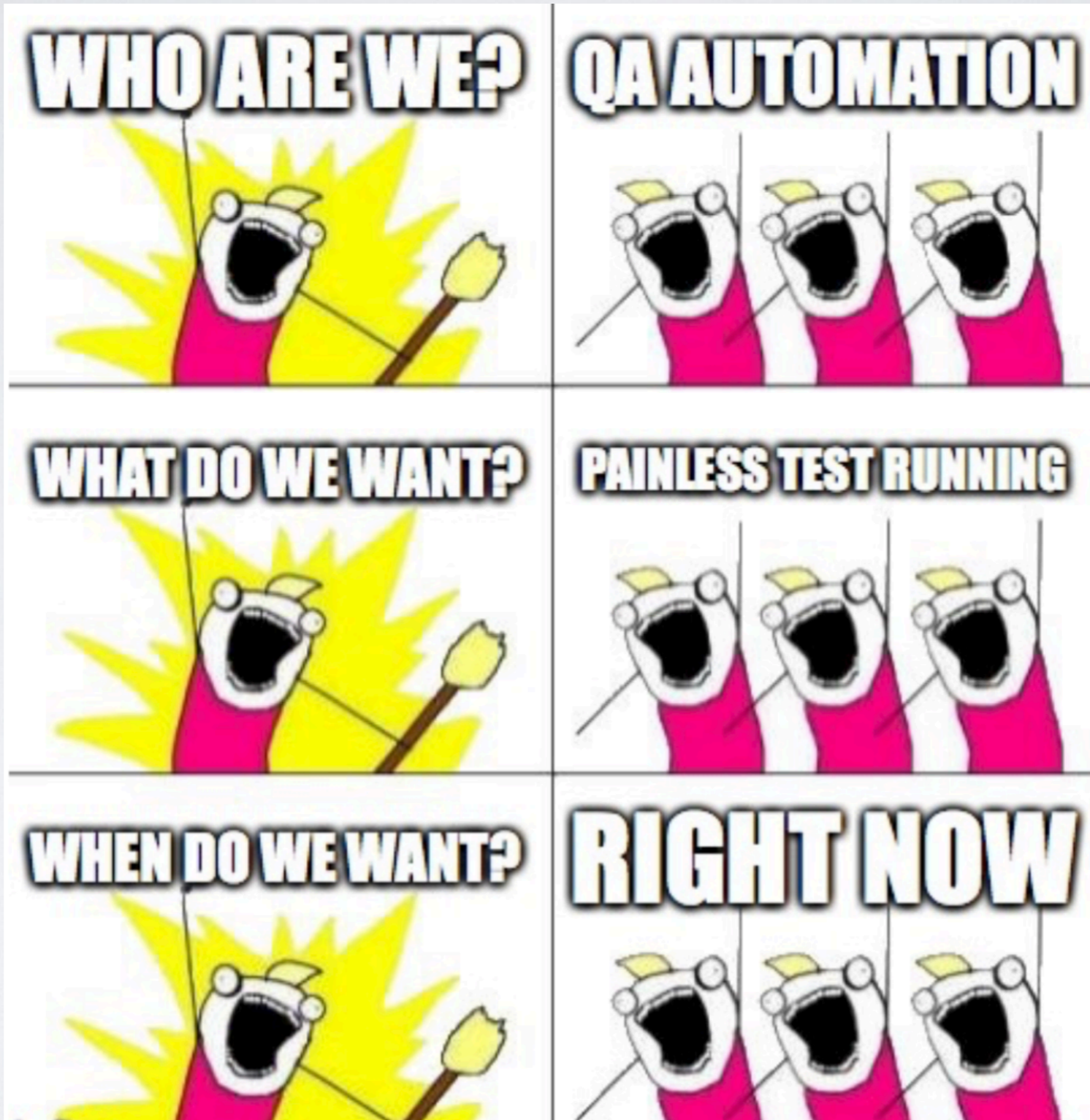


Parallel running tools for Selenium tests

Altunin Alexey
Frontier Car Group, Berlin

MAIN TOPIC



Out of the box



CI: GitLab CI

Builder

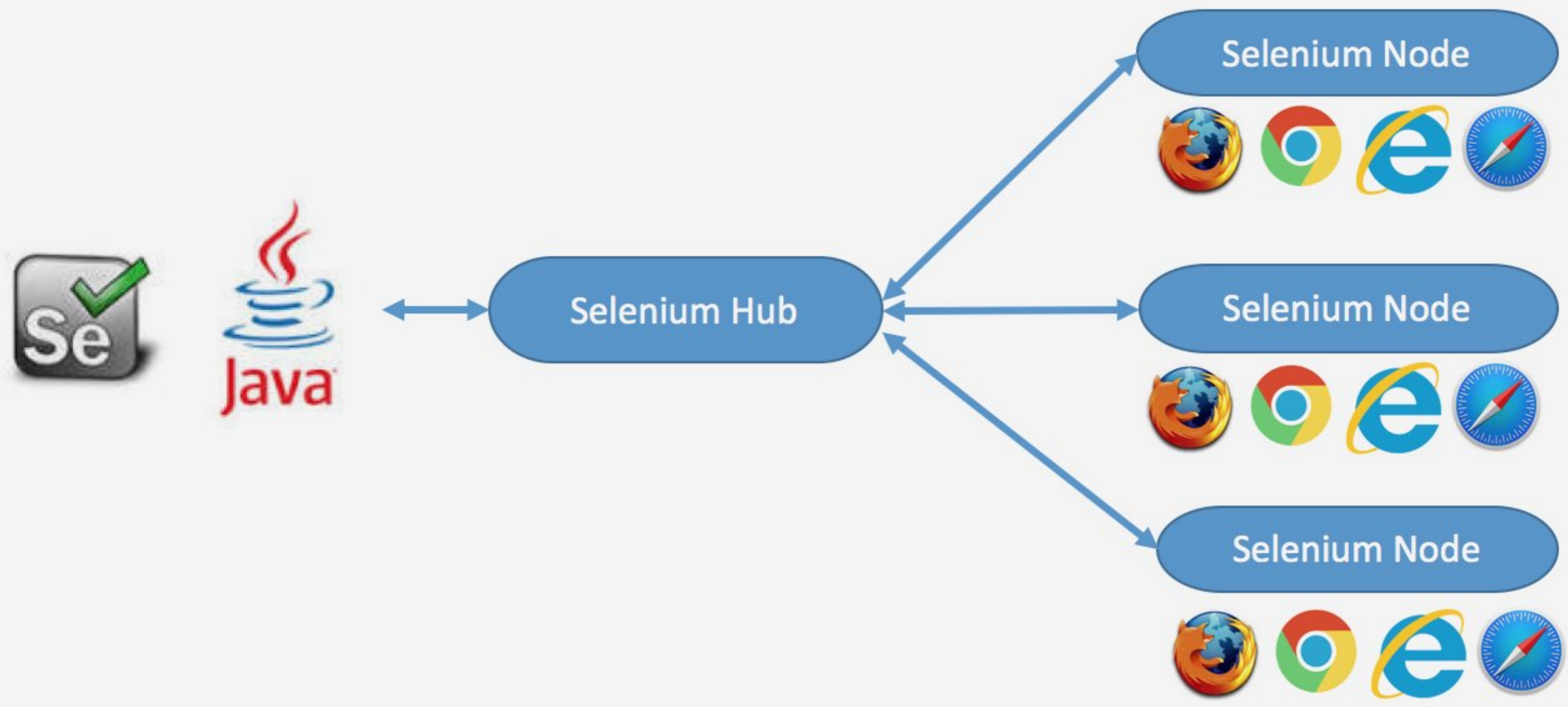
Test runner: mocha-parallel-tests

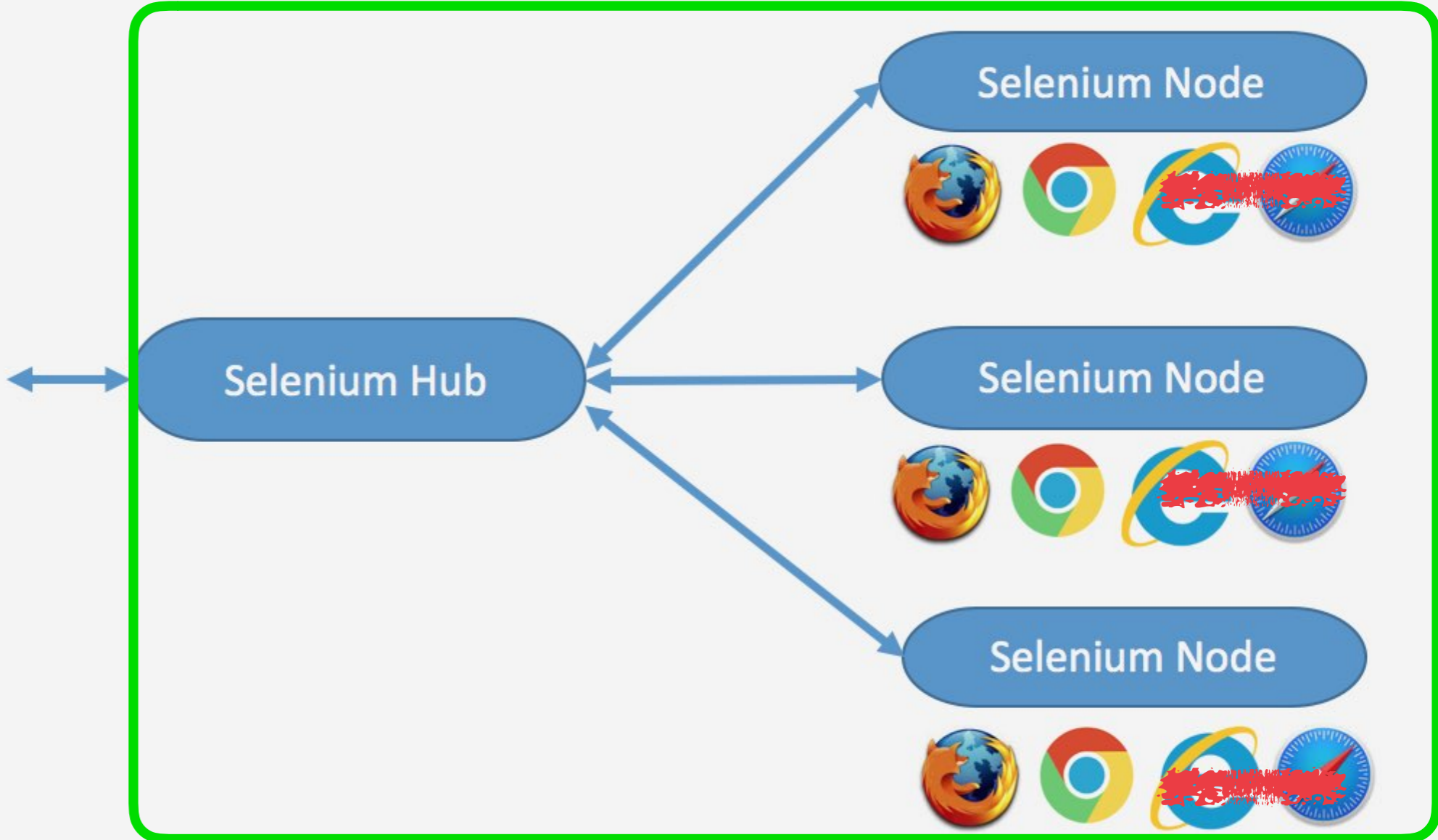
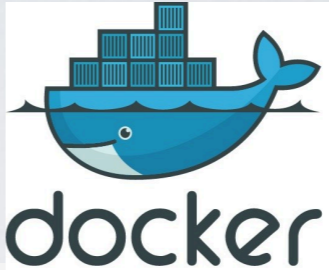
Tests: JavaScript

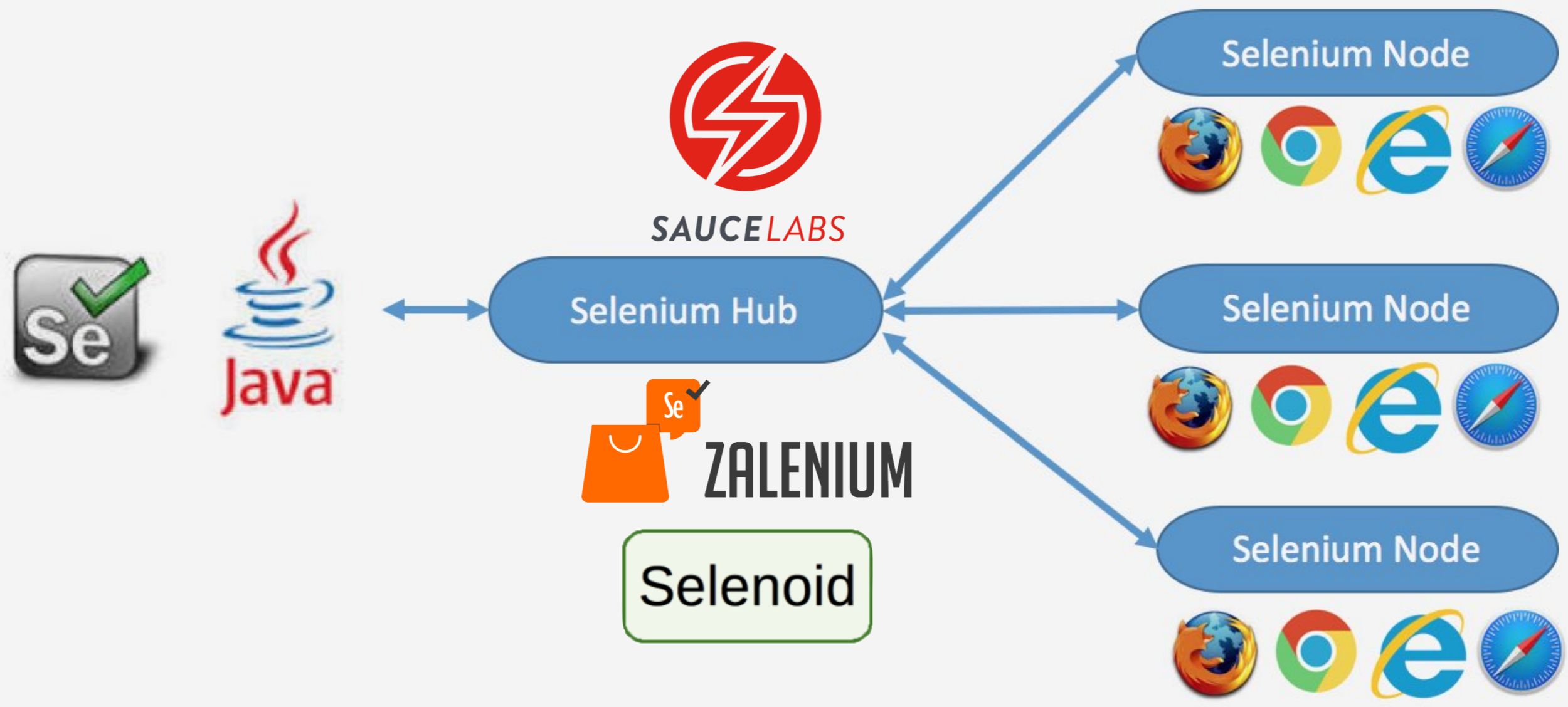
Driver: WebDriver

Infrastructure

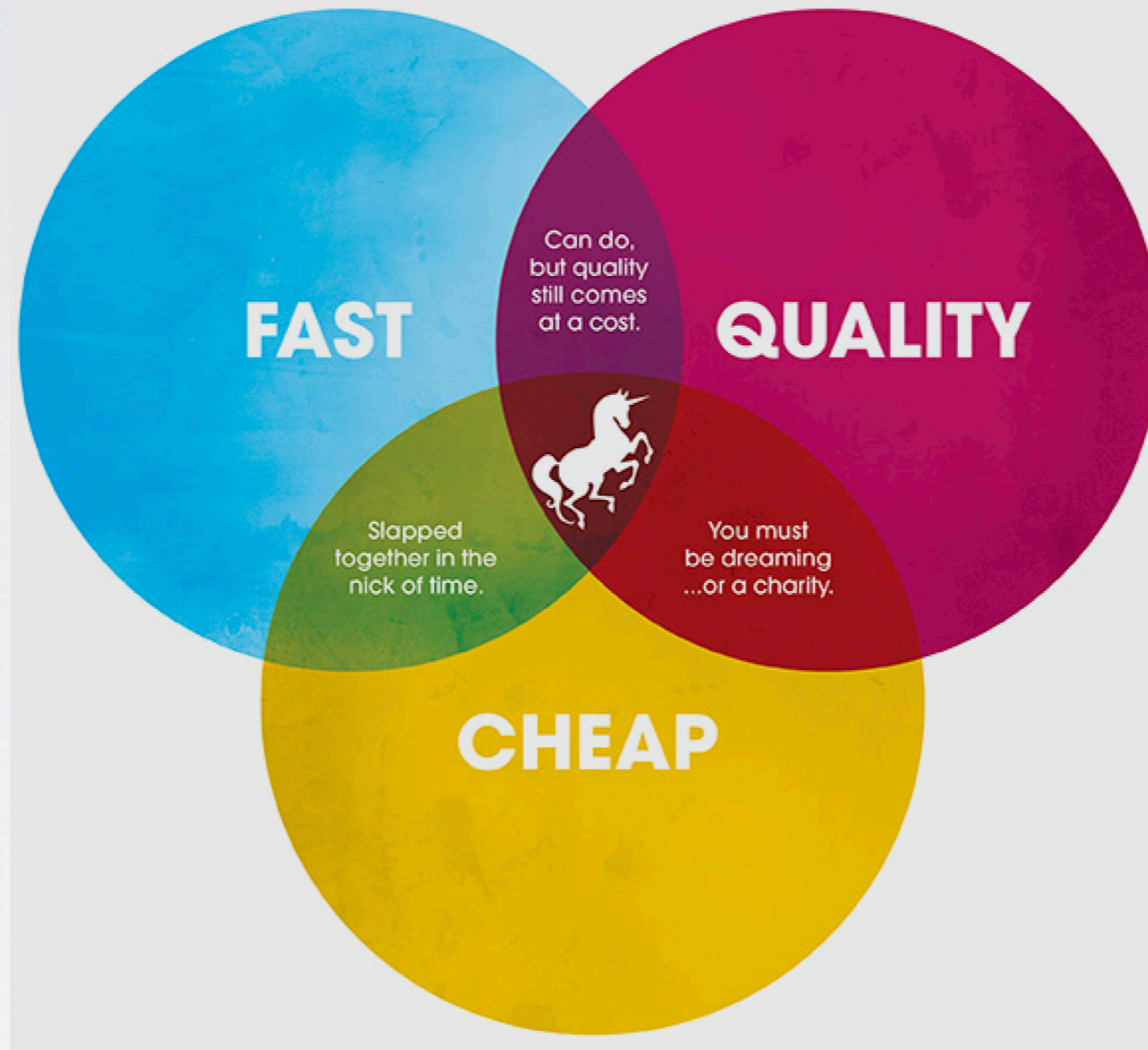
Where and how we run browsers







EVALUATION CRITERIA



FAST: Time of build
QUALITY: Maintainability, Reliability

Out of the box

ABOUT THE PROJECT



Customer
App

6 web clients + 6 web in mobile mode = 12

Admin
App

6 web clients + 6 web in mobile mode = 12

Dealer
App

6 web clients + 6 web in mobile mode = 12

6 Android + 6 IOS apps = 12

CUSTOMER APP



How it works About us Inspection centres Careers Car dealers

Sell your car in under 45 minutes

Free online valuation Book free inspection Get paid instantly



Brand

Model

Gear type

Year

Enter your email

I have read and I agree to the [Privacy Policy](#)

[Value my car](#)



¿Cómo funciona? ¿Quiénes somos? ¿Dónde estamos?

COMPRAMOS TU AUTO FÁCIL, RÁPIDO Y SEGURO.

Cotización Gratuita Inspección Sin Costo Pago Al Instante



Marca

Modelo

Año

Versión

Email

Estoy de acuerdo con el aviso de privacidad. Si no encuentras tu auto en el cotizador comunícate con nosotros para solicitar una cotización.

[COTIZAR MI AUTO](#)



Bahasa Indonesia How it works Who we are Where We Are

Sell your car easy and safe in just 1 hour!

Get online offer Inspect your car Get paid!



Brand

Model

Year

Trim / variant

Transmission

Mileage

Email

I have read and agree on the [Privacy Policy](#)

[Value my car](#)



Nasıl Çalışır Hakkımızda Ekspertiz Merkezleri

2. El Arabanızı Hemen Satın Alıyoruz

Online Fiyat Teklifi Ücretsiz Ekspertiz Hızlı ve Kolay Satış



Marka

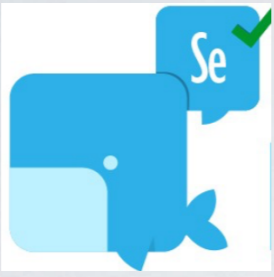
Model

Model Yılı

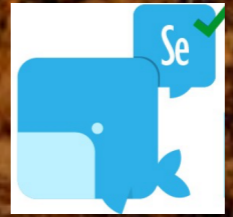
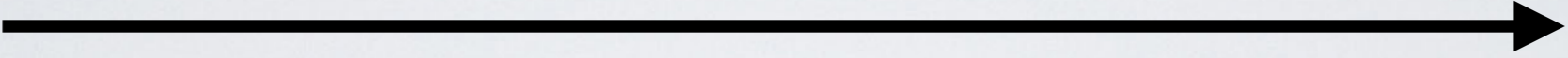
Model Detayı

Kilometre

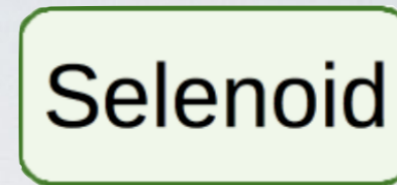
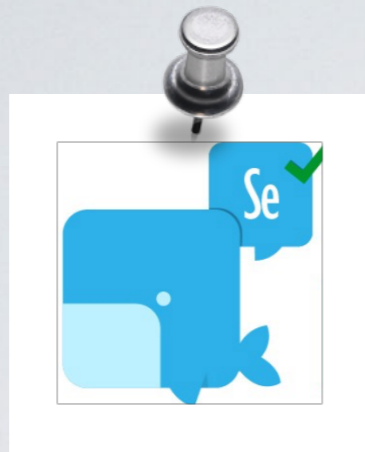
[Arabamın Değerini Hesapla](#)



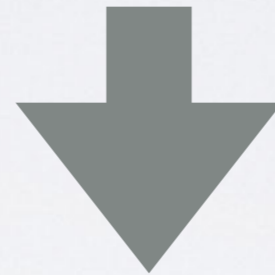
Selenoid



Selenoid



Static



- manually predefined driver + browser versions
- node timeout issue
- continuous resources consumption

version: "3"

services:

hub:

image: selenium/hub

ports:

- 4444:4444

chrome:

image: 'selenium/node-chrome-debug'

restart: always

hostname: chrome

ports:

- '5909:5900'

links:

- hub

volumes:

- /dev/shm:/dev/shm

environment:

- HUB_PORT_4444_TCP_ADDR=hub

- HUB_PORT_4444_TCP_PORT=4444

chrome2:

image: 'selenium/node-chrome-debug'

restart: always

hostname: chrome2

ports:

- '5910:5900'

links:

- hub

volumes:

- /dev/shm:/dev/shm

environment:

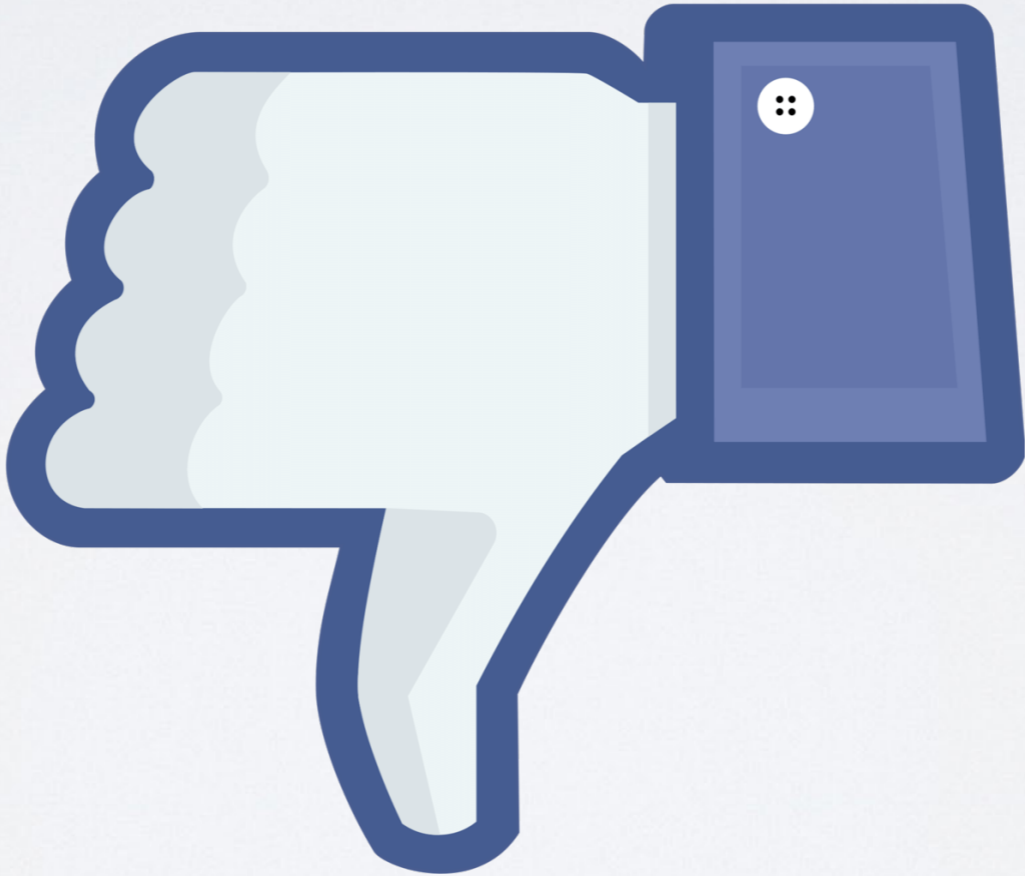
- HUB_PORT_4444_TCP_ADDR=hub

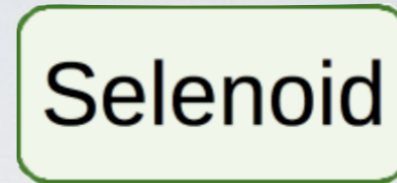
- HUB_PORT_4444_TCP_PORT=4444



Seleniumoid

Static





Static

```
var webdriver = require('selenium-webdriver'),  
    username = "YOUR_SAUCE_USERNAME",  
    accessKey = "YOUR_SAUCE_ACCESS_KEY",  
    driver;
```

```
driver = new webdriver.Builder().
```

```
    withCapabilities({  
      'browserName': 'chrome',  
      'platform': 'Windows XP',  
      'version': '43.0',  
      'username': username,  
      'accessKey': accessKey  
    }).  
    usingServer("http://" + username + ":" + accessKey +  
"@ondemand.saucelabs.com:80/wd/hub").  
    build();
```

```
driver.get("http://saucelabs.com/test/guinea-pig");
```

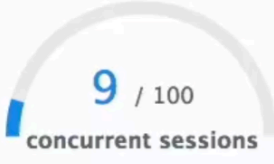
```
driver.getTitle().then(function (title) {  
    console.log("title is: " + title);  
});
```

```
driver.quit();
```

- Dashboard
- Manual tests
- Tunnels
- Analytics
- Archives

Real Device Testing
Now Available on TestObject

Access Real Devices



Test **Success** 10 58 [more...](#)

Creating Studio Code Account

Team ▼ Report ▼ Delete

Install JIRA Plugin

Watch **Commands** Logs Metadata

FILTER: Command ▼ Has Screenshot

Play ⏪ ⏩ 36 of 36

POST	element/2/click	00:13:66 + 0.28s	<input type="checkbox"/>
POST	element	00:14:14 + 0.02s	<input type="checkbox"/>
POST	element/3/value	00:14:31 + 0.08s	<input type="checkbox"/>
POST	element	00:14:70 + 0.01s	<input type="checkbox"/>
POST	element/4/value	00:14:83 + 0.13s	<input type="checkbox"/>
POST	element	00:15:23 + 0.01s	<input type="checkbox"/>
POST	element/5/value	00:15:40 + 0.13s	<input type="checkbox"/>
POST	element	00:15:82 + 0.03s	<input type="checkbox"/>
POST	element/6/value	00:15:98 + 0.04s	<input type="checkbox"/>
POST	element	00:16:30 + 0.01s	<input type="checkbox"/>
GET	element/7/name	00:16:43 + 0.01s	<input type="checkbox"/>
GET	element/7/attribute/multiple	00:16:59 + 0.03s	<input type="checkbox"/>
POST	element/7/elements	00:16:77 + 0.03s	<input type="checkbox"/>
GET	element/8/selected	00:16:92 + 0.08s	<input type="checkbox"/>

00:00:22 00:00:22

The screenshot shows the Code.org website interface. At the top, there's a navigation bar with 'My Dashboard', 'Course Catalog', and 'Projects'. A user profile 'Hi Andrew' is visible. The main content area features a 'My Dashboard' header, a 'My Courses' section with a 'Start learning' button and a 'Find a course' button, and a 'Projects' section with a 'View projects' link and a 'Start a new project' button. Below these are four project cards: 'Play Lab', 'Artist', 'App Lab', and 'Game Lab'.

AUTOMATED

\$149 /month

Billed Annually

Or \$199 month-to-month

2 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ **Up to 12,000 automated testing minutes / month**
- ✓ **Up to 24 concurrent sessions for parallel testing**
- ✓ **Up to 24 users (based on concurrent sessions)**

UNLIMITED AUTOMATED

\$298 /month

Billed Annually

Or \$399 month-to-month

2 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ Up to 24 concurrent sessions for parallel testing
- ✓ Up to 24 users (based on concurrent sessions)
- ✓ **Unlimited automated testing minutes**

AUTOMATED

\$529 /month

Billed Annually

Or \$699 month-to-month

8 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ **Up to 12,000 automated testing minutes / month**
- ✓ **Up to 24 concurrent sessions for parallel testing**
- ✓ **Up to 24 users (based on concurrent sessions)**

UNLIMITED AUTOMATED

\$1192 /month

Billed Annually

Or \$1599 month-to-month

8 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ Up to 24 concurrent sessions for parallel testing
- ✓ Up to 24 users (based on concurrent sessions)
- ✓ **Unlimited automated testing minutes**

AUTOMATED

\$1599 /month

Billed Annually

Or \$2159 month-to-month

24 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ **Up to 12,000 automated testing minutes / month**
- ✓ **Up to 24 concurrent sessions for parallel testing**
- ✓ **Up to 24 users (based on concurrent sessions)**

UNLIMITED AUTOMATED

\$3576 /month

Billed Annually

Or \$4799 month-to-month

24 Concurrent Sessions ▾

SELECT

- ✓ Unlimited live browser testing minutes
- ✓ Instant access to 800+ desktop browser & OS combos
- ✓ Instant access to ~200 mobile emulators & simulators
- ✓ Secure, single use VMs
- ✓ Debugging tools
- ✓ Videos & screenshots of tests
- ✓ Secure local tunneling
- ✓ REST API Access
- ✓ Up to 24 concurrent sessions for parallel testing
- ✓ Up to 24 users (based on concurrent sessions)
- ✓ **Unlimited automated testing minutes**



Static



SAUCELABS

Expensive



Selenium





Static



SAUCELABS

Expensive



Selenoid

- Selenium Grid extension to scale your local grid dynamically with docker containers
- Firefox and Chrome containers
- Tests can get redirected to a cloud testing provider (Sauce Labs, BrowserStack, TestingBot)
- Video recording / VNC

```
# Usage:
# docker-compose up --force-recreate
version: '3'

services:
  #-----#
  zalenium:
    image: "dosel/zalenium:latest"
    container_name: zalenium
    hostname: zalenium
    tty: true
    volumes:
      - /tmp/videos:/home/seluser/videos
      - /var/run/docker.sock:/var/run/docker.sock
      - /usr/bin/docker:/usr/bin/docker
    ports:
      - 4444:4444
    command: >
      start --chromeContainers 1
        --firefoxContainers 0
        --maxDockerSeleniumContainers 12
        --screenWidth 1920 --screenHeight 1080
        --timeZone "Europe/Berlin"
        --videoRecordingEnabled true
        --saucelabsEnabled false
        --browserStackEnabled false
        --testingBotEnabled false
        --startTunnel false
    environment:
      - HOST_UID
      - HOST_GID
      - SAUCE_USERNAME
      - SAUCE_ACCESS_KEY
      - BROWSER_STACK_USER
      - BROWSER_STACK_KEY
      - TESTINGBOT_KEY
      - TESTINGBOT_SECRET
```

Zalenium - Dashboard

Cleanup

Search

Tests (2)

searchInGithub 26-Dec 22:45:34 firefox 57.0.2, LINUX	Zalenium Success
searchInGithub 26-Dec 22:45:07 chrome 63.0.3239.108, LINUX	Zalenium Success

searchInGithub **Success**

Date	26-Dec 22:45:07
Browser/Platform	chrome 63.0.3239.108, LINUX
Screen Dimension	1280x720
Time Zone	Europe/Berlin
Proxy	
Zalenium	
Build	

Video | **Logs**

Search - zalenium · x

GitHub, Inc. [US] | <https://github.com/search?utf8=✓&q=zalenium&type=>

Features Business Explore Marketplace Pricing Sign in or Sign up

Repositories 14 **14 repository results** Sort: Best match

Code
Commits 183
Issues 266
Wikis 1
Users

zalandol/zalenium Java ★ 637
Allows anyone to have a disposable, flexible, container based Selenium Grid infrastructure featuring video recording,...

[testingbot](#) [browserstack](#) [docker-selenium](#)
Updated 23 hours ago 7 issues need help

elgalu/docker-selenium Shell ★ 837
Selenium in Docker with Chrome & Firefox plus video recording support. Also check: *Zalenium*

[firefox](#) [vnc](#) [video-recording](#) [chrome](#)
Updated 11 days ago

emilianmelian/zalenium

Advanced search Cheat sheet

0:06 / 0:16

Se Zalenium Live Preview Help

DockerSeleniumRemoteProxy (version : 3.8.1)
id : http://172.17.0.4:40000, OS : LINUX

DockerSeleniumRemoteProxy (version : 3.8.1)
id : http://172.17.0.3:40001, OS : LINUX

Browsers **Configuration**

Browsers **Configuration**

Test name: searchInGithub
WebDriver
63.0.3239.108
57.0.2
[Read-only VNC](#) | [Interact via VNC](#)

Test name: searchInGithub
WebDriver
63.0.3239.108
57.0.2
[Read-only VNC](#) | [Interact via VNC](#)





Selenoid

Static Expensive Performance



SeleniumConf
BERLIN

Ivan Krutov
Scalable Selenium Cluster:
Up & Running

Video sponsor



AI powered Visual Testing & Monitoring



Static Expensive Performance

- Selenium is a powerful Go implementation of original Selenium hub
- Consumes 10 times less memory than Java-based Selenium server under the same load
- Lightweight containers
- Firefox, Chrome and Opera containers
- Running without docker (IE, Edge, Safari)
- Video recording / VNC / Documentation

version: '3'

services:

selenium:

image: "aerokube/selenium:latest"

network_mode: bridge

ports:

- "4444:4444"

volumes:

- "\$PWD:/etc/selenium/" # assumed current dir contains browsers.json

- "/var/run/docker.sock:/var/run/docker.sock"

- "\${HOME}:/root"

- "\$PWD/video/:/opt/selenium/video/"

environment:

- "OVERRIDE_HOME=\${HOME}"

- "OVERRIDE_VIDEO_OUTPUT_DIR=\$PWD/video/"

command: `-conf /etc/selenium/browsers.json -limit 25 -video-output-dir /opt/selenium/video/`

selenium-ui:

image: "aerokube/selenium-ui:latest"

network_mode: bridge

links:

- selenium

ports:

- "8080:8080"


command: ["--selenium-uri", "http://selenium:4444"]

```
{  
  "firefox": {  
    "default": "46.0",  
    "versions": {  
      "46.0": {  
        "image": "selenium/firefox:46.0",  
        "port": "4444",  
        "tmpfs": {"/tmp": "size=512m"},  
        "path" : "/wd/hub",  
        "volumes" : ["/from:/to:ro"],  
        "env" : ["TZ=Europe/Moscow"],  
        "hosts" : ["example.com:192.168.0.1"],  
        "shmSize" : 268435456,  
      },  
      "50.0" : {  
        // ...  
      }  
    }  
  },  
  "chrome": {  
    // ...  
  }  
}
```

NUMBERS

Machine type	Virtual CPUs	Memory	Price (USD)	Preemptible price (USD)
n1-highcpu-2	2	1.80GB	\$36.23	\$10.95
n1-highcpu-4	4	3.60GB	\$72.46	\$21.90
n1-highcpu-8	8	7.20GB	\$144.92	\$43.80
n1-highcpu-16	16	14.40GB	\$289.84	\$87.60
n1-highcpu-32	32	28.80GB	\$579.68	\$175.20
n1-highcpu-64	64	57.6GB	\$1159.36	\$350.40
n1-highcpu-96	96	86.4GB	\$1739.04	\$525.60

Skylake Platform only

Chrome		Selenium
Without video recording	18(24) flows 8 mins ~ 20 GB	24 (48) flows 5 mins ~ 10 (22) GB
With video recording	8 flows 18 mins ~ 15 GB	8 flows 14 mins ~ 20 GB
Time to run and close browser	9s	4s

SUMMARY



Don't use it in 2018 year



SAUCELABS

If you have money

Great for mobile and native browsers

If you don't have an infrastructure

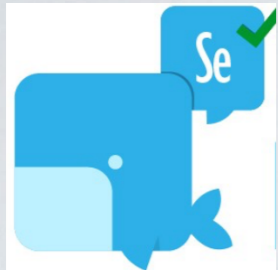


It is awesome. But Selenium is better :)

Selenium

The best Selenium grid alternative!

LINKS



https://www.seleniumhq.org/docs/07_selenium_grid.jsp

<https://github.com/elgalu/docker-selenium>

<https://sqadays.com/en/talk/49075>



SAUCELABS

<https://saucelabs.com>



<https://github.com/zalando/zalenium>

Selenoid

<https://github.com/aerokube/selenoid>

<https://www.youtube.com/watch?v=TGjpc32my0Y>



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<https://www.linkedin.com/in/alexey-altunin-265411136/>