

# Endpoint user device and app provisioning models

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CERN IT Applications and Devices

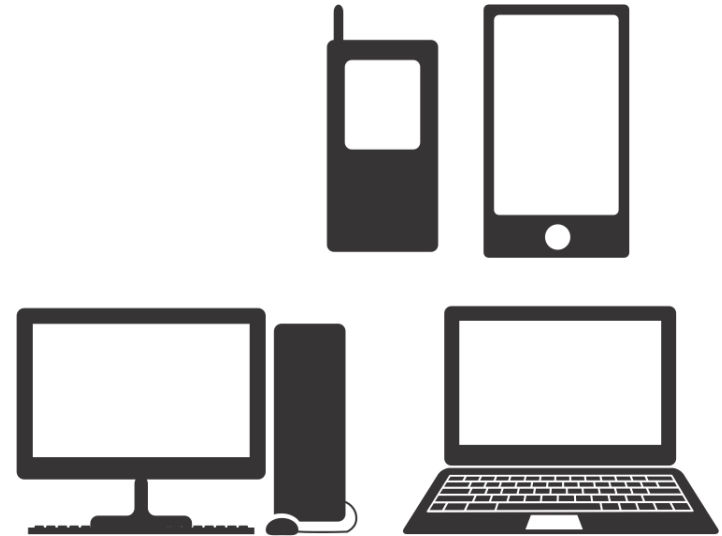
# Professional endpoint user devices

According to Wikipedia, endpoint is a [hardcore punk band](#) from Louisville, Kentucky.

A more common definition for *endpoint* in computer networking, architecture, and operations is a mobile device such as a desktop computer, laptop, phone, or tablet.

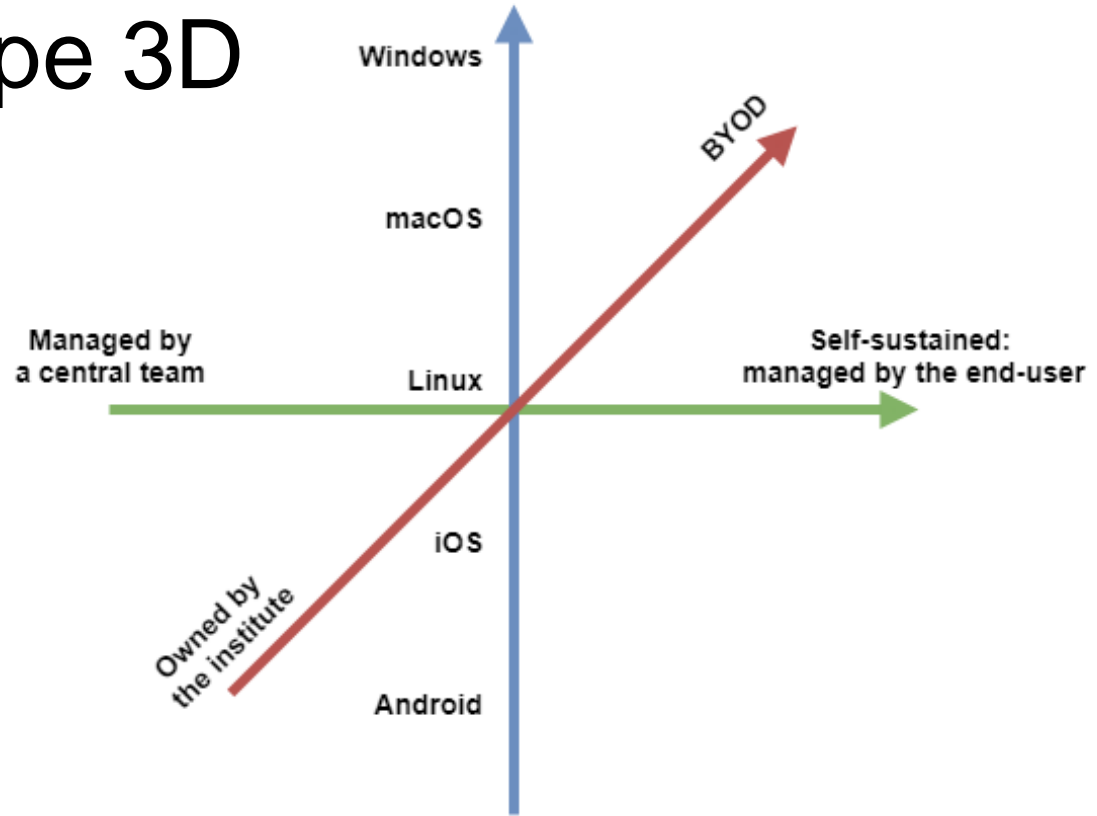
*Professional end-point user device* is a device on which a professional application is installed, or one from which the user connects to a professional application in the cloud. It is the device that the users sits in front of, or holds in their hands in order to carry out their professional functions.

For the sake of this analysis, we considered as *professional endpoint user devices* all devices that the end-user used to connect to their CERN mailbox.



# Device Landscape 3D

- Operating system
- Management
- Ownership



# Goals

Understand endpoint user device landscape, identify important areas, adapt strategy

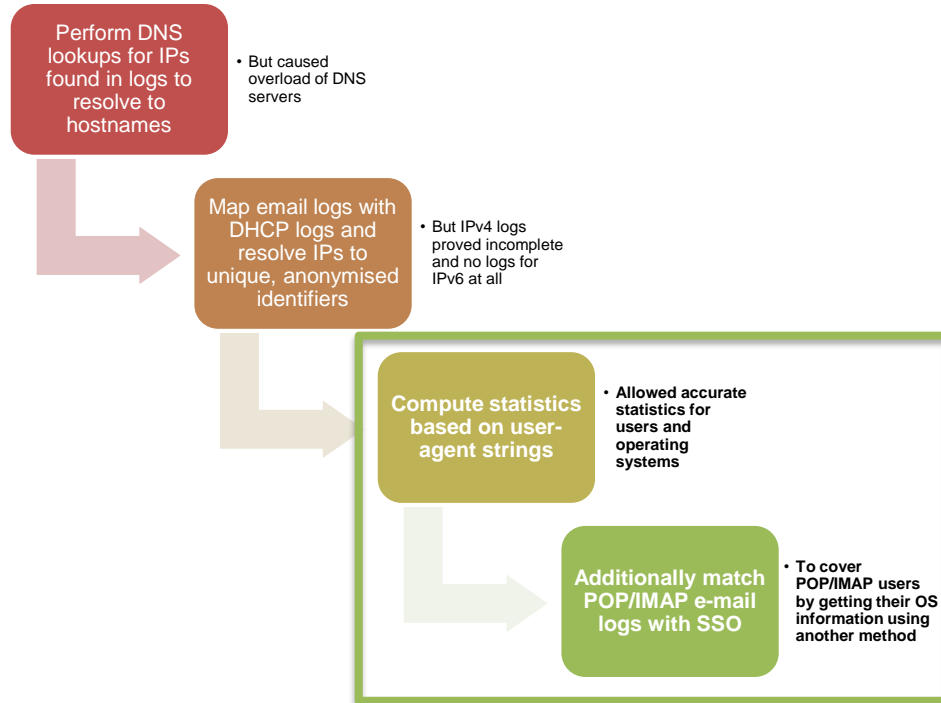
## Questions:

- Which endpoint user devices are used in your institution?
- What are the management configuration trends?
- What are BYOD trends?

Gather and share information among other HEPiX sites:

- Survey: <https://indico.cern.ch/event/765497/surveys/971>

# Analysis: attempted approaches



# Analysis: implementation

- Process normalised, anonymised email logs
- Infer Operating System from user-agent strings
- Map with SSO logs by IP address hash to retrieve user agents for POP/IMAP users
- Compare device usage with CERN endpoint management systems
- Compare with CERN SSO statistics from Piwik and a user survey

# Setting the scene

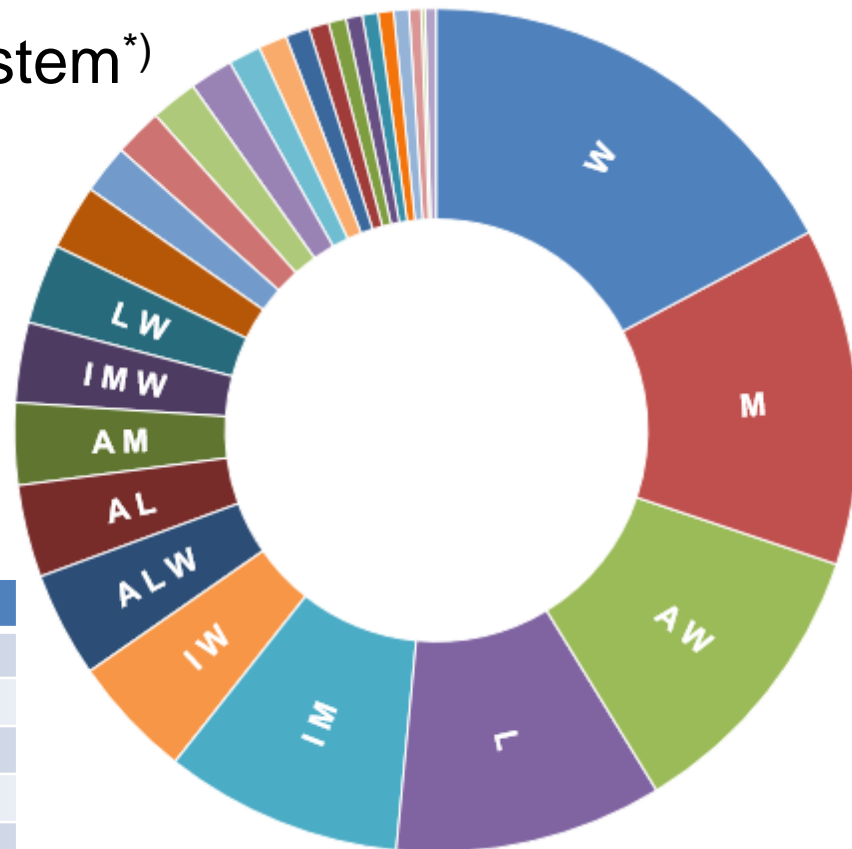
Statistic	Number
Total Primary CERN Mailboxes	~ 34000
<b>Active CERN e-mail users<sup>*)</sup></b>	16478 or <b>48%</b> of all CERN mailboxes
External e-mail addresses	~ 5200
Ex-employees	~ 2500

<sup>\*)</sup> Active users: users who accessed CERN email at least once over the reference period of 1 month.

# Results: Users per Operating System<sup>\*)</sup>

Most common use cases:

- 17%: Windows only
- 13%: macOS only
- 11%: Windows and Android only
- 10%: Linux only
- 9%: macOS and iOS only
- 5%: Windows and iOS only
- 4%: Windows, Linux and Android only

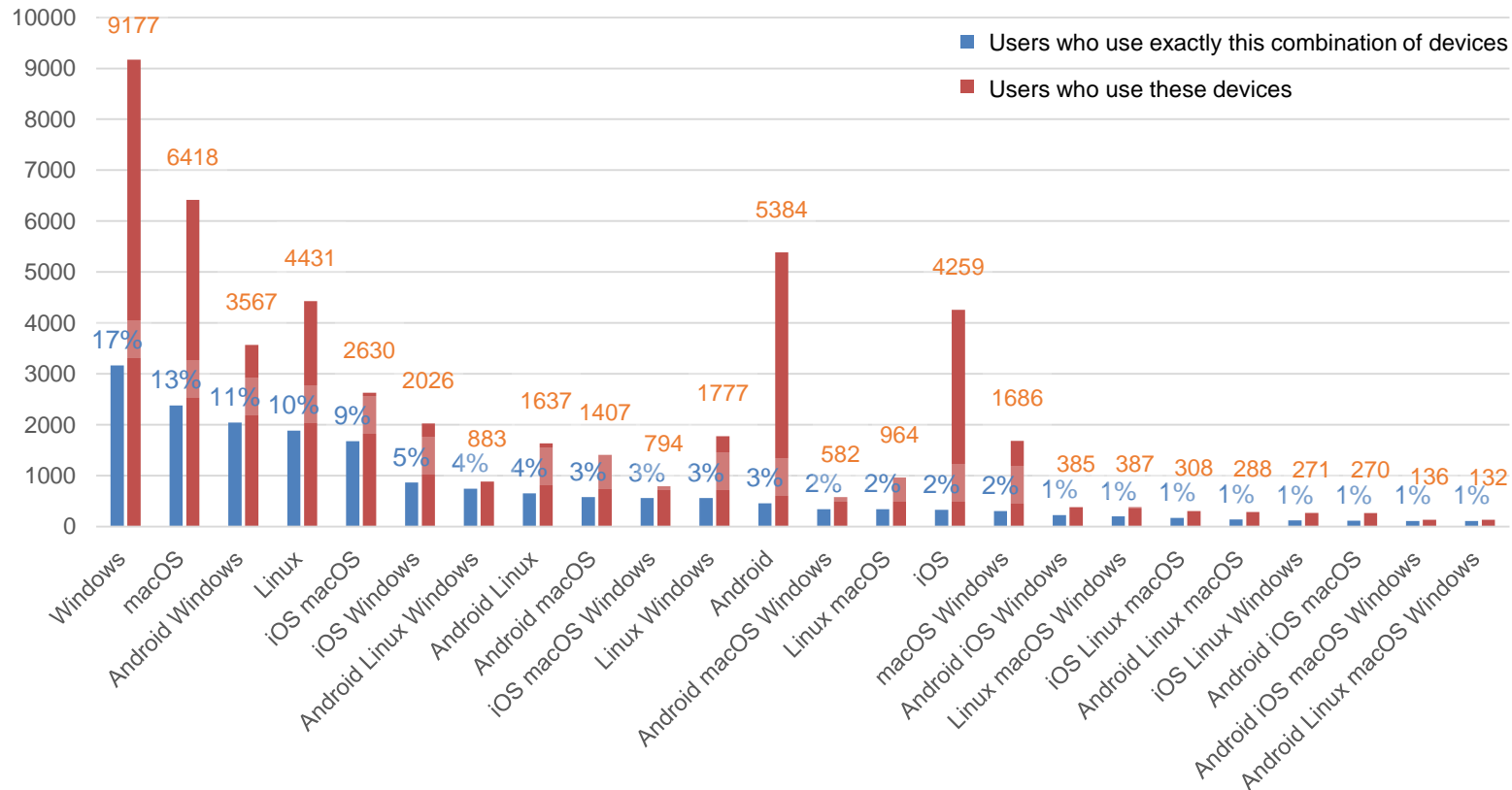


<sup>\*)</sup> Based on CERN e-mail logs. Unknown POP/IMAP users have been inferred from the recognised POP/IMAP OS share ratios.

OS	Abbreviation
Windows	W
macOS	M
Linux	L
iOS	I
Android	A



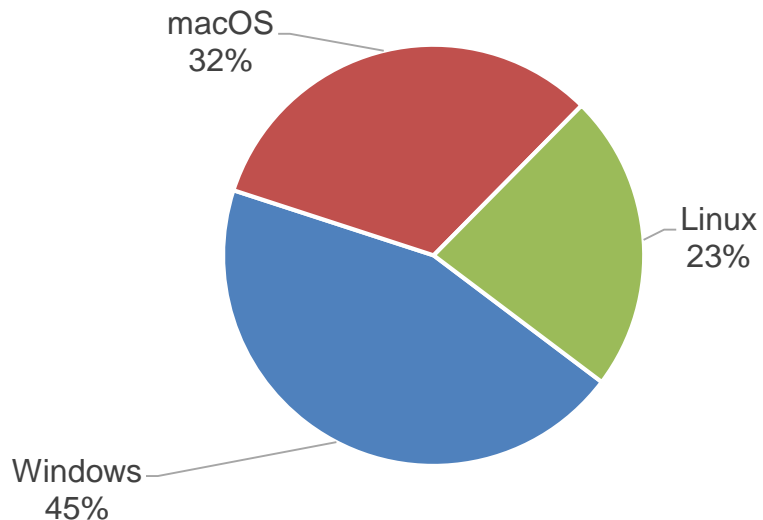
# Operating system / user statistics



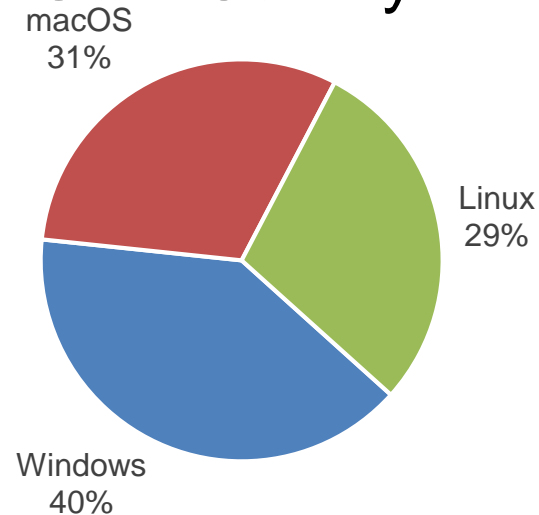
# Users / Operating System statistics

COMPARISON WITH 2016 USER SURVEY

## CERN e-mail



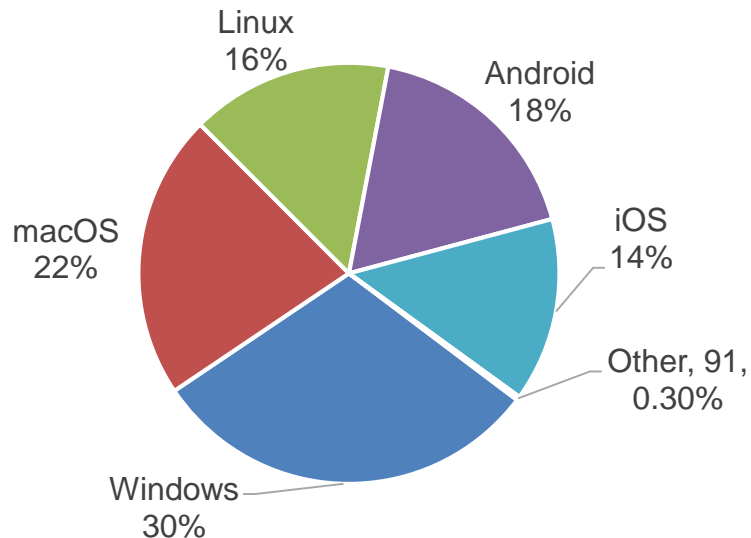
## User Survey



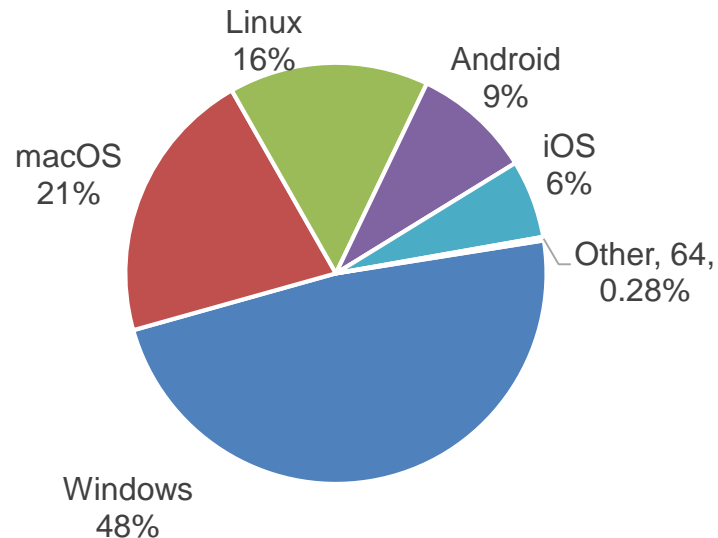
# Users / Operating System statistics

APPROXIMATE COMPARISON WITH PIWIK

## CERN e-mail

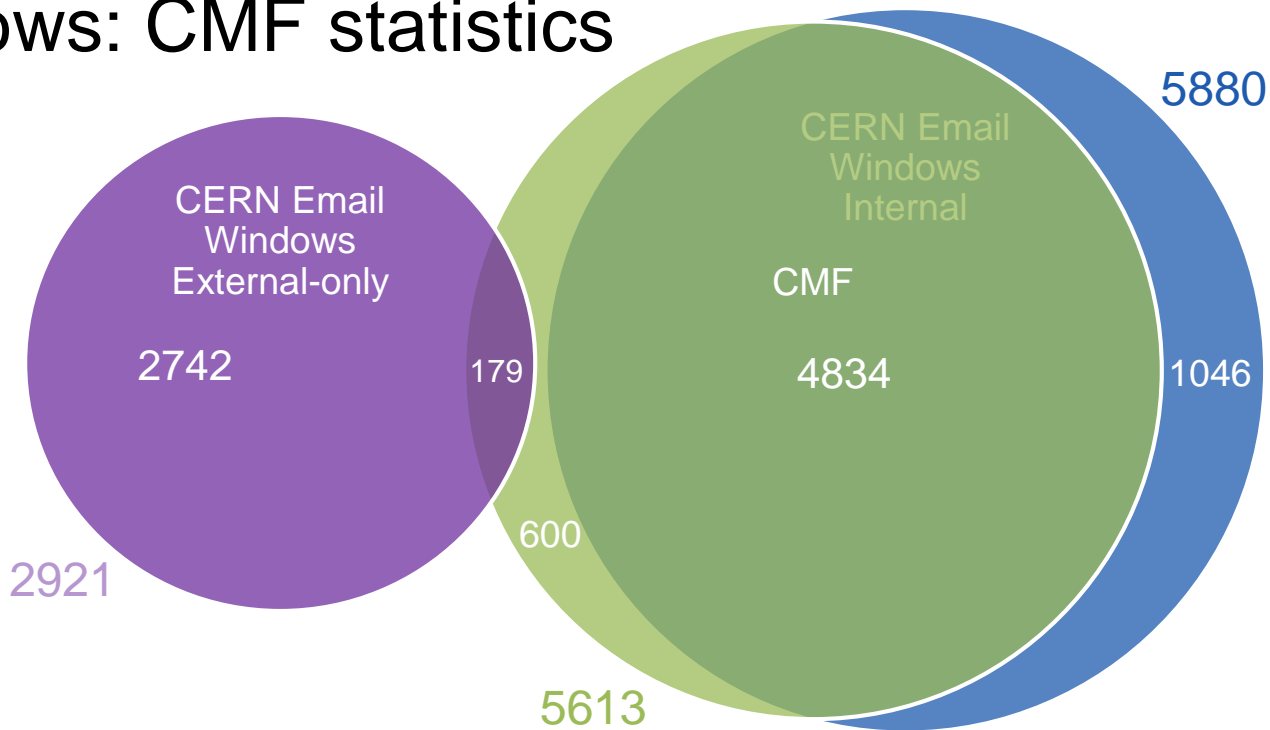


## SSO



# Managed Windows: CMF statistics

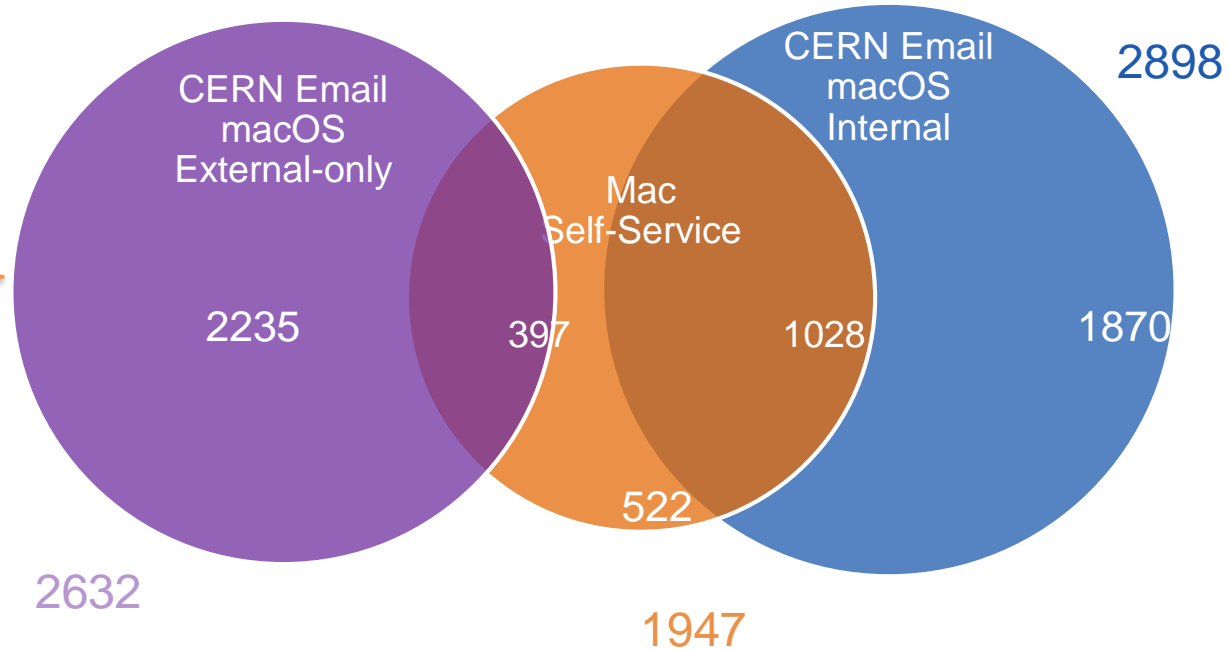
57% of users who access CERN e-mail use CMF  
82% of internal / 6% of external-only



“Internal” denotes any user that accessed e-mail from inside the CERN network in the specified timeframe.

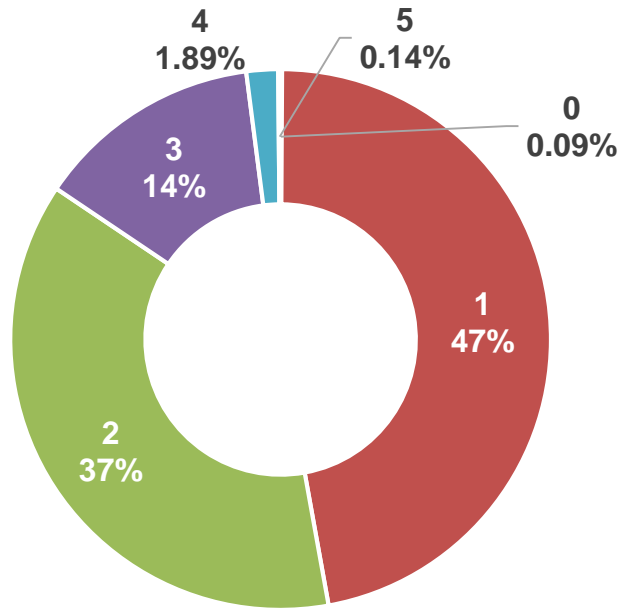
# Mac Self-Service statistics

26% of users who access CERN e-mail use also Self-Service  
35% of internal  
15% of external-only



“Internal” denotes any user that accessed e-mail from inside the CERN network in the specified timeframe.

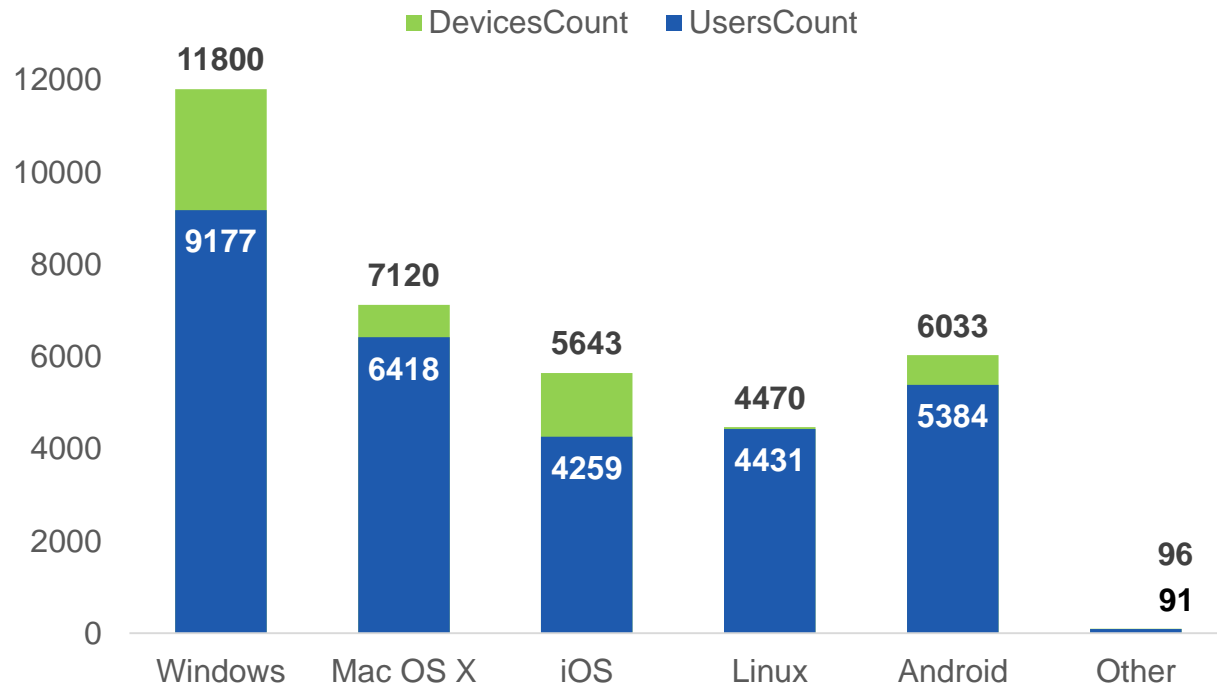
# Number of operating systems per user



Most of the users who access CERN email use either one or two OSes for this purpose.

14% of the users use three OSes

# Inferred devices statistics



Devices were differentiated by the amount of information contained in the user agent strings (OS, OS version, device maker, etc.)

# Mobile Device Management market

“MDM primarily deals with corporate data segregation, securing emails, securing corporate documents on devices, enforcing corporate policies, integrating and managing mobile devices including laptops and handhelds of various categories. MDM implementations may be either on-premises or cloud-based.”

- Microsoft SCCM
- Microsoft Intune
- Citrix Endpoint Management
- MobileIron
- VMWare
- Puppet
- Certero
- Miradore
- Comodo
- ManageEngine
- WSO2 IoT
- Flexera
- Hexnode
- Filewave
- Sophos
- FlyveMDM
- JAMF Casper Suite
- Developed in-house (ex.: CMF)

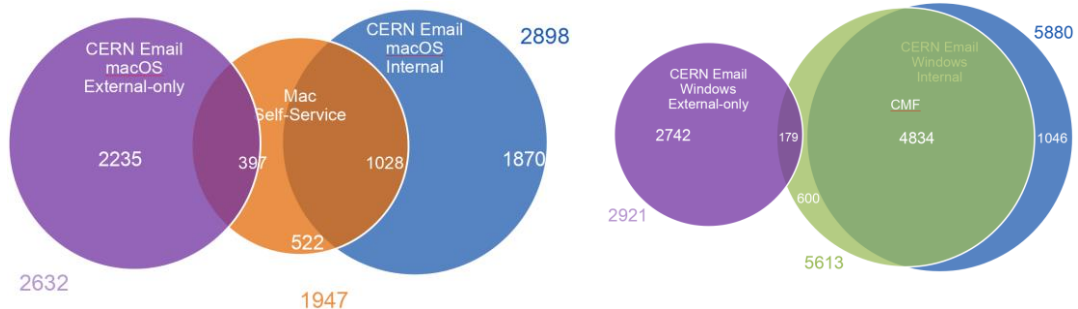


# Strategy

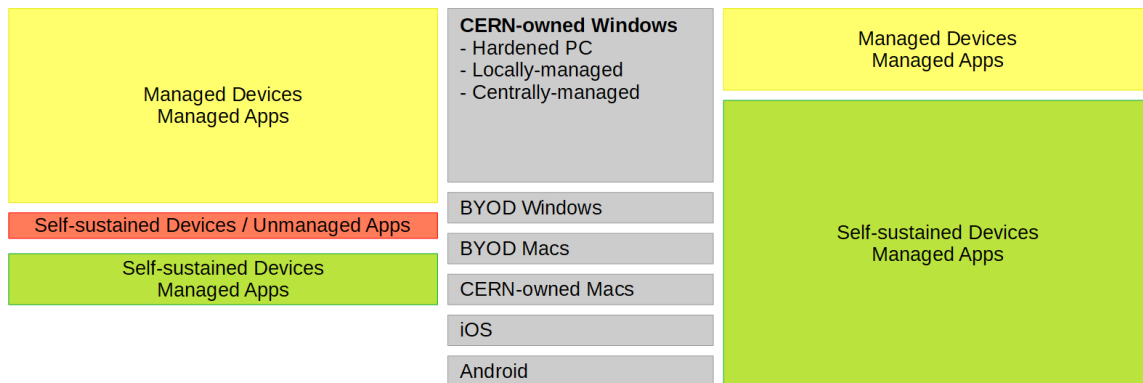
5000 Android users, 4000 iOS users

*CMF used by 82% of users at CERN  
and by 57% of all Windows CERN users*

*Mac Self-Service used by 35% of users  
at CERN and by 26% of all CERN users*

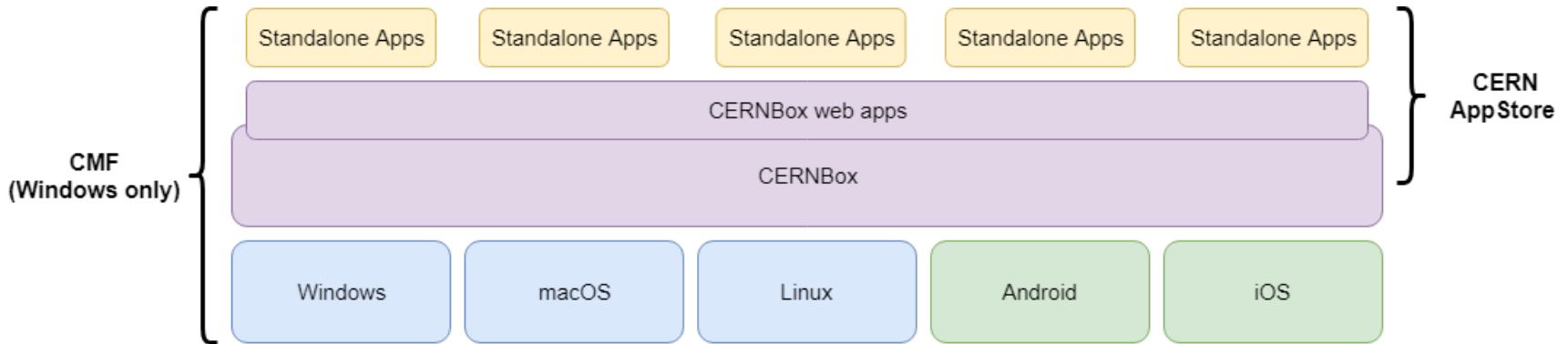


Focus on managing Devices → Focus on managing Apps



# Focus on Application Management

- Provide single point of entry for Apps for all OS platforms
- Manage Apps rather than Devices
- Leverage software repositories
- Provision licences



# HEPiX Survey

How are end-point user devices managed in your institution?

Fill in the [survey](#)

By March 28<sup>th</sup>, please!

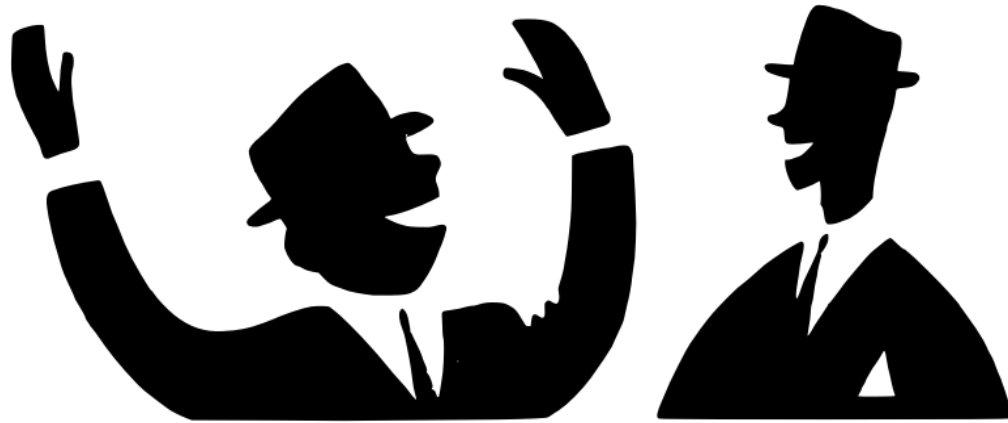


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# Data Privacy Protection considerations

- All personal data was encrypted
- No sensitive personal data was processed
- The data was processed for preparation of statistics
- The data was process in order to pursue legitimate interest of the Organization

I would like to thank CERN Data Privacy Protection Officer for his guidance and advice at the beginning of this project



Thank you for your attention!

