JupyterHub as a Service

On-Demand Course-Related JupyterHubs for Research and Teaching

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You love Jupyter Notebooks?
So do we. However...

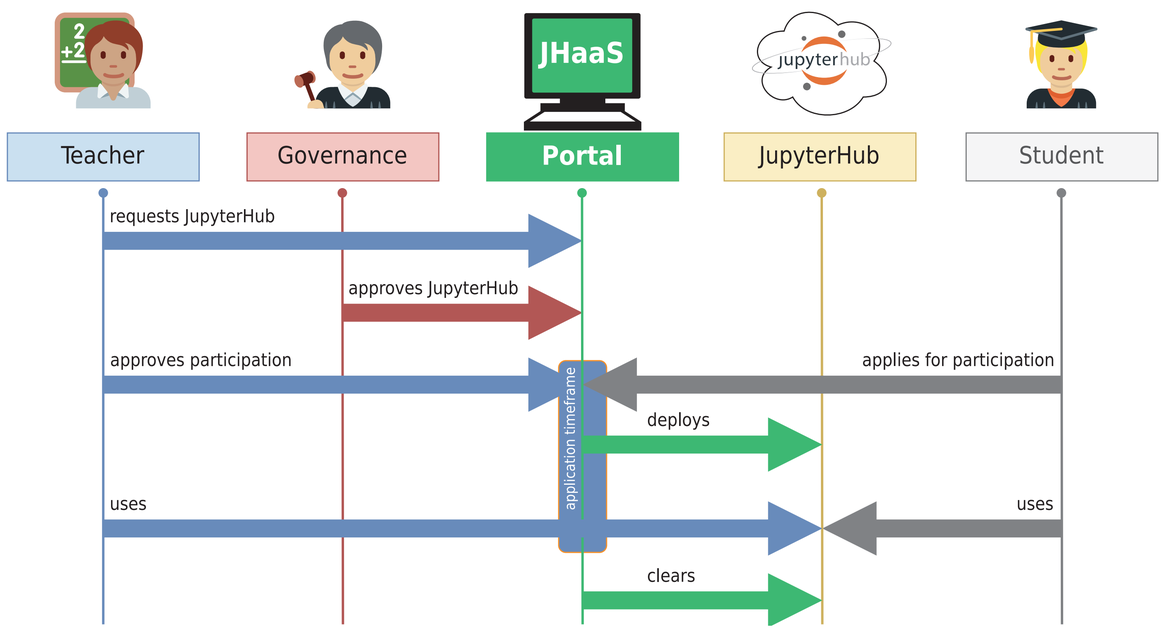
As a teacher, you **do** want to...

- ✔ have JupyterHubs for your courses
- ✔ define Notebooks for your JupyterHubs
- ✔ manage access to your JupyterHubs

As an admin, you **do not** want to...

- ✗ deploy a JupyterHub for each course
- ✗ define Notebooks for any JupyterHub
- ✗ manage access to any JupyterHub

»JupyterHub as a Service« to the rescue!



- ➥ **Easy to use.** Deploy JupyterHubs on arbitary clusters with just a few clicks. You are in control of the Jupyter Notebooks definition.
- ➥ **Course-Related.** JupyterHubs are created and cleared automatically according to the course period. It is right there, when you need it.
- ➥ **Secure by Design.** Forced Multi-Factor-Authentication, forced validation and explicit access grants via Authentik.
- ➥ **Admins in mind.** Self-Service for teachers and governance = no political interaction for admins!
- ➥ **Flexible.** Integrates into existing infrastructure.
- ➥ **Adheres hierarchy structures.** JupyterHubs are deployed only after governance approval.
- ➥ **Explicit access control.** The teacher is in control over who can access the JupyterHub.
- ➥ **Privacy taken seriously.** No trackers, no secrets, 100 % open source and self-hostable.

Get the code
https://github.com/JLU-BCF

See it in action
https://bit.ly/jhaas-journey

Abstract

Jupyter Notebook is a popular tool for writing, documenting, and sharing code. It is a server program that can be run on a local computer and that provides a web-based environment for working with code and data. A JupyterHub forms an organizational layer for Jupyter Notebooks on a server and allows authentication and authorization of users. Using a JupyterHub, it is possible to provide a predefined and uniform software stack for all users of this JupyterHub, which is especially attractive for courses. However, running your own, self-configurable JupyterHub brings challenges in the form of the required resources and knowledge to run a web service. JupyterHub as a Service (JHaaS) addresses this issue by enabling fully automated on-demand deployments of JupyterHub instances in arbitrary Kubernetes clusters. To do this, a course leader requests a JupyterHub from JHaaS and defines a configuration appropriate for that course. A governance can agree to this request, whereupon JHaaS takes care of the deployment of the JupyterHub before the course starts and the deletion after the course ends. Course participants can apply to join the JupyterHub and can be accepted by the course leader. With JHaaS, it is easy to deploy JupyterHub instances for many use cases while giving control over the definition of and the access to the JupyterHub to the course leader. JHaaS is currently in a very early stage of development and is accordingly subject to active change. A trial run in regular courses is planned for the upcoming winter semester 2023. Our source code is available on GitHub.

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[*]Funded by the German Research Foundation DFG under the National Research Data Infrastructure–NFDI4Microbiota(NFDI 28/1)–460129525