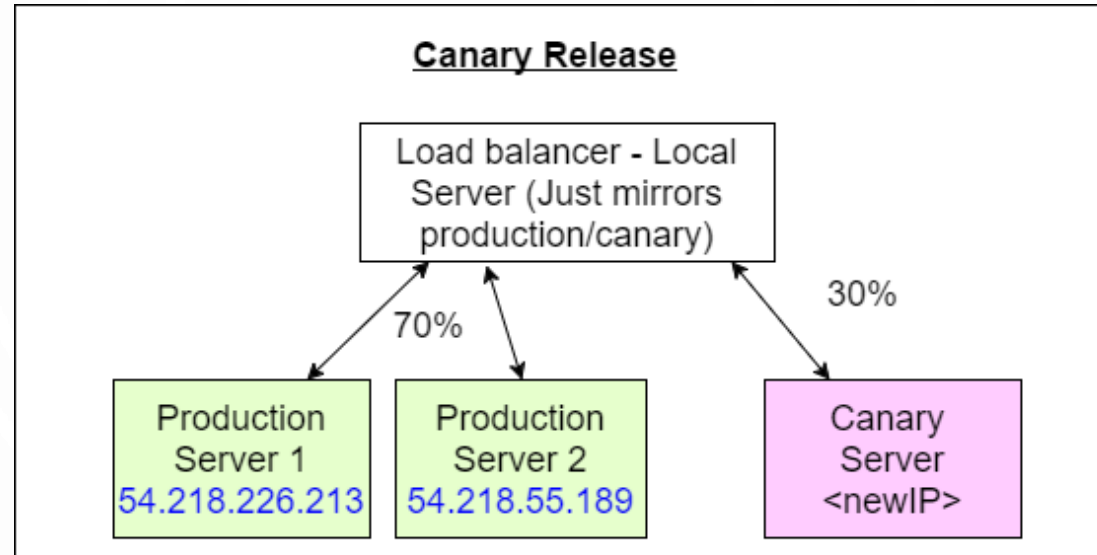


# CHECKBOX.IO

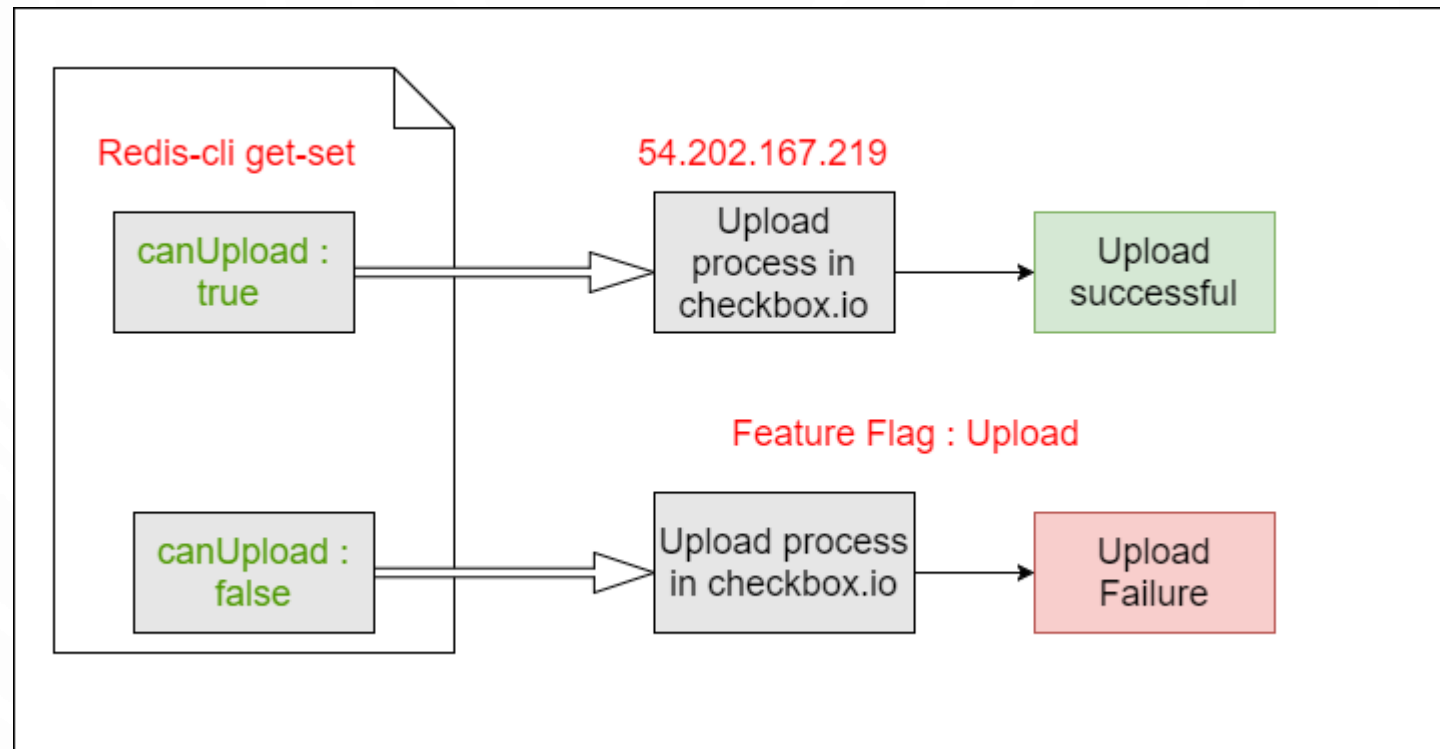
## - LOAD BALANCER




# CHECKBOX.IO - CANARY RELEASE



# CHECKBOX.IO - FEATURE FLAG



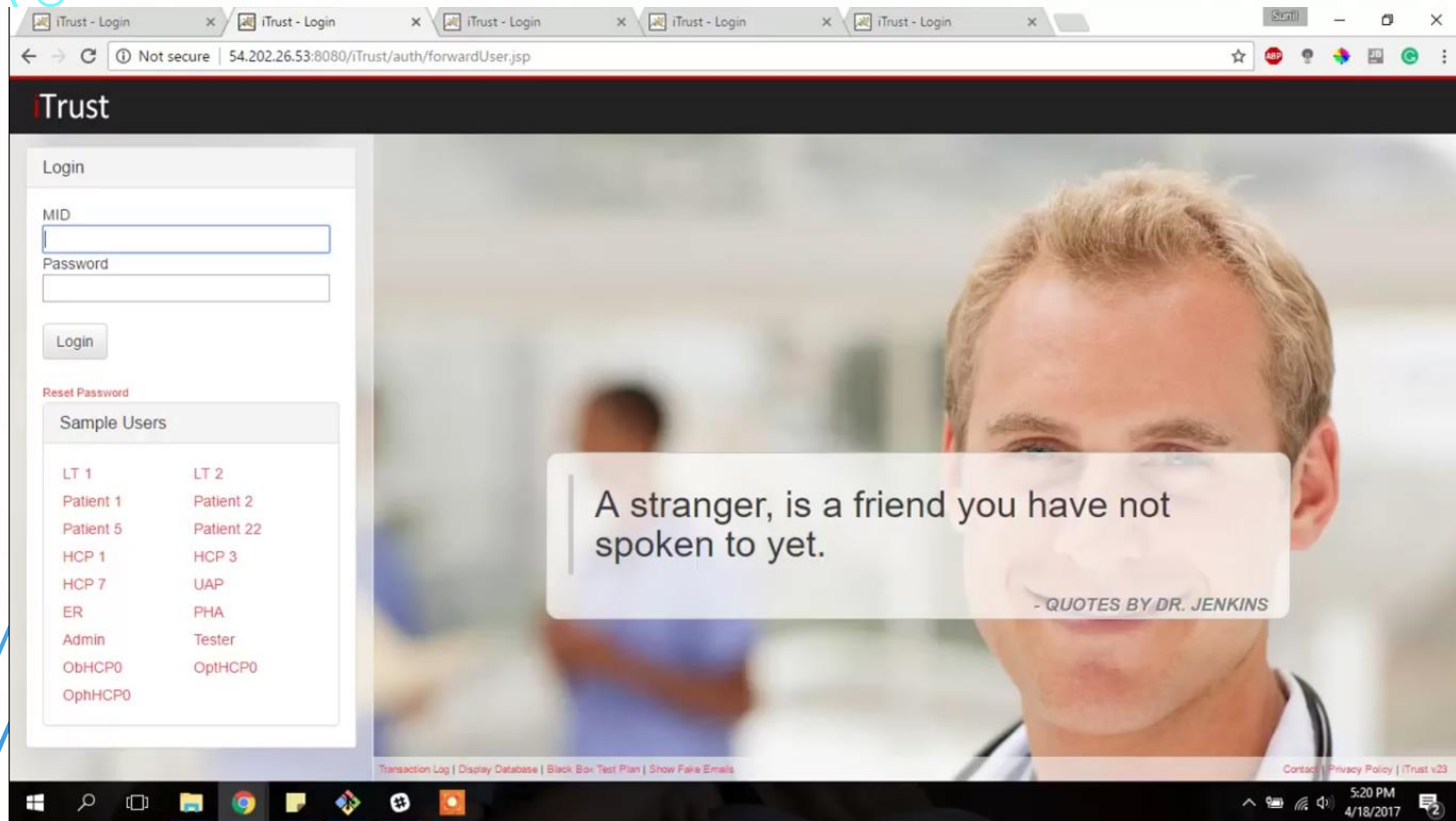




Sr	Milestones	Checkbox.io	iTrust
Mile 3	Deploy	<ul style="list-style-type: none"><li>• Deployment on AWS EC2 instance</li><li>• Load balancer</li><li>• Canary Release</li><li>• Feature Flag</li></ul>	<ul style="list-style-type: none"><li>• Deployment on EC2 instance</li><li>• Rolling updates</li></ul>

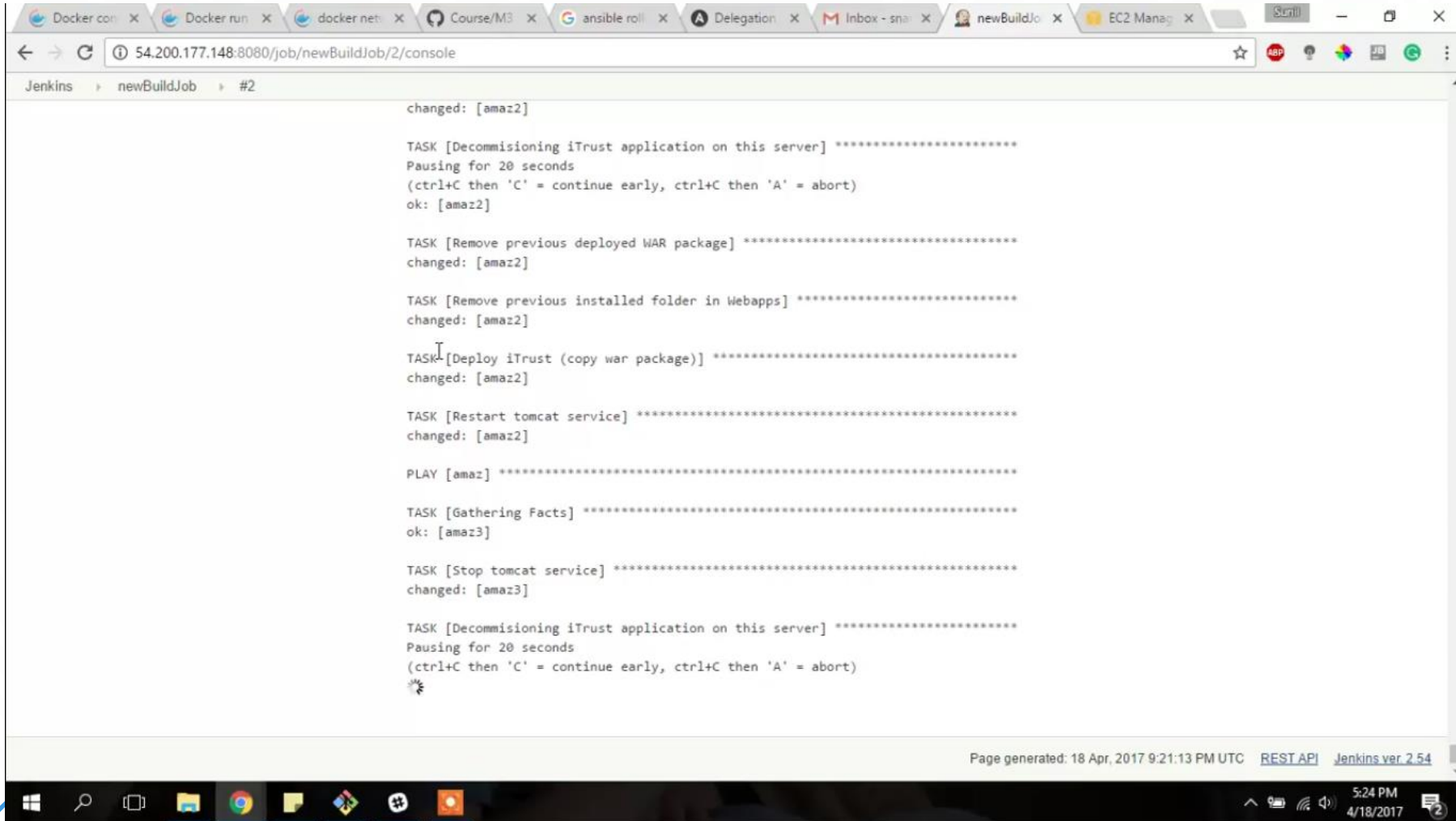
# ITRUST

## - DEPLOYMENT ON AWS



# ITRUST

## - ROLLING UPDATES



The screenshot shows a Jenkins console output for a job named 'newBuildJob' at step #2. The output displays a series of tasks performed on an Amazon EC2 instance (amaz2). The tasks include decommissioning the current iTrust application, pausing for 20 seconds, removing the previous WAR package and installed folder, deploying the new WAR package, restarting the tomcat service, gathering facts, stopping the tomcat service, and finally decommissioning the application again. The console output is as follows:

```
changed: [amaz2]

TASK [Decommissioning iTrust application on this server] *****
Pausing for 20 seconds
(ctrl+C then 'C' = continue early, ctrl+C then 'A' = abort)
ok: [amaz2]

TASK [Remove previous deployed WAR package] *****
changed: [amaz2]

TASK [Remove previous installed folder in Webapps] *****
changed: [amaz2]

TASK [Deploy iTrust (copy war package)] *****
changed: [amaz2]

TASK [Restart tomcat service] *****
changed: [amaz2]


PLAY [amaz] *****

TASK [Gathering Facts] *****
ok: [amaz3]

TASK [Stop tomcat service] *****
changed: [amaz3]

TASK [Decommissioning iTrust application on this server] *****
Pausing for 20 seconds
(ctrl+C then 'C' = continue early, ctrl+C then 'A' = abort)
^C
```

Page generated: 18 Apr, 2017 9:21:13 PM UTC [REST API](#) [Jenkins ver. 2.54](#)



Sr	Milestones	Checkbox.io
<b>SPECIAL</b>	<b>Special Milestone</b>	<ul style="list-style-type: none"><li>• Clean up monkey</li><li>• Gremlin Monkey</li></ul>

# CLEAN UP MONKEY

## Problem:

In multiserver environment, there can be the scenario when the log files or the files which are important but they do not contribute to execution of the application.

## Solution:

Clean up monkey will track the log files and if their size gets greater than limit then it copies those files to backup server and deletes them from running server

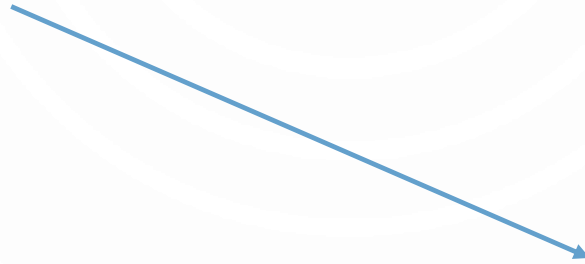


# CLEAN UP MONKEY

Flooding



Production server



Back up server





# GREMLIN MONKEY

## Problem:

Web application to be robust, it must be tested for varied user inputs. This includes random clicks, unexpected user behaviour

## Solution:

Gremlin monkey provides the functionality to perform random clicks and navigations on application and one can check console.log for inconsistencies



# GREMLIN MONKEY

54.202.236.33

Apps ★ Bookmarks Wolfware Moodle MyPage CSC-DevOps/Course 519 DevOps Slack-DevOps my git Netflix 510 SE DevOps\_HW1A/Creati IBM Cityscape ansi

Be heard, get rewarded. Host experiments, get results. See data and results.

Study participants are eligible for prizes such as Amazon giftcards, BrowserStack memberships, Microsoft Surface RT, Starbucks gift cards, and more.

Studies can be run in a [linode instance](#) for the lifetime of the study or co-host a node.js service. Studies, such as surveys can be authored in markdown, and results distributed in .json.

We are dedicated to sharing and [disseminating science results](#). Participants will be able to see graphs, papers, and blog posts related to research they had participated in.

☐ checkbox.io is a step toward connecting researchers and developers. It is not unlike how psychology departments use a pool of experiments and participants where students can pick studies and earn class credits.

Host Studies Easy surveys Include code snippets

**<> Code Snippet Su** Read Write

```
$(document).ready( function() {  
  ko.applyBindings(new TaskViewModel());  
});
```

Elements Console Sources Network Timeline Profiles Application Security Audits

top Preserve log

gremlin typer	type " at 326 18	gremlins.min.js:2
gremlin scroller	scroll to 0 525	gremlins.min.js:2
gremlin clicker	mousedown at 514 251	gremlins.min.js:2
gremlin scroller	scroll to 0 114	gremlins.min.js:2
gremlin typer	type □ at 1032 74	gremlins.min.js:2
gremlin typer	type X at 212 165	gremlins.min.js:2
mogwai fps	60.02040693303795	gremlins.min.js:2

nightwatch-0.9.14.zip researchers.html archi.png FeatureFlag.png Removed canary.png Removed Show all

Type here to search 12:12 AM 27-Apr-17





THANK YOU