



# **IISAS** Cloud laboratory

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### Short instruction to IISAS



- Full name: Institute of Informatics, Slovak Academy of Sciences
- Established in 1956 as Laboratory of Theoretical and Applied Mechanics in Slovak Academy of Sciences
- 6 departments, 63 scientists:
  - Department of Parallel and distributed computing is the largest one, with long history in R&D in Grid/Cloud computing
- 11 H2020 projects, 5 HE projects: Al4EOSC, iMagine, EuroScienceGateway, EOSC-SIESTA, EOSC-Beyond
- Publisher of journal Computing and Informatics















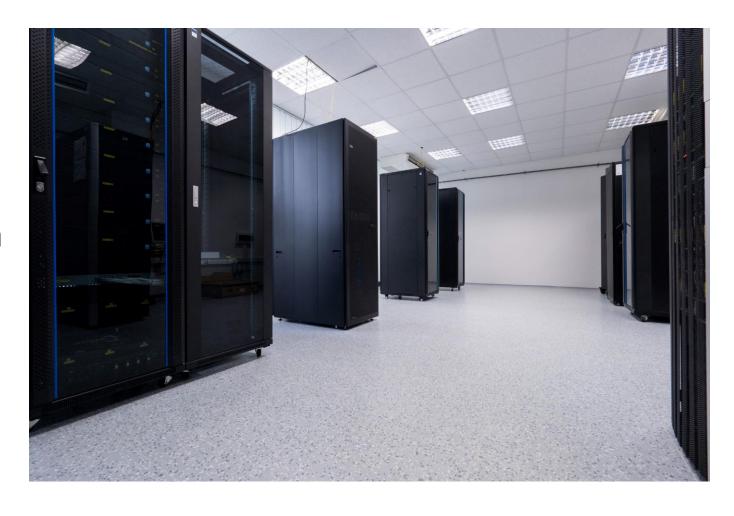




## IISAS Computing infrastructure



- Shared computing room with different systems (Cloud, Hadoop, HPC, storage, Al servers, ...)
- Global monitoring system
- No global firewalls so far, firewalls are configured at server level





















### What is new in HW



#### News:

- The big investment in HW upgrade (announced at IberGrid'23) is delayed
- Several ongoing attempts to get funds for HW upgrades
- Some mini upgrades done

#### **Current status:**

- NVIDIA A100 GPUs available and heavily loaded
- (Small) new HW with modern CPUs for Confidential Computing



















### What is new in SW and services



#### News:

- The global firewall for whole SAS campus deployed
  - Network segment for Cloud partitions are exempted and unaffected
- More new services being developed/deployed and going to operation

#### Current status:

- Security services: Wazuh/Zeek IDS, AI-based abnormal detection
- Confidential Computing/Container
- Al services: Nvidia Flare, CVAT, ...
- FedCloud services: FedCloud client, Secret store, Dynamic DNS



















### FedCloud client



- Development version in 2.0-alpha
- Expected new features:
  - Customizable config files for regional/thematic/institutional cloud federations:
    - Federations create their own config file with customized AAI, list of sites, VOs, ...
    - Users just download the config files and have everything set up
    - Users can have multiple config files, switching them via `-c` option or FEDCLOU\_CONFIG\_FILE environment variable
  - Many other small improvements
- To be released at EGI 2025



















## Dynamic DNS



- In production: 33 domains, >400 services
- New development
  - Expected new features:
    - Support for wildcards accompanied with registered hostnames
      - If a user register a hostname for a k8s cluster, e.g. k8s.fedcloud.eu, he has the option to include also the wildcard \*.k8s.fedcloud.eu
      - Any service deployed on in the cluster, e.g. abc.k8s.fedcloud.eu will have the IP of k8s.fedcloud.eu, without registration again
      - Highly demanded by Kubernetes and proxy/gateway providers
    - Other improvements: API for registering hostnames, SSL certificates
  - To be released at EGI 2025



















## Confidential Computing



- Being deployed on IISAS-FedCloud OpenStack site within EOSC-SIESTA project
- Based on AMD SEV (Secure Encrypted Virtualization) that enable HW-encrypted whole VM
- Preventing unauthorized access to data in memory, even from host roots, and ensuring data privacy
- No knowledge required from users
- Should be available for all users (according to resource availability)

















