

# CERNBox

**Storage Operations at CERN**

**Luca Mascetti**  
**CERN - IT Storage**

# Outline



- Description and Architecture
- User Community and Service Numbers
- New features and ongoing work
- Overview and Summary

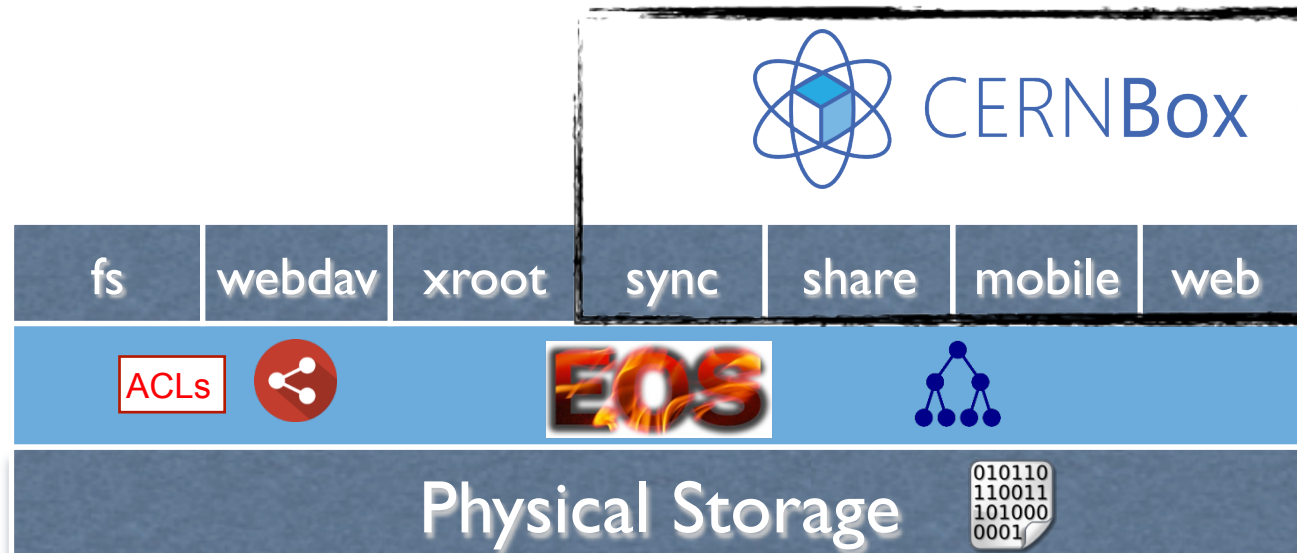
# Description and Architecture

# What is CERNBox ?

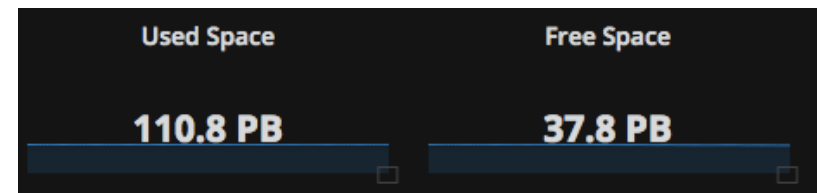
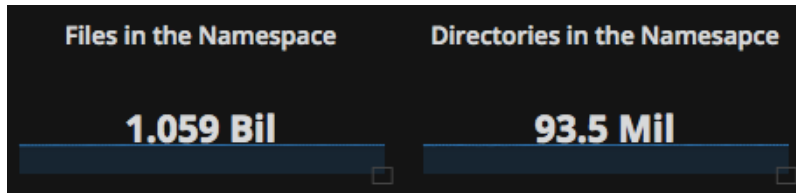


CERNBox provides a cloud synchronisation service

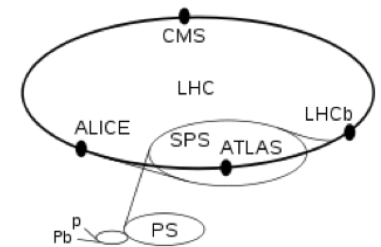
- Available for all CERN users (1TB/user)
- Synchronise files (data at CERN) and offline data access
- Easy way to share with other users
- All major platforms supported
- Based on **ownCloud** integrated with **EOS**

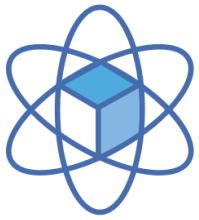


# What is EOS ?

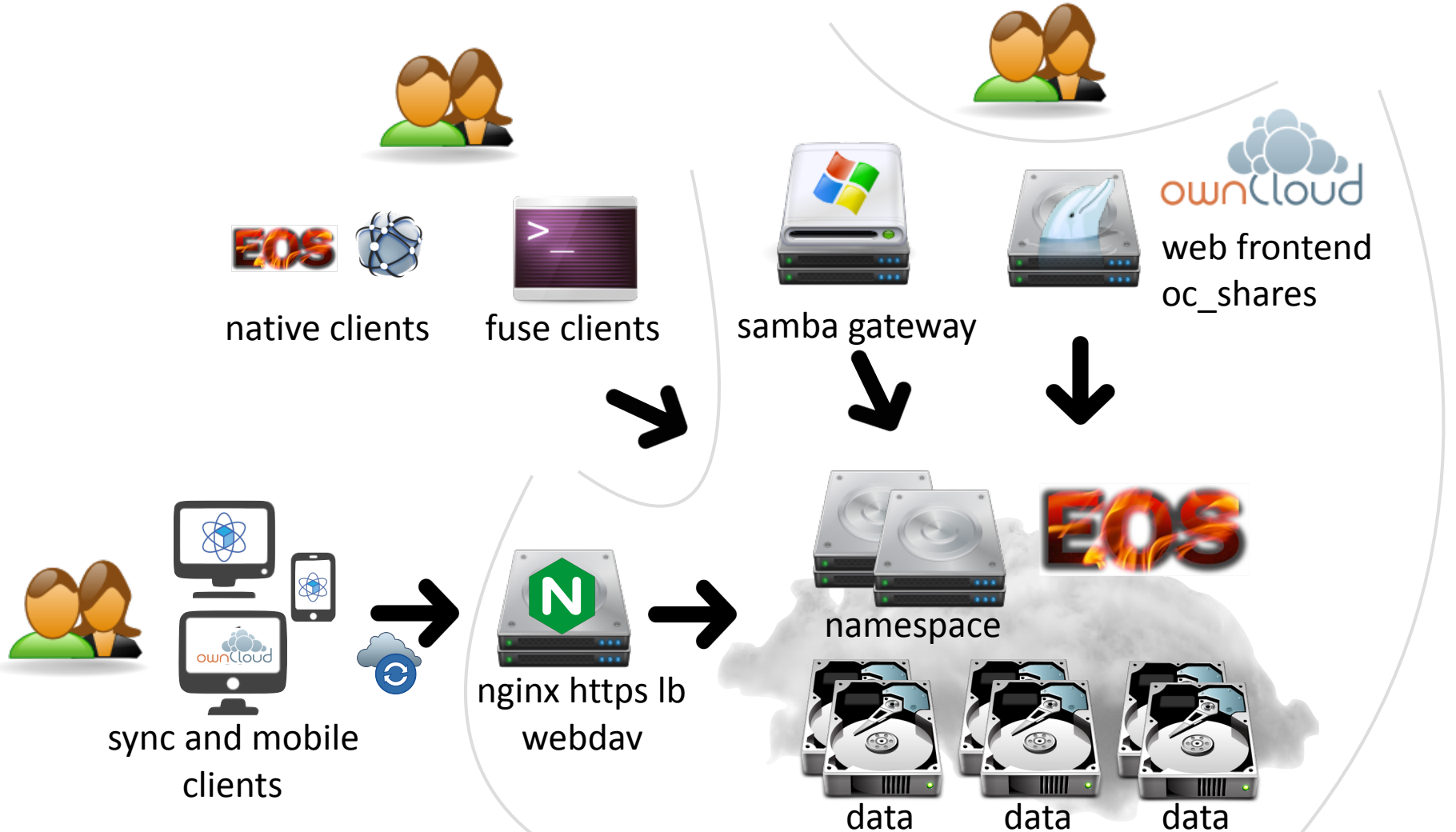


- CERNBox storage backend
- Disk Storage for all LHC and physics data
- Deployment across two computer centres





# CERNBox Architecture

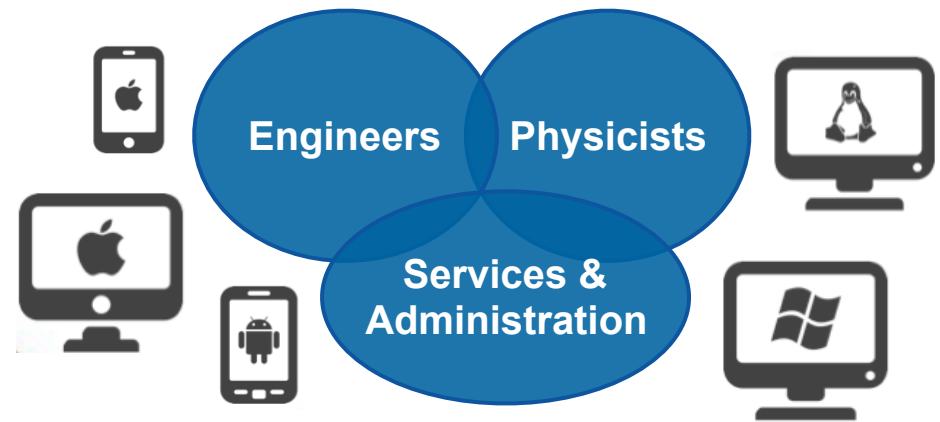


# User Community and Service Numbers

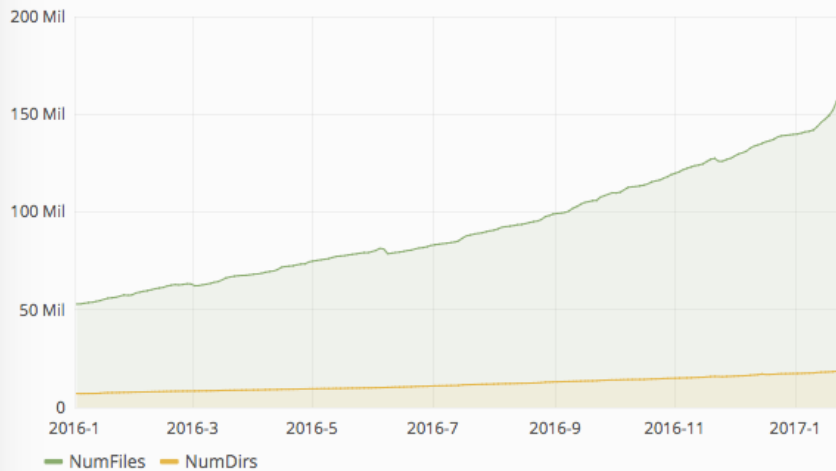


# CERNBox Service Numbers

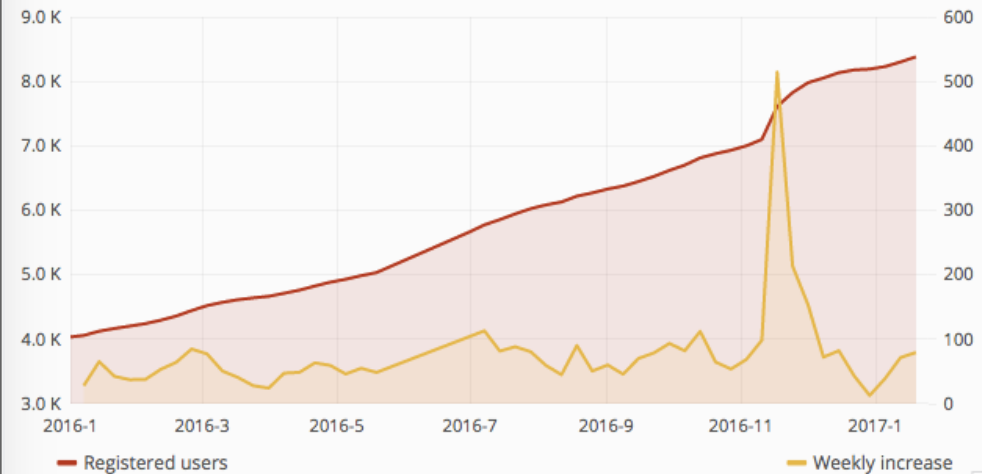
	Jan 2016	Jan 2017
<b>Users</b>	<b>4074</b>	<b>8411</b>
<b># files</b>	<b>55 Million</b>	<b>176 Million</b>
<b># dirs</b>	<b>7.2 Million</b>	<b>19 Million</b>
<b>Used Raw Space</b>	<b>208 TB</b>	<b>806 TB</b>
<b>Deployed Raw Space</b>	<b>1.3 PB</b>	<b>3.2 PB</b>



Number of files and directories

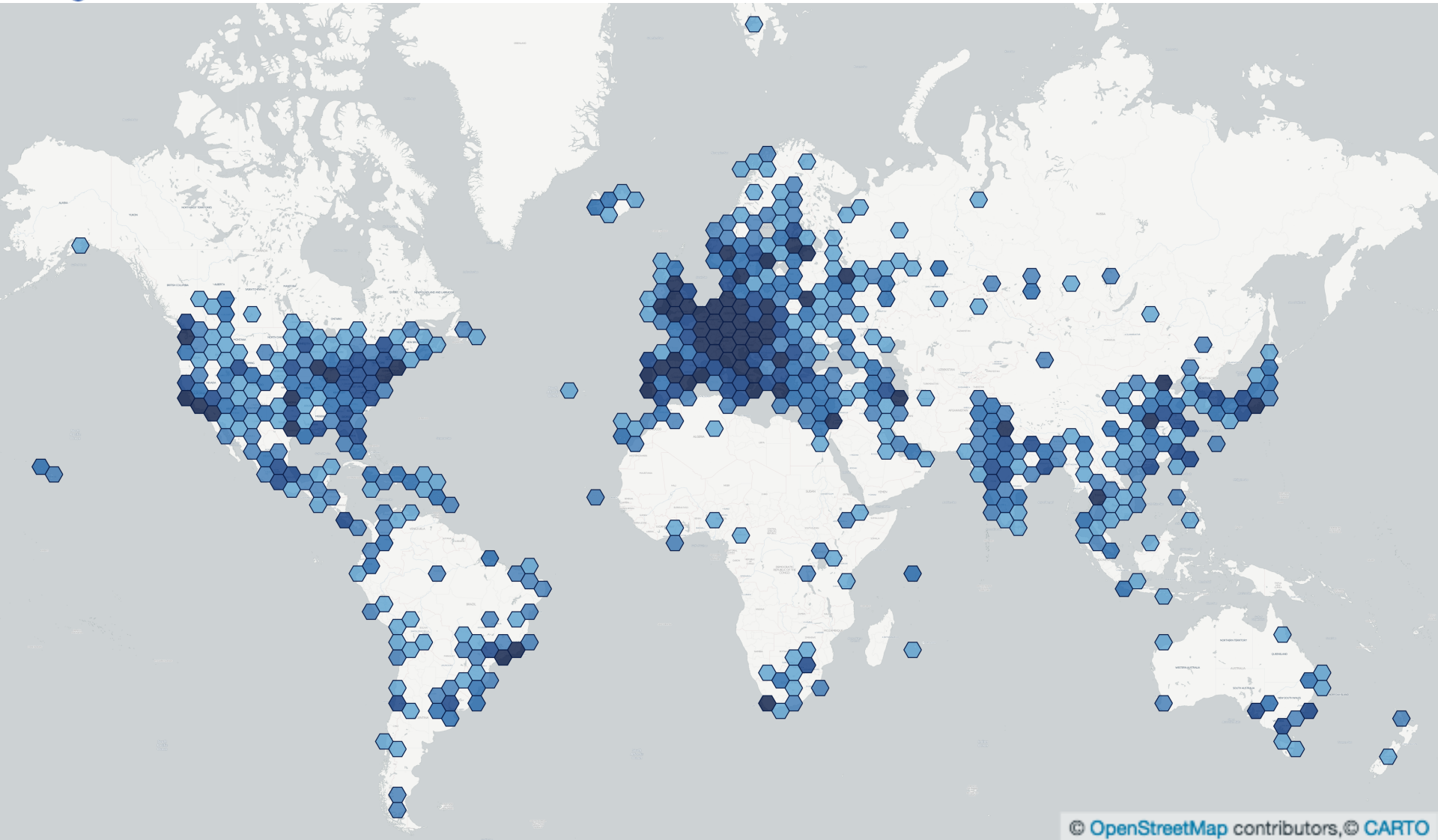


CERNBox users





# CERNBox Clients



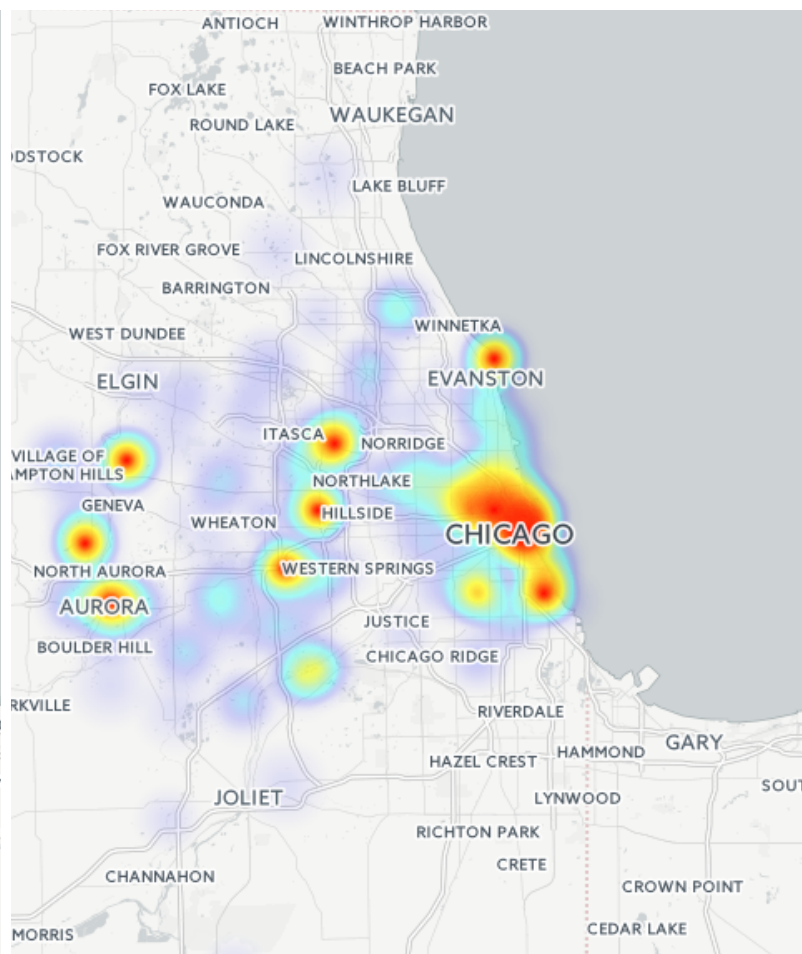
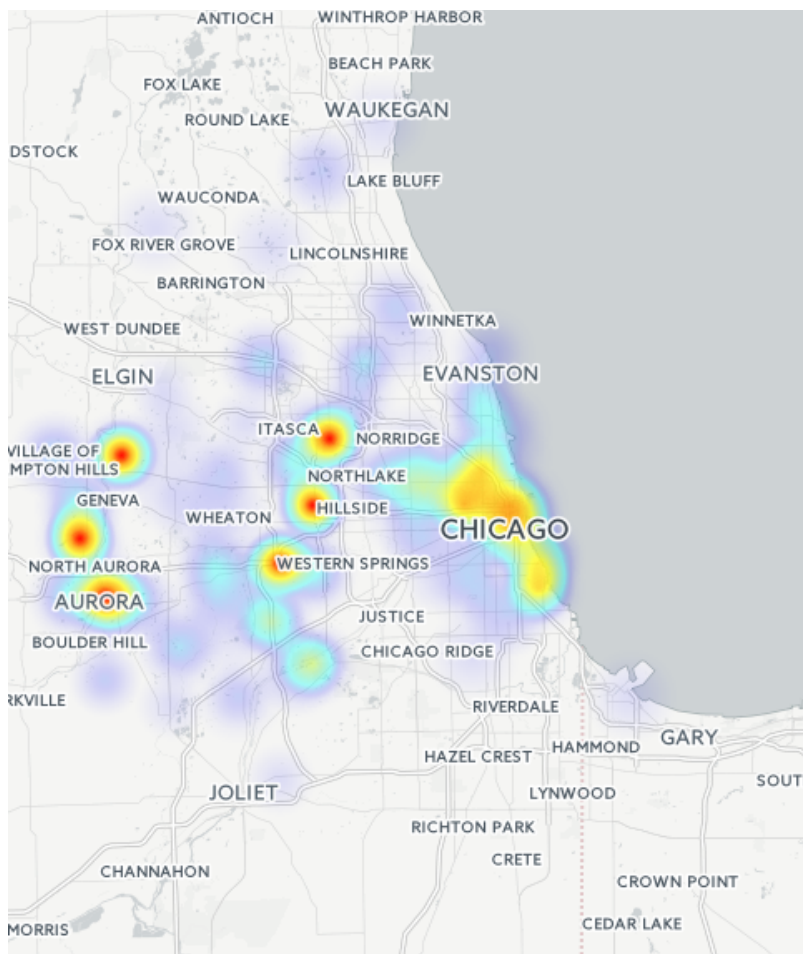
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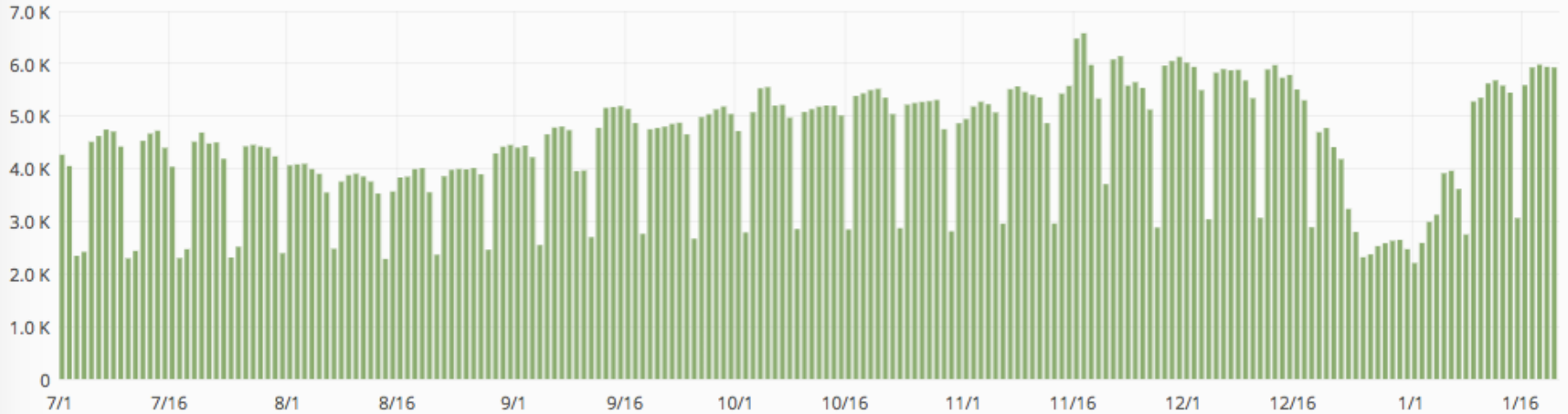
# 38th INTERNATIONAL CONFERENCE ON HIGH ENERGY PHYSICS

AUGUST 3 - 10, 2016  
CHICAGO

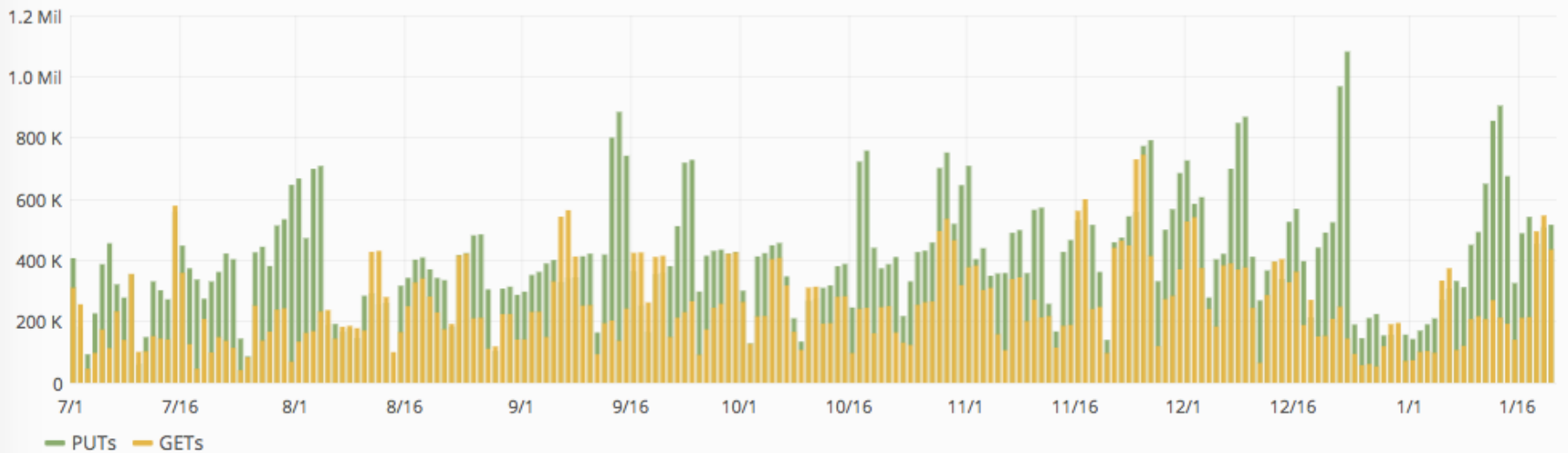


# CERNBox daily clients

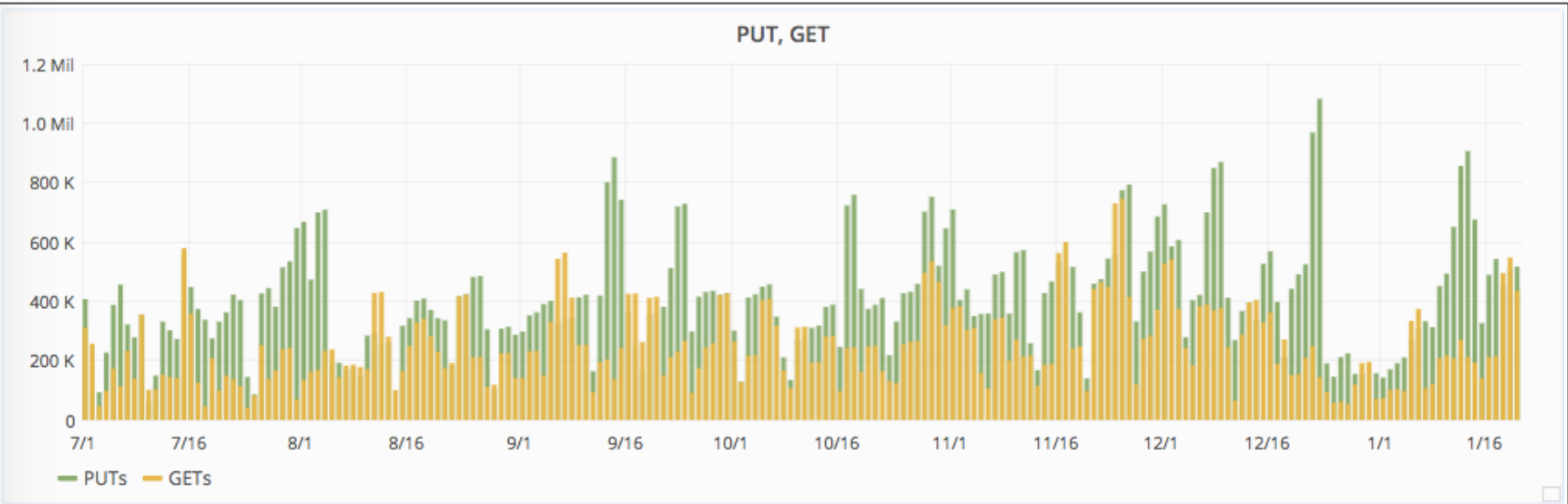
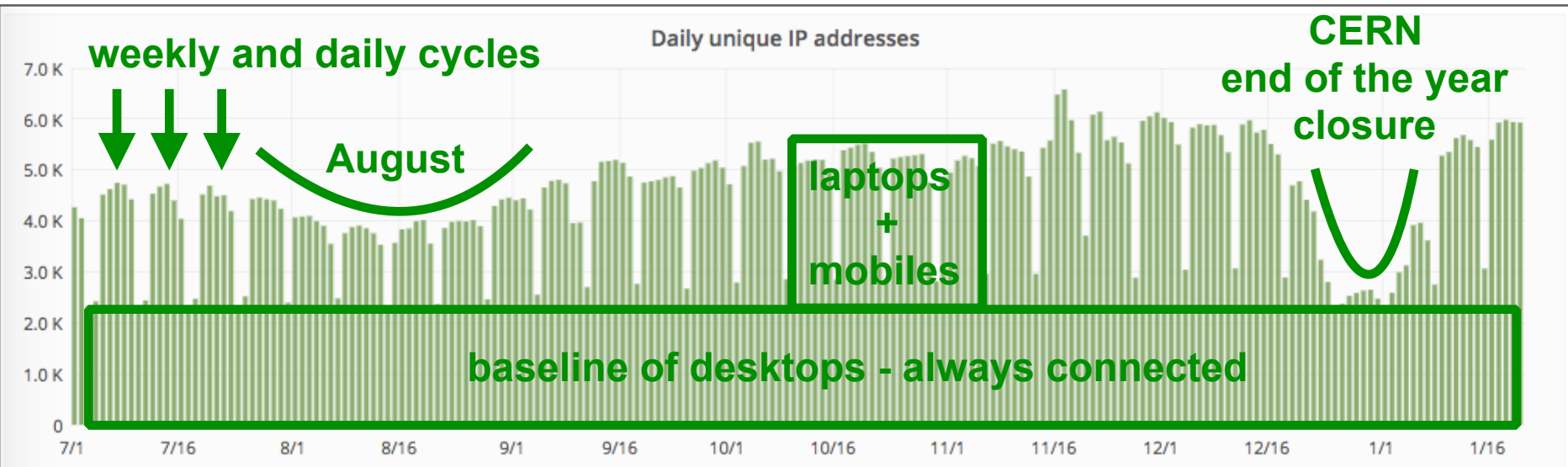
Daily unique IP addresses



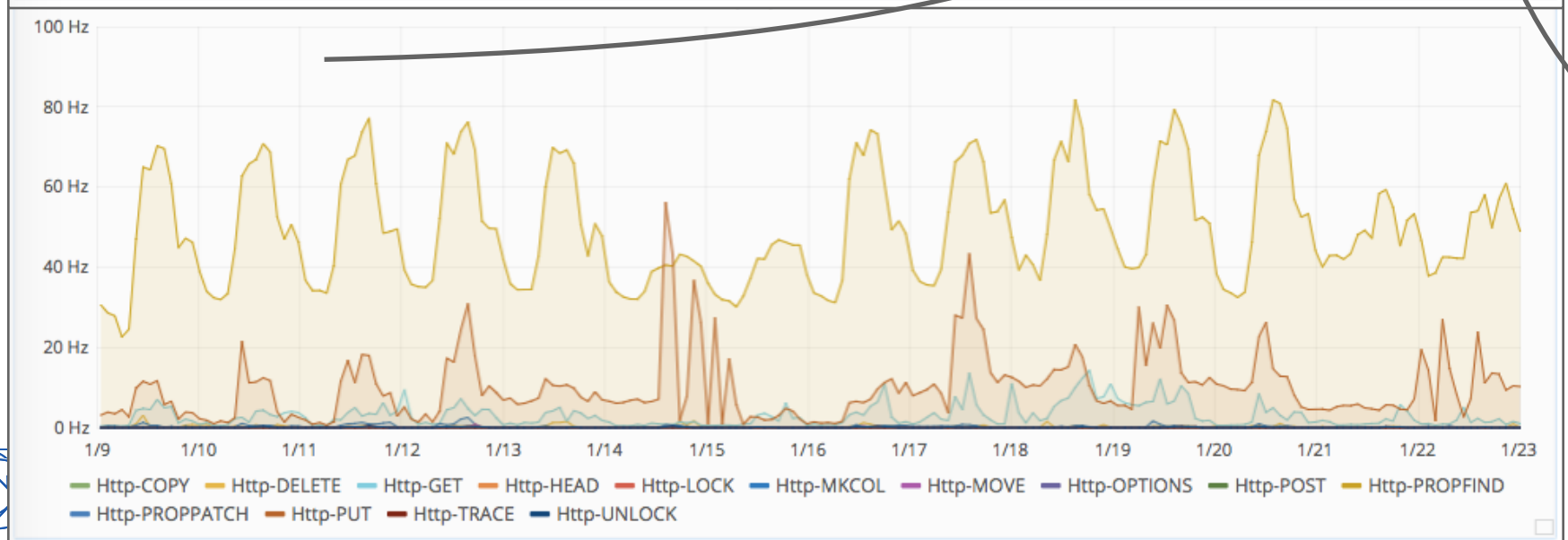
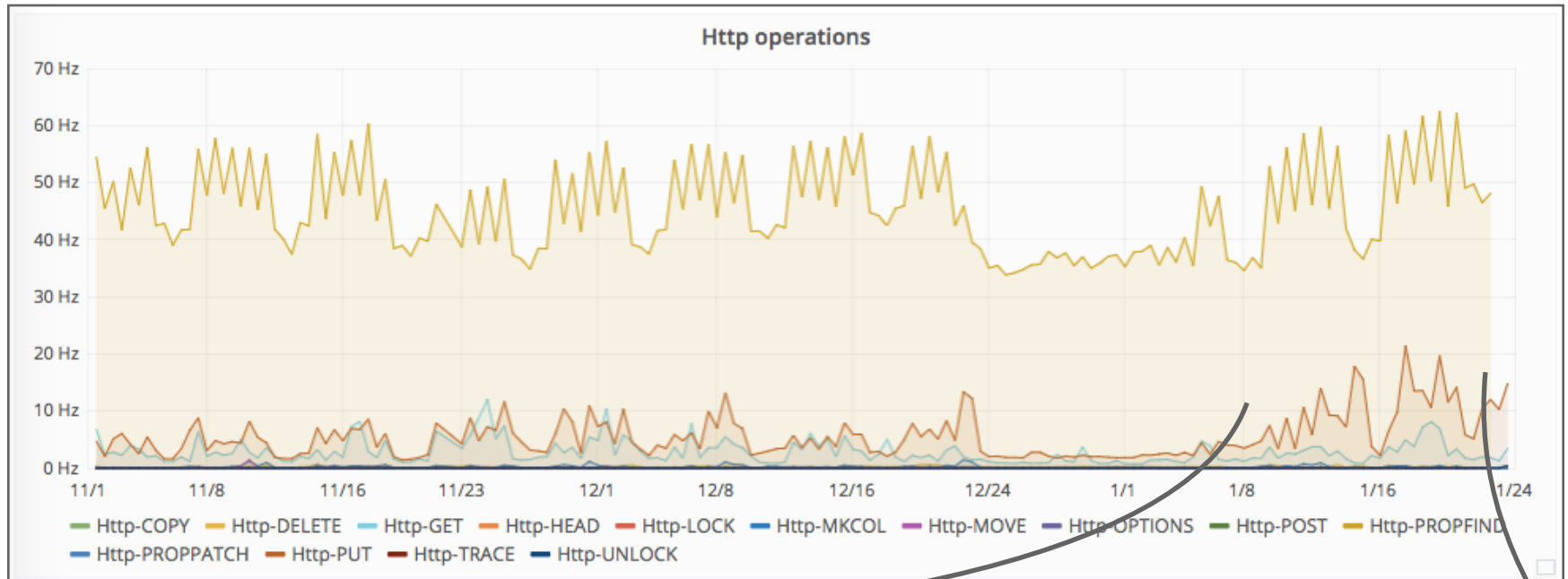
PUT, GET



# CERNBox daily clients



# CERNBox HTTP Operations



# New features and ongoing work

# Single Sign On

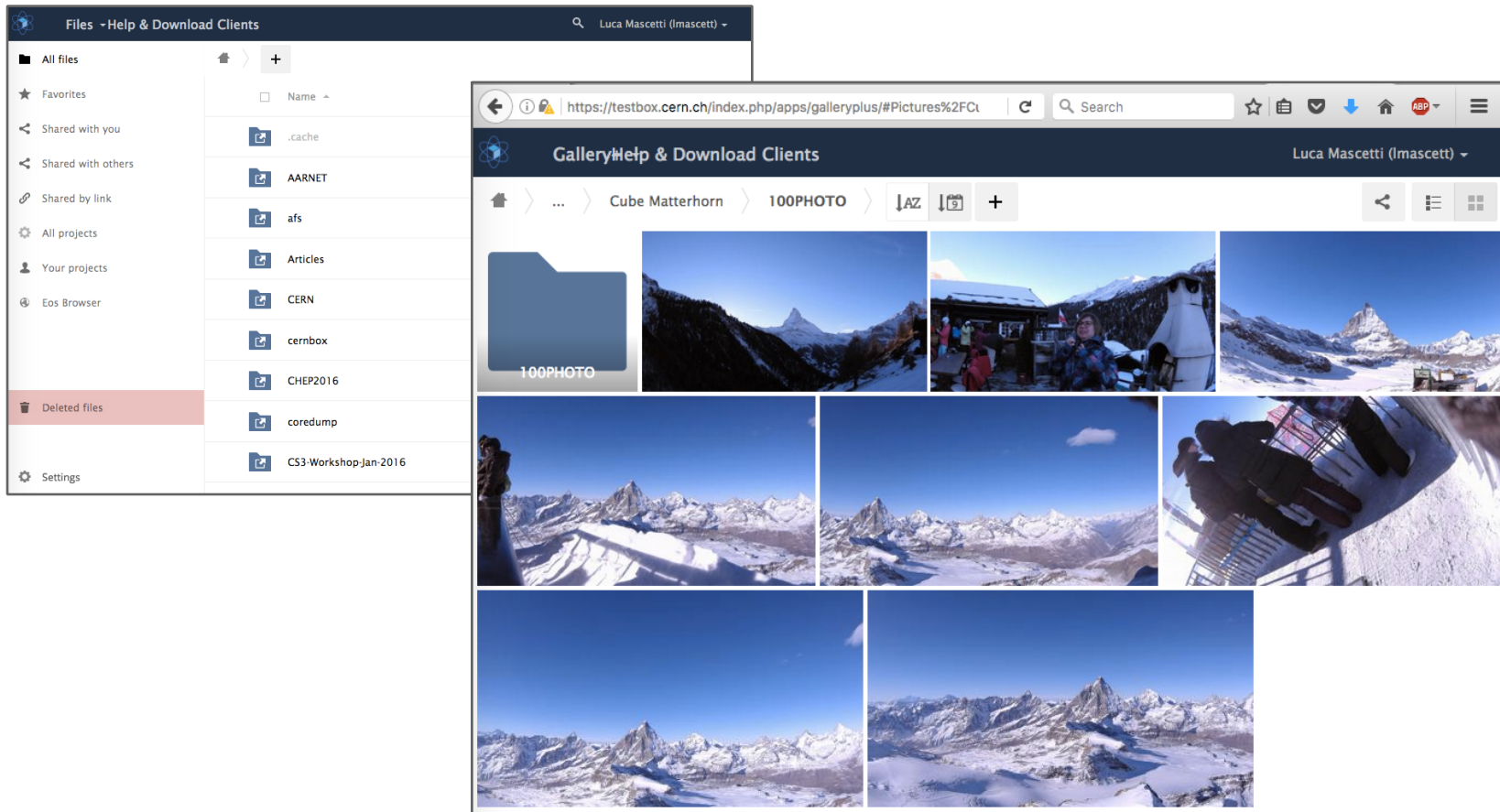
The image consists of three overlapping screenshots illustrating the Single Sign-On (SSO) process for CERN services.

- Top-left screenshot:** Shows the CERNBox login page. The URL is <https://cernbox.cern.ch>. The page features the CERNBox logo and a prominent "Login to CERNBox" button. Below the button, there is a link for "Help and Download Clients".
- Middle screenshot:** Shows the "CERN Single Sign-On" page. The URL is <https://login.cern.ch/adfs/ls/?wa-wslogin1.0&wreply=https%3A%2F>. The page title is "CERN Single Sign-On" and the subtitle is "Sign in with a CERN account, a Federation account or a public service account". It offers three main authentication paths:
  - Use credentials:** A form with fields for "Username or Email address" and "Password", and a checkbox for "Remember Username or Email Address". A link for "Need password help?" is provided.
  - Use one-click authentication:** Includes options for "Sign in using your current Windows/Kerberos credentials" (with a note about Internet Explorer and SLC) and "Sign in using your Certificate [autologon]" (with a note about EuGridPMA certificates).
  - Use strong two factor authentication [show]**
- Bottom-right screenshot:** Shows a file explorer window titled "Files - Help & Download Clients" for user "Luca Mascetti (lmascetti)". The window displays a list of files and folders with columns for "Name", "Size", and "Modified". The "Deleted files" section is highlighted in red.

- SSO enabled to align with the other CERN web services
- Desktop Sync Client continue using standard auth



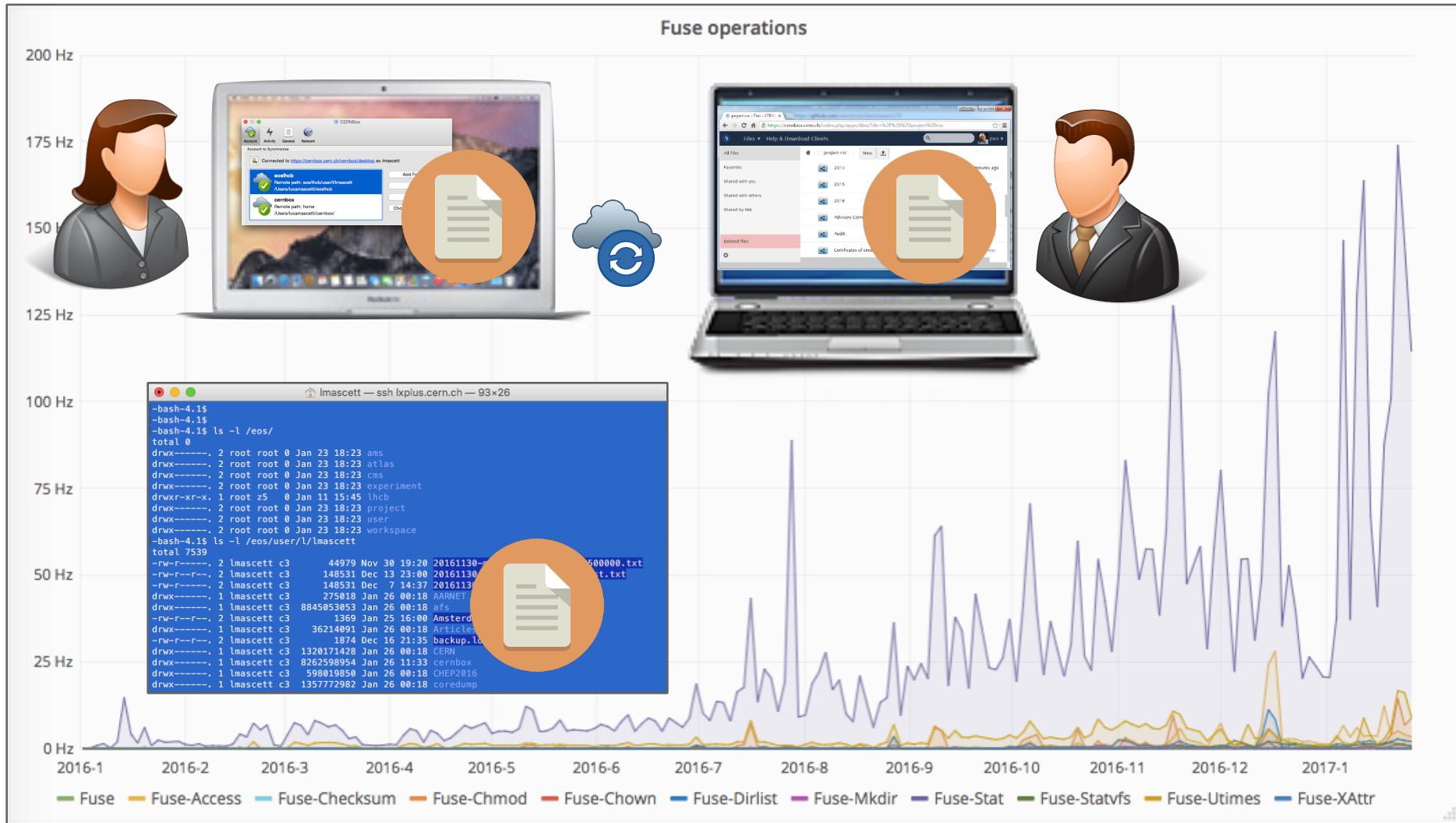
# Gallery View



- Working on the enable the Gallery View
- Integration between the Gallery App and EOS

# Filesystem Access (FUSE)

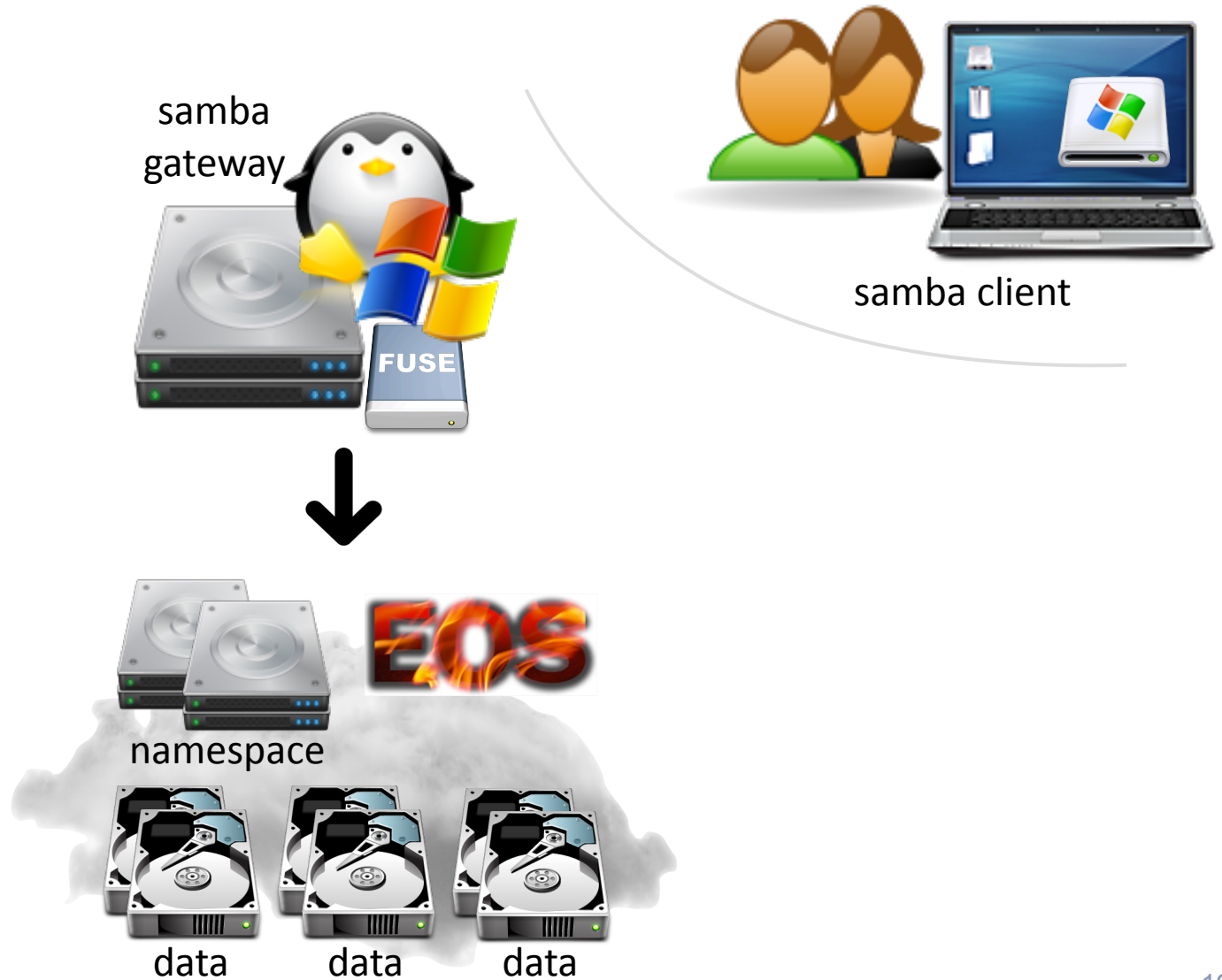
Fuse operations



```

lmascott ~ ssh lxplus.cern.ch — 93x26
-bash-4.1$
-bash-4.1$
-bash-4.1$ ls -l /eos/
total 0
drwx----- 2 root root 0 Jan 23 18:23 ams
drwx----- 2 root root 0 Jan 23 18:23 atlas
drwx----- 2 root root 0 Jan 23 18:23 cms
drwx----- 2 root root 0 Jan 23 18:23 experiment
drwxr-xr-x 1 root z5 0 Jan 11 15:45 lhcb
drwx----- 2 root root 0 Jan 23 18:23 project
drwx----- 2 root root 0 Jan 23 18:23 user
drwx----- 2 root root 0 Jan 23 18:23 workspace
-bash-4.1$ ls -l /eos/user/l/lmascett
total 7539
-rw-r----- 2 lmascott c3 44979 Nov 30 19:20 20161130-
-rw-r----- 2 lmascott c3 148531 Dec 13 23:00 20161130-
-rw-r----- 2 lmascott c3 148531 Dec 7 14:37 20161113
drwx----- 1 lmascott c3 275018 Jan 26 00:18 AARNET
drwx----- 1 lmascott c3 8845053053 Jan 26 00:18 afs
-rw-r----- 2 lmascott c3 1369 Jan 25 16:00 Amsterd
drwx----- 1 lmascott c3 36214091 Jan 26 00:18 ATLASLE
-rw-r----- 2 lmascott c3 1874 Dec 16 21:35 backup.t
drwx----- 1 lmascott c3 1320171428 Jan 26 00:18 CERN
drwx----- 1 lmascott c3 8262598954 Jan 26 11:33 cernbox
drwx----- 1 lmascott c3 598019850 Jan 26 00:18 CHEP2016
drwx----- 1 lmascott c3 1357772982 Jan 26 00:18 coredump
    
```

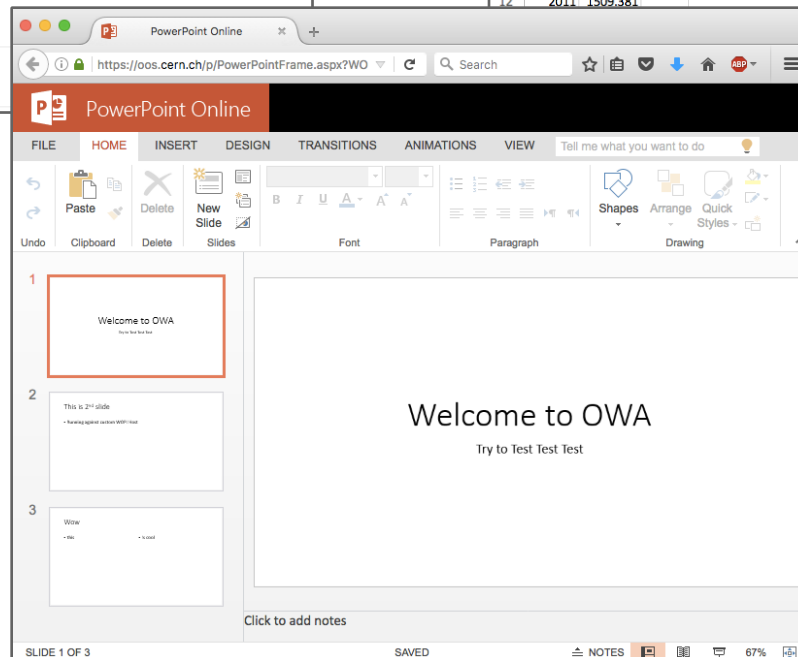
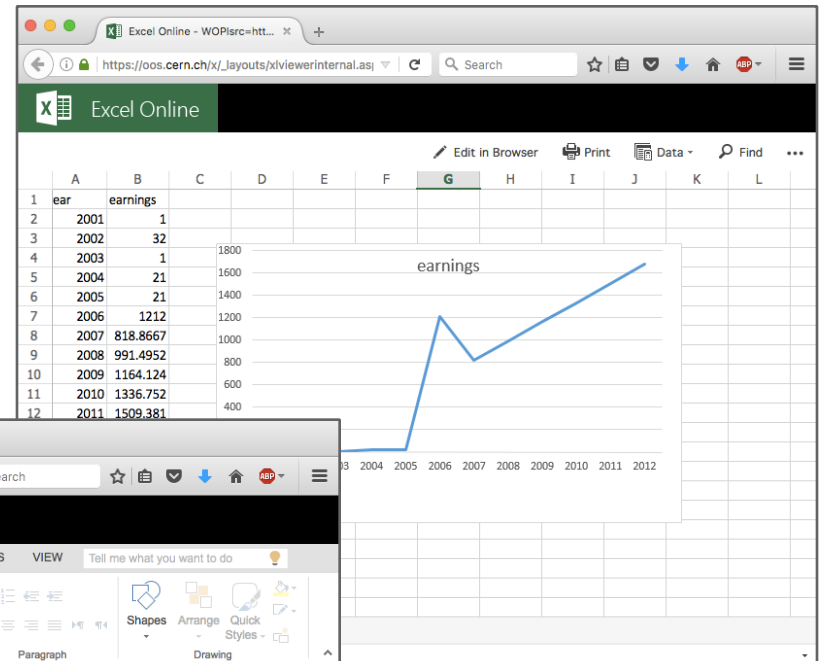
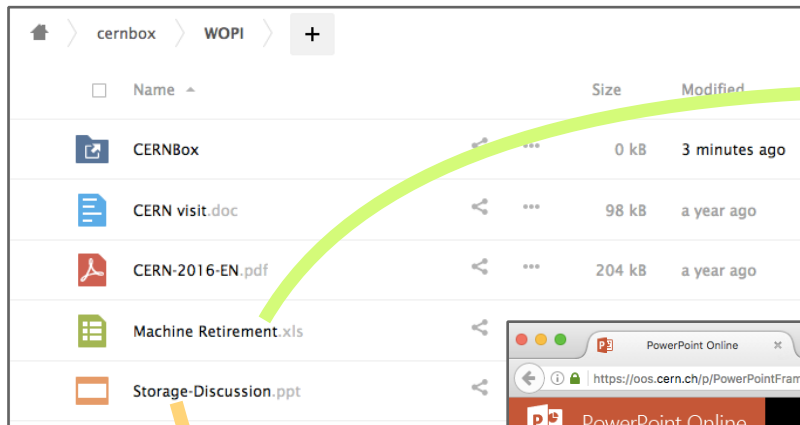
# Filesystem Access (SAMBA)





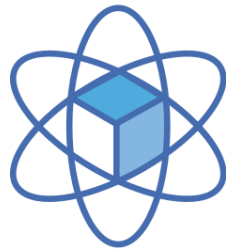
# Office Online Integration (WOPI)

- Web Application Open Platform Interface (WOPI) protocol
  - Native Office in the browser



# Overview and Summary

# Summary



CERNBox



- EOS/CERNBox innovative platform for scientific computing
  - scalable architecture
- Full integration with the entire LHC storage (100+ PB)
- Bring data closer to our users
  - New ways to interact with the data
- CERNBox as an extension of the Desktop
  - ongoing integration with multiple services

Again... This is really really amazing!!!! I am figuring out what I can do now!  
Freedom!

All the best,





[www.cern.ch](http://www.cern.ch)