



# Efficient file exchange and collaboration in the Newsroom

Customer Success Story:  
Germany's public radio and television deploys Nextcloud

April 2020



## Key points

- Widespread use of different consumer file exchange solutions causing problems
- Decision made to develop a central, unified Enterprise File Sync and Share solution for collaboration and file exchange
- Insufficient performance with large data, lack of control and high prices of tested proprietary technologies were the reason to move to self-hosted (ownCloud based) solution
- Move to Nextcloud improved performance, support and added collaboration features

*“IVZ decided to purchase a Nextcloud Subscription in order to provide a reliable solution for a large number of users.”*

## Project overview

**Goal:** Bring data from different consumer file exchange solutions together and improve collaboration

**Customer:** IVZ, shared services organization for the German public broadcasting organizations

**Branche:** public-law, non-legally capable administrative community

**Employees:** over 8000 have access to private cloud

**Solution:** Nextcloud Files Integration: GPFS storage, multiple user directories

**Highlight:** Extensive use of Nextcloud for easy transfer of multi-gigabyte sized audio/video files from remote locations to processing studios in Germany



## About IVZ

[IVZ](#), the Informations-Verarbeitungs-Zentrum (Information Processing Centre), is a cooperation between all public broadcasting stations of Germany (together they form ARD), Deutschlandradio and DW. IVZ was initially founded in 1993 by only three stations, ORB, SFB and MDR, in the form of a public-law, non-legally capable administrative community. In the following years other public broadcasting stations joined the Cooperation and since February 2017 all of them are on board.

The IVZ cooperation is headquartered at RBB in Berlin and operates at the locations of its clients, the public state broadcasting stations. ARD and Deutschlandradio cooperate on SAP applications as well as video archive and production systems. As of 2018, around 200 IVZ-employees support the cooperation partners, i. e. clients, in central IT issues.



## Infrastructure

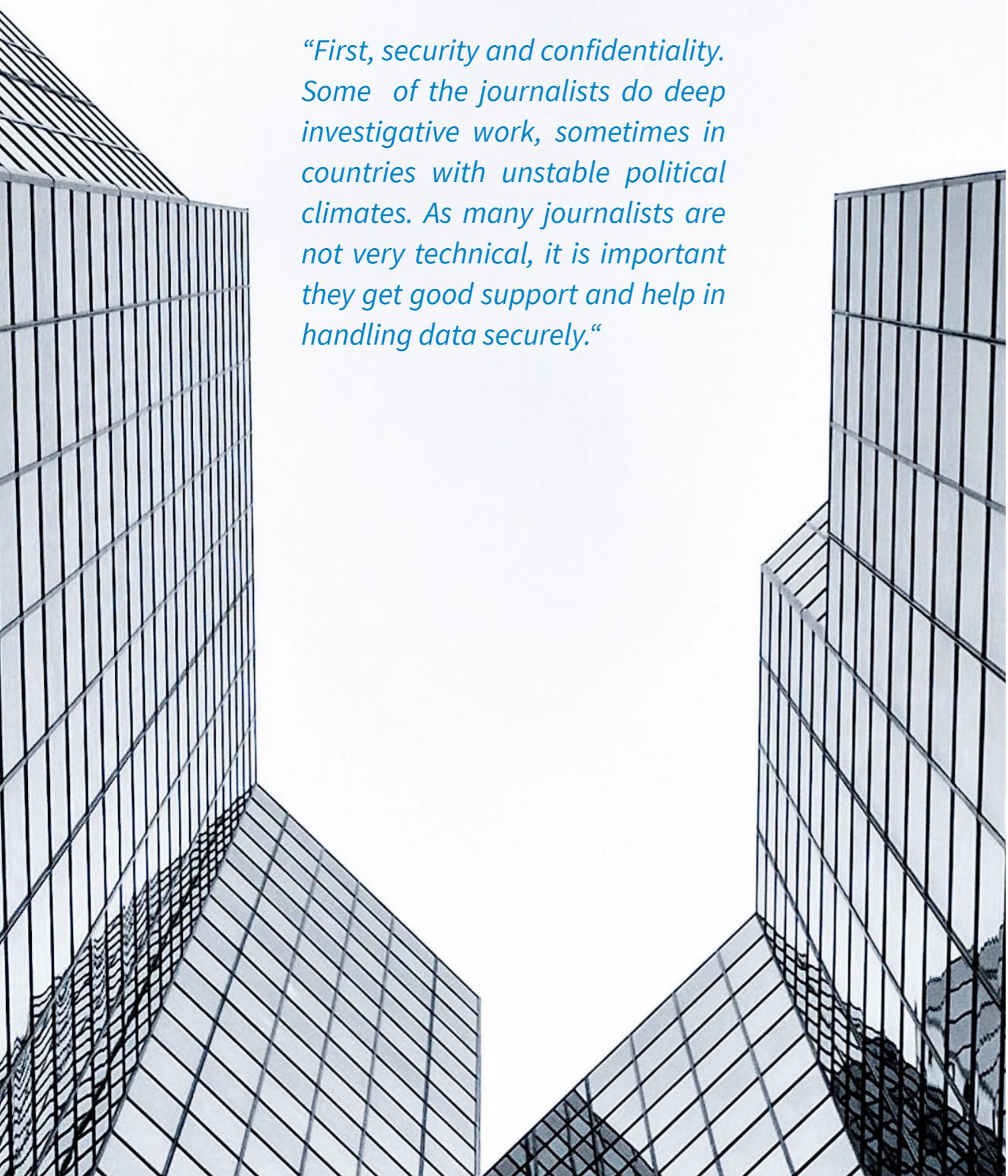
IVZ manages data spread over several data centers. Headquarters are in Berlin at the RBB campus. There are two separate data centers about 50 meters from each other, synchronizing data between them.

Their second main data center is in Cologne where two data centers are located about 15 kilometers apart, keeping data in sync. Further data centers are Mainz (at the ZDF campus) and Leipzig, both providing redundancy. The last location is Hamburg, used for backup purposes.

The IVZ infrastructure runs OpenStack and a VMWare cluster with Linux and Windows and employs a GPFS cluster for file storage.

ARD-ZDF-Box, built on Nextcloud and available on [ard-zdf-box.de](http://ard-zdf-box.de), is an exchange platform for public broadcasting related organizations in Germany.





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## Management summary

IVZ deployed ownCloud as ARD-ZDF-Box in 2014 after evaluating Sharepoint and Syncplicity. The migration to Nextcloud in 2017 brought much improved support, performance and stability. The road map to collaboration that Nextcloud pursues delivers many of the capabilities IVZ is exploring and the Nextcloud Enterprise Subscription has proven to be key in getting the most out of Nextcloud.

ARD-ZDF-Box, built on Nextcloud and available on [ard-zdf-box.de](http://ard-zdf-box.de), is an exchange platform for public broadcasting related organizations in Germany. It allows data to be exchanged with other registered users as well as public access via a link. ARD-ZDF-Box is set up and administered by IVZ, a shared services organization for the German public broadcasting organizations.

## Files floating in public clouds

Typically, as a shared services organization, IVZ responds to requests from the stations to deliver services. The history of ARD-ZDF-Box took a different path. IVZ and the stations saw many users started using private cloud solutions to exchange data. This caused a number of concerns and problems.

First, security and confidentiality. Some of the journalists do deep investigative work, sometimes in countries with unstable political climates. As many journalists are not very technical, it is important they get good support and help in handling data securely. Their files should not be in public clouds, with perhaps bad password policies or shared with public links. The IT administrators should be in control so they can enforce security policies over sensitive data.

A second issue was with the network setup used by the stations: an extensive private network, blocked from the internet to avoid attacks from viruses, trojans and active hacking and phishing attempts. When data was on the public cloud it would require unlocking the internal network to move data inside to the production studios. This was impractical.

A last concern was the quick proliferation of different, non-interoperable cloud solutions. One team was using Dropbox, another OneDrive and a third had their data in Google Drive. This made collaboration harder so in 2012, the team started thinking about a solution.

## Deciding on Nextcloud

The team started with a small ownCloud setup, growing slowly. In the end we decided to go for ownCloud. It is open source and has a very easy to use, simple interface."

But after the Nextcloud fork happened, ownCloud support quality significantly decreased.

"So we had to decide: Do we stay with ownCloud or move to Nextcloud? As ownCloud failed, we gave it a while, then saw Nextcloud was better and migrated. 2017 we decided that Nextcloud had a great position in the market and a strong roadmap so we changed product and vendor. Nextcloud gives us more reliability and features, a better solution for the future."

The 100% open source strategy of Nextcloud provided another benefit: "Because many of our administrators use Nextcloud in private at home, we have experience with it. We learn from using it privately and try it, of testing the features before we deploy it at IVZ. This is a great way to decide if a product is good for us."

IVZ decided to purchase a Nextcloud Subscription in order to provide a reliable solution for a large number of users.

"We need a subscription to provide this to everyone. Easiest way is with a company very near to the product. Nextcloud itself. We didn't look at other companies, there might be a way to save a few euros, by using a little company that can support it for less, but we want the original to have certainty. And the price is very reasonable, very fair."



## The Challenge

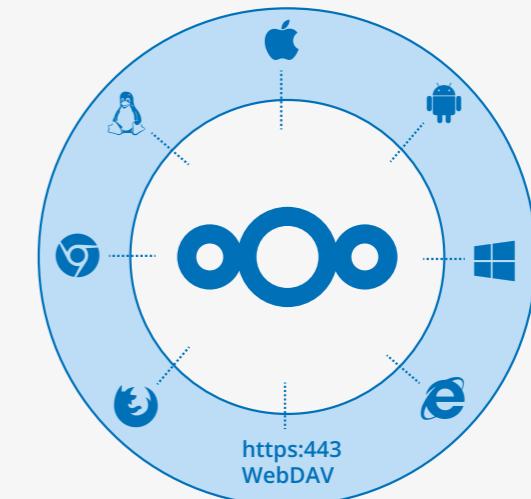
- ✓ Provide a solution that is as easy to use as public cloud solutions to get users to migrate
- ✓ Give access to data irrespective of location and network connectivity
- ✓ Offer the performance needed for large amounts of data
- ✓ Offer efficient project collaboration platform for management
- ✓ Integrate in existing infrastructure and workflows
- ✓ Provide a roadmap to further collaboration capabilities



## Feature wish: upload with quotas

Often, journalists need to upload large, multi-gigabyte files. But they are on a quota-limited hotel WiFi. So they upload half the file and then their connection stops until the next day. It would be great if there was a way to make Nextcloud upload in pieces. It does of course do that to some degree but there is a time-out, it does not work spread out over 72 hours or more. ARD-ZDF-Box and Nextcloud are evaluating a professional services project for this.

Access all of your data regardless of the device or platform you use.



## Web, mobile or desktop

"Initially, people used the mobile apps the most but the sync client is getting very popular now. And the web interface is also used more now we provide more apps. And we will add more abilities."

"IVZ sees that on iOS devices people don't actually use the mobile app interface directly that much anymore, as the new integration with the iOS filemanager makes the app nearly invisible. Users can just edit a file and store it on Nextcloud, the sync happens in the background."

"On the PC more and more users start using the desktop client. Normally, users can't install software so we didn't expect much usage of the sync client, but the broadcasting organizations have begun making the apps available to users. There must have been a lot of demand."



## Introducing a private cloud: the ARD-ZDF-Box

When IVZ introduced the ARD-ZDF-Box in 2015, they started simple, providing it as a basic service to users with little in the way of support and training. But month after month usage grew, gaining more users, storing more data.

It started to get used in more places and management started to use it as well. By the end of 2016, ARD-ZDF-Box was rolled out to all the tv stations.

Growth came primarily in two ways. First, employees and their managers needed collaboration capabilities, which they could use to share data before meetings and work on documents.

"And the other use case, which we did not expect, was for journalists who are in far away countries, like Iraq, Iran, Afghanistan. They used the ARD-ZDF-Box to transfer videos and audio from interviews and such to Germany. Their use wasn't even about security, it was just simplicity - you just need a standard wifi in the hotel! Today, this is very important. You use your iPhone - you interview, files simply transfer over GPRS or wifi in the hotel."

This proved to offer a much lower barrier

for less technical users than other solutions the ARD had. But it also came with a bit of a downside. The private cloud was very easy for the journalist to use, an quick way to bring data into the company. But in doing so they worked around the usual processes and workflows.

Their use didn't always interface with existing tools. The result was growth in storage requirement, sometimes duplicated data or more copying needed and occasional unpleasant effects when users would combine syncing with a private OneDrive and Nextcloud. "You can do everything with ARD-ZDF-Box. With the sync clients, it syncs easy, without the existing workflows they built over time. Good and bad, thus."

In one case, an user had data on a OneDrive synced internally, but was also syncing the same folder with Nextcloud. When home, the OneDrive didn't show up and Nextcloud, assuming the files had deleted, removed them from the shared space, causing quite an upset.

# Testing solutions

In early 2013, IVZ started to explore Microsoft SharePoint as a solution. This solution was abandoned after about half a year, for two main reasons. First, to deliver all the functionality the team envisioned, Microsoft charged an outrageous price for the 10,000 employees at the different stations. Second, while the GUI for SharePoint had some fine features for building sites and dealing with documents, data transfer was extremely slow and not suitable for audio/video data.

After SharePoint, EMC's Syncplicity was evaluated, followed by several other proprietary solutions. The team started to discover that there was a common downside to these solutions for an organization looking to self-host and maintain control:

"We learned that many of these products are difficult to handle. Not only because they are closed, we learned the companies provide these cloud solutions to lock their customers in. They try to get into their data center and then make them dependable.

That is clearly noticeable. They have on-premises option, you can put the data in your own data center. But the user management is still on their server, so you still depend on them. Other have similar problems, you can't really have it under your control."

In 2014, decision was made to go for an open source solution, designed for 100% on-premises use, as the team required. At the time, ownCloud was the best solution on the market.

## A story of a data recovery event

"One example of a data recovery is an event that happened with our board of directors. They have a setup with one user sharing with everyone. One of them had synced Nextcloud with our client but also used OneDrive. He let OneDrive sync the same folder. That worked fine in the office. But when he used his laptop at home, the OneDrive was not available and the data was not there. Windows simply shows the share as empty. Nextcloud then proceeded to delete the files on the server as it assumed the local user had deleted them. It was 200, 300 files and folders. They are of course in the trash but to put it all back was too much work, a tape restore was the easiest. In trash you don't see the directory structure." The client has a warning built in, but users might have ignored it, or did not understand it. In the end, having the restore ability was important, though mainly for disaster recovery or special cases like the above. Nextcloud trash and versioning takes care of the normal, day-to-day recovery needs of normal users.





## Nextcloud and ONLYOFFICE setup

To serve the over 8000 users, IVZ has set up an architecture consisting of two NGINX load balancers directing data to four Nextcloud application servers. Each has the GPFS filesystem directly mounted locally so they talk immediately to the LUNs. They are connected with two ONLYOFFICE servers each managing up to 200 concurrent connections.

The four servers talk to a backend cluster, consisting of two NGINX servers with Redis and Memcached. They offer three services: LDAP, MySQL and Redis. Behind them is a Galera cluster-of-two for database and the LDAP setup. For LDAP, IVZ has its own Active Directory servers as well as one connection to each of the AD servers of the TV stations.

IVZ has two ways to connect to the cloud. They have an internal network and an external network. Systems connect to their ARD-ZDF-Box with the same IP address irrespective of their location. When the device is on the internal network, data is internally routed so that it doesn't leave the network even though the IP is public. From the outside, devices connect to the same public IP so users can connect from home or on the road.

## ONLYOFFICE

IVZ deployed ONLYOFFICE in 2018 to provide a collaborative document editing tool to the users.

ONLYOFFICE is connected to the application servers, running on two separate servers. These handle 200 connections per server, which suffices for now for the usage at IVZ. The team does see growth coming for this, though, and is actually surprised it works with just 400 connections right now.

The built in collaborative editing and chat functions are used a fair bit and users are very happy with the application. A real advantage is that ONLYOFFICE looks very similar to Microsoft office, which keeps migration easy.

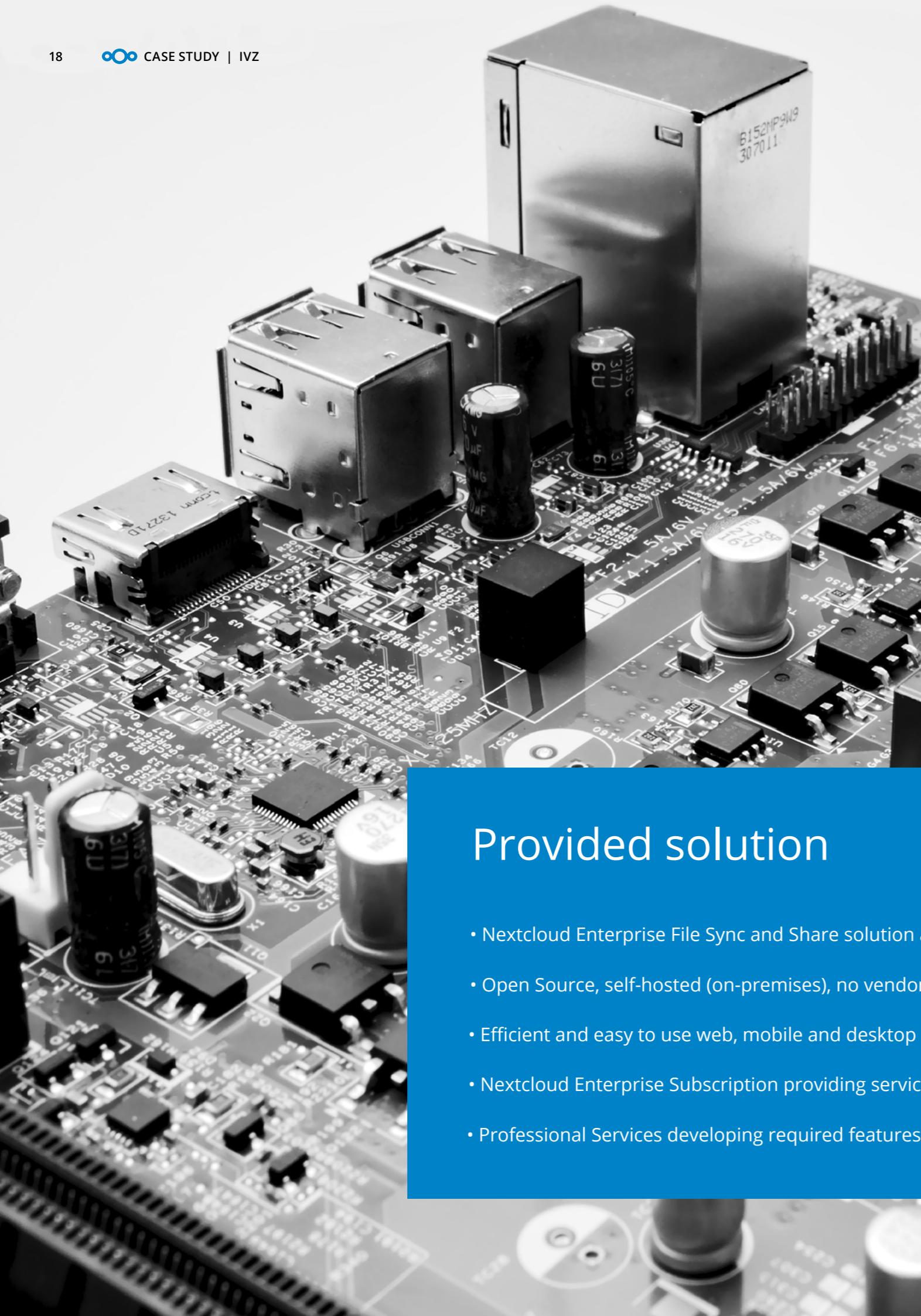
## Today: exploring collaboration

A big deal for IVZ is video/audio transfer, to simplify file exchange for the editors and journalists across the globe. Also important are collaboration tools for back office and management. In 2018, IVZ deployed ONLYOFFICE to enable online collaboration for the various teams at the TV and Radio stations. The Contacts app was also enabled and a field test with 200 people kicked off in mid 2018 using Deck, Circles, Calendar and Mindmap. A decision on these apps is coming in Autumn 2018, but it is clear that collaboration is becoming more important. Further apps will certainly be looked at.

"Circles has one problem in our testing, you can create 3 kinds of groups, one is the very public one, a user can create a group for all of ARD, that is a little too much. They can make a group like "let's drink coffee" and 8000 people can see it. We need to see if this can be changed."

The integration with other tools is something that gets more attention lately. There is overlap in features with existing tools, but users tend to like the simplicity and integration in Nextcloud. Moreover, the degree of competition between tools is limited as typically, the more complicated, heavy apps have their specific use cases.

"For building sites, SharePoint is useful, but for sharing, collaboration with people not only inside but also outside, I use Nextcloud. Most normal users like to use Nextcloud, it has a simple, efficient user interface, you can easily work remotely. We have to find the balance between the various solutions but we like direction Nextcloud is taking. An interesting idea might be SharePoint integration the other way around, seeing Nextcloud files in SharePoint, it might make the two work better together. We tried this with WebDAV but it is tricky."



## Provided solution

- Nextcloud Enterprise File Sync and Share solution and Content Collaboration Platform
- Open Source, self-hosted (on-premises), no vendor-lock-in
- Efficient and easy to use web, mobile and desktop interfaces
- Nextcloud Enterprise Subscription providing services and support
- Professional Services developing required features and integration capabilities

## Large file exchange and expiration of data

For the ARD-ZDF-Box IVZ has defined a special kind of user: the power user, introduced in 2017. Each of the broadcasting organizations has only about a dozen of these users, for a total of roughly 50 power users on the ARD-ZDF-Box. Yet, with a total of 8000 users, the power users together use half the storage of ARD-ZDF-Box and are responsible for over 90% of the daily bandwidth use of almost 1 terabyte of traffic!

These users handle large audio and video files, typically employing the ARD-ZDF-Box for file transfer from outside the organization to the internal editing studios. By default, they get assigned 100GB of storage for audio, or a terabyte for video, with more possible.

The files exchanged are often multiple gigabytes. But the files stay only for a relatively short time in Nextcloud, as they are uploaded, downloaded and removed again, with ARD-ZDF-Box essentially acting as a file transfer or cache system. Of course Nextcloud keeps a trash and versioning system, but a new, multi-gigabyte file coming in will automatically push out old files as Nextcloud limits the size of trash and versions to 50% of the allotted account storage.

*“Nextcloud’s default expiration policy in this area is perfect, we never had problems or had to tune it. We just have to tune the account size.”*

## Current usage

With about 8000 active ARD-ZDF-Box users, some 4000 log in on an average day, with a steady growth. Half the users come from the Active Directory from the stations. "The other half comes from vouchers, special accounts we create, that are stored in Nextcloud. It is up to the TV stations to advertise usage. We simply provide LDAP connectivity and vouchers, user accounts."

That there are multiple Active Directory systems is a bit problematic sometimes. It can cause a slowdown of user activity if one of them is slow or even down. The reason is that the servers are queried sequentially instead of in parallel. Nextcloud is working on improving this separation.

"We'd ideally like to consolidate the Active Directories across the broadcasting organizations but that is a politically sensitive move. Luckily the situation only rarely causes problems."

IVZ does not have that much storage, only about 8.500 GB. Half of that roughly is data used by people, day to day, editing documents for example. Movie and audio files are only temporarily on the box. ARD/ZDF has a separate network and storage system for handling these big files during editing as well as petabytes of audio/video archives which are final storage. The users who transfer large amounts of data are designated 'power users'.

*The ARD-ZDF-Box is used for transfer of data to the studios, often directly from the field. In the studios editors cut the material and put it in the archive. So ARD-ZDF-Box is mostly for raw data and this data is usually only on Nextcloud for hours or a few days. So the amount of data transfer has grown over 100x in the last 2 years, as people continuously transfer gigabytes worth of videos and audio.*

## Key requirements

- Easy user interface, excellent user experience
- Sufficient performance for large media file handling
- Seamless cross-platform, on-the-go document access across mobile, desktop and web platforms
- Protecting data security without disrupting collaboration



These get hundreds of gigabytes or even terrabytes of storage space assigned. Together, the about 50 power users are responsible for half the used data storage, while their activity accounts for 95% of the nearly 1 Tera-byte of data transfer each day.

Normal users who use Nextcloud for their meeting notes, powerpoints and documents get 10 GB of storage. If needed they can get more but this is rarely needed. As the amount of data in the normal user accounts grows, so do the storage needs of ARD-ZDF-Box as a whole, of course. There is a backup/restore in place, using

tapes, but recovery is done only rarely, only twice last year. The backup is largely meant as disaster recovery solution. If a restore is needed, the key users at the broadcasting organizations will request it.

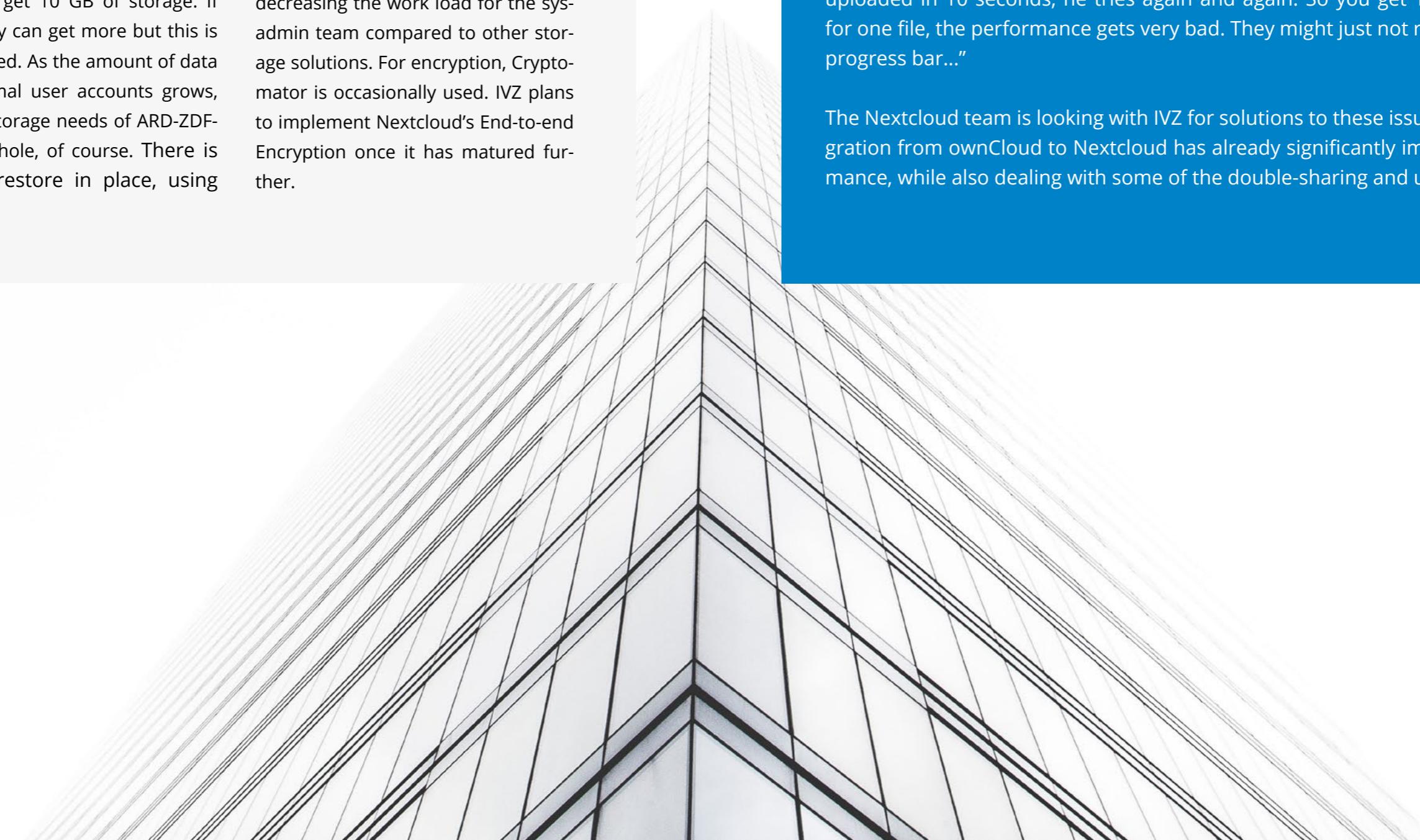
The needs of data recovery for normal users is taken care off by the Nextcloud Versioning and Trash features, decreasing the work load for the sys-admin team compared to other storage solutions. For encryption, Cryptomator is occasionally used. IVZ plans to implement Nextcloud's End-to-end Encryption once it has matured further.

## Difficulties for non-technical users

Non-technical users loved the easy interface of the ARD-ZDF-Box. But it also occasionally caused issues. A user would sync files from their iPhone to their devices then put them in another share which would sync back to another share, creating double loops, copying things around. The user would not realize the mess they create.

"Another problem we have is the users who have little patience, who are inexperienced. A journalist who puts a 500mb file in the box, then it doesn't get uploaded in 10 seconds, he tries again and again. So you get 10-20 transmits for one file, the performance gets very bad. They might just not really notice the progress bar..."

The Nextcloud team is looking with IVZ for solutions to these issues, and the migration from ownCloud to Nextcloud has already significantly improved performance, while also dealing with some of the double-sharing and user interface.



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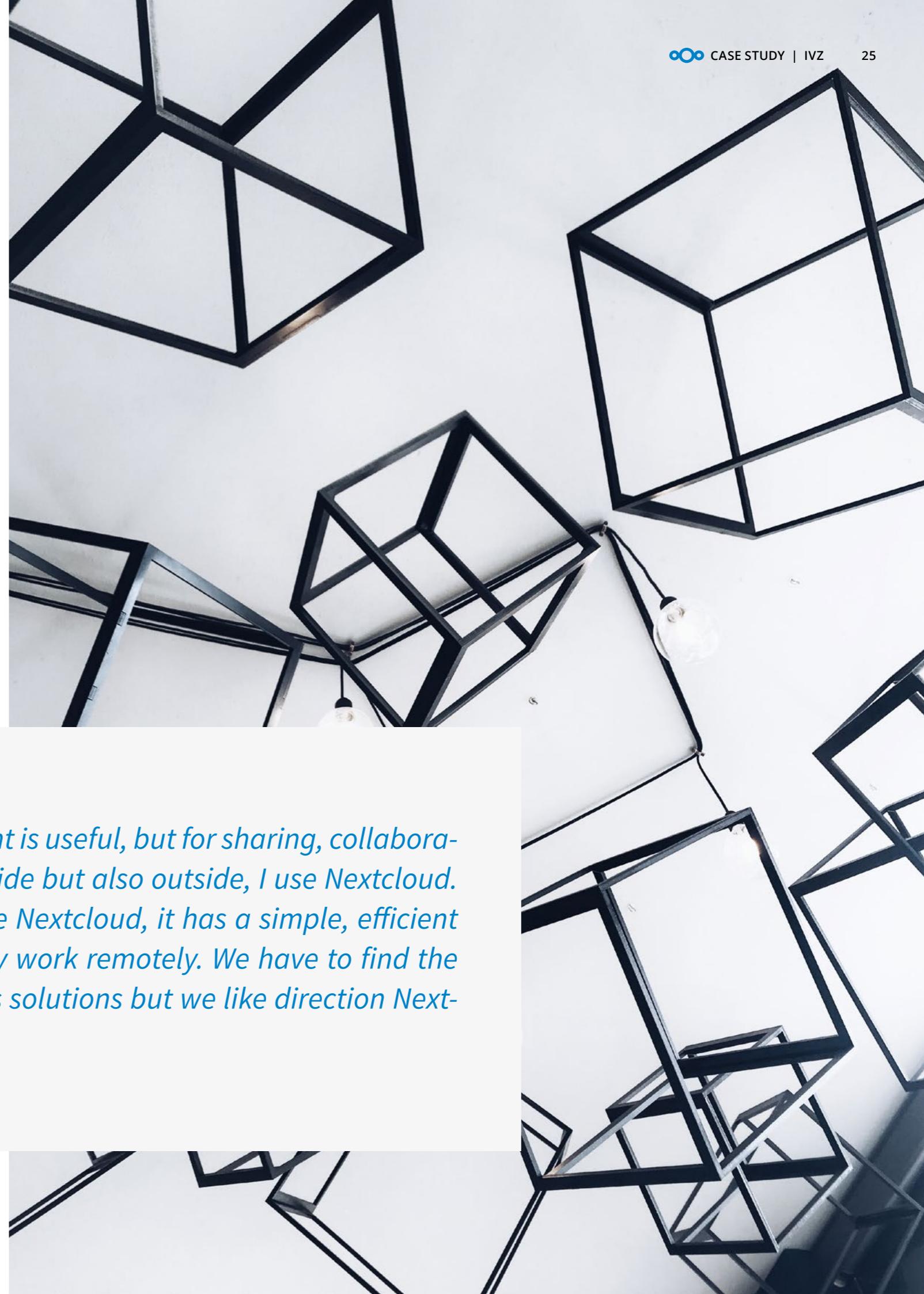
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## Looking forward

There is political pressure on the ARD and ZDF to reduce costs and be more efficient. The German people will pay 60 million less broadcasting fees next year and IT has received directions to lower costs. Simplifying infrastructure and standardizing tools is certainly part of that goal. Nextcloud is a strong and complete collaboration platform, popular with the users for its easy interface, thus playing a role in this consolidation strategy.

IVZ is very happy with their choice for Nextcloud as Content Collaboration Platform, and looks forward to explore more of its capabilities.

"We are looking into Outlook integration, for files, calendar and contacts, we could use that. CalDAV/CardDAV integration in Mac is easy, and is being used, the integration in Outlook for Windows would be great."

Another feature that is IVZ is evaluating is the Files-from-Mail feature for Nextcloud. This allows the creation of a special mail address which is integrated in Nextcloud. Any attachments sent to the mail address will be automatically stored in a chosen folder in Nextcloud.

The IVZ team wants to improve the playing of audio and video, which always depends on the capabilities of browser and platform and thus causes some complications and confusion. Setting up their own streaming servers will work around this problem.

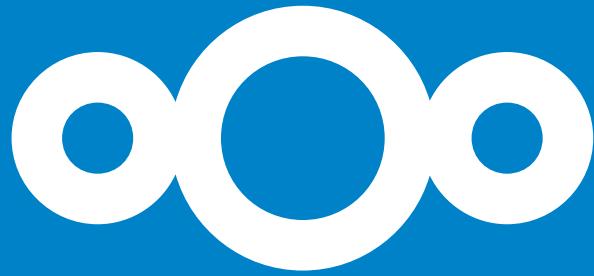
Some journalists use cryptomator and IVZ looks forward to the End-to-end Encryption being available for production usage.

last but not least, IVZ team members have started looking into the extensive Workflow capabilities in Nextcloud to keep data under control, manage retention but also optimize workflows in the stations.

There is a road map full of opportunities to get more out of Nextcloud and the Nextcloud Subscription provides IVZ with the expertise they need to provide a reliable, integrated and quickly improving solution to the public broadcasting stations in Germany.

## Feedback on sharing with Nextcloud

People often use public links for sharing internally. This is more due to confusion, they should not use them for that but they do. It is often quicker to send around a public link than to add every person individually to the share. But the risk is that the link leaks, and the files are suddenly everywhere. This is harder to track, follow and block. IVZ will look into File Access Control to limit the potential damage of publicly shared links for data that should not be public. Their tests with Circles, where users can create and share to custom groups, are part of a solution for this. The subject has also been discussed with other customers and Nextcloud management at the Nextcloud Enterprise Day in August 2018 and Nextcloud has committed to improve in this area.



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