

# IMPROVING OPENSTACK SWIFT AS OWNCLOUD BACKEND TO SCALE

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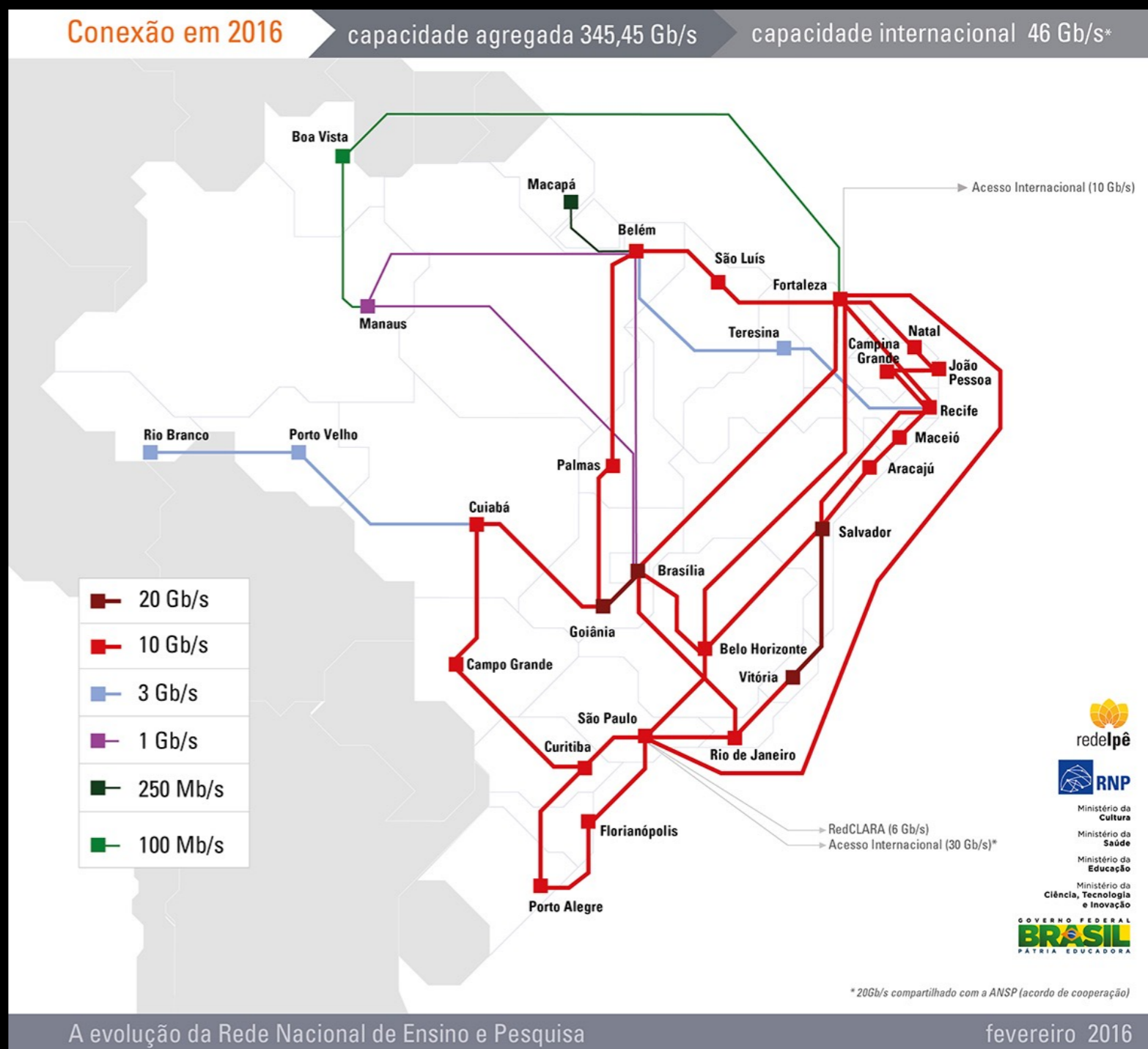




# RNP

REDE NACIONAL DE  
ENSINO E PESQUISA

- Connects more than 350 public and private institutions (universities and research institutes) on more than 1.300 campi through an advanced multi-gigabit national backbone.
- RNP also offers advanced services on top of this network, potentially benefiting more than 3.5 million users, these services include VoIP, webconf, VC, VoD, colocation, federated authentication, eduroam and now **cloud services**.



# edudrive@RNP

- RNP File Sync&Share service;
- Based on Owncloud (opensource) and Openstack Swift;
- Developed some adds to improves federated users management and external object storage.

The screenshot displays the edudrive@RNP web interface. At the top, the logo and name 'edudrive@RNP' are visible. The interface is divided into three main sections:

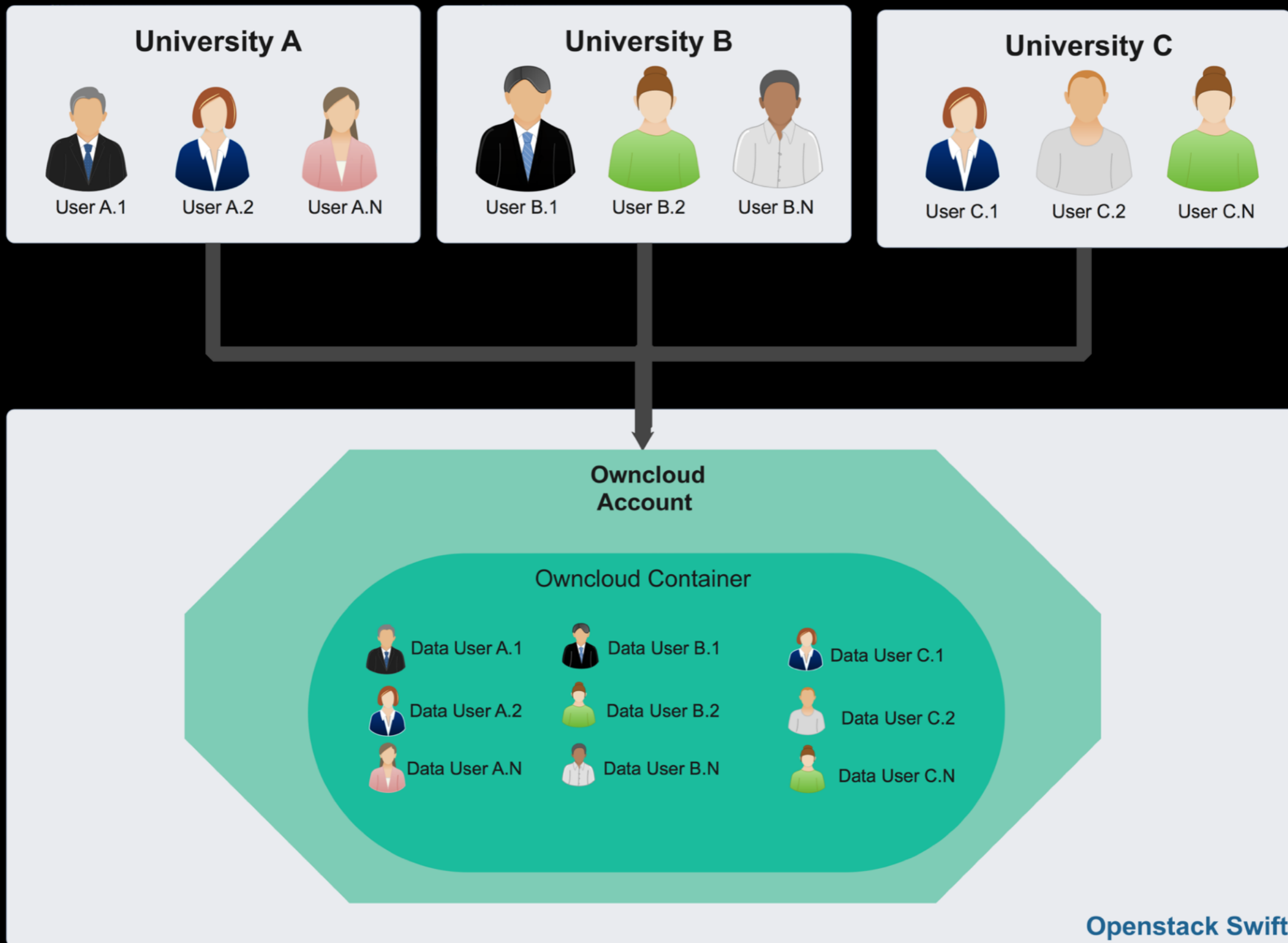
- Sidebar (Left):** Contains navigation options such as 'Todos os arquivos', 'Favoritos', 'Compartilhado com você', 'Compartilhado com outros', 'Compartilhado por link', 'Imagens', 'Etiquetas', 'Envie seu Feedback', and 'Arquivos apagados'.
- Main Content Area (Right):** Shows a list of folders and files, including 'Apresentações', 'Artigos', 'Certs', 'Controle de Atividades', 'DAGSer (2)', 'Desenhos', 'Documents', 'Eventos', 'Força tarefa', 'Forum-RNP-2017-slides', 'Grupo de Estudos de SDN', 'GSer', and 'GTI'.
- Storage Usage (Bottom):** A donut chart indicates a total capacity of 50 GB. The chart is divided into two segments: 'Espaço Livre (17.5 GB)' (free space, blue) and 'Espaço Usado (32.5 GB)' (used space, red).

# WHY IMPROVE OWNCLOUD EXTERNAL OBJECT STORAGE (SWIFT) INTEGRATION?

Folder name	External storage	Authentication	Configuration	A
<input type="text" value="OpenStackObjectSt"/>	OpenStack Object Storage	OpenStack ▾	<input type="text" value="Service name"/> <input type="text" value="Region"/> <input type="text" value="myfiles"/> <input type="text" value="Request timeout (se"/> <input type="text" value="molly"/> <input type="text" value="....."/> <input type="text" value="foobar"/> <input type="text" value="http://devstack:5000"/>	



# WHAT IS THE PROBLEM?

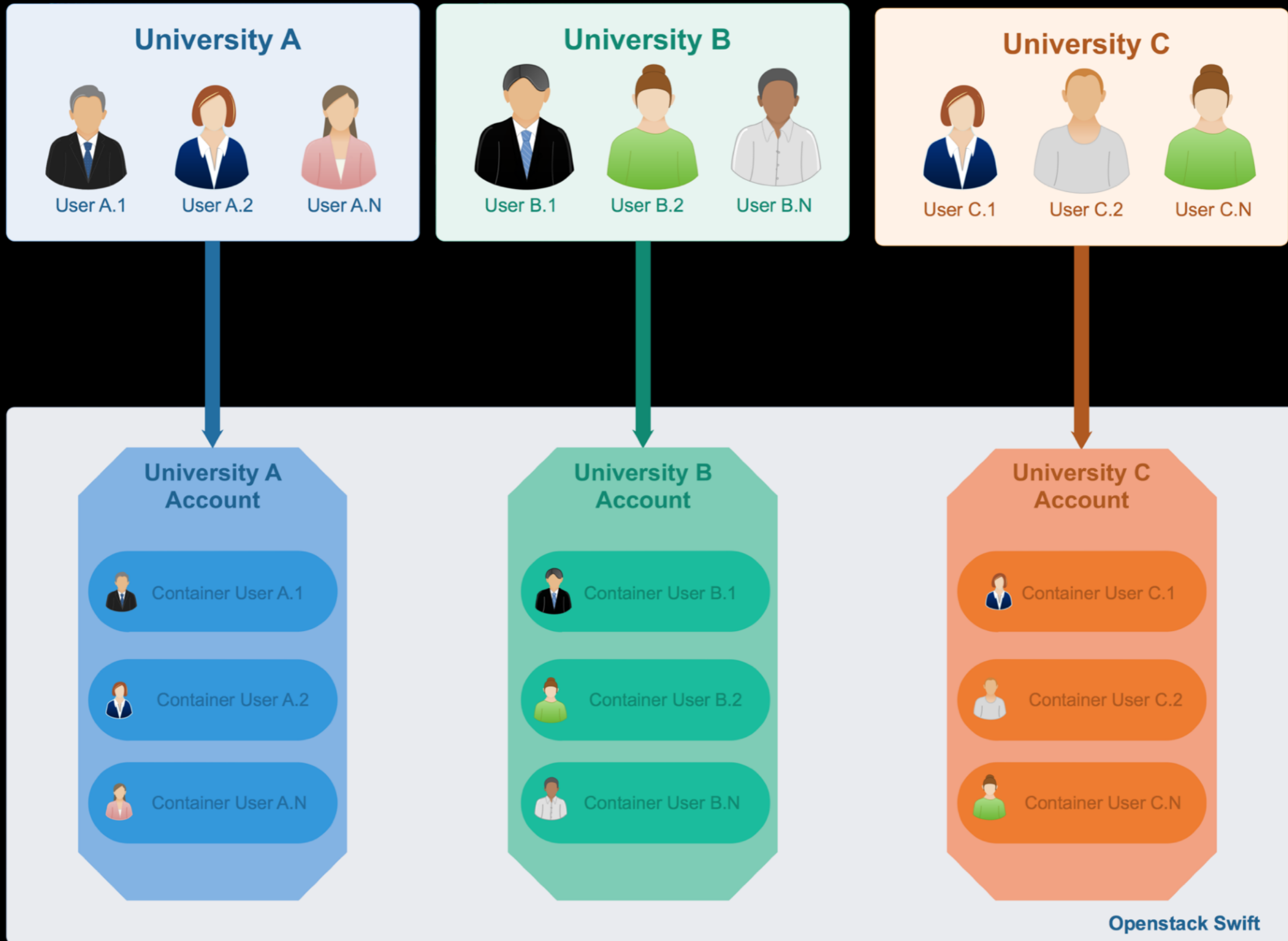


# WHAT ARE THE IMPLICATIONS?

- Increase in account.db and container.db size since only one account/container pair is used, impacting replication performance;
- Slow performance in uploads and deletes due to the replication of account.db and container.db between storage nodes (worse if geographically distant);
- Slow performance in uploads and deletes due to congestion among account.db and container.db holders;
- Decrease in security since all user data are stored in the same account/container pair.



# OUR PROPOSAL



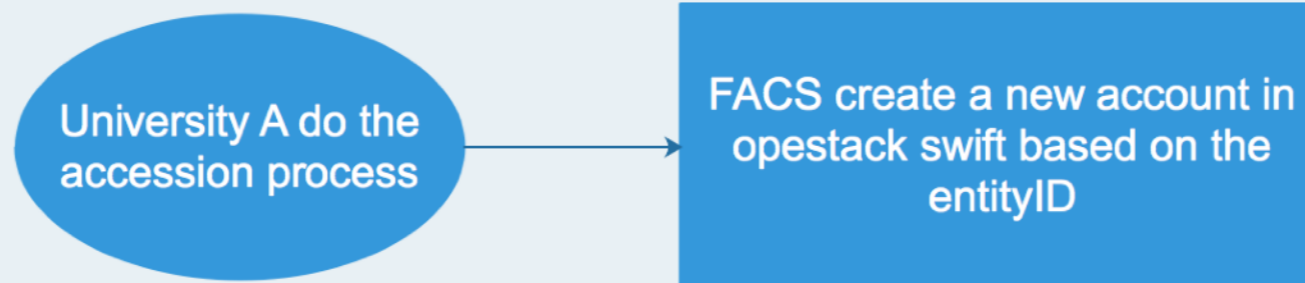
# HOW WE DID IT!

- We develop a tool to manage federated users and institutions in owncloud.
- This tool handle accounts and containers creation in Openstack Swift and provides objects path to owncloud external storage plugin.
- Furthermore, we provide user and institutions administration (quota, file type filters, groups, etc).

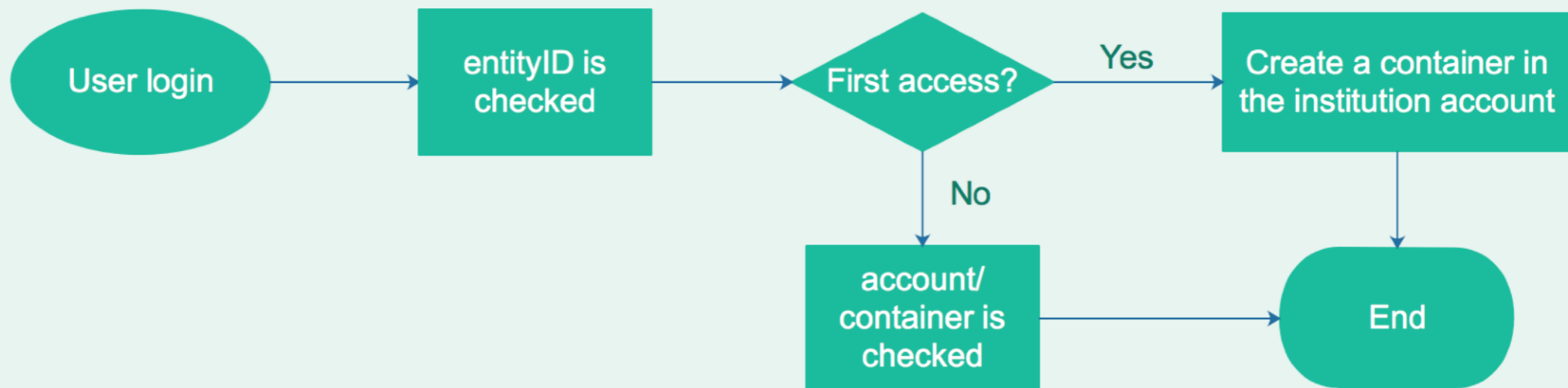


# THE PROCESS

Account creation



Container creation



# CONCLUSIONS

- Using Swift as Owncloud backend improves edudrive@RNP in two aspects:
  - Scalability
    - Using multi-tenant and multi-container approach enable us to scale;
    - Enable us to implement direct download using PreSigned request to reduce the load in Owcloud servers (as Thomas Müller presented at oCCon17).
  - Security
    - At least 3 copies of each file (two in the same datacenter and one copy in a datacenter 1000 km far away);
    - We guarantee a logical segregation of user data.
- Implementation give us a lot of fun and great discussions! :)



# Thank You!

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