The missing link

- Tech talk -

Checkmk Conference #7/2021

Jens Dunkelberg
Teamleader Monitoring
Abraxas Informatik AG

Simon Meggle
Robotmk Developer
Consultant/CEO
ELABIT GmbH
WHAT IS YOUR JOB?
YOU DON’T JUST RUN “IT”...
...YOU DELIVER SERVICES TO REAL USERS. (mostly)
YOU DELIVER SERVICES.

WEB SHOP + CRM + TICKET SYSTEM + CUSTOMER PORTAL

SAP + INTRANET + DWH + WEBMAIL

available! + performant! + functioning!
<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHAT ARE YOU</td>
<td></td>
</tr>
<tr>
<td>MONITORING?</td>
<td></td>
</tr>
<tr>
<td>PROCESSES</td>
<td>HARD DRIVE, TCP 443</td>
</tr>
<tr>
<td>TRAFFIC</td>
<td>TABLE SPACE, USERS</td>
</tr>
<tr>
<td>SWAP</td>
<td>DISK IO, FILE COUNT, LOGS, FANS</td>
</tr>
<tr>
<td>HEAP MEMORY</td>
<td>TEMPERATURE, UPLINK, AC POWER</td>
</tr>
<tr>
<td>UPLINK</td>
<td></td>
</tr>
</tbody>
</table>
WHAT ARE YOU NOT MONITORING?
YOU MONITOR "IT" AND YOU HOPE YOU CAN DELIVER SERVICES.
EXTERNAL IMPACT
END USER’S TRUST / VISITOR / CUSTOMER
How long would you try an app which does not work...?
IMPACT

INTERNAL
TEST
WHAT CAN BREAK WITHIN YOUR BUSINESS APPLICATIONS
"HA!"

check_http

Pulse

ICMP Ping
"HA!"  check_http

Pulse  ICMP Ping
Your own “framework”...

```python
from selenium import webdriver

driver = webdriver.Chrome(r'C:\Users\drivers\chromedriver.exe')
driver.maximize_window()
driver.get("http://www.seleniumeasy.com/test/basic-first-form-demo.html")
assert "Selenium Easy Demo - Simple Form to Automate using Selenium" in driver.title

eleUserMessage = driver.find_element_by_id("user-message")
eleUserMessage.clear()
eleUserMessage.send_keys("Test Python")

eleShowMsgBtn = driver.find_element_by_css_selector('#get-input > .btn')
eleShowMsgBtn.click()

eleYourMsg = driver.find_element_by_id("display")
assert "Test Python" in eleYourMsg.text
driver.close()
```
ROBOT FRAMEWORK

- Generic test automation framework
- written in Python
- Library concept
- “keyword driven approach”
*** Settings ***
Library SeleniumLibrary
Suite Teardown Close All Browsers

*** Variables ***
${URL} = http://www.seleniumeasy.com/test/basic-first-form-demo.html

*** Test Cases ***
Selenium Demo
  Open Browser  ${URL}  chrome.service_log_path=null
  Maximize Browser Window
  Wait Until Element Is Visible  at-cv-lightbox-close  timeout=10  error=None
  Click Element  at-cv-lightbox-close
  Page Should Contain  Selenium Easy Demo - Simple Form to Automate using Selenium
  Input Text  user-message  Test Robot
  Click Button  css:#get-input > .btn
  Wait Until Element Contains  display  Test Robot  timeout=3  error="Testtext konnte nicht gefunden werden!"
KEYWORDS ABSTRACT
SOURCE CODE

Python selenium module

function 1

function 2

function 3

keyword

user keywords

library keywords
LIBRARIES FOR EVERY USE CASE

- Web automation (SeleniumLibrary, Playwright)
- Desktop/OS automation
  - by Win32 API (FlaUI, Zoomba.Desktop, AutoIT)
  - by Image pattern recognition (ImageHorizonLibrary)
- Network (SSH, REST, SOAP, Telnet, ...)
- Kubernetes (KubernetesLibrary)
- PDF comparison (DocTest library)
- many more...
- self-written libraries (Python functions become keywords)
“The decision for Robot Framework is NOT a decision for a software vendor.

It’s the decision for the LINGUA FRANCA of test automation.”
INTEGRATING ROBOT FRAMEWORK INTO CMK

100% ROBOT COMPATIBLE
100% CONFIGURABLE BY WEB UI
100% RAW DATA ACCESS
CUSTOMER CASE

Jens Dunkelberg
ICT-System-Ingenieur Automation
Abraxas Informatik AG

uses
Abraxas Informatik AG

Locations
- Münchenstein
- Zürich
- Frauenfeld
- St.Gallen | Headquarter
- Bern
- Morges

Employees
870

Revenue 2020
183.7 Mio. CHF

Our shareholders
- 6 Cantons
- 127 Municipalities

Focus customers
- Confederation
- Cantons
- Municipalities
- Social & building insurances
- Companies
- Police & Judiciary

Support Partner
SILVER
Old setup

- Outdated
- Insecure, flash based dashboard
- Unreliable, error-prone
- Know-How intensive even for small customizations
- Complicated
- Expensive
- Very, very complicated to attach or integrate into Checkmk
POC

Different tools, same task:
- Same old application
- Migrate existing e2e test

Main focus for me:
- Easy to learn
- Future-proof
- No fixed costs, no vendor lock-in
- Deep integration into Checkmk
Demo applications

Electronic Archive (ELAR)

- Document management for the Swiss social insurance institutions
- Very old Windows legacy application
- Scope on:
  - Is it working?
  - Speed on fetching documents

Gemeinsame Informationsplattform Naturgefahren (GIN)

- Web application e.g. useable to weight natural hazards
- Very modern, award-winning web application
- Used by “blue light” organizations, disaster management, governments etc.
- Scope on:
  - Is it working?
  - Presence of the data
Prepare a Windows client

- Install Python3
- Install Robot framework + libraries
  - `pip install robotframework`
  - `pip install robotframework-browser`
- create `robot` dir, paste RF suite into it
Install Robotmk

- MKP files for Checkmk **v1.6 and v2.x**
- Latest version from GitHub / reviewed version from Checkmk Exchange
- Install MKP

![Image of Checkmk interface with extension package for Robotmk](image_url)
Configure Bakery rule

- **bakey rule**
- **bakey script**
- **CMK**

**Execution mode**
- agent_serial

**Specify suites to execute with one runner**
- Robot test path
- Suite tag
- Piggyback host

**Robot Framework parameters**
- AREA: prod
- BROWSER: chromium

**Add new element**
- Load variables from file (---variablefile)
- Exit on failure (---exitonfailure)

**Result cache time**
- 0 days 0 hours 11 mins 0 secs

**Runner execution interval**
- 0 days 0 hours 10 mins 0 secs
The agent got configured

```yaml
agent > bakery > ! check.mic.bakery.yml
1 # Created by Check_MK Agent Bakery.
2 # This file is managed via WATO, do not edit manually or you
3 # lose your changes next time you update the agent.
4
5 global:
6   enabled: true
7   execute:
8     - exe
9     - bat
10    - vbs
11    - psi
12    - py
13 install: true
14 port: 6556
15 plugins:
16   enabled: true
17   execution:
18     - cache_age: 600
19     pattern: $CUSTOM_PLUGINS_PATHS\robotmk-runner.py

agent > config > ! robotmk.yml
1 # Created by Check_MK Agent Bakery.
2 # This file is managed via WATO, do not edit manually or you
3 # lose your changes next time you update the agent.
4
5 # This file is part of Robotmk, a module for the integration of Robot
6 # framework test results into Checkmk.
7 #
8 # https://robotmk.org
9 # https://github.com/simonmeggel/robotmk
10 # https://robot-framework.org/
11 # ROBOTMK VERSION: v1.1.0-beta.4
12
13 global:
14   execution_mode: agent_serial
15   agent_output_encoding: \lib_codec
16   transmit_output_encoding: true
17   logging: true
18   log_rotation: '14'
19   cache_time: 600
20   execution_interval: 600
21
22 suites:
23   webshop:
24     path: webshop
25   variable:
26     AREA: prod
27     BROWSER: chromium
```
Discovery

Default = 1 service per RF suite

Create one service per RF test
Discovery: Pattern based service naming

Robot Framework E2E ${SUITEID} - <item>

use patterns and variables to rename services:

- **Service name prefix**: RF $SUITEID$SPACE$SPACE

The default format string is 'Robot Framework E2E $SUITEID$SPACE$SPACE'.

- **RF workshop - Login With Invalid Credentials**
  - Status: OK
  - Test result: [T] 'Login With Invalid Credentials': PASS

- **RF workshop - Login With Valid Credentials**
  - Status: OK
  - Test result: [T] 'Login With Valid Credentials': PASS

- **RF workshop - Search For Items**
  - Status: OK
  - Test result: [T] 'Search For Items': PASS
Check: Thresholds and Graphs
(Measuring means Knowing!)
Different interests of notifications

As an application admin, it is my job to...
- keep the application running

I want to be informed about...
- runtime threshold exceedance
- performance decline
- function disruption

(And I want a 100% availability report!)

As a Checkmk admin, it is my job to...
- maintain the E2E test infrastructure

I want to be informed about...
- stale Robot results
- timing/scheduling issues
- deployment problems

...60% ??!
My application WAS available!!!
The “Robotmk” self monitoring service

Robotmk keyword library for a separate “notification channel”:

https://github.com/simonmeggle/robotmk

$\{PW\_EXPIRING\} = \text{Get Element} //\text{span[contains(text(),'Your password will expire in')]}$

Run Keyword If $\{PW\_EXPIRING\}$

- Add Monitoring Message
  - WARNING
  - Application reports: Password of test user is expiring soon!
The “Robotmk” self monitoring service

(versio mismatch)
(stale result)
(runtime headroom)

execution_interval
- runtime
= runtime headroom
= “intentional idle time”
Planned: HTML Report integration
IDEAS...

**Website defacement detection**
with ImageHorizon Library

**Data Driven Testing**
with DataDriver Library

**DDM (Database Deep Monitoring)**
with DatabaseLibrary

**KDM (Kubernetes Deep Monitoring)**
with KubeLibrary

...
Robotmk integration: ELAR
Robotmk integration: GIN
Robotmk integration: GIN
Robotmk statistics in Grafana (advanced customer view)
HOW TO START WITH ROBOTmk
HOW TO START

YOUR OWN STEPS

- Robot Framework community (Slack, forum, mailing list)
- Robot Framework documentation
- Robotmk inline help
- Have a goal in sight!
PROFESSIONAL SUPPORT

Network of experienced partners for

- Consulting
- Project Assistance

www.robotmk.org/pages/professionalsupport
Learning curve
The comprehensive E2E monitoring guide:

- Launch day: September 1st, 2021
- Different skill levels
- Video/script/code learning material and exercises
- E2E best practice for all common RF libraries (web, UI, ...)
- Lively content, regular updates
- Built-in community

Register at www.robotmk.org/courses

→ The 3+ beginner courses are free content
→ CMK7 attendees who register today get a discount for the release in September
Thanks for your attention

Ask Jens or me:

- now
- after this tech talk at the Speaker’s Corner (#cmk7-speakers-corner)

www.robotmk.org/courses