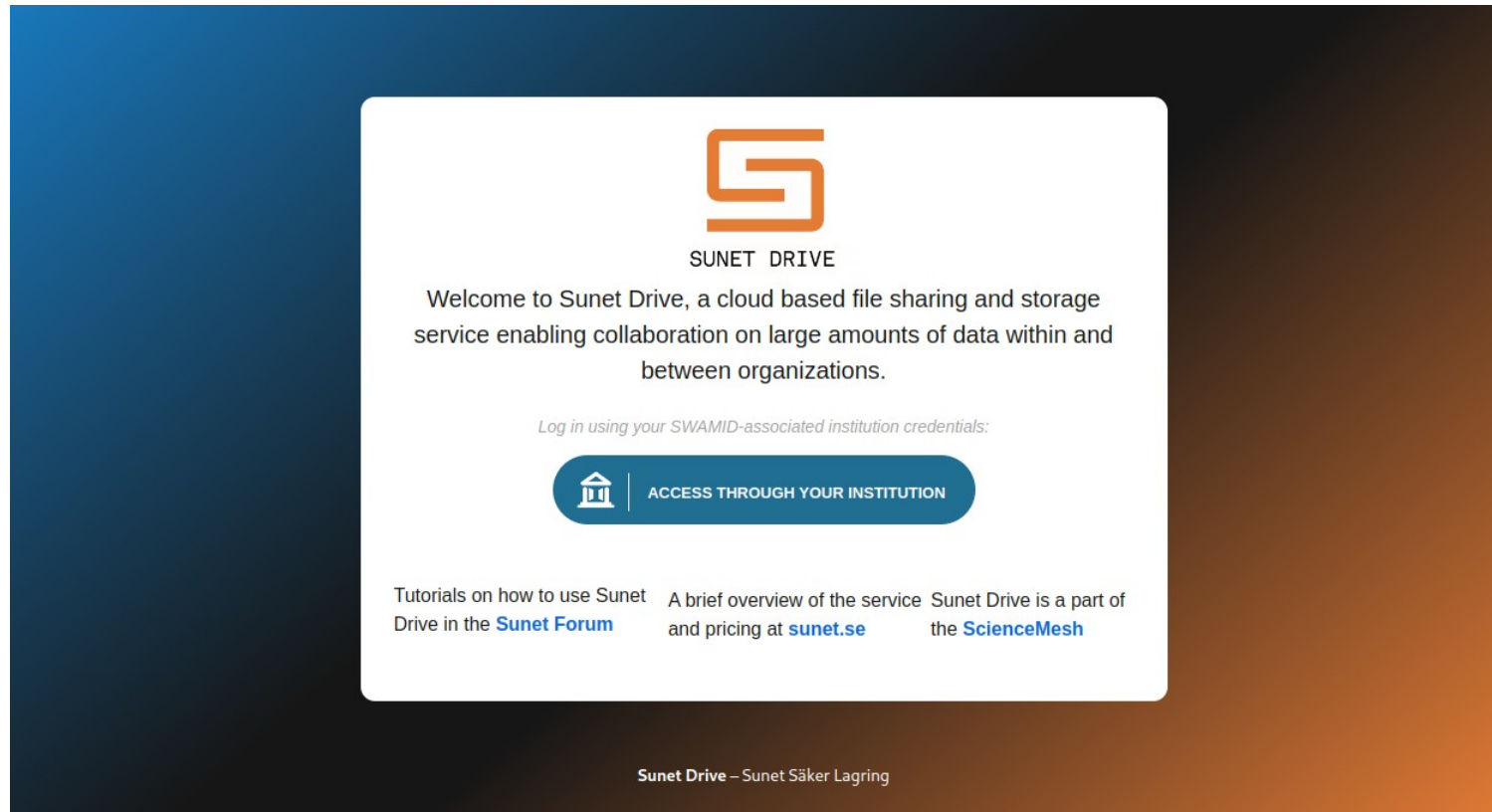



SUNET Drive

An Academic Toolbox






SUNET DRIVE

Welcome to Sunet Drive, a cloud based file sharing and storage service enabling collaboration on large amounts of data within and between organizations.

Log in using your SWAMID-associated institution credentials:

 ACCESS THROUGH YOUR INSTITUTION

Tutorials on how to use Sunet Drive in the [Sunet Forum](#) | A brief overview of the service and pricing at [sunet.se](#) | Sunet Drive is a part of the [ScienceMesh](#)

SUNET Drive – Sunet Säker Lagring

FAIR Data Storage, Analysis and Publication

Sunet Drive - Architecture

Primary data sources

UV-Vis

IVIUM

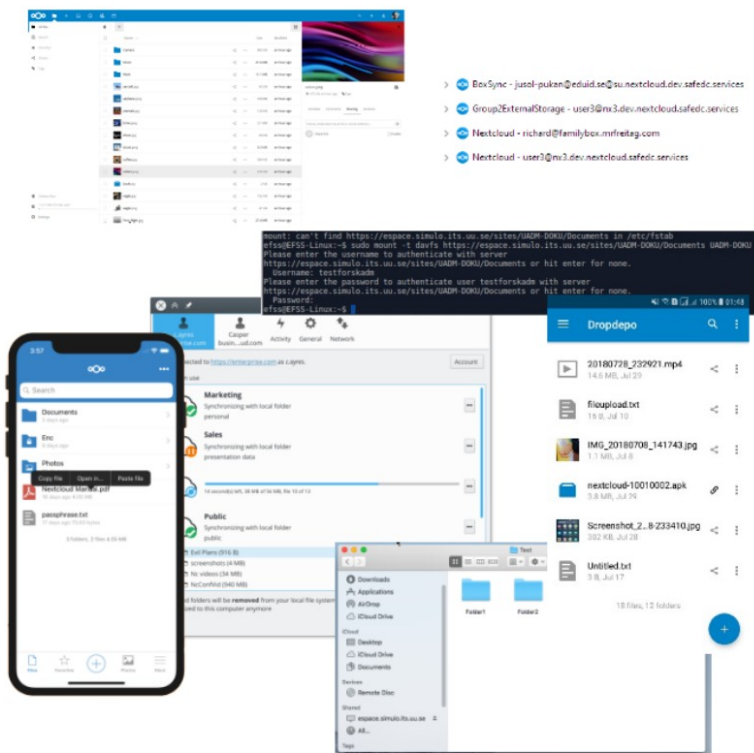
...

PIA

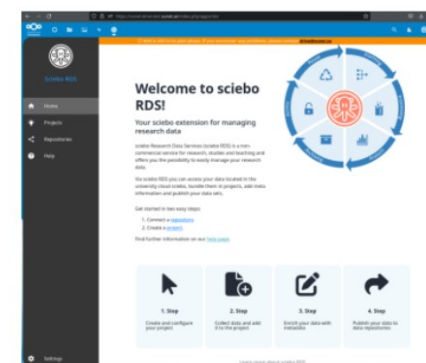
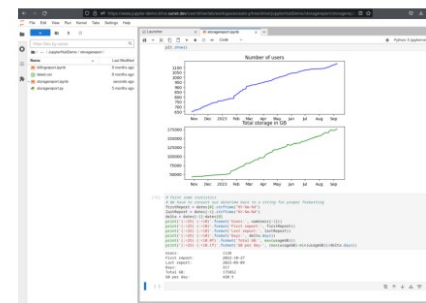
IPCE



Secure Storage



Analyze and Publish

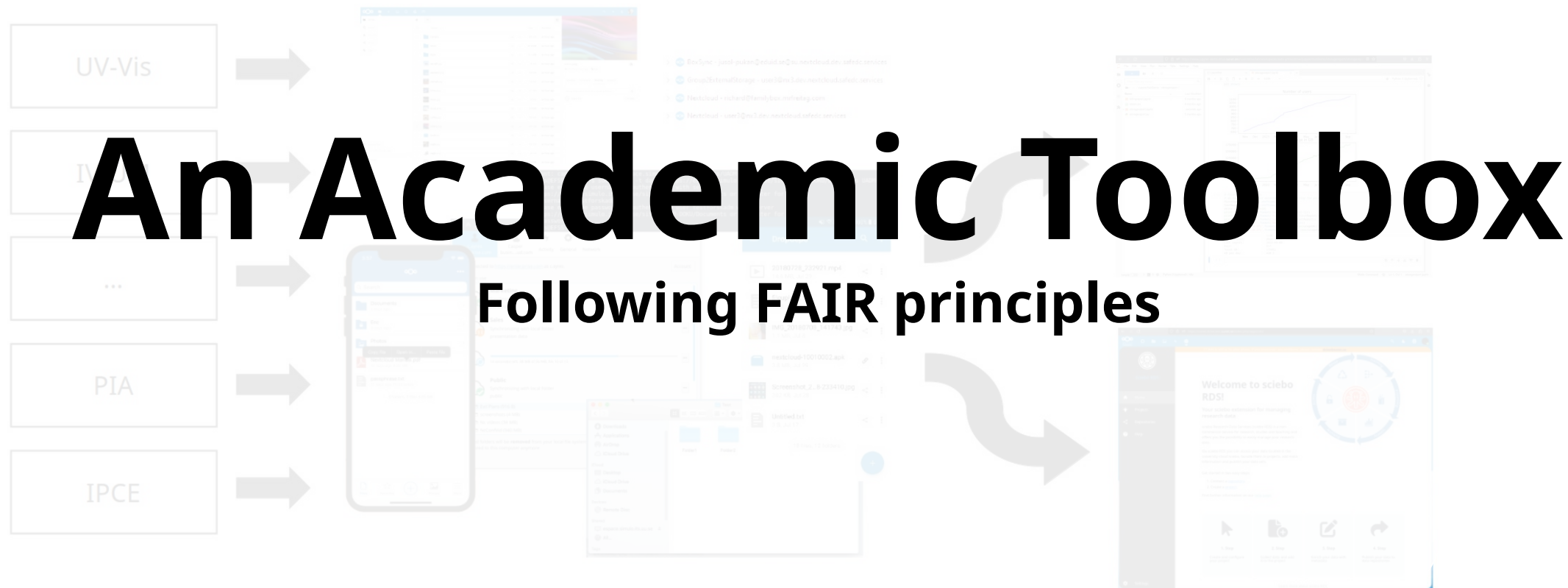


Sunet Drive - Architecture

Primary data sources

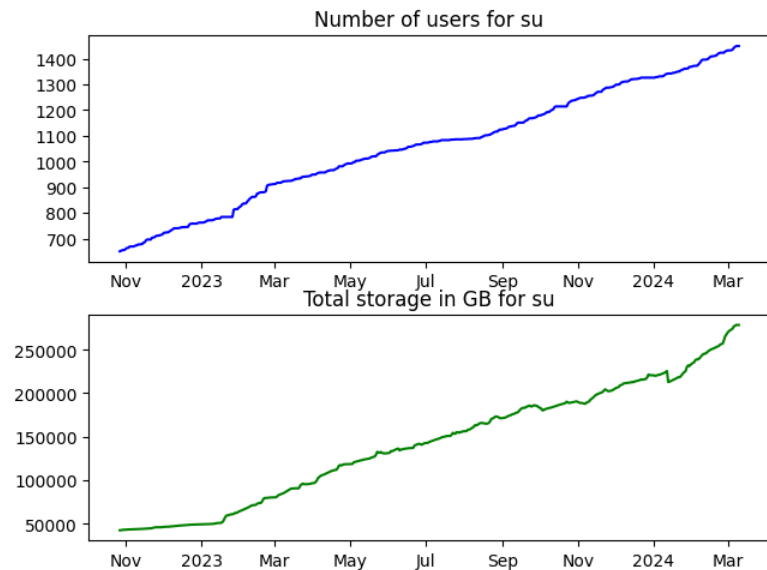
Secure Storage

Analyze and Publish



Sunet drive today

- 2x54 nodes on 300 servers in two data centres
- 100% powered by green energy
- 20 paying customers
- 508TB data stored with >0.5TB added daily
- 3,752 total users, >600 daily users



Sunet Drive development & projects

- Full RDS-setup in production
- JupyterHub
- Secure Zones/MFA/Step-up Authentication
- Security Audit
- Devops: Third data centre & Kubernetes
- AI Assistant with "Ethical AI"

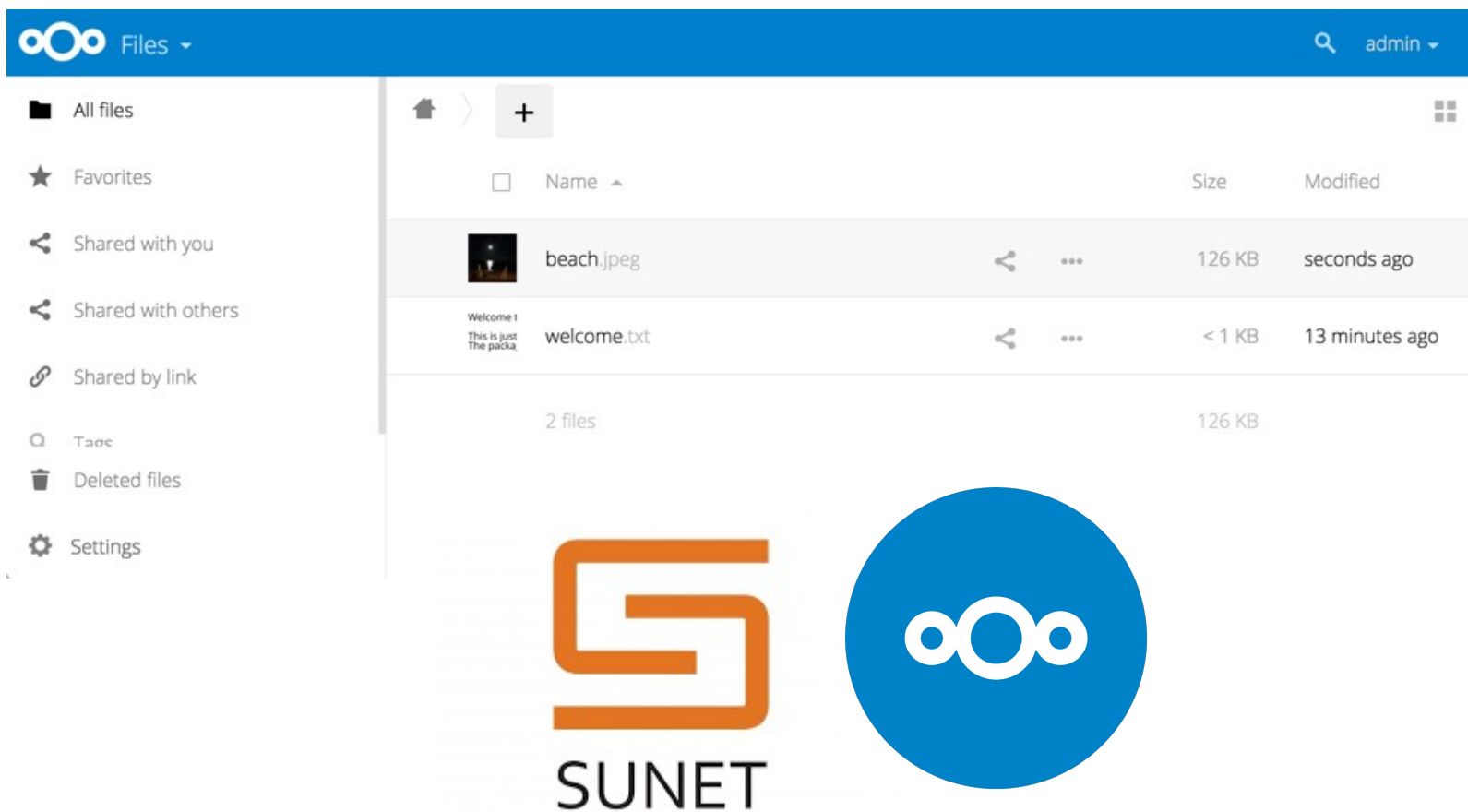
Core Application
JupyterHub

Core Application
Sciebo Research Data Service

Core Application
ScienceMesh

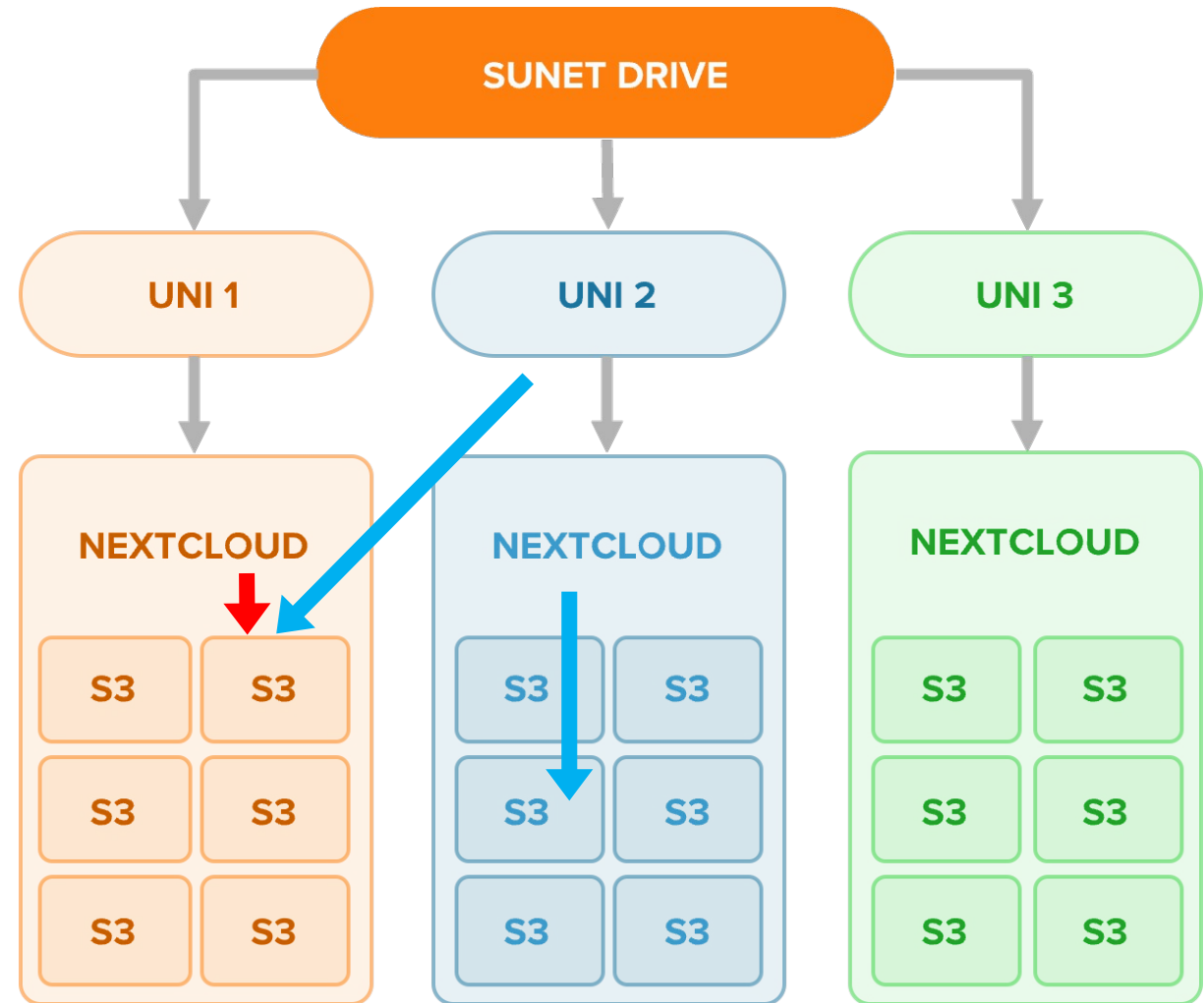
Sunet Drive

- Allows people to store, share and collaborate on any type of file
- Runs in the browser, on your computer, on your phone and probably more!
- Secure datacenters controlled by SUNET. No data leaves our datacenter, unless you want it to!



Co-management of nodes

- S3-bucket storage
- Share data between nodes
- Access ownership separation
- Lifecycle managed buckets
- Co-managed with users for continuous improvement

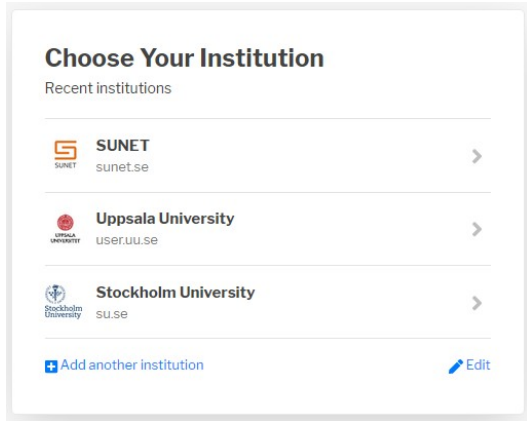


Global Collaboration

Nationally: eduGAIN

- ~6000 Identity Providers
- Euid.se for external collaborators

Swedish Account

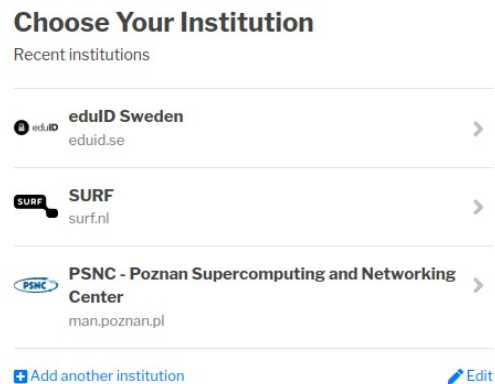


sunset.se

uu.se

su.se

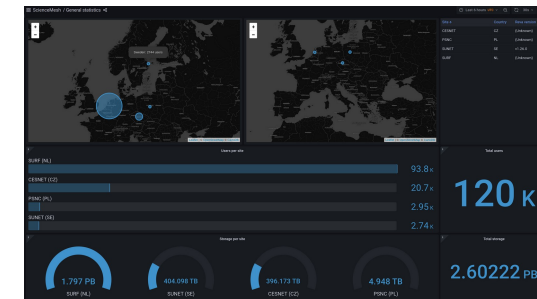
Global Account



extern.sunset.se

Globally: OCM

- OpenCloudMesh protocol
 - Initiated in 2015 by GÉANT
 - Supported by ownCloud, Nextcloud, Seafile
- Global federated shares with local sovereign solutions (e.g. SurfDrive, Sciebo)
- “ScienceMesh” by design (i.e., without app)
- MFA proposed for v1.2

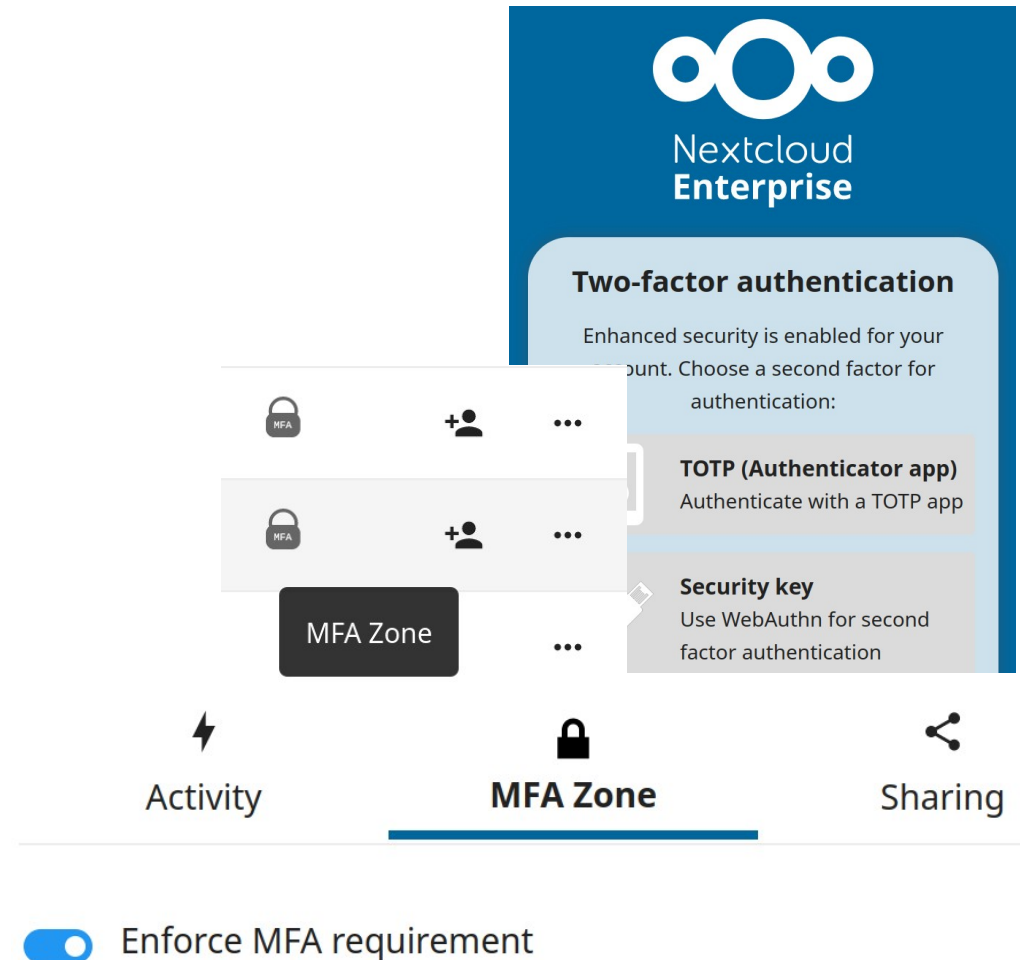


Step-up Authentication & MFA Zones

Step-up Authentication

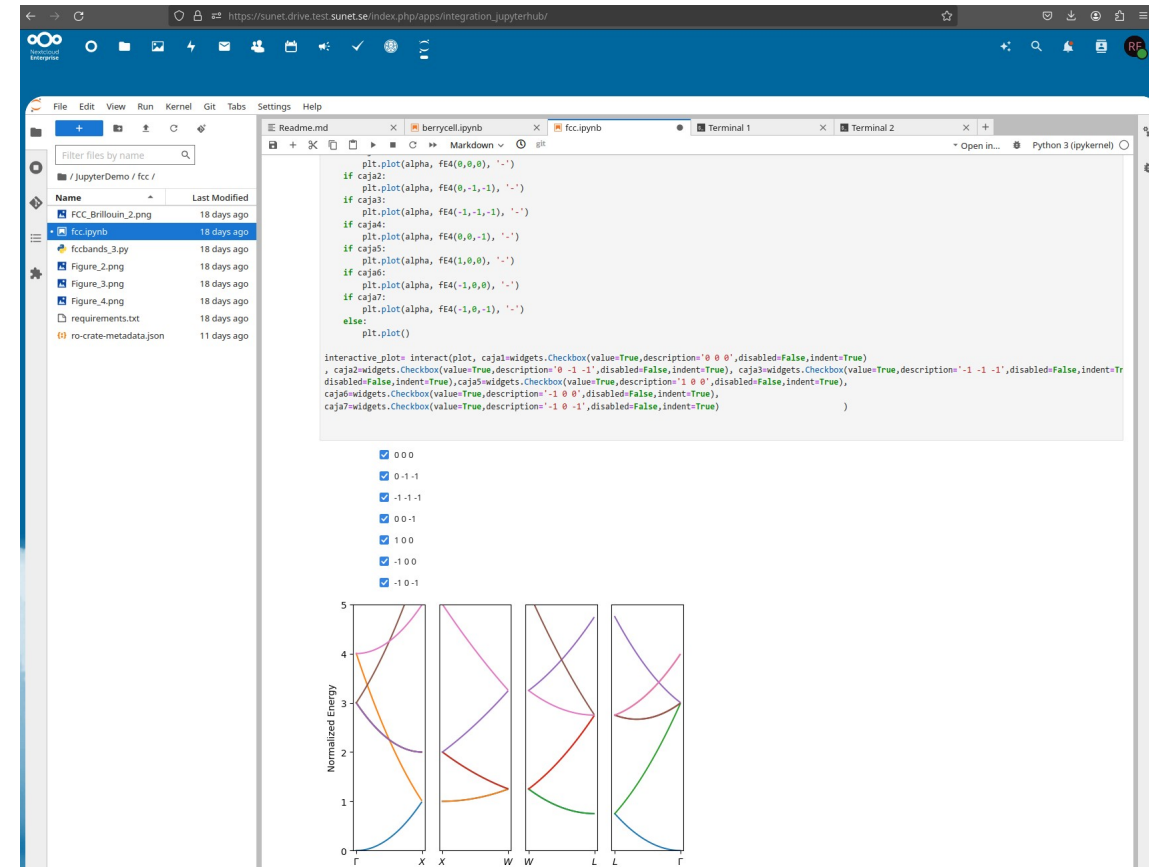
- Adds Nextcloud-native MFA to SSO accounts
- TOTP or WebAuthn
- Can be enforced via groups (forcemfa)
- Might be made mandatory in the future for all users on all nodes
- **MFA Zone**
- Enforces MFA on file- and folder-level
- Prevents sharing with non-MFA accounts
- Works only on a local node
- Proposed OCM-extension

“The auditors tried to bypass MFA and Step-up authentication but failed. So, even though the efforts were made, our conclusion is that the quality is outstanding regarding the main target of the audit.”



Academic Toolbox – JupyterHub

- Integrated in Sunet Drive
- Users can individually execute notebooks
- Users get 10GB “local” Jupyter Storage
- Storage is continuously synchronized between Sunet Drive and JupyterHub
- Allows people to share and collaborate on code
- Write once, execute however often you like
- Supports 40+ programming languages
- Funded by GÉANT Above-the-Net Services Incubator



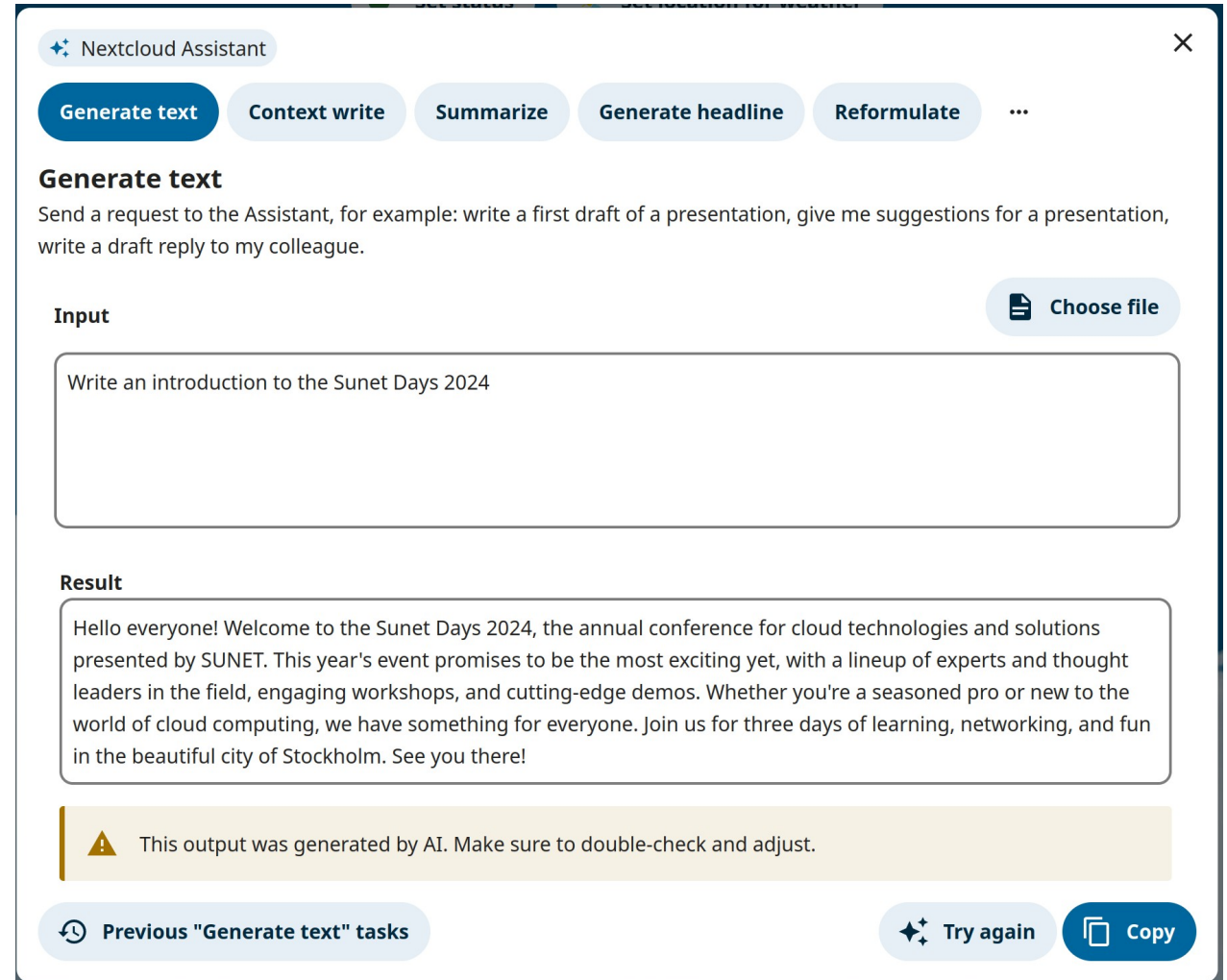
Academic Toolbox – From Data to DOI with a Berry Solar Cell

- Execute Experiment
 - Jupyter notebook with instructions to make a simple organic solar cell
 - Measure data and upload to Sunet Drive in realtime
- Data Analysis
 - Analyse and visualise data in JupyterHub
- Publish Data
 - Prepare data and metadata
 - Publish to Zenodo using **ScieboRDS** app
 - <https://sandbox.zenodo.org/records/70251>
- Showcased as live demo at TNC24



AI Assistants

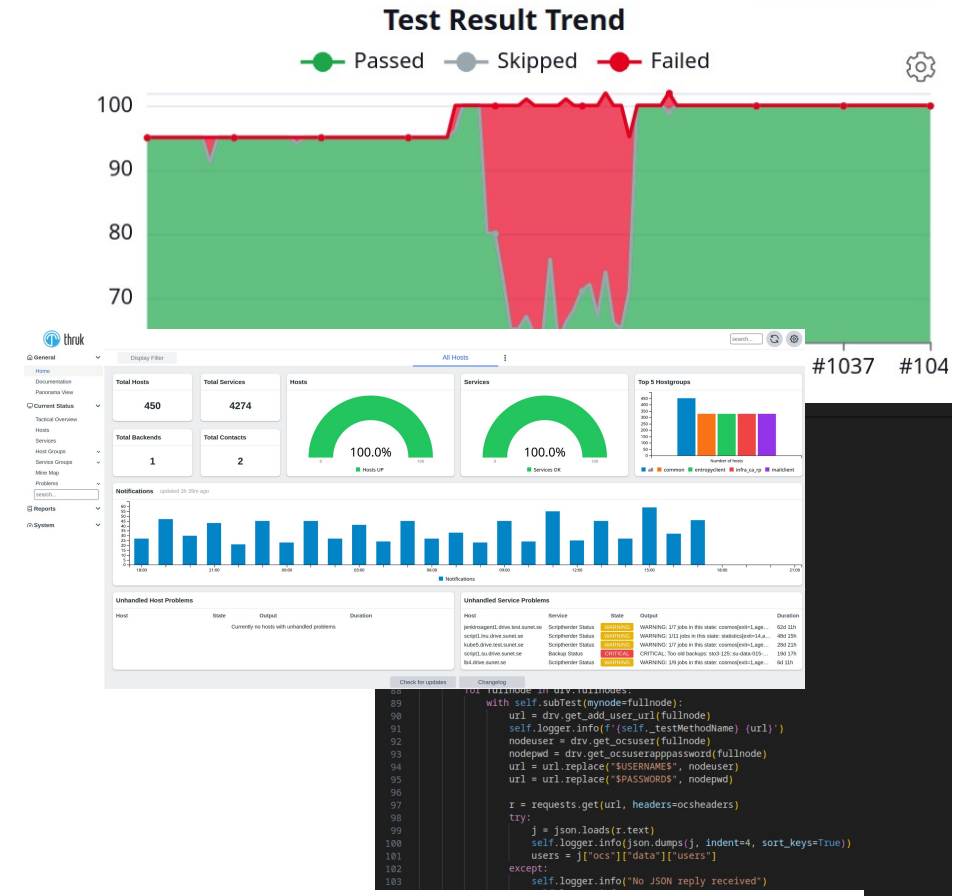
- Introduced in Nextcloud 27.1 and improved in 28 and 29
- Has support for OpenAI and Local Large Language Models
- On-prem inference using “Ethical AI”
- LLM, Speech2Text, Image Generation and other assistants available
- Requires many resources (CPU & GPU)
- Many open questions (technical and legal)
- Under evaluation



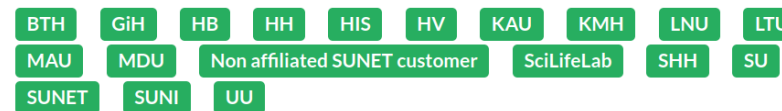
The screenshot displays the Nextcloud Assistant interface. At the top, there's a title bar with a star icon and the text 'Nextcloud Assistant' and a close button. Below the title bar are several action buttons: 'Generate text' (highlighted in blue), 'Context write', 'Summarize', 'Generate headline', 'Reformulate', and a three-dot menu. The main content area is titled 'Generate text' and contains a prompt: 'Send a request to the Assistant, for example: write a first draft of a presentation, give me suggestions for a presentation, write a draft reply to my colleague.' Below the prompt is an 'Input' section with a text box containing 'Write an introduction to the Sunet Days 2024' and a 'Choose file' button. The 'Result' section shows the AI-generated text: 'Hello everyone! Welcome to the Sunet Days 2024, the annual conference for cloud technologies and solutions presented by SUNET. This year's event promises to be the most exciting yet, with a lineup of experts and thought leaders in the field, engaging workshops, and cutting-edge demos. Whether you're a seasoned pro or new to the world of cloud computing, we have something for everyone. Join us for three days of learning, networking, and fun in the beautiful city of Stockholm. See you there!' Below the result is a yellow warning bar with a triangle icon and the text: 'This output was generated by AI. Make sure to double-check and adjust.' At the bottom, there are three buttons: 'Previous "Generate text" tasks', 'Try again', and 'Copy'.

Everything else

- Open for everyone via EduGAIN
- Monitoring with Thruk: >6000 monitoring points
- Automated testing: >30k test points per day
- Infrastructure as Code
- **Open Source**
 - <https://github.com/SUNET/nextcloud-custom>
 - <https://github.com/SUNET/nextcloud-jupyter>
 - <https://github.com/SUNET/nextcloud-mfazones>
 - <https://github.com/SUNET/drive-tests>
 - <https://github.com/cs3org/OCM-API>
- And more: eduid.se, ScienceMesh, OCM, RDS-ng, ...



SUNET Drive



Operational

Tack! Frågor?

Anders Nilsson

anders@sUNET.se

Richard Freitag

freitag@sUNET.se

Micke Nordin

kano@sUNET.se

Magnus Andersson

mandersson@sUNET.se

Issues and Questions

drive@sUNET.se