SWAN interactive data analysis on the web

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On behalf of the SWAN team

https://cern.ch/swan

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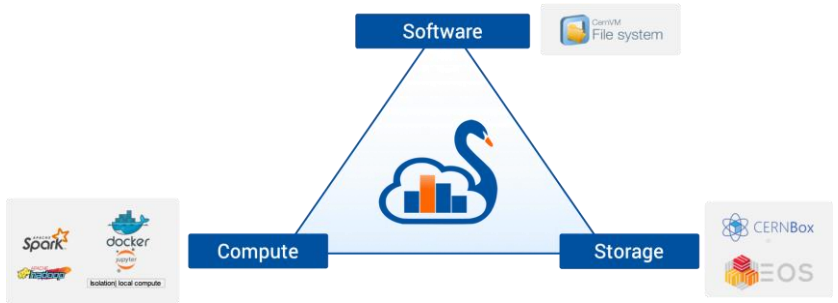
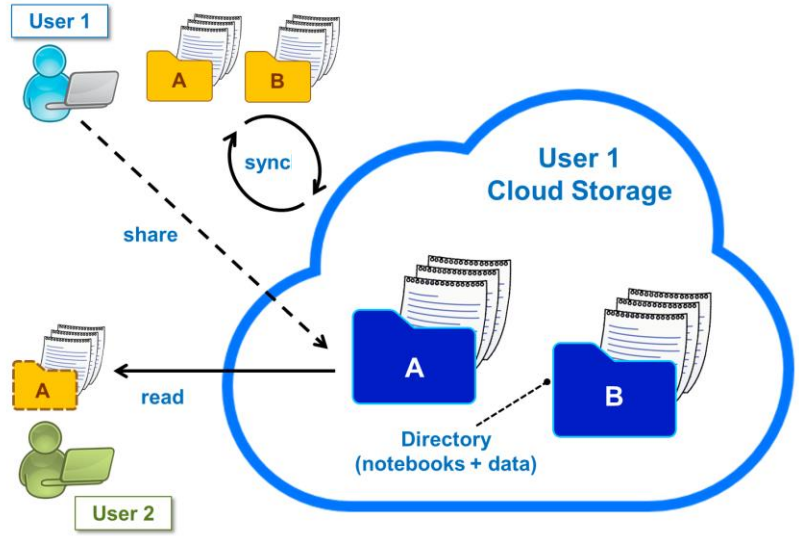
SWAN in a Nutshell

- CERN's Jupyter Notebook service
  - Used for final steps of an Analysis, Exploration, Teaching, Documentation and Reproducibility
  - Easy sharing of scientific results: plots, data, code
- Support for multiple analysis ecosystems and languages
  - Python, ROOT C++, R and Octave
- Integration with CERN resources
  - Software, storage, mass processing power



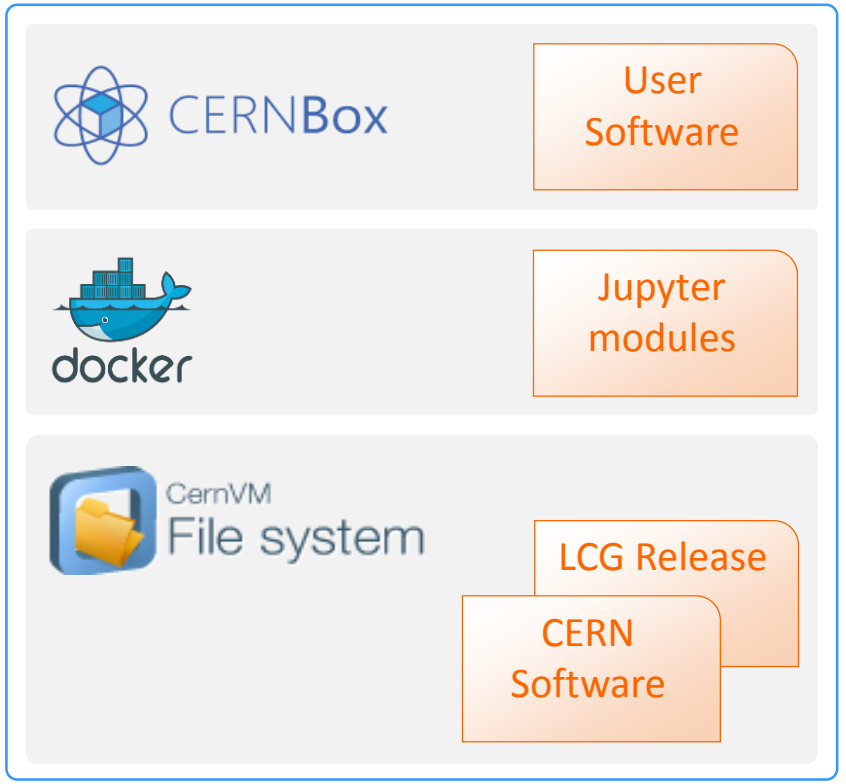
Cloud storage as your Home

- CERNBox is SWAN's home directory
  - Based on EOS disk storage system
- Sync & Share
  - Files synced across devices and the Cloud
  - Collaborative analysis
- Sharing integration within SWAN UI
  - Users can share “Projects”(special kind of folder that contains notebooks and other files, like input data)
  - Self contained



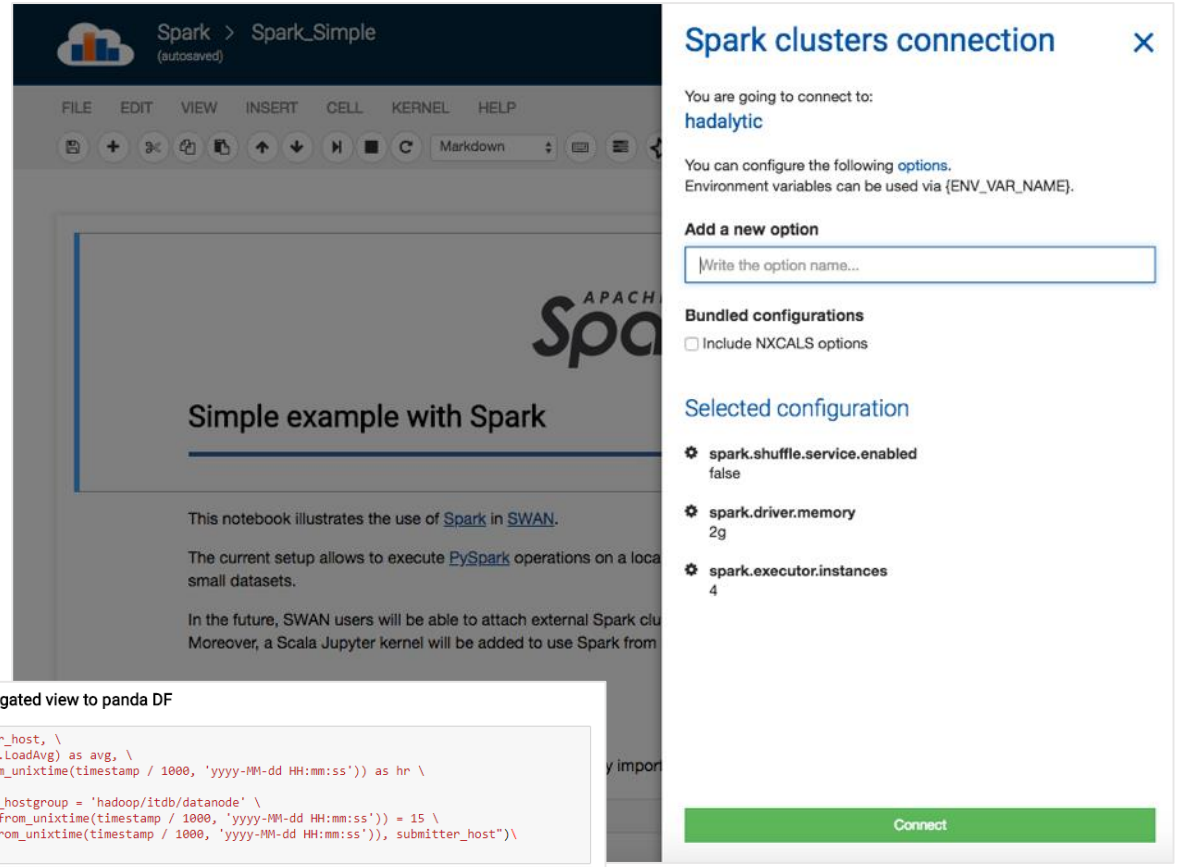
Software

- Software distributed through CVMFS
  - Distributed read-only filesystem
  - ”LCG Releases” - pack a series of compatible packages
  - Reduced Docker Images size
  - Lazy fetching of software
- Possibility to install libraries in user cloud storage
  - Good way to use custom/not mainstream packages
  - Configurable environment



Integration with Spark

- Connection to CERN Spark Clusters
  - Spark: general purpose distributed computing framework
- Same environment across platforms (local/remote)
  - Software - CVMFS
- Graphical Jupyter extensions developed
  - Spark Connector
  - Spark Monitor



Service evolution

- Jupyterlab
  - Next-generation interface for Project Jupyter
  - Concurrent editing
- NVidia GPU Support
  - Already integrated with ScienceBox
  - New LCG stack with CUDA enabled machine learning software
- Batch jobs submission
- Configurable software environment for Projects
  - Associated with Conda Environments
  - Easy installation and sharing

Where to find us

- Contacts
  - swan-admins@cern.ch
  - http://cern.ch/swan
- Repository
  - https://gitlab.cern.ch/swan
- Science Box
  - https://cern.ch/sciencebox

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Thank you

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