

IBERGRID

2024

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13TH IBERIAN GRID CONFERENCE



INSTITUTE OF INFORMATICS
SLOVAK ACADEMY OF SCIENCES

IISAS Cloud laboratory

Viet Tran
Institute of Informatics SAS
Slovakia



LABORATÓRIO DE INSTRUMENTAÇÃO
E FÍSICA EXPERIMENTAL DE PARTÍCULAS



- 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: AI4EOSC, iMagine, EuroScienceGateway, EOSC-SIESTA, EOSC-Beyond
- Publisher of journal Computing and Informatics

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



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

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
- AI services: Nvidia Flare, CVAT, ...
- FedCloud services: FedCloud client, Secret store, Dynamic DNS

- 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 FEDCLOUD_CONFIG_FILE environment variable`
 - Many other small improvements
- To be released at EGI 2025

- 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

- 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)