



Kriten

API driven automation

working
alongside:

evolvere
TECHNOLOGIES

10 years of Network Automation

Many platforms, modules and products now available

No single solution, even within an organisation.

Custom code necessary to automate networks.



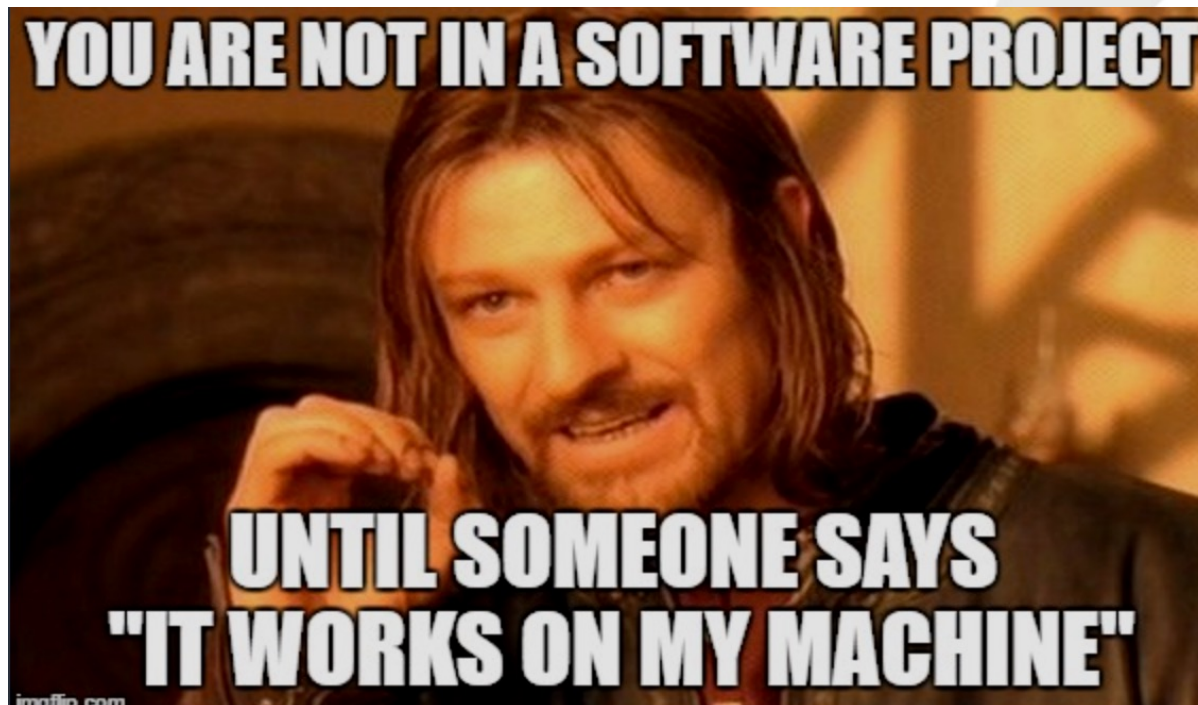
Common Problems

Where to run automation code?

How to make it available?

How to implement authentication/authorisation.

How to protect system/privileged accounts?

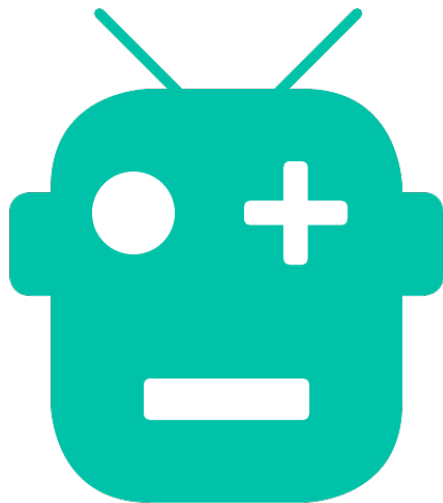


Kriten – The API-driven runtime environment

Kriten is a cloud-native code execution platform.

- Build and test your automation code.
- Build a container with your packages installed.
- Configure runner and task in Kriten.

You can now send consumers the Kriten task URL, which is all they need to run your automation code.



<https://kriten.io/>



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The show version example

You have proudly written an Ansible playbook to issue the “show version” command to a set of devices.

```
---
- name: Read extra_vars
  hosts: localhost
  gather_facts: no
  vars:
    input_vars: "{{ lookup('ansible.builtin.env', 'EXTRA_VARS')}}"

  tasks:
    - name: Reading target hosts from input vars and storing as localhost fact
      set_fact:
        target_hosts: "{{ input_vars['target_hosts'] }}"

- name: Show Version
  hosts: "{{ hostvars['localhost']['target_hosts'] }}"
  gather_facts: false
  connection: network_cli

  tasks:
    - name: Run 'show version' command on remote devices
      eos_command:
        commands: "show version"
        register: show_version

    - name: debug
      debug:
        #msg: "{{ show_version.stdout.0 }}"
        var: show_version.stdout.0
```

<https://github.com/kriten-io/kriten-examples/tree/main/netbox-ansible>



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Run the playbook locally

```
python3 -m venv venv
source venv/bin/activate
pip install -r requirements.txt
source venv/bin/activate
export NETBOX_TOKEN=a08684c4649c091e201f1eeb4eb5c18123123123
export NETBOX_API=http://192.168.10.55:8000/
export EXTRA_VARS='{ "target_hosts": "all" }'
ansible-playbook -i netbox_inv.yml show_version.yml -e EXTRA_VARS
```

```
PLAY [Read extra_vars] *****
TASK [Reading target hosts from input vars and storing as localhost fact] *****
ok: [localhost]
PLAY [Show Version] *****
TASK [Run 'show version' command on remote devices] *****
ok: [evo-eos01]
TASK [debug] *****
ok: [evo-eos01] =>
  show_version.stdout.0: |-
    Arista vEOS-lab
    Hardware version:
    Serial number: CA0DFC7A91FA31E6C14199440F9B86C6
    Hardware MAC address: 0050.56f6.9bb9
    System MAC address: 0050.56f6.9bb9

    Software image version: 4.27.0F
    Architecture: x86_64
    Internal build version: 4.27.0F-24308433.4270F
    Internal build ID: 9088210e-613b-47db-b273-7c7b8d45a086
    Image format version: 1.0

    Uptime: 5 days, 23 hours and 13 minutes
    Total memory: 4002360 kB
    Free memory: 2836760 kB
PLAY RECAP *****
evo-eos01      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
localhost     : ok=1    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```



Build a container image

```
FROM python:3.9-slim
RUN mkdir /app
COPY requirements.txt /app
WORKDIR /app
RUN pip3 install -r requirements.txt
ENV ANSIBLE_HOST_KEY_CHECKING=False
CMD ["python", "ansible-playbook -i netbox_inv.yml show_version.yml"]
```

```
docker build -t evolvere/netbox-ansible-webinar:0.2 .
docker push evolvere/netbox-ansible-webinar:0.2
```



Create runner and task

Kriten

- Dashboard
- Users
- Groups
- Roles
- Role bindings
- Runners
- Tasks
- Jobs

Create Runner

Name
netbox-ansible

Image
evolvere/netbox-ansible-webinar:0.2

Branch
main

Git Url
<https://github.com/kriten-io/kriten-examples.git>

Token

SAVE

Kriten

Create Task

Name
netbox-ansible-show-version

Runner
#netbox-ansible

Command
ansible-playbook -i netbox-ansible/netbox_inv.yml netbox-ansible/show_version.yml

Schema

```
{
  "additionalProperties": false,
  "properties": {
    "target_hosts": {
      "minLength": 1,
      "pattern": "^[A-Za-z0-9-]+$",
      "type": "string"
    }
  },
  "required": [
    "target_hosts"
  ]
}
```

Secret

```
{
  "NETBOX_API": "http://192.168.10.55:8000/",
  "NETBOX_TOKEN": "a08684c4649c091e2011feeb4eb5c18123123123"
}
```

Synchronous

SAVE



Run the playbook via Kriten API call

```
export KRITEN_URL=http://kriten.192.168.10.102.nip.io

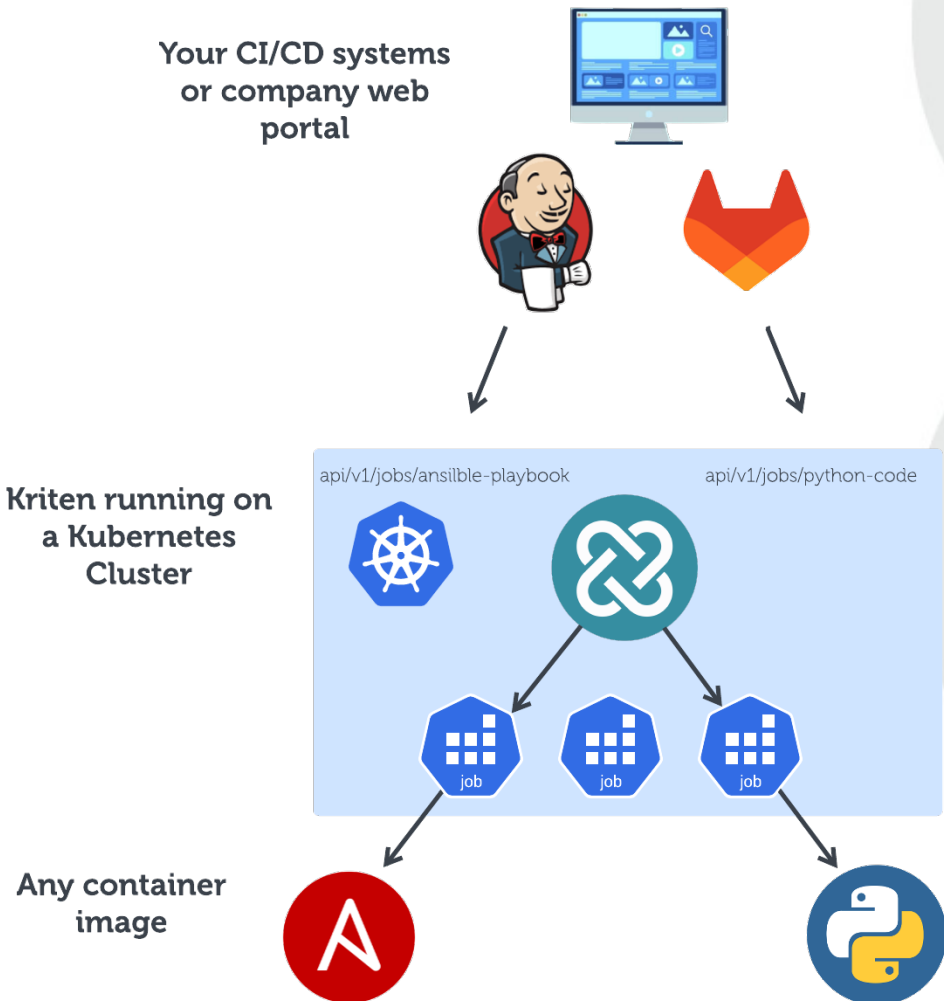
curl -c ./token.txt $KRITEN_URL'/api/v1/login' \
--header 'Content-Type: application/json' \
--data '{
  "username": "root",
  "password": "root",
  "provider": "local"
}'
{"token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6ImVyb3QlLkIjoiZTc4ZDk3NDYtZTNiZi00MDdiLTk1NmYtNWQwNzg3ZGEyZTczIiwic29udmkiOiJsb2NhbCI6ImV4cCI6MTcxMjc0ODg4Nn0.oah0MVVXRyYfYuf6dsJneV7b0q8HyEfnSo1hf-vQvjYY"}

curl -b ./token.txt $KRITEN_URL'/api/v1/jobs/netbox-ansible-show-version' \
--header 'Content-Type: application/json' \
--data '{
  "target_hosts": "evo-eos01"
}'
{"id":"netbox-ansible-show-version-7vdlf","msg":"job created successfully"}[evolvere@evo-management-05 ~]$

curl -b ./token.txt $KRITEN_URL'/api/v1/jobs/netbox-ansible-show-version-7vdlf' \
--header 'Content-Type: application/json'
{"id":"netbox-ansible-show-version-7vdlf","owner":"root","startTime":"Wed Apr 10 10:34:39 UTC 2024","completionTime":"Wed Apr 10 10:34:56 UTC 2024","failed":0,"completed":1,"stdout":"\nPLAY [Read extra_vars] *****\n\nTASK [Reading target hosts from input vars and storing as localhost fact] *****\nok: [localhost]\n\nPLAY [Show Version] *****\n\nTASK [Run 'show version' command on remote devices] *****\nok: [evo-eos01]\n\nTASK [debug] *****\nok: [evo-eos01] =\u003e {\n  \"show_version.stdout.0\": \"Arista vEOS-lab\nHardware version: \nSerial number: CA0DFC7A91FA31E6C14199440F9B86C6\nHardware MAC address: 0050.56f6.9bb9\nSystem MAC address: 0050.56f6.9bb9\nSoftware image version: 4.27.0F\nArchitecture: x86_64\nInternal build version: 4.27.0F-24308433.4270F\nInternal build ID: 9088210e-613b-47db-b273-7c7b8d45a086\nImage format version: 1.0\nUptime: 5 days, 23 hours and 52 minutes\nTotal memory: 4002360 kB\nFree memory: 2837448 kB\n}\n\nPLAY RECAP\n*****\nevo-eos01 : ok=2\nchanged=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0\nlocalhost :\nok=1 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0\n\n","json_data":null}
```



Typical deployment scheme



Run from NetBox

The screenshot displays the NetBox web interface. On the left is a dark sidebar with navigation menus: Organization, Devices, Connections, Wireless, IPAM, Overlay, Virtualization, Circuits, Power, Provisioning, Customization, and Operations. The 'Scripts' menu item is highlighted. The main content area shows the configuration for a script named 'Show Version' (ID: show_version.SHOWVER). The script description is 'Run show version command'. There are three tabs: 'Script', 'Source', and 'Jobs' (with a count of 3). The 'Script Data' section contains the following fields: 'Kriten url' (http://kriten.192.168.10.102.nip.io), 'Kriten username' (root), 'Kriten password' (masked with dots), and 'Target hosts' (evo-eos01). The 'Script Execution Parameters' section includes 'Schedule at' (YYYY-MM-DD hh:mm:ss), 'Recurs every' (a dropdown menu), and a checkbox for 'Commit changes'. At the bottom right, there are 'Cancel' and 'Run Script' buttons.

Results from NetBox

The screenshot displays the NetBox interface for a script execution. The left sidebar shows the navigation menu with 'Scripts' selected. The main content area shows the 'Show Version' script details, including a 'Log' tab and a 'Script Log' table. The 'Script Log' table has two entries: a 'Success' message indicating the job was launched, and an 'Info' message indicating that database changes were reverted automatically. Below the log is an 'Output' section showing the raw output of the script, including a recap of the results for the 'evo-eos01' and 'localhost' hosts.

Organization

Devices

Connections

Wireless

IPAM

Overlay

Virtualization

Circuits

Power

Provisioning

Customization

CUSTOMIZATION

- Custom Fields
- Custom Links
- Export Templates
- Saved Filters
- Tags
- Image Attachments

REPORTS & SCRIPTS

- Reports
- Scripts

Operations

Search

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Scripts > Show_version > Show Version > 2024-04-10 10:44

Show Version

Run show version command

Delete

Log Source

Started: 2024-04-10 10:44 Duration: 0 minutes, 20.88 seconds **Completed**

Script Log

Line	Level	Message
1	Success	Job netbox-ansible-show-version-46628 launched
2	Info	Database changes have been reverted automatically.

Output

```
PLAY [Read extra_vars] *****
TASK [Reading target hosts from input vars and storing as localhost fact] *****
ok: [localhost]

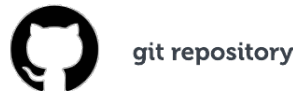
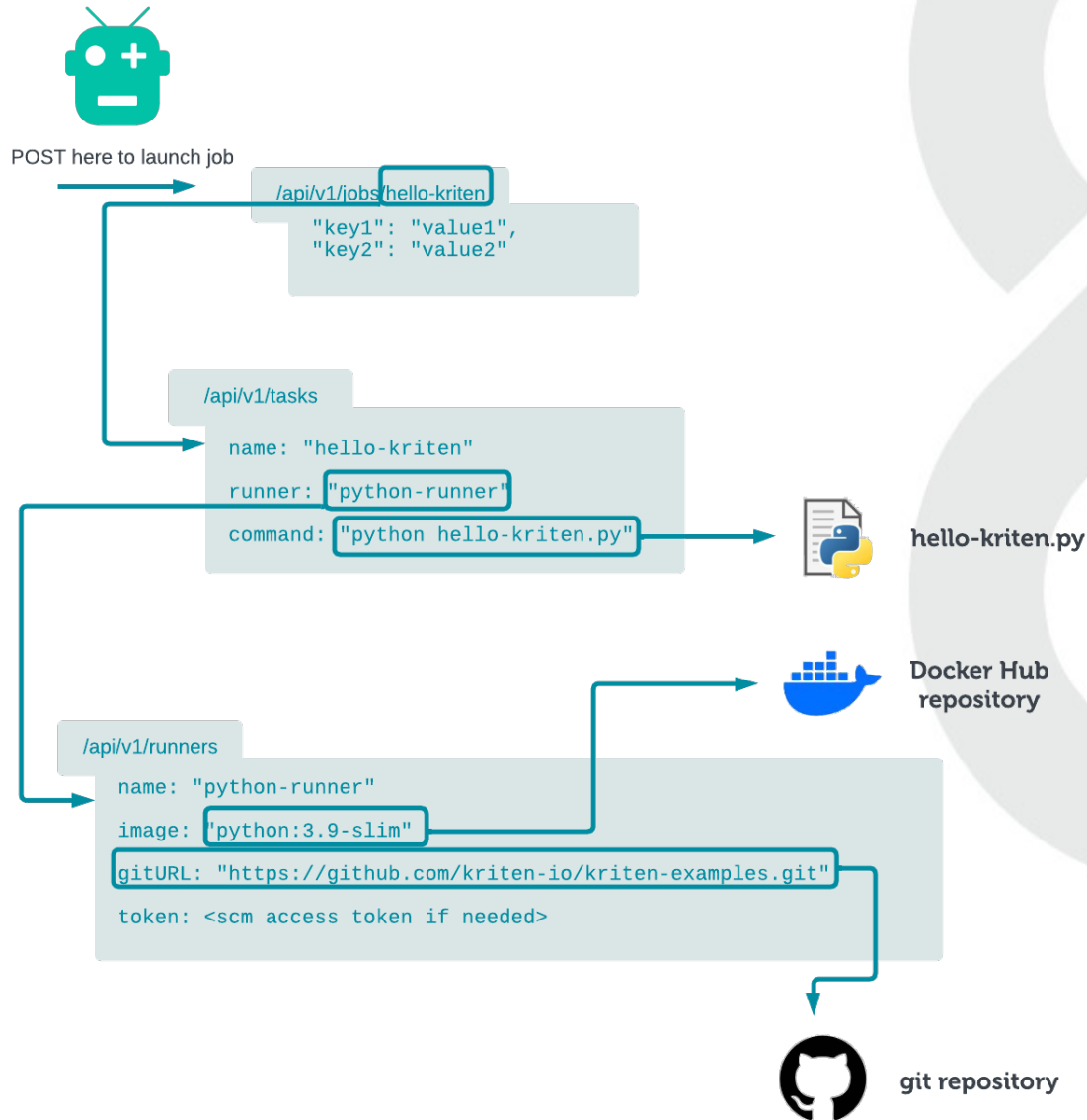
PLAY [Show Version] *****
TASK [Run 'show version' command on remote devices] *****
ok: [evo-eos01]

TASK [debug] *****
ok: [evo-eos01] => {
  "show_version.stdout.0": "Arista vEOS-lab\nHardware version: \nSerial number: CA0DFC7A91FA31E6C14199440F9B86C6\nHardware MAC
}

PLAY RECAP *****
evo-eos01      : ok=2   changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
localhost     : ok=1   changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```



Kriten runners and tasks



git repository



Docker Hub repository



hello-kriten.py



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Kriten Backlog

We have several features in the backlog for future release.

Scheduling
Deployments
Administration UI
Kritctl

New feature and enhancement suggestions welcome.

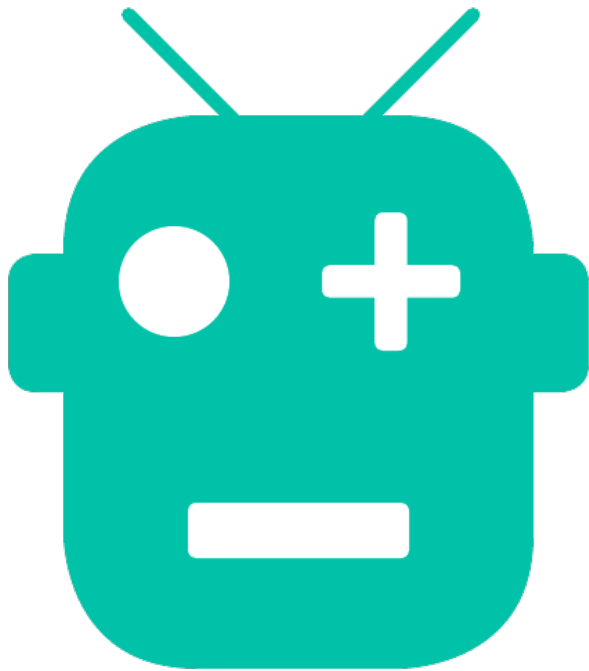
Contact us at support@kriten.io



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Need some help?

We have Network Automation and DevOps capabilities and a flexible approach to help wherever you are in the automation maturity model.



Contact us at info@evolvere-tech.co.uk.



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