Checkmk Conference #9

Automate Host Management with External Sources

Or: The CMDB Syncer

Bastian Kuhn

CEO at Kuhn & Rueß GmbH

Automate Host Management with External Sources
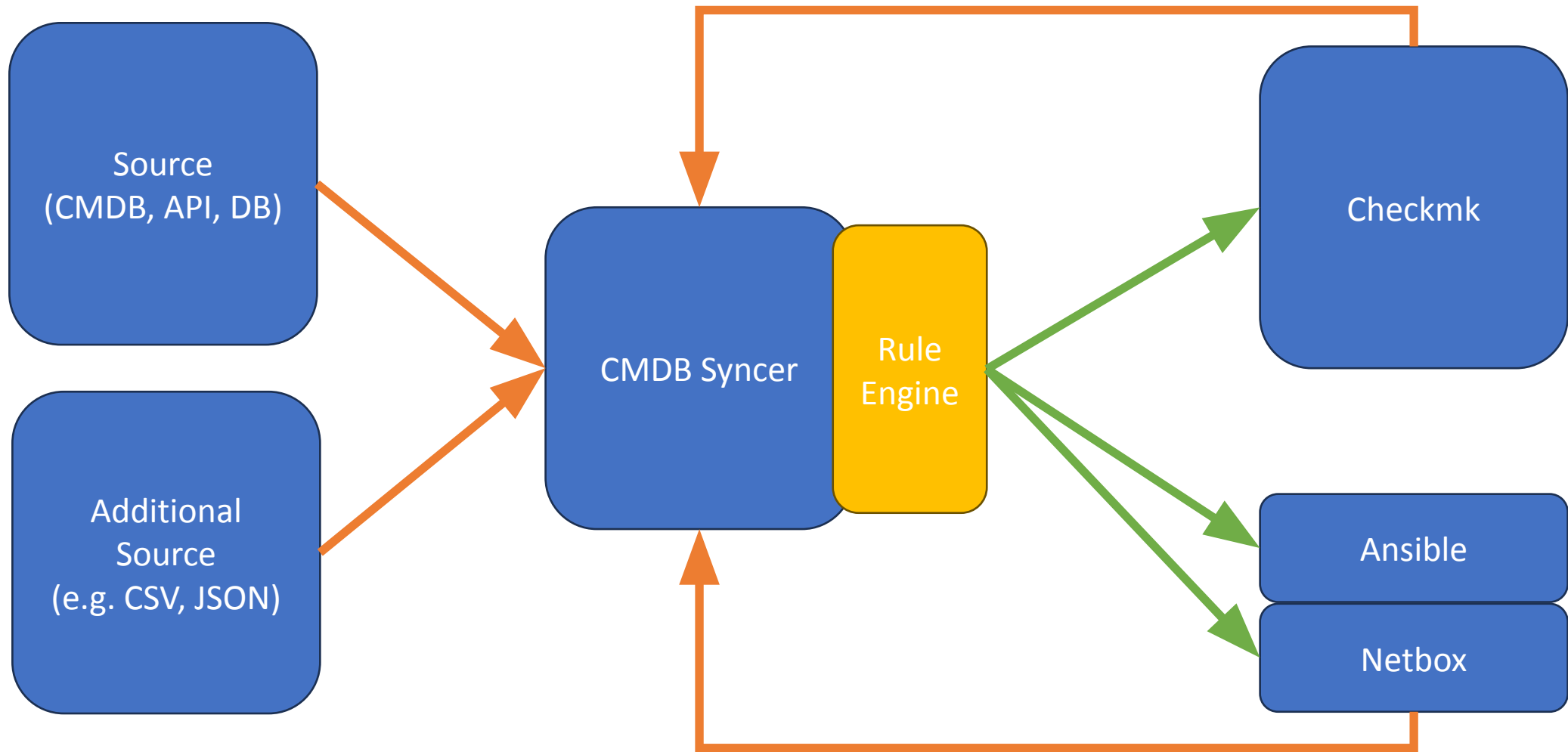
Or: The CMDB Syncer

Kuhn & Rueß GmbH

- We are Bastian Kuhn and Sven Rueß
- We are former Checkmk Team Members
- Checkmk Projects and Development
- Consultin, Support and Service Contracts
- Founded 2023
- But expirence over 20 Years

CMDB Syncer

- Started in 2019 as Script
- Now a Webapplication with CLI
- Manages Automation of Checkmk
- Includes Folders and Rules
- Includes Agents registrations and inital Installations
- Docu: https://cmdbsyncer.readthedocs.io/
- Runs with Docker, needs Mongodb and Python
- Productive in more and more Companies

Architecture

The Command Line Interface

```
/srv # ./cmdbsyncer
CMDB Syncer Version: 3.1.4
Usage: cmdbsyncer [OPTIONS] COMMAND [ARGS]...

Options:
  --help  Show this message and exit.

Commands:
  ansible     Ansible related commands
  checkmk     Checkmk commands
  cisco-dna   Cisco DNA related commands
  cron        Cron Jobs
  csv         CSV related commands
  json        JSON related Commands
  mysql       MYSQL Related commands
  netbox      Netbox Commands
  rules       Rule related commands
  sys         Syncer commands
/srv #
```

```
/srv # ./cmdbsyncer checkmk
Usage: cmdbsyncer checkmk [OPTIONS] COMMAND [ARGS]...

  Checkmk commands

Options:
  --help  Show this message and exit.

Commands:
  activate_changes      ## Activate Changes in given Checkmk Instance
  bake_and_sign_agents  ## Bake and Sign Agents for given Checkmk Instance
  debug_host            ## Debug Host Configuration
  export_bi_rules       Export all BI Rules to given Checkmk Installations
  export_groups         ## Create Groups in Checkmk
  export_hosts          ## Export Hosts to Checkmk
  export_rules          Export all configured Rules to given Checkmk...
  import_v1             Get All hosts from a CMK 1.x Installation and add...
  import_v2             Get All hosts from a CMK 2.x Installation and add...
  inventorize_hosts     ## Do an Status Data inventory on given Checkmk...
  show_hosts            ## Print List of all Hosts currently synced to...
  show_labels           ## Print unique list of labels which later will...
  show_missing_hosts    ## Check which Hosts are in Checkmk but not in...
/srv #
```

The Web Interface

Import Plugin Api

```python
def import_hosts(json_path, hostname_field, account):
    """
    ## Import Hosts from JSON File
    """
    #pylint: disable=no-member, consider-using-generator


    account = get_account_by_name(account)

    filename = json_path.split('/')[-1]
    print(f"{ColorCodes.OKBLUE}Started {ColorCodes.ENDC}"\
          f"{ColorCodes.UNDERLINE}{filename}{ColorCodes.ENDC}")

    with open(json_path, newline='', encoding='utf-8') as json_file:
        data = json.load(json_file)
        for host in data:
            hostname = host[hostname_field]
            print(f" {ColorCodes.OKGREEN}** {ColorCodes.ENDC} Update {hostname}")
            del host[hostname_field]
            host_obj = Host.get_host(hostname)
            if host_obj.get_labels() != host:
                host_obj.set_import_sync()
                host_obj.set_labels(host)
            host_obj.set_import_seen()

            do_save = host_obj.set_account(account_dict=account)

            if do_save:
                host_obj.save()
```

Import and Inventory

```
/srv #
/srv # ./cmdbsyncer json import_hosts --account json
Started local_hosts.json
   **   Update ai██████████████████.at
   **   Update ai██ ███ ███ ████.at
   **   Update ai█████████71 ██ ███ ██████.at
   **   Update amf█1 ██ ███ ██████.at
   **   Update amf█1 ██████ ██████.at
   **   Update amf8██████████████.at
   **   Update amf8██████████████.at
   **   Update amf8██████████████.at
   **   Update amf82 ██████ ██████.at
   **   Update amf8██████████████.at
   **   Update amf81 ██ ████ ██████.at
   **   Update amf82 ██ ████ ██████.at
   **   Update amf82 ██████████████.at
```

Attributes

path	./local_hosts.json
hostname_field	name

List   Create   Details

Filter [   ]

Hostname	~~xi91.ihr.clcvkvssvstc~~.at
Folder	
Available	True
Force Update	False
Labels	

computeResources	~~{type: Sphere, ...}~~
env	dev
managedBy	~~{ansibleRepo : ai-devops, platform : ai}~~
status	active
usedBy	~~{platform :..., ...}~~
zone	~~hs~~

Inventory	
Log	

Export Rules

- Folder Structure by Attributes

- Folder Structure by Folder Size

- Make Attributes an Checkmk Attribute

- Create Clusters

List (3)   Create   Export ▾   Add Filter ▾   With selected ▾

☐		Name	Condition Typ	Conditions					Checkmk Outcomes			Last Match	Enabled	Sort Field
☐	✏ 🗑	New Folder	anyway						0	Use Value of given Attribute Name as Folder	os	⊖	✔	0
☐	✏ 🗑	Create Cluster	all	0	Hostname	is equal	srvlx110		0	Create Cluster. Specify Tags with Nodes as Wildcard (*) and or Comma separated	node_*, xnode	⊖	✔	0
☐	✏ 🗑	Create Folder	all	0	Attribute	Key	is equal	os	Negate: False	0	Move Host to specified Folder	team1	⊖	✔	0
						Value	found in list	linux,windows,unix	Negate: False	1	Use Value of given Attribute Name as Folder	os			

Cron: Run the needed Jobs

Ansible

Linux and Windows

Ansible – Rules

0	**Attribute**	**Key**	is equal	**cmk_inventory_failed**	Negate: **False**
		Value	is equal	**True**	Negate: **False**
1	**Attribute**	**Key**	is equal	**cmk_svc_check_mk_output**	Negate: **False**
		Value	is equal	**[agent] Empty output**	Negate: **False**
2	**Attribute**	**Key**	is equal	**cmk_svc_check_mk_output**	Negate: **False**
		Value	is equal	**[agent] Communication failed**	Negate: **False**

0	cmk_install_agent	**true**
1	cmk_discover	**true**
2	cmk_register_bakery	**true**
3	cmk_register_tls	**true**

Ansible – Inventory

- Use as Inventory Source

- RestAPI if the Playbook runs from diffrent Server

- Integrated Playbooks for:
  - Installation
  - Registrations
  - Discovery

```yaml
- name: "Register Agent for TLS."
  become: true
  ansible.builtin.shell: |
    cmk-agent-ctl register -H {{ inventory_hostname }} \
    -s {{ cmk_server }}:{{ cmk_agent_receiver_port }}  -i {{ cmk_site }} \
    -U {{ cmk_user }} --password {{ cmk_secret }} --trust-cert
  when: cmk_register_tls | bool
  ignore_errors: yes

- name: "Register Agent on Local Bakery."
  become: true
  ansible.builtin.shell: |
    cmk-update-agent register -H {{ inventory_hostname }} \
    -s {{ cmk_server }} -i {{ cmk_site }} -p https \
    -U {{ cmk_user }} -S {{ cmk_secret }}
  when: cmk_register_bakery | bool
  ignore_errors: yes
```

Ansible – Update your Checkmk Sites

		Name	Server User	Cmk Version	Cmk Edition	Cmk Version Filename
☐	✏ 🗑	Main Setup	bkuhn	2.1.0p20	cee	check-mk-enterprise-2.1.0p19_0.bullseye_amd64.deb

CMDB Syncer 3.1.4   Hosts   Rules ▾   Config ▾   Profil ▾   Log   Commit Changes

List (1)   Create   With selected ▾

- Update your Distributed Monitoring
- Automatic Download using your Subscription
- Alternative: Place Installation File on Server

Questions?

- I'm Happy to answer your Question

- Contact us at: info@kuhn-ruess.de

- Documentation: cmdbsyncer.readthedocs.io

- About us: https://kuhn-ruess.de