

Universität
Münster

Uni Münster JupyterHub Deployment

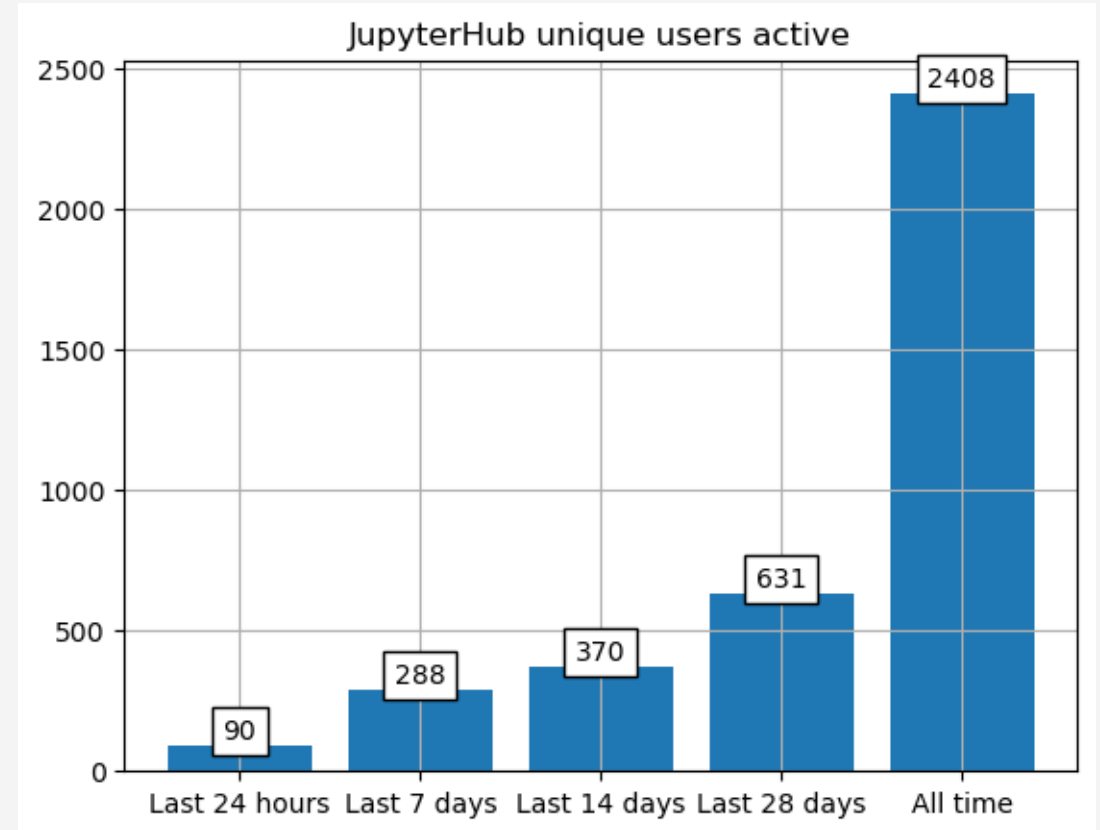
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living.knowledge



Usage statistics

- Initial deployment: May 2019,
- stats starting November 2022
- > 600 monthly active users
- Peak concurrent sessions last 30 days: 160



Users

- Used for teaching and research
- Two different groups of users

many



students with low requirements
in university courses

few

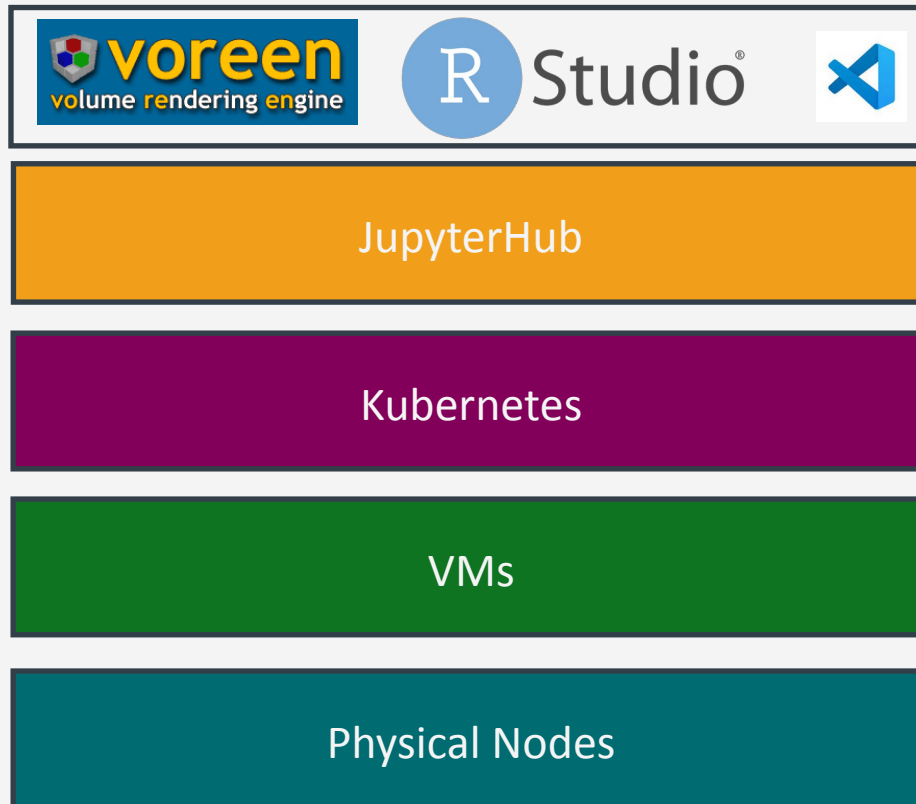


researchers with higher
hardware requirements

Notable features

- eduGAIN login augmented with local Unix groups for permissions/quotas
- Sciebo (ownCloud) integration, mount cloud storage as folder
- X11 GUI applications via noVNC
- 16 vCPUs and 32 GB RAM max per user
- GPUs for CUDA and rendering (16x Nvidia A40 – by default only for employees)
- access tokens for external users/guests

The IT Stack



Kubernetes Cluster

Build on top of the cloud platform and allows to run different applications using Kubernetes

University Cloud

Provides the Infrastructure for a large range of services,

Mainly virtual machines and storage (CephFS)

JupyterHub running on Kubernetes

- JupyterHub version 4.1.4 on Kubernetes 1.27
- Kubernetes is running on OpenStack
- Istio as a service mesh, Cilium as a Container Network Interface (CNI)
- ArgoCD for deployments (GitOps)
- HashiCorp Vault for secret management
- Grafana, Prometheus, Loki for monitoring and logs
- Satsa auth-proxy with SAML ↔ OAuth for authentication, local Unix groups from LDAP
- Currently 4 instances: production, staging, 2x development

Sciebo (ownCloud) integration

- Log in button on spawn page
- „Hub-Managed Service“ acts as OAuth client towards ownCloud, hands out access tokens to CSI plugin, refreshing them when expired
- CSI plugin based on rclone connects to ownCloud using WebDAV, mounts cloud data as „virtual filesystem“ (cached locally)
- Users are notified if session ends with unsynced data, told to contact support for recovery
 - No one has ever done this

Most common support inquiries

- JupyterLab won't start because
 - Disk quota exceeded
 - User installed some package and broke their Python environment
- More CPU, RAM, GPU

Current projects

- User survey to gauge usage patterns
- Currently single-origin with sharing disabled, investigate user subdomains
- Expand to JupyterHub.NRW

JupyterHub.nrw

- Funded by the dh.nrw and the Ministry for Culture and Science North Rhine-Westphalia (NRW)
- In cooperation with H-BRS (exams), RUB (LMS integration), TU Dortmund (didactics)
- JupyterHub as a service for all universities in NRW, hosted and maintained in Münster
- One instance for each university
- Project: November 2023 – November 2027

Thank you for your attention!

Please feel free to reach out to jupyterhub@uni-muenster.de