VSCode servers for physics infrastructure at LAPP

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Where the infrastructure is hosted ?

- LAPP => Annecyan laboratory of particles physics
- Principally working on Big Sciences projects (Atlas/LHCB/FCC, CTA, Virgo)

- MUST => Storage and Compute Mesocentre (Datacenter) of Savoie University
- Working in WLCG and helping on local scientific computing

Whats my job there ?

- Maintaining the datacenter with the MUST Team
- Development of the Software as a Service part (local VRE)
- Working on EOSC VRE infrastructure integration (EOSC based VRE)
- Other research subject (ML)

The VRE plateform

- **Deployed in a Bare Metal Kubernetes with gitops tools :**
  - Kubespray for the kubernetes itself
  - FluxCDv2 for the apps and helpers services (CSI, Secret management ...)
  - Ceph MUST storage for Persistent data (Existing part of MUST)

Helpers Services

- Logging => FluentBit and OpenSearch
- Metrics => NodeExporter, Prometheus and Grafana
- Secrets => Hashicorp VAULT
- Identity => Keycloak, INFN IAM, Local IAM
- Storage => CEPH RBD CSI
- Load Balancers => MetalLB (OSI IP layer) and Nginx Ingress (OSI Layer 7)

Rucio Datalake and MUST

- **Must is maintaining a DCACHE instance with others laboratories connected to the Escape Datalake**
- **Some work are needed locally for making the binding with the EOSC JupyterHub instance.**

The JupyterHub instances

- **3 instances will be deployed for simplicity sake :**
  - Local laboratory
  - EOSC
  - External Clients (other Universities or Industries)

- **One identification platform and one persistent storage per instance. No « data mixing » allowed, as MUST is not responsible of choosing files access right for users.**

VSCODE in JupyterHub

- Another UI available for our users. Far more better IDE in case of complex devs than JupyterLab.
- It use a local Jupyter Proxy in the container for redirecting to the VSCODE Server process.
- Some rough edges : no return to JupyterHub Homepage button
- Need some dev work to integrate with the scientific tools

Platform Use-cases

- **The platform is currently used principally for :**
  - Formation purposes (Summer Schools)
  - Some thesis student use it for toy models exploration and analysis
- **Local University is interested to use it for for practical courses and formation.**
- **As LAPP work a lot with Big Science project, scientist use their experiments tools. (ATLAS => WLCG)**

Demo time

- **You can pull the VSCODE docker image to try it yourself**
  - gitlab-registry.in2p3.fr/must/kubernetes/jupyter-environments/vscode:latest