consol
Enterprising IT

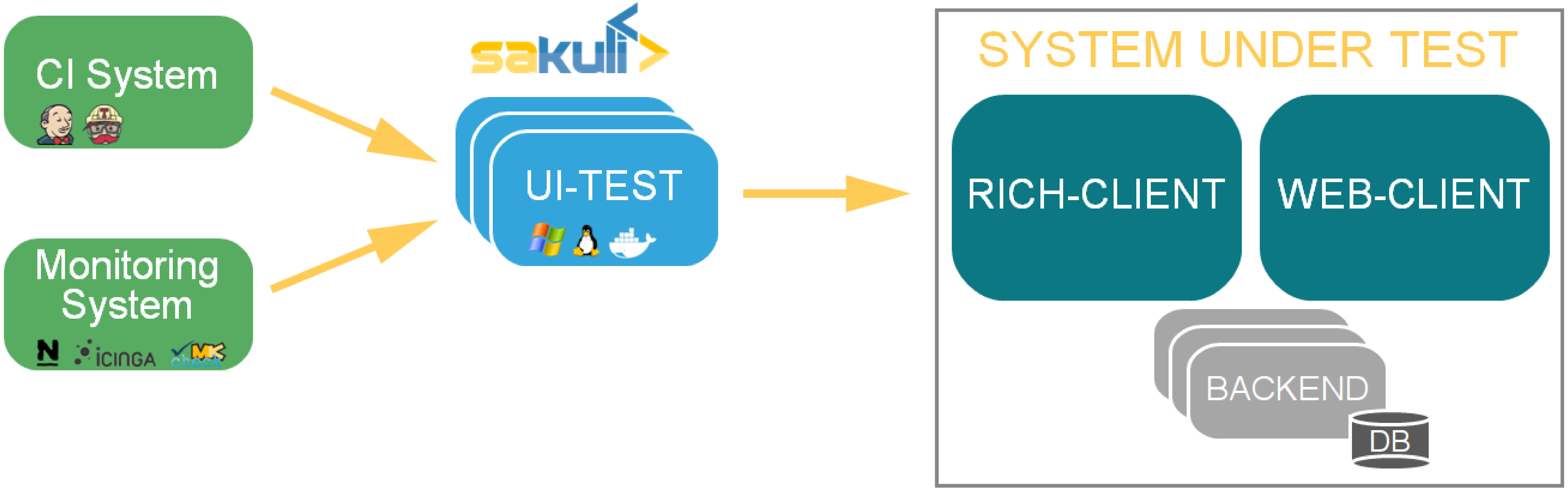
sakuli

# End-2-End Testing & Monitoring

sakuli

# Basics

# Sakuli Use Cases



# Motivation

- Founded February 2014,  Open Source (Apache)
- Objective:
  - Combine two open source automation tools (web + native UI)
  - Use the test results in CI and monitoring systems
  - Platform independence (Linux/Windows)
- Application tests from the perspective of the end users
  - Functionality
  - Performance (loading + rendering times)

# Referenzen

Die
Continentale

LIDL

testo

PUBLIC SECTOR FINANCE
REAL ESTATE FINANCE
pbb
DEUTSCHE
PFANDBRIEFBANK

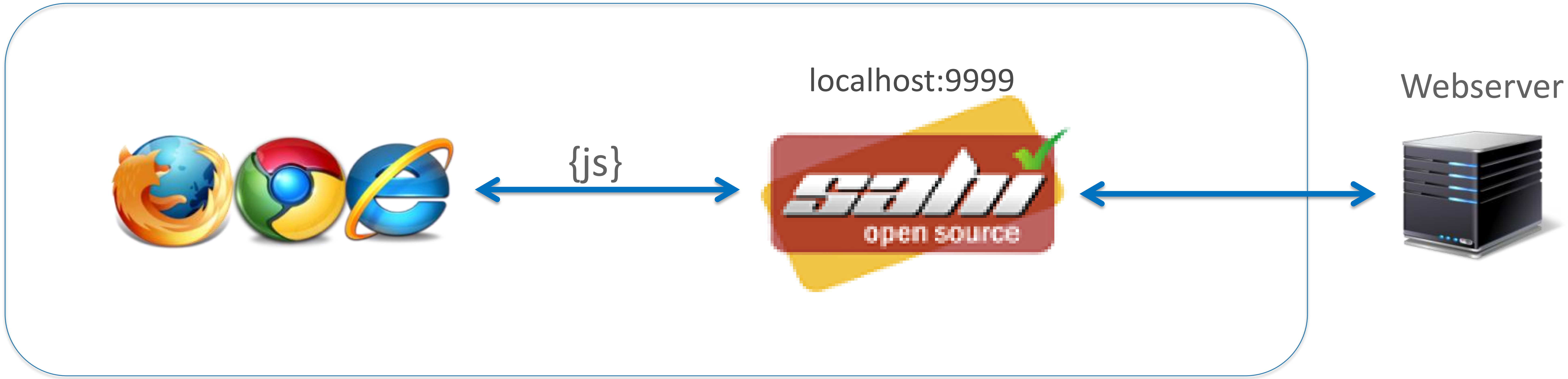
SIEMENS

sakuli Testing API

# Component 1: Sahi / Selenium

**Web testing tool** (sahi.co.in, seleniumhq.org)
method based DOM access:

```
_assertContainsText ("Logged in as: Sakuli", _div("user_field"));
_click(_span("Loaded Run Tabels"));
_assertExists(_table("cross_table_fixed"));
_assertExists(_cell(“testing allowed", _rightOf(_span("Name")), _under(_cell("Action")));
```



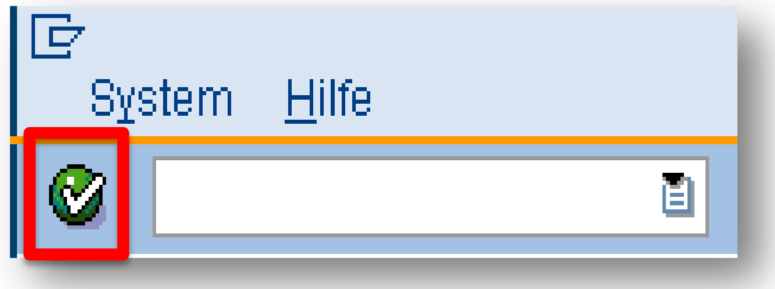
```
<table>
 <tbody>
  <tr>

<td>Alice</td>
   <td>Bob</td>
  </tr>
 </tbody>
</table>
```

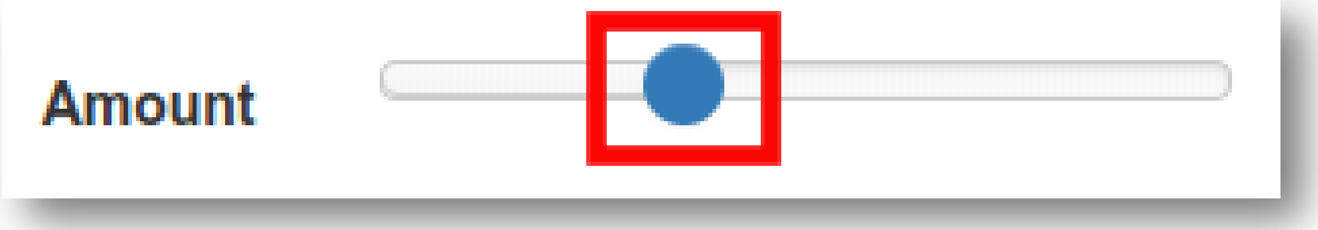
# Component 2: Sikuli

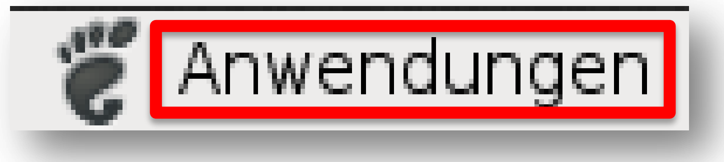
**Visual automation tool** (sikuli.org)

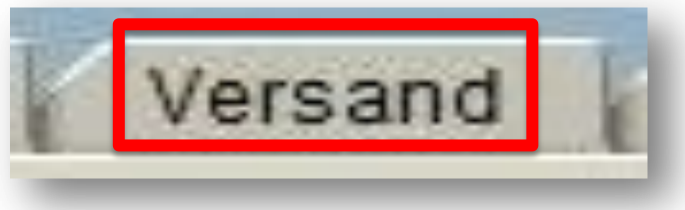
image identification, mouse & keyboard interaction:

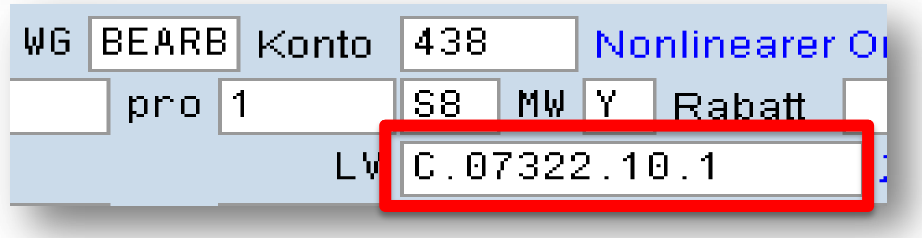
```
screen.find("sap_ok").click();
screen.find("sap_ok").right(40).click().type("2223");

var bubble = new Region().waitForImage("bubble.png", 20);
bubble.dragAndDropTo(bubble.left(35)).highlight();
```

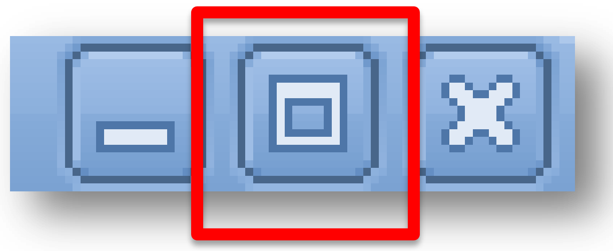


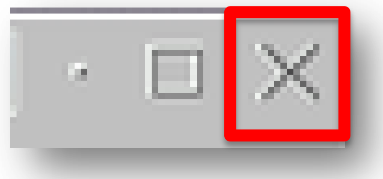







WG BEARB Konto 438 Nonlinearer O
pro 1 S8 MW Y Rabatt
LV C.07322.10.1





# Comparison: Sahi/Selenium ◂▸ Sikuli

## Sikuli

✓ **universal**, complete screen

✗ **(more) resource intensiv**

✗ needs a "unlocked" screen

## Sahi / Selenium

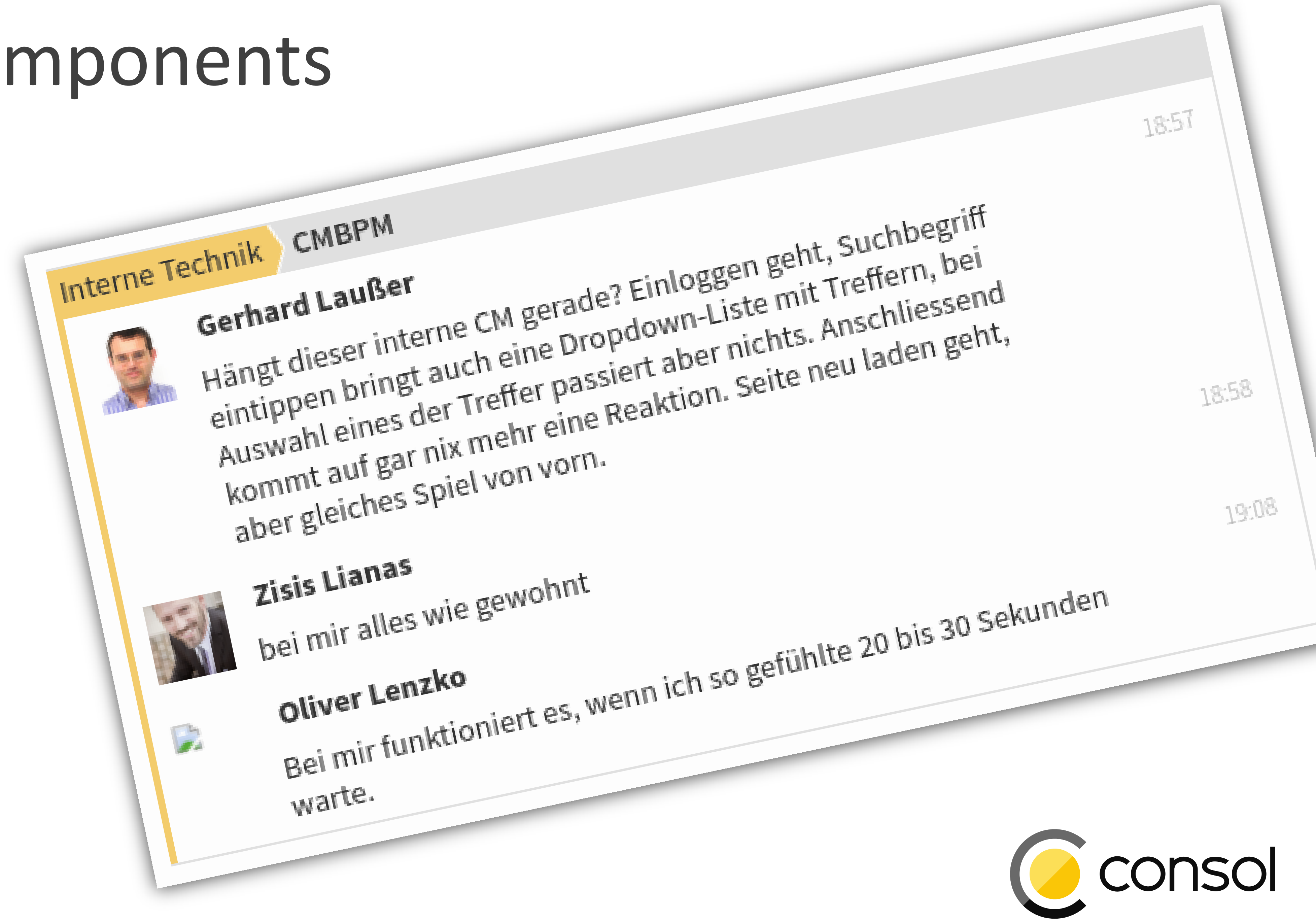
✗ limited on **web,**
(no Flash, Java applets...)

✓ **fast through DOM navigation**

✓ **easy to write and stabilize**

# Common Challenges

- Current monitoring/testing strategy can‘t:
  - Execute acceptance or smoke tests after a new release is rolled
  - No automatic check that basic functions of the main processes like e.g. „ticket creation“
  - Also no information available about the state of GUI side.
- Continuous monitoring from the end user perspective
- Selenium Accessor API didn’t work well with some UI components (random IDs)
- Test environments should be containerized and scalable (OpenShift)



**Gerhard Laußer** 18:57

Hängt dieser interne CM gerade? Einloggen geht, Suchbegriff eintippen bringt auch eine Dropdown-Liste mit Treffern, bei Auswahl eines der Treffer passiert aber nichts. Anschliessend kommt auf gar nix mehr eine Reaktion. Seite neu laden geht, aber gleiches Spiel von vorn.

**Zisis Lianas** 18:58

bei mir alles wie gewohnt

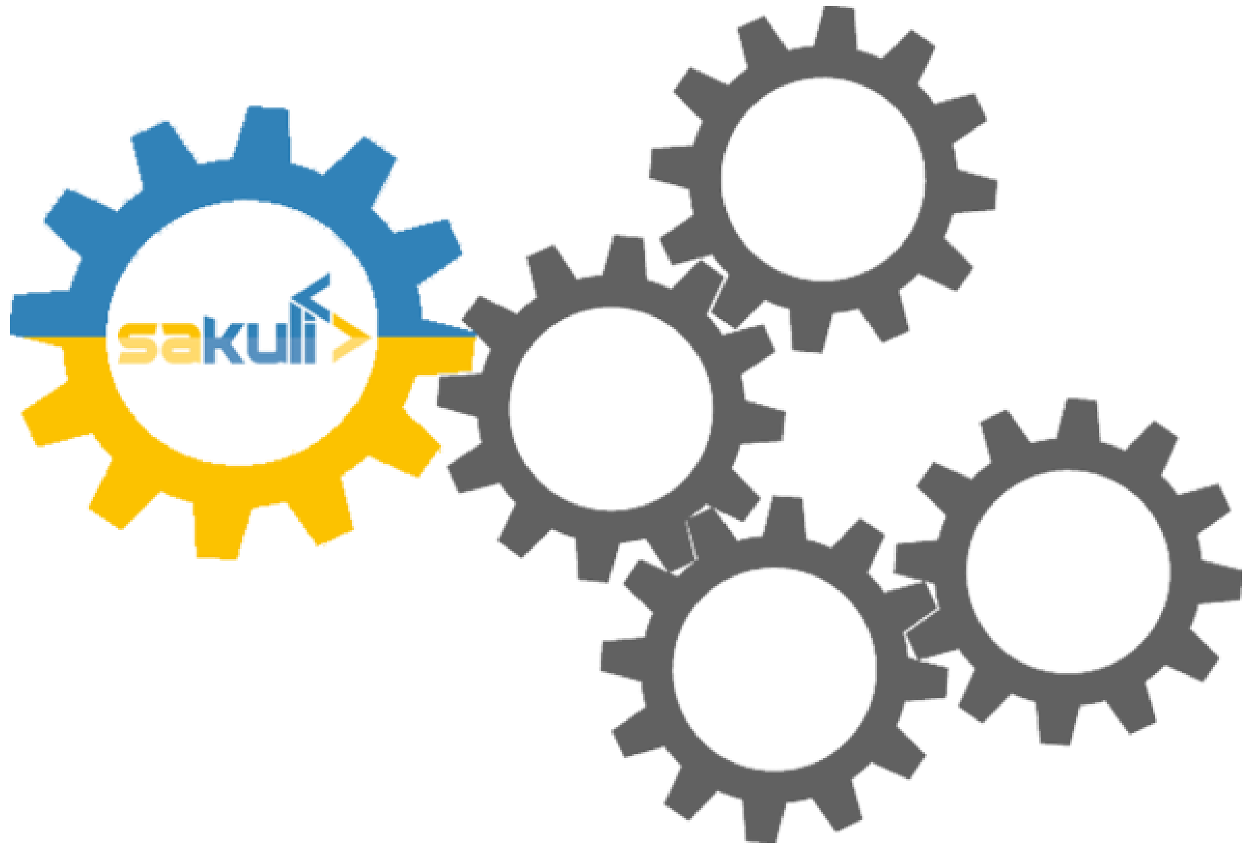
**Oliver Lenzko** 19:08

Bei mir funktioniert es, wenn ich so gefühlte 20 bis 30 Sekunden warte.

# sakuli Execution Types

# Overview Execution Types

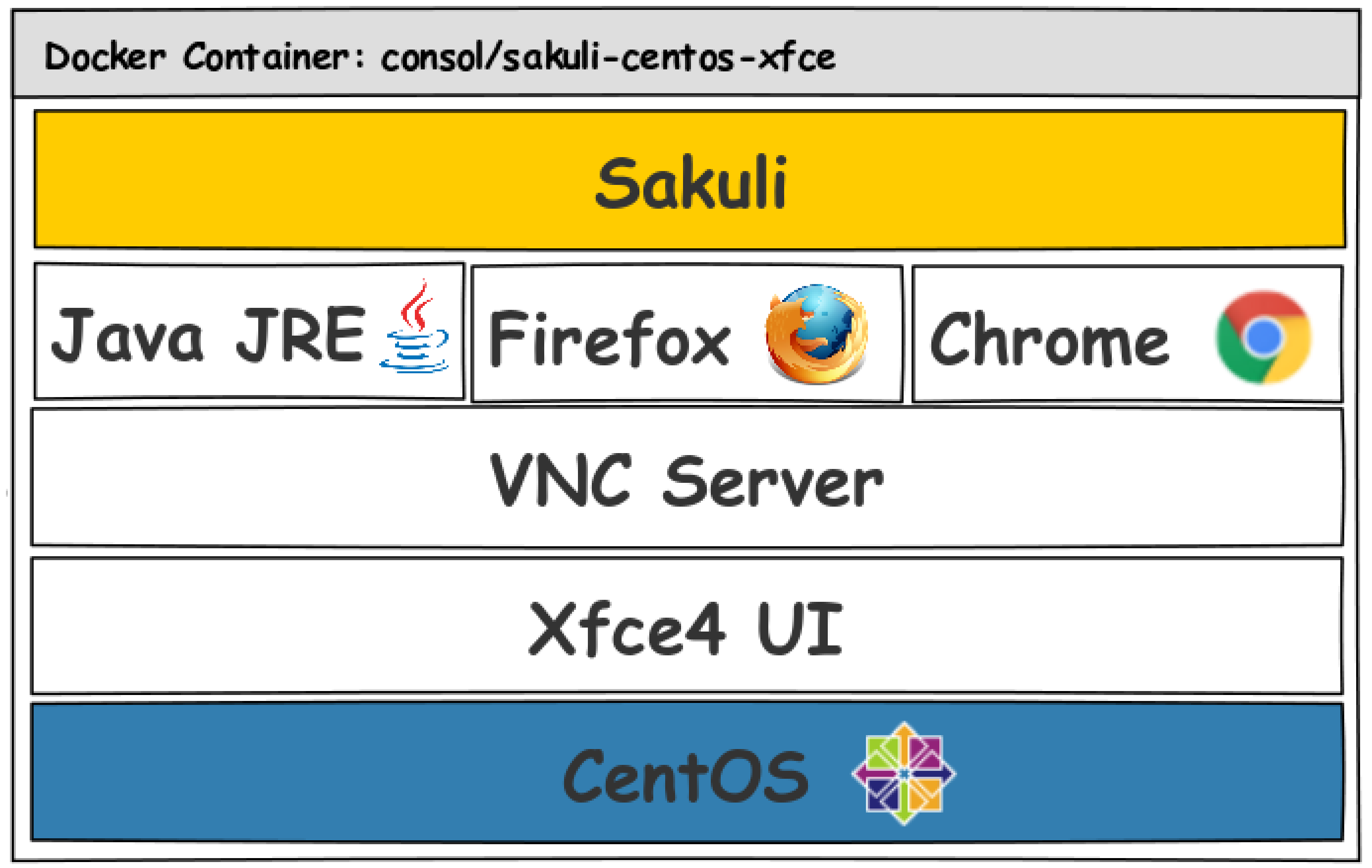
- **Native Execution**
  - Supports all end user platforms: Windows, Linux, Mac
  - Installable directly on the end user client
  - Easy JavaScript based API syntax
  - Direct execution of test scripts without compile process

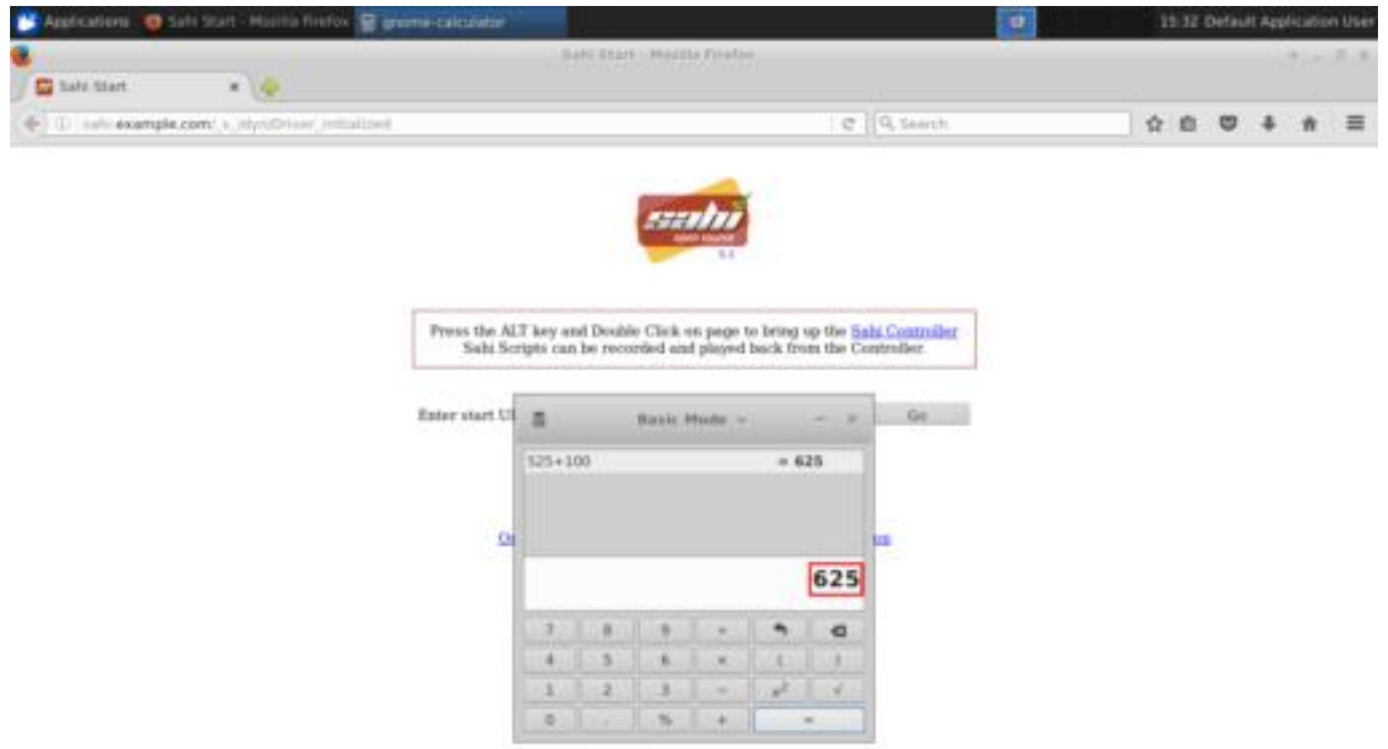


- **Maven Execution**
  - Java Syntax, Maven Dependency
  - Easy integration in maven build cycle
  - Good writing and debug support through well known Java IDEs
  - Optional: Integrate Selenium as Web-Testing-Engine

# Overview Execution Types

- **Containerized Execution**
  - Supported Container platforms:
    Docker Compose, Kubernets, OpenShift
  - Ready to use E2E environment
    without installation process
  - Tests run in a real desktop and
    using a real browser or native client
  - Easy integration in server environments
    for running headless UI tests
  - Supports JavaScript and Java based tests
  - Scalable environment with all advantages
    of the container technology





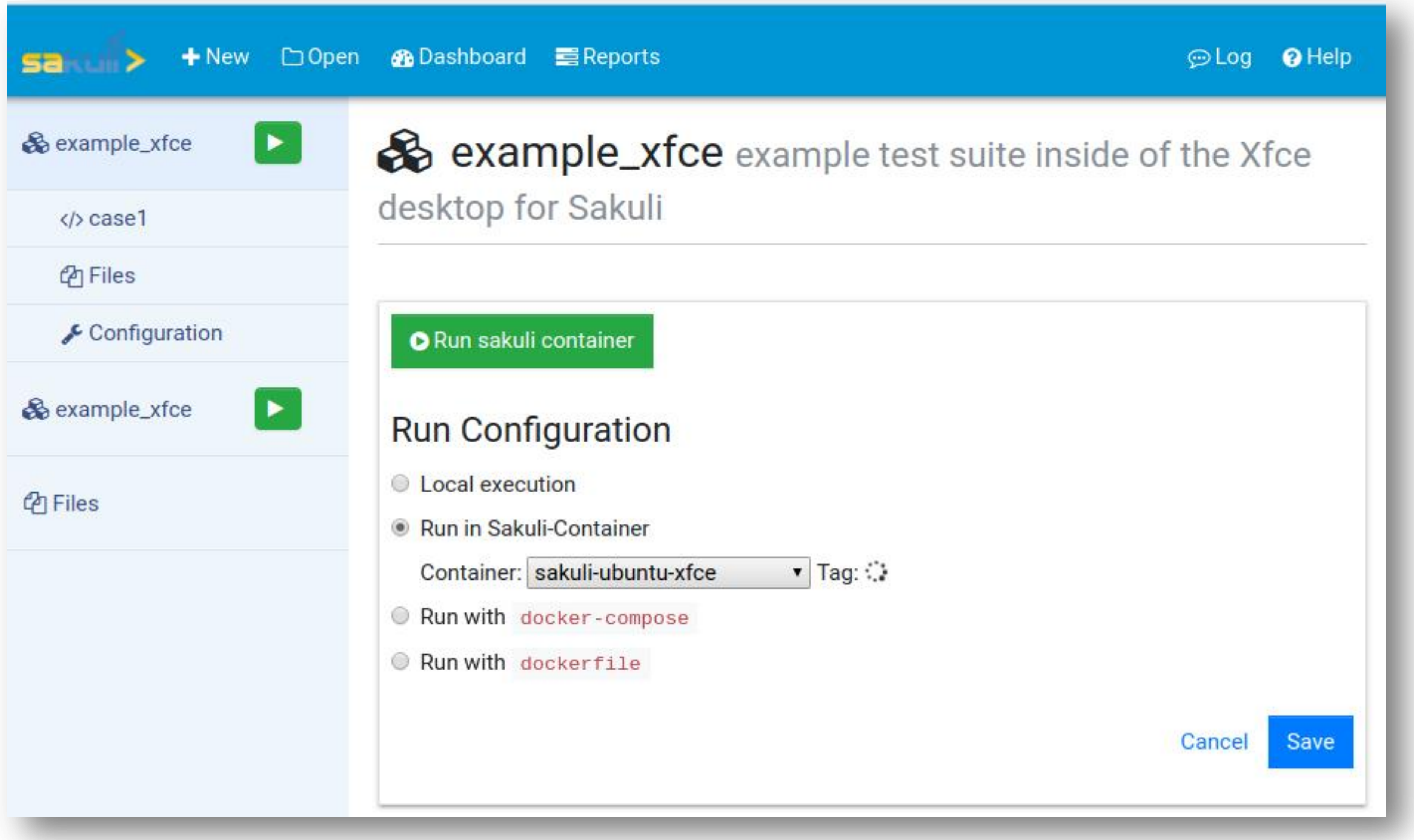
Applications
Sahi Start - Mozilla Firefox
gnome-calculator
15:32 Default Application User
Sahi Start - Mozilla Firefox
Sahi Start
sahi.example.com/_s_/dyn/Driver_initialized
Search
Enter start U
Go
Basic Mode
625

Press the ALT key and Double Click on page to bring up the Sahi Controller
Sahi Scripts can be recorded and played back from the Controller.

525+100 = 625

# Test Management UI (beta)

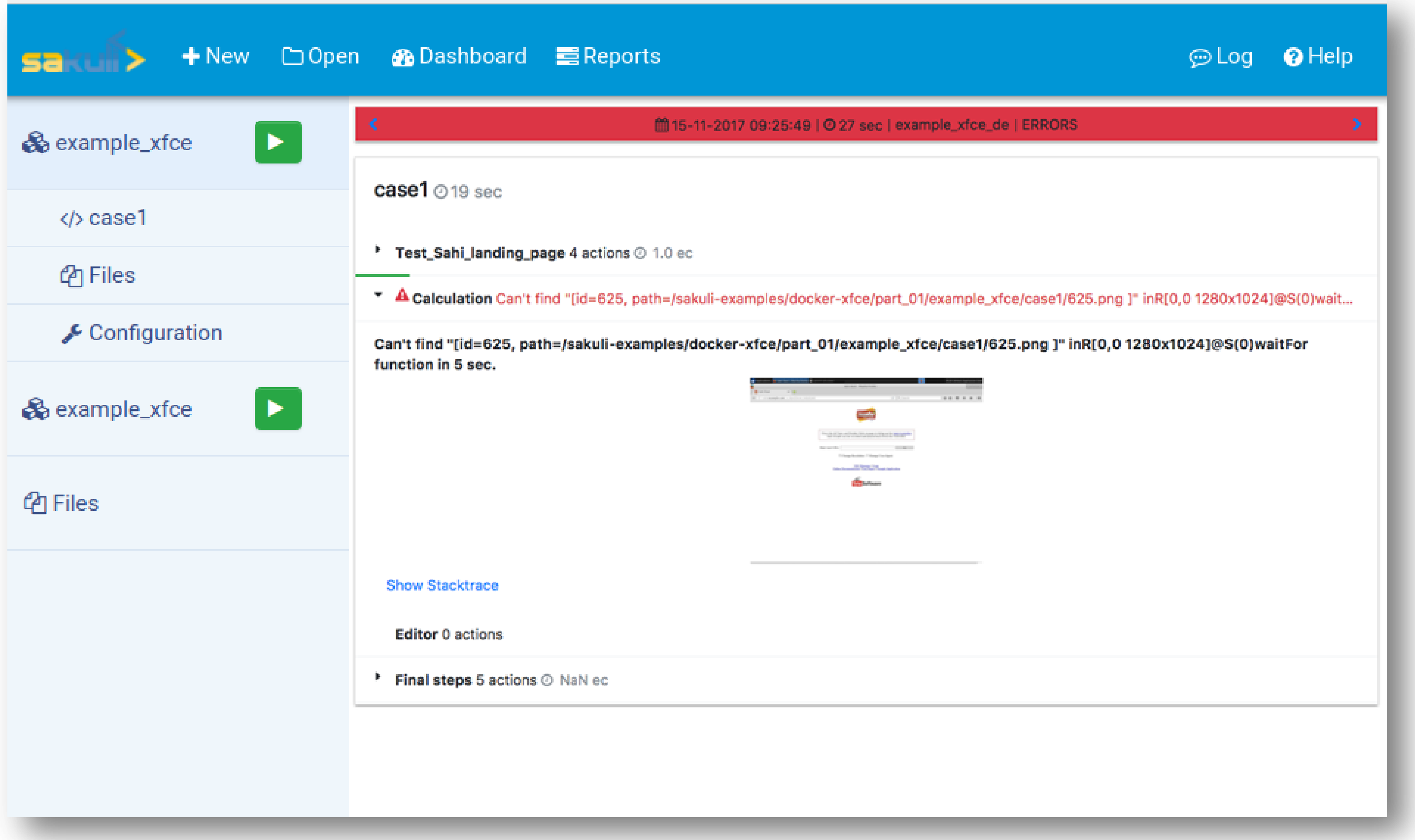
- Comfortable writing and management of test suites
- Direct test execution with integrated live view and logs
- Extended reports for easy error detection



example_xfce example test suite inside of the Xfce desktop for Sakuli

Run Configuration

○ Local execution
● Run in Sakuli-Container
Container: sakuli-ubuntu-xfce Tag:
○ Run with `docker-compose`
○ Run with `dockerfile`



15-11-2017 09:25:49 | 27 sec | example_xfce_de | ERRORS

case1 19 sec

**Test_Sahi_landing_page** 4 actions 1.0 ec

**Calculation** Can't find "[id=625, path=/sakuli-examples/docker-xfce/part_01/example_xfce/case1/625.png ]" inR[0,0 1280x1024]@S(0)wait...

**Can't find "[id=625, path=/sakuli-examples/docker-xfce/part_01/example_xfce/case1/625.png ]" inR[0,0 1280x1024]@S(0)waitFor function in 5 sec.**

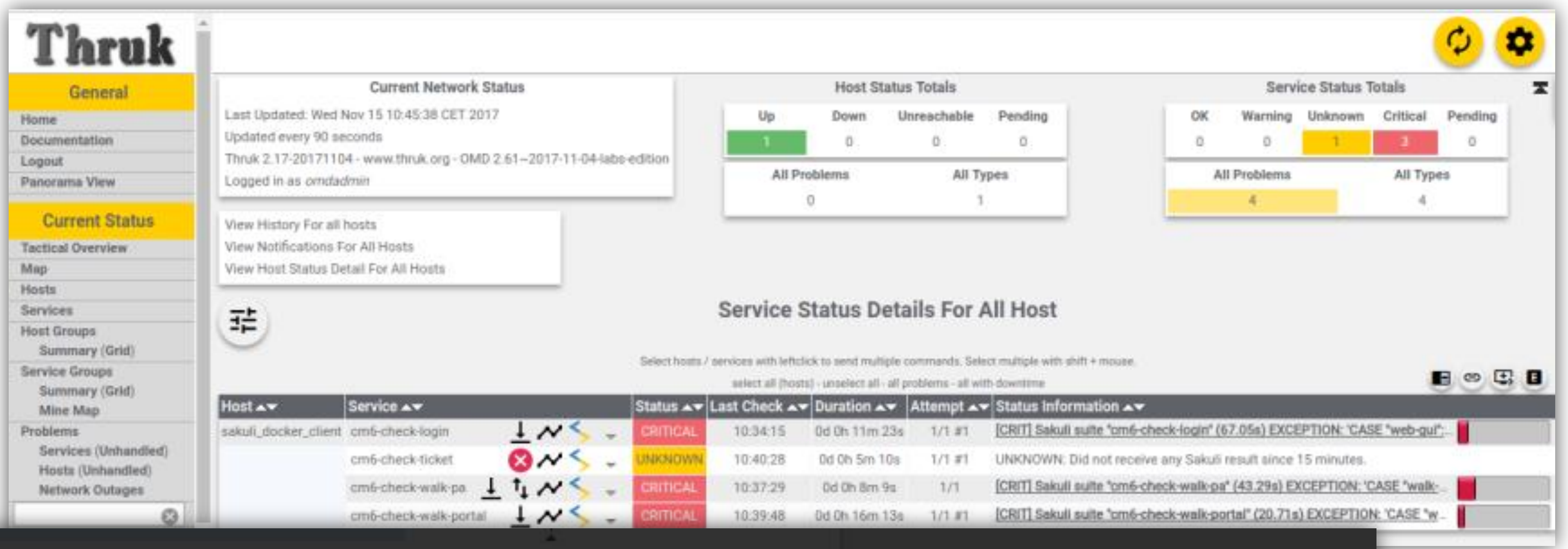
**Editor** 0 actions

**Final steps** 5 actions NaN ec

# sakuli Integrations

# OMD Monitoring Integration

- Ready-to-use setup in OpenShift
- Combinable with „traditional“ monitoring checks
- Performance graphs
- Cron scheduled check execution
- Error screenshots
- Mail / Chat Notification
- Live watching possible



Current Network Status

Last Updated: Wed Nov 15 10:45:38 CET 2017
Updated every 90 seconds
Thruk 2.17-20171104 - www.thruk.org - OMD 2.61~2017-11-04-labs-edition
Logged in as *omdadmin*

View History For all hosts
View Notifications For All Hosts
View Host Status Detail For All Hosts

Host Status Totals

| Up | Down | Unreachable | Pending |
|---|---|---|---|
| 1 | 0 | 0 | 0 |

| All Problems | All Types |
|---|---|
| 0 | 1 |

Service Status Totals

| OK | Warning | Unknown | Critical | Pending |
|---|---|---|---|---|
| 0 | 0 | 1 | 3 | 0 |

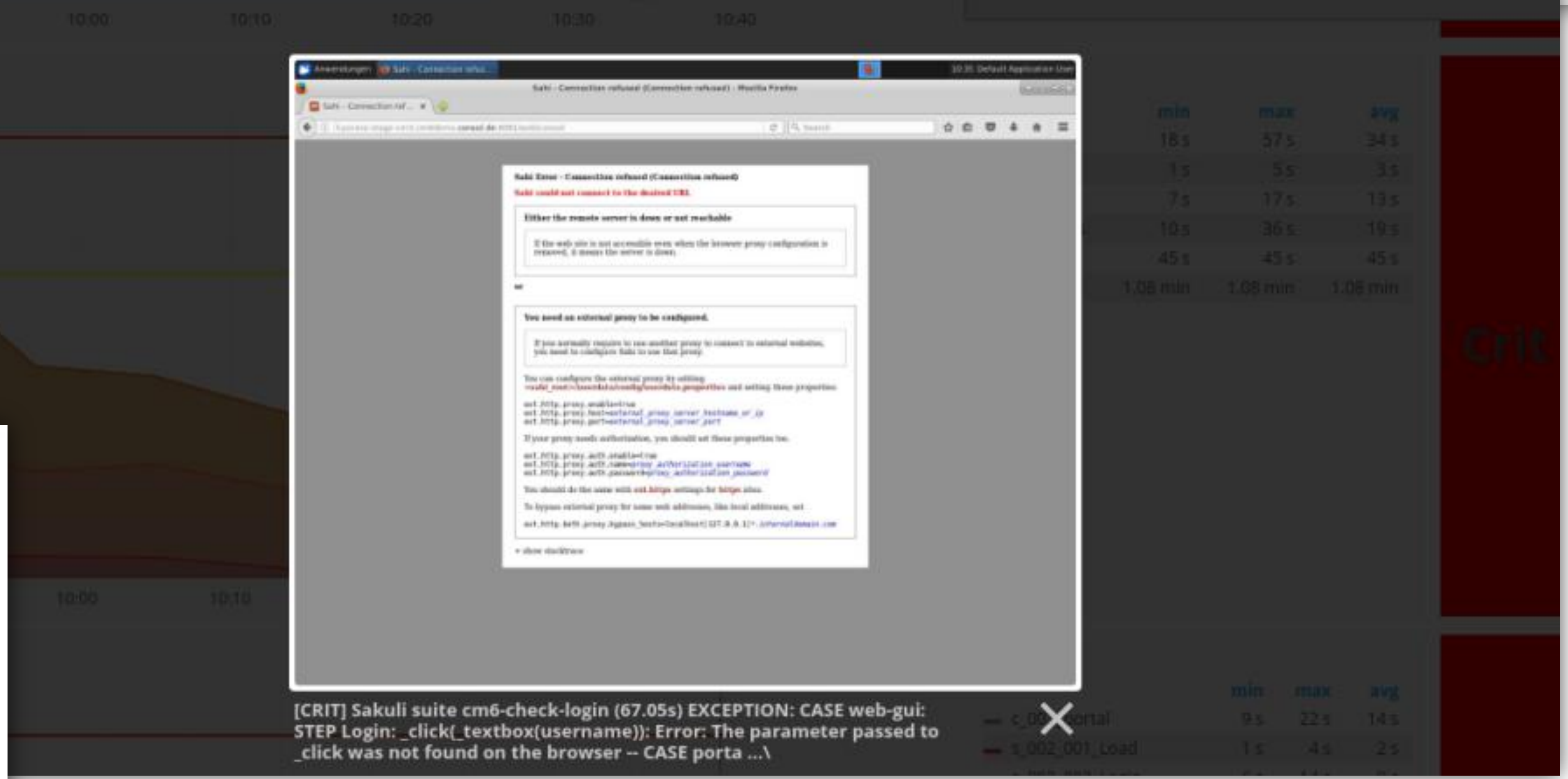
| All Problems | All Types |
|---|---|
| 4 | 4 |

Service Status Details For All Host

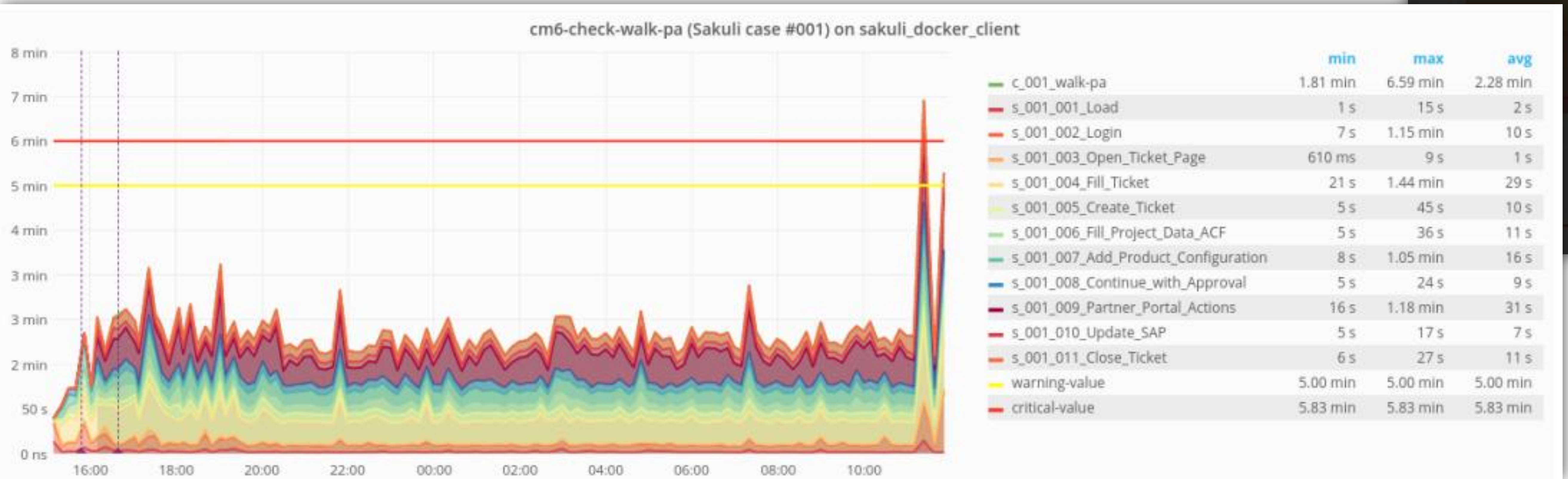
Select hosts / services with leftclick to send multiple commands. Select multiple with shift + mouse.

select all (hosts) - unselect all - all problems - all with downtime

| Host | Service | Status | Last Check | Duration | Attempt | Status Information |
|---|---|---|---|---|---|---|
| sakuli_docker_client | cm6-check-login | CRITICAL | 10:34:15 | 0d 0h 11m 23s | 1/1 #1 | [CRIT] Sakuli suite "cm6-check-login" (67.05s) EXCEPTION: 'CASE "web-gui"... |
| | cm6-check-ticket | UNKNOWN | 10:40:28 | 0d 0h 5m 10s | 1/1 #1 | UNKNOWN: Did not receive any Sakuli result since 15 minutes. |
| | cm6-check-walk-pa | CRITICAL | 10:37:29 | 0d 0h 8m 9s | 1/1 | [CRIT] Sakuli suite "cm6-check-walk-pa" (43.29s) EXCEPTION: 'CASE "walk-... |
| | cm6-check-walk-portal | CRITICAL | 10:39:48 | 0d 0h 16m 13s | 1/1 #1 | [CRIT] Sakuli suite "cm6-check-walk-portal" (20.71s) EXCEPTION: 'CASE "w... |



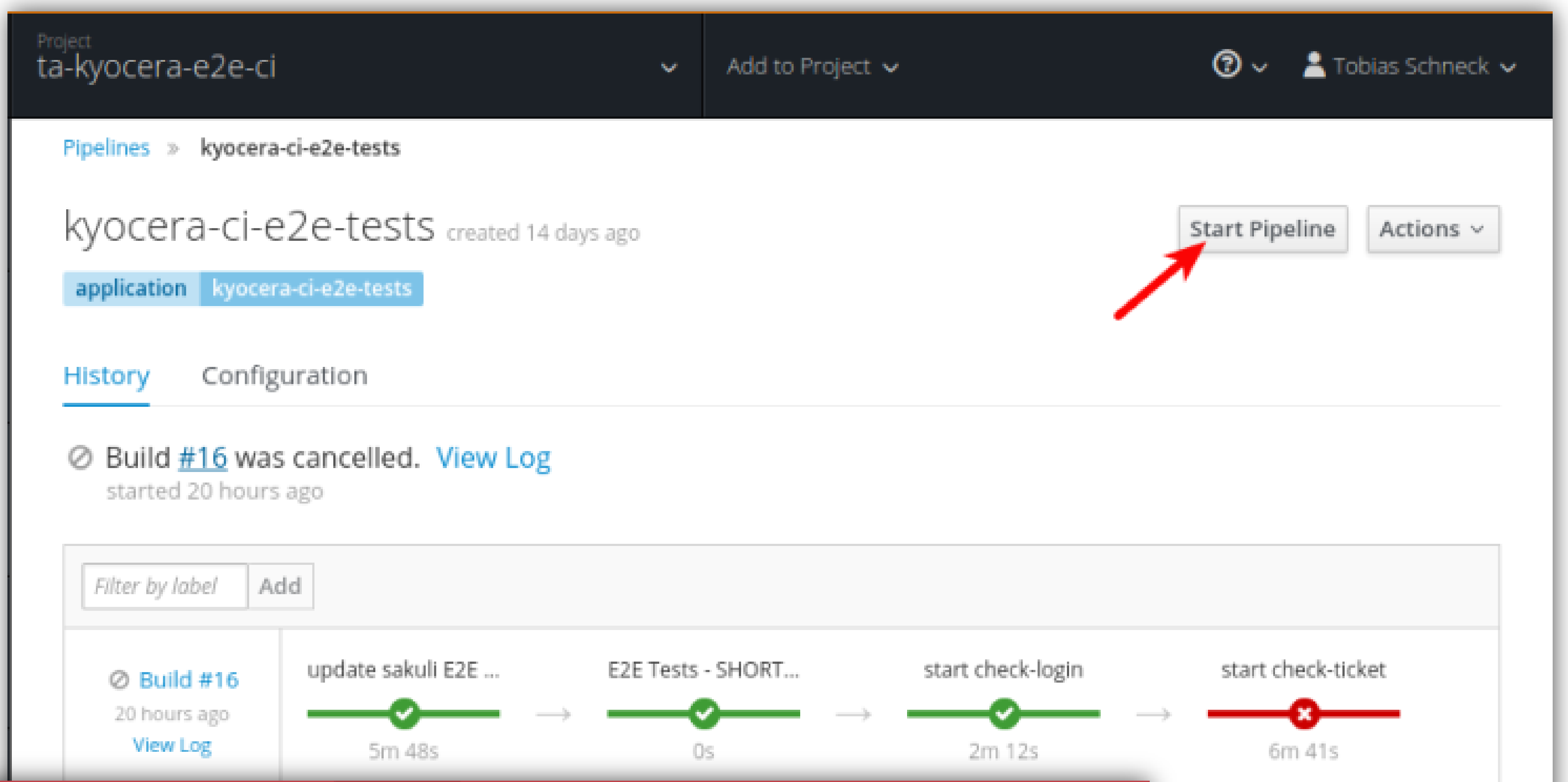
[CRIT] Sakuli suite cm6-check-login (67.05s) EXCEPTION: CASE web-gui: STEP Login: _click(_textbox(username)): Error: The parameter passed to _click was not found on the browser -- CASE porta ...\



| | min | max | avg |
|---|---|---|---|
| c_001_walk-pa | 1.81 min | 6.59 min | 2.28 min |
| s_001_001_Load | 1 s | 15 s | 2 s |
| s_001_002_Login | 7 s | 1.15 min | 10 s |
| s_001_003_Open_Ticket_Page | 610 ms | 9 s | 1 s |
| s_001_004_Fill_Ticket | 21 s | 1.44 min | 29 s |
| s_001_005_Create_Ticket | 5 s | 45 s | 10 s |
| s_001_006_Fill_Project_Data_ACF | 5 s | 36 s | 11 s |
| s_001_007_Add_Product_Configuration | 8 s | 1.05 min | 16 s |
| s_001_008_Continue_with_Approval | 5 s | 24 s | 9 s |
| s_001_009_Partner_Portal_Actions | 16 s | 1.18 min | 31 s |
| s_001_010_Update_SAP | 5 s | 17 s | 7 s |
| s_001_011_Close_Ticket | 6 s | 27 s | 11 s |
| warning-value | 5.00 min | 5.00 min | 5.00 min |
| critical-value | 5.83 min | 5.83 min | 5.83 min |

# CI Pipeline with Jenkins

- OpenShift integrated Jenkins
- Triggerable by Hand
- Triggerable by Webhooks
- Build & run E2E tests
- Error screenshots
- Mail / Chat Notifications
- Live watching possible

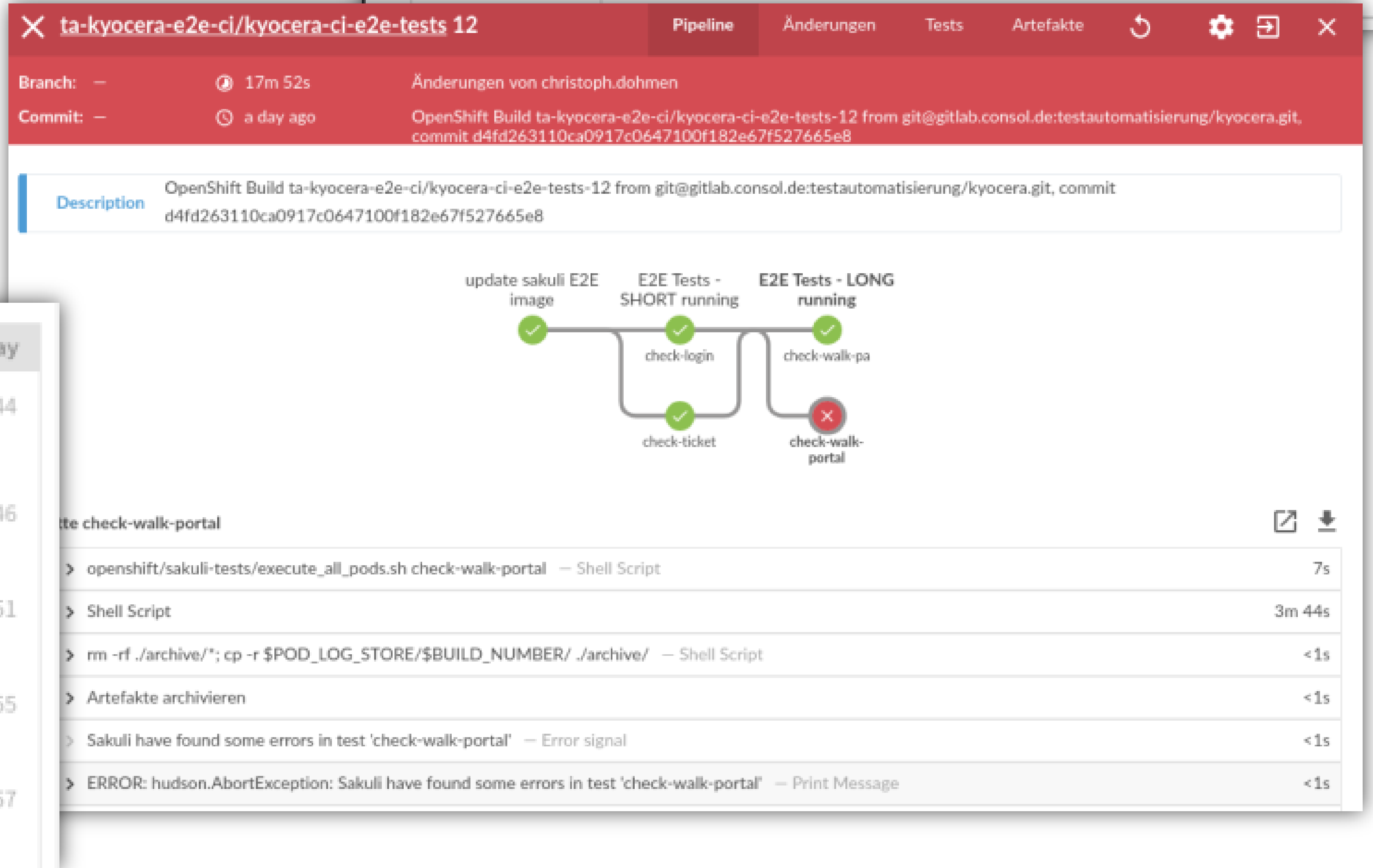


kyocera-ci-e2e-tests created 14 days ago

application kyocera-ci-e2e-tests

Build #16 was cancelled. View Log
started 20 hours ago

| Build #16<br>20 hours ago<br>View Log | update sakuli E2E ... | E2E Tests - SHORT... | start check-login | start check-ticket |
|---|---|---|---|---|
| | 5m 48s | 0s | 2m 12s | 6m 41s |

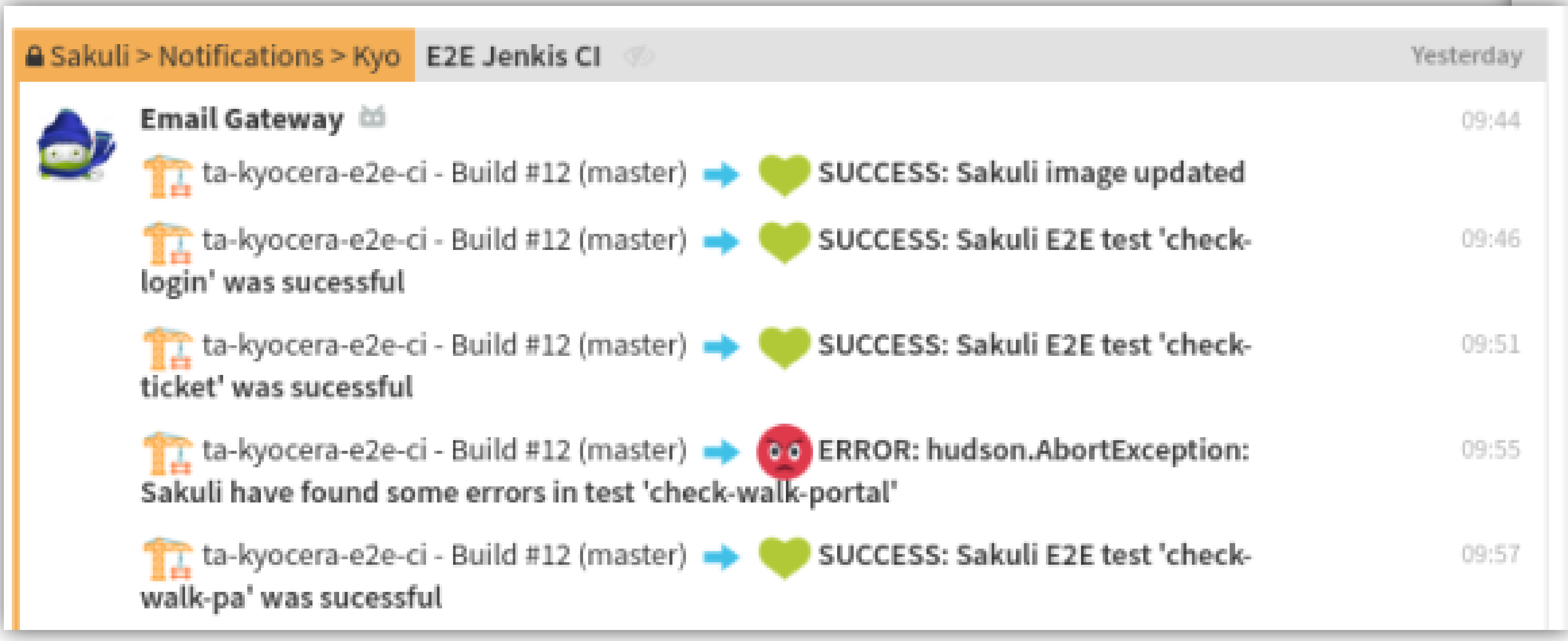


ta-kyocera-e2e-ci/kyocera-ci-e2e-tests 12

Branch: — 17m 52s Änderungen von christoph.dohmen
Commit: — a day ago OpenShift Build ta-kyocera-e2e-ci/kyocera-ci-e2e-tests-12 from git@gitlab.consol.de:testautomatisierung/kyocera.git, commit d4fd263110ca0917c0647100f182e67f527665e8

Description OpenShift Build ta-kyocera-e2e-ci/kyocera-ci-e2e-tests-12 from git@gitlab.consol.de:testautomatisierung/kyocera.git, commit d4fd263110ca0917c0647100f182e67f527665e8

```
te check-walk-portal
> openshift/sakuli-tests/execute_all_pods.sh check-walk-portal  — Shell Script                                7s
> Shell Script                                                                                             3m 44s
> rm -rf ./archive/*; cp -r $POD_LOG_STORE/$BUILD_NUMBER/ ./archive/  — Shell Script                          <1s
> Artefakte archivieren                                                                                      <1s
> Sakuli have found some errors in test 'check-walk-portal'  — Error signal                                   <1s
> ERROR: hudson.AbortException: Sakuli have found some errors in test 'check-walk-portal'  — Print Message    <1s
```



Sakuli > Notifications > Kyo E2E Jenkis CI — Yesterday

**Email Gateway** 09:44

ta-kyocera-e2e-ci - Build #12 (master) → **SUCCESS: Sakuli image updated**

ta-kyocera-e2e-ci - Build #12 (master) → **SUCCESS: Sakuli E2E test 'check-login' was sucessful** 09:46

ta-kyocera-e2e-ci - Build #12 (master) → **SUCCESS: Sakuli E2E test 'check-ticket' was sucessful** 09:51

ta-kyocera-e2e-ci - Build #12 (master) → **ERROR: hudson.AbortException: Sakuli have found some errors in test 'check-walk-portal'** 09:55

ta-kyocera-e2e-ci - Build #12 (master) → **SUCCESS: Sakuli E2E test 'check-walk-pa' was sucessful** 09:57

# Links

- **Testautomation@ConSol:** https://www.consol.de/it-services/testautomatisierung

- **Sakuli:**
  - Homepage: www.sakuli.org
  - Github: https://github.com/ConSol/sakuli
  - Documentation: http://consol.github.io/sakuli/
  - Examples: https://github.com/consol/sakuli-examples
  - Publications: http://consol.github.io/sakuli/latest/index.html#publications

Informatik Aktuell

**Software-Test im Container**

Stabile und skalierbare Testumgebungen für End-2-End-Tests im Container mit Docker und Sakuli.

**>> Weiterlesen**

# Any questions?

# Thank you!

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