IBM Spectrum Scale:

Using the REST API

in Ansible
Playbooks und Modules

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Agenda

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- Spectrum Scale REST API:
- What ist Ansible?
- Communicating with the REST API in Playbooks using the URI module
- Ansible Module
- Questions, Feedback

REST API und GUI Overview

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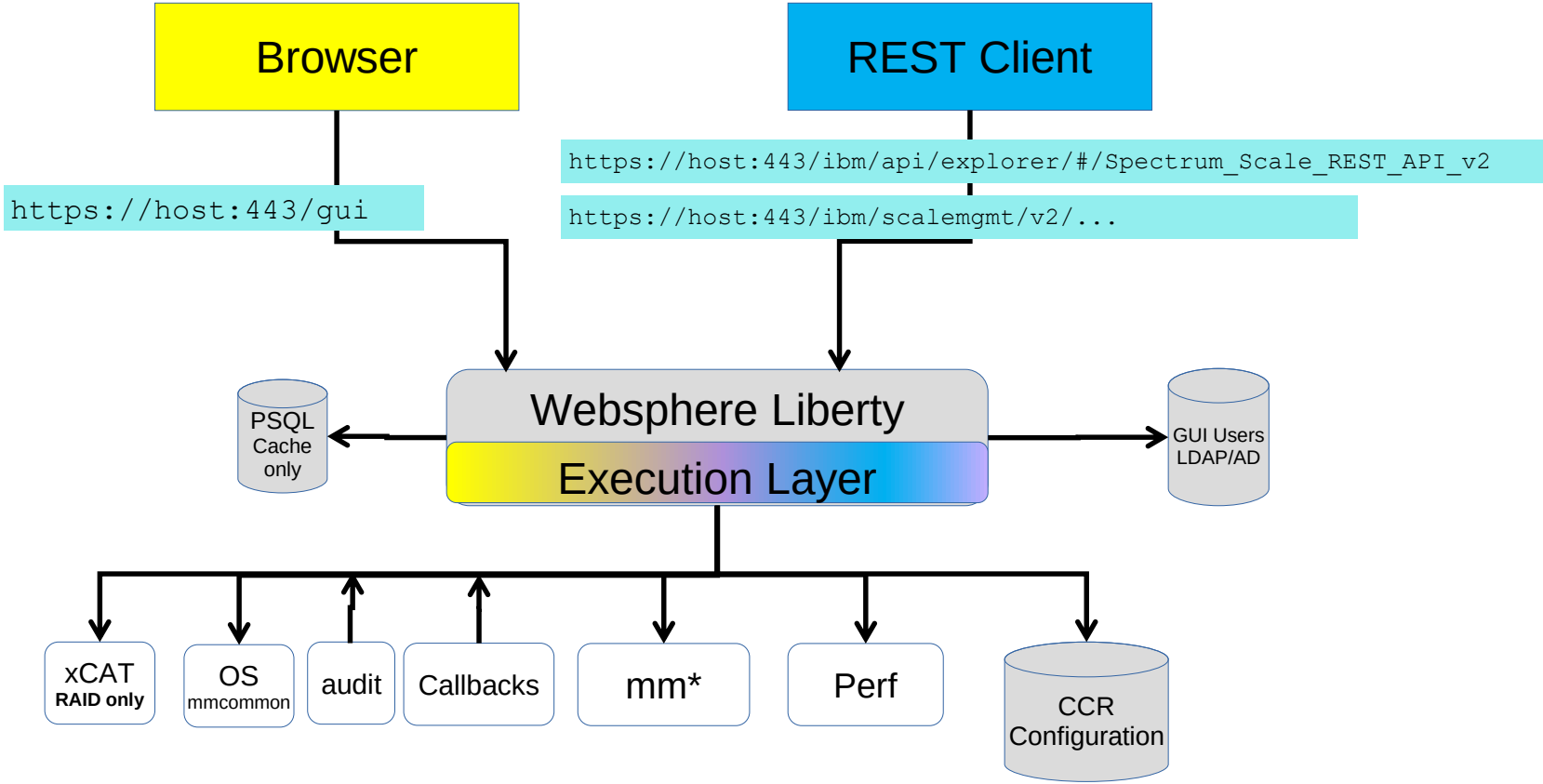

Information about die Spectrum Scale REST API:

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API Explorer (swagger)

https://hostname/ibm/api/explorer/#/Spectrum_Scale_REST_API_v2

Knowledge Center

https://www.ibm.com/support/knowledgecenter/STXKQY_5.0.4/com.ibm.spectrum.scale.v5r04.doc/bl1adm_restapi_main.htm

Getting started with the REST API

(2019 Presentation by Andreas Köninger using Jupyter Notebooks)

https://github.com/andiveloper/spectrumscale-guides

Ansible

Ansible is an open-source software provisioning, configuration management, and application deployment tool

Written in Python

- Started in 2012
- RedHat required AnsibleWorks in 2015

Ansible Playbooks

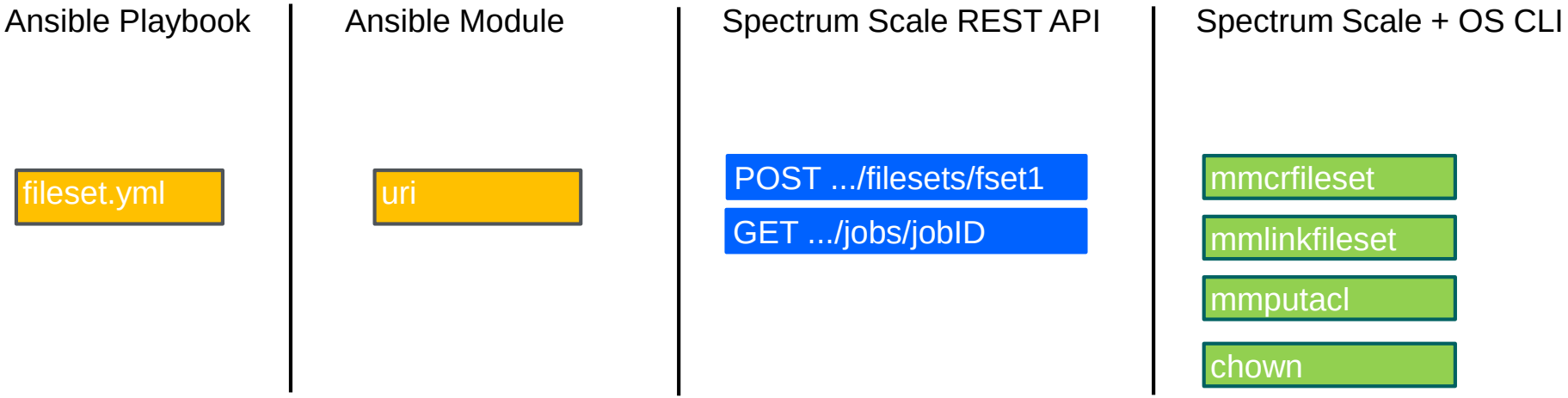
Playbooks are Ansible’s configuration, deployment, and orchestration language.

The use a declarative languate to describe how systems should be, using the YAML markup languagte

Ansible prior art in Spectrum Scale land:
Deployment - will be extended:
https://github.com/acch/ansible-scale

CSI:
https://github.com/IBM/ibm-spectrum-scale-csi

Ansible Playbook Example:



Ansible Playbook that creates filesets

- Uses the uri module for REST communication

Ansible Playbook: Create Fileset Code Example

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```
---
- hosts: localhost

  vars:
    configuration: {
      "filesetconfig" : {
        "filesetName" : "fset23",
        "path" : "/mnt/gpfs0/fset23",
        "owner" : "root",
        "inodeSpace" : "new",
        "maxNumInodes" : "2000",
        "allocInodes" : "2000" ,
        "comment" : "my fileset comment"
      }
    filesystem: "gpfs0"
    }

  tasks:

  - name: create fileset
    uri:
      url: https://9.155.108.208/s
      user: admin
      password: admin001
      method: POST
      validate_certs: no
      return_content: yes
      body_format: json
      body: "{{ configuration.filesetconfig }}"
      force_basic_auth: yes
      status_code: 202
    register: response
```

Request Body as json

job Endpoint, inorder to check progress

```
- name: check job
  uri:
    url: https://9.155.108.208/scalemgmt/v2/jobs/{{ response.json.jobs[0].jobId }}
    user: admin
    password: admin001
    method: GET
    validate_certs: no
    return_content: yes
    body_format: json
    force_basic_auth: yes
  register: jobinfo
  until: jobinfo.json.jobs[0].status != 'RUNNING'
  retries: 5
  delay: 10
  failed_when: jobinfo.json.jobs[0].status == 'FAILED'

- name: Print details
  debug:
    var: jobinfo.json.jobs[0]
```

"until" keyword triggers polling

What is Idempotence?

For an operation or service call to be idempotent, clients can make that same call repeatedly while producing the same result.

Ansible Module

Ansible modules are reusable, standalone scripts that can be used Ansible API, or by the **ansible** or **ansible-playbook** programs.

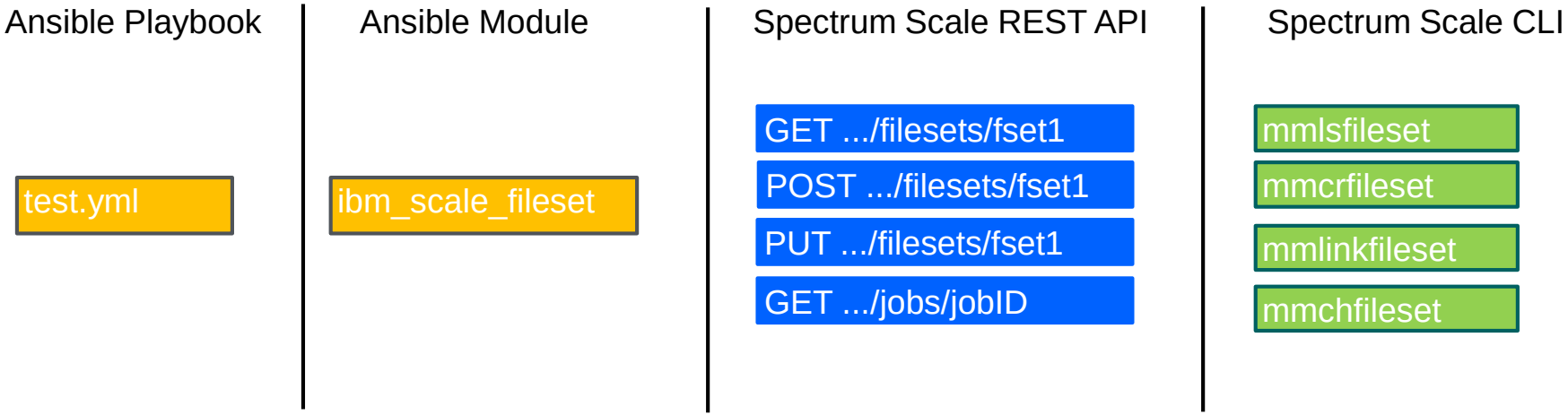
They return information to ansible by printing a JSON string to stdout before exiting.

Ansible modules are typically written in python

There are hundreds of modules.
Up to date no Spectrum Scale Module yet.

https://docs.ansible.com/ansible/latest/modules/list_of_all_modules.html

Ansible Modul Example / Demo



The Modules *"ibm_scale_fileset"* can create or modify filesets

- It uses Ansible APIs to communicate via REST

Ansible Dynamic inventory

Ansible is aware of all hosts it manages using an inventory. In the simplest case this is just a file of hosts.
Ansible can also connect to an external inventory via the concept of a dynamic inventory

The Spectrum Scale Cluster information can be used to create a dynamic inventory
--- Demo not ready yet

Ansible using REST API vs CLI

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REST API

JSON is super compatible with Ansible

RBAC for REST API Access

Read access to cache super fast and lightweight

Cache could be delayed or inconsistent

REST API has to be up and running

CLI

CLI parsing und commandline generation harder to manage and maintain

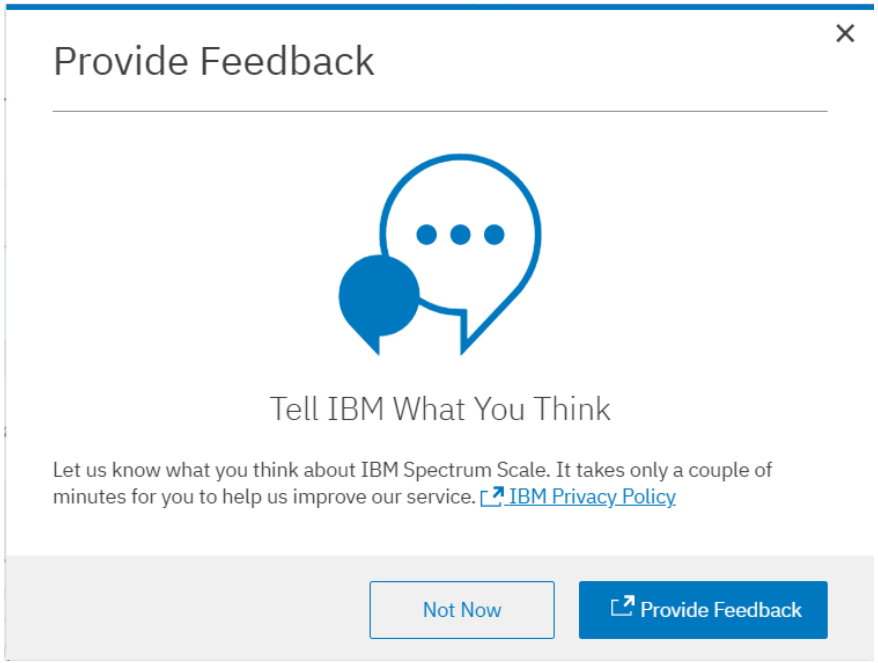
root acces needed

Read Access may be expensive for some commands

No Cache

No prerequisites, will als work for deployment when there is no cluster yet

Thank you!



Please help us to improve Spectrum Scale with your feedback

- If you get a survey in email or a popup from the GUI, please respond
- We read every single reply