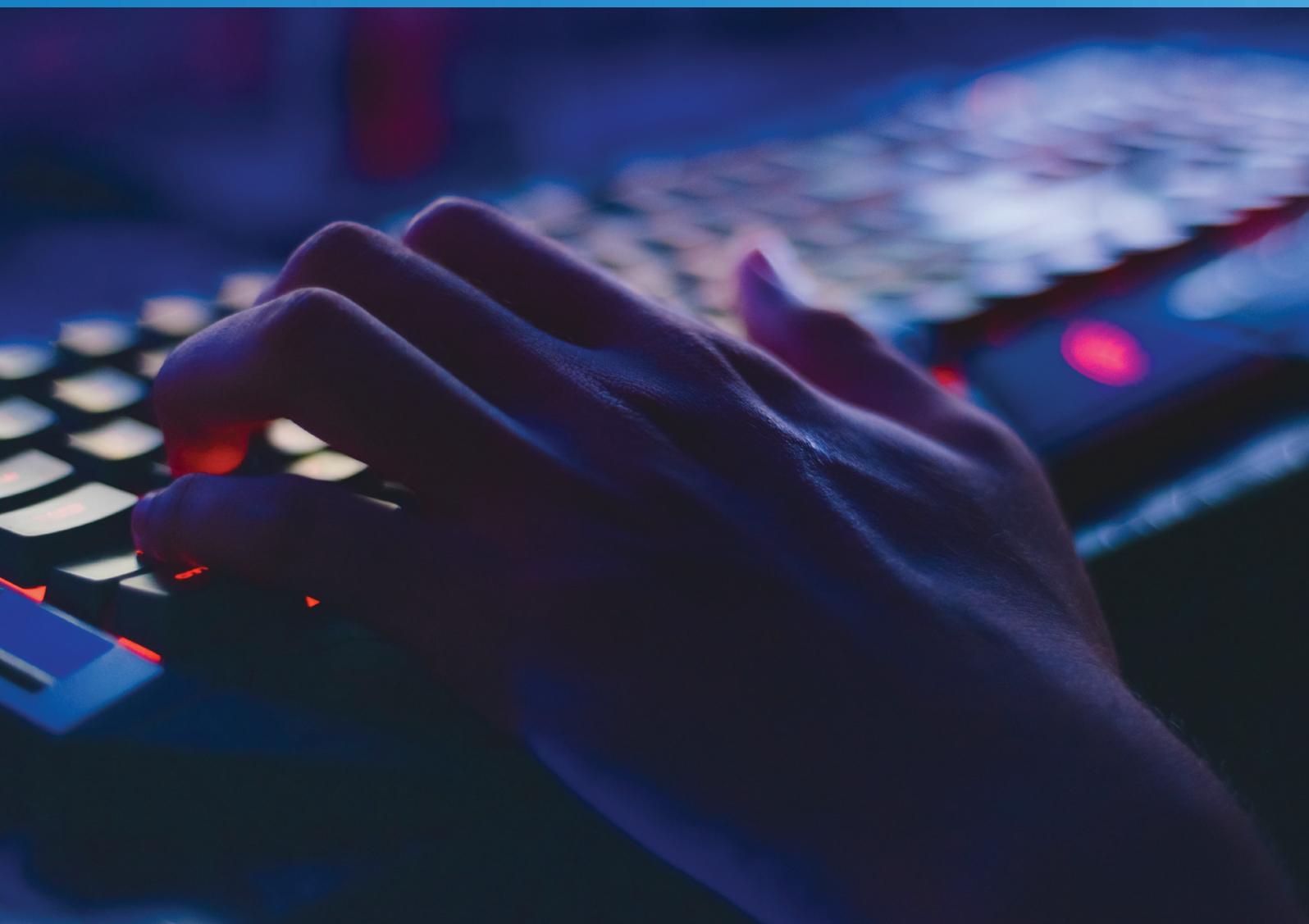
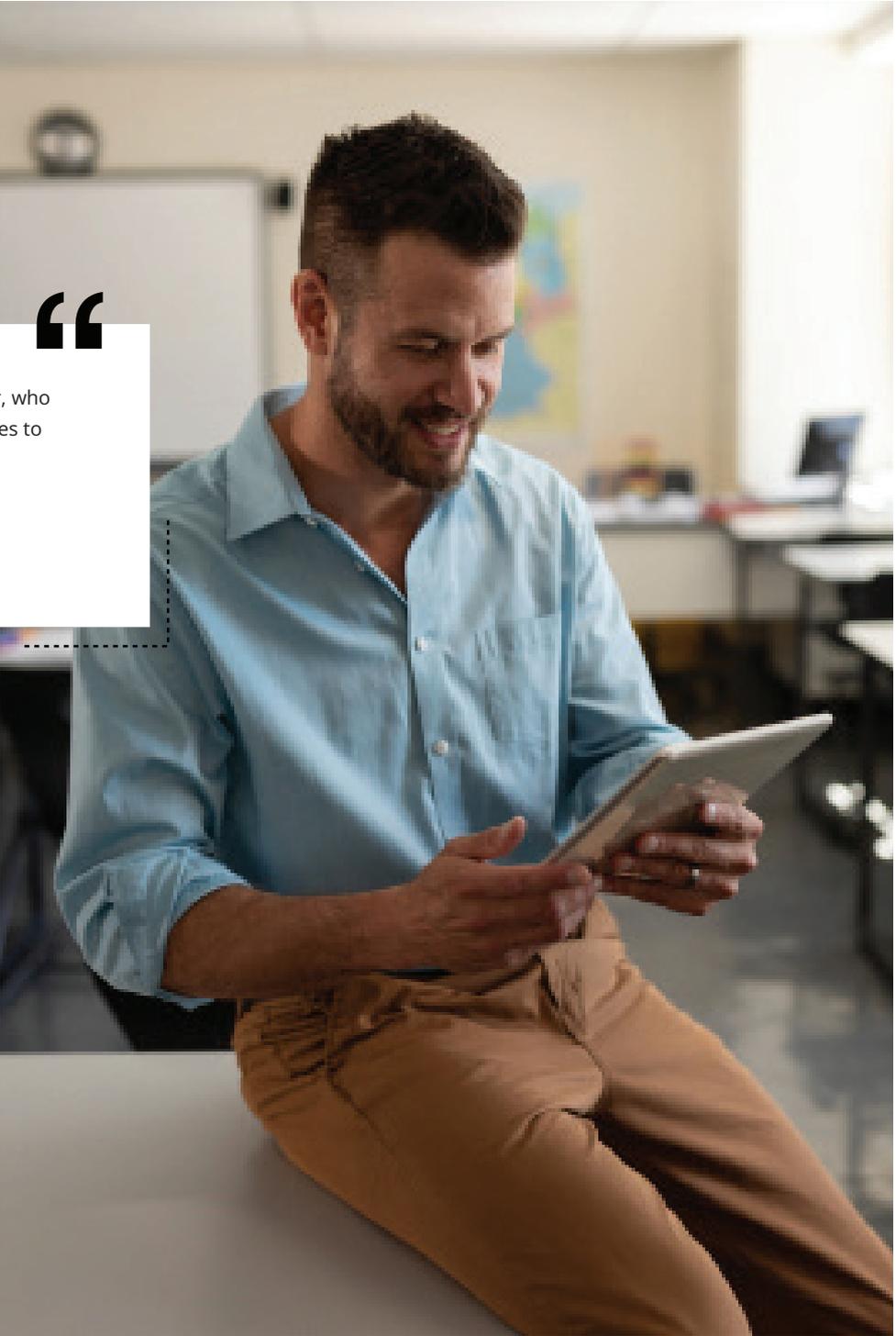




# Centre de gestion informatique de éducation

Setup and operation of an on-premise Nextcloud cluster





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With HKN, we found the partner we were looking for, who was flexible and had the necessary core competencies to meet our needs. We were thus able to set up our on-premise Nextcloud within a very short time.

*Centre de gestion informatique de l'éducation*

## Establishment of a data cloud as a GDPR-compliant platform for teachers in Luxembourg

The Centre de gestion informatique de l'éducation, the IT resource management administration of the Ministry of National Education, Children and Youth in Luxembourg, is in charge of preparing and implementing the government's policy in the areas of education, children and youth. In 2020, the CGIE launched a Nextcloud service to provide **about 15000 teachers and staff members** with a GDPR compliant file storage.



# The challenge

Establishment of a GDPR-compliant data cloud that teachers in Luxembourg

Even before the Corona pandemic, Luxembourg had given all pupils and teachers access to the Microsoft 365 cloud, but on the condition that it not be used for documents relevant to data protection. For these documents, an on-premise hosted cloud was to be set up, which would enable the GDPR-compliant hosting of data.

With the onset of the Corona pandemic, the pressure to build such a cloud quickly increased. The IT organization quickly decided on Nextcloud as the cloud software, and for the data storage they wanted to use the service of a Luxembourg provider for S3-compatible storage if possible. In addition, it was clear from the beginning that they needed a Nextcloud subscription and a partner to set up and operate the Nextcloud service to ensure reliability and compliance.

Another requirement was that the existing single sign-on with two-factor authentication must be used. To avoid an "uncontrollable" spread of data, access should only be possible via the browser. In order to make this as convenient as possible, it should be possible to (jointly) edit Office files via the browser in addition to the functions for saving and sharing files.

The main concern was that Nextcloud has to be convincing from day one so that the users accept it immediately. Designing a setup that takes into account the external S3 storage provider and still guarantees very good performance is a particular challenge for organization.

After several discussions, HKN GmbH was chosen as the partner. The open cloud partner was particularly convincing with its conception of the cluster and its long experience in operating large Nextcloud installations.

## Requirements



The Nextcloud setup must be very performant in order to achieve a high level of acceptance.



The data storage is to be an S3-compatible storage with a Luxembourg provider.



Nextcloud must work well for all teachers immediately without a slow ramp-up.



Single sign-on with two-factor authentication.

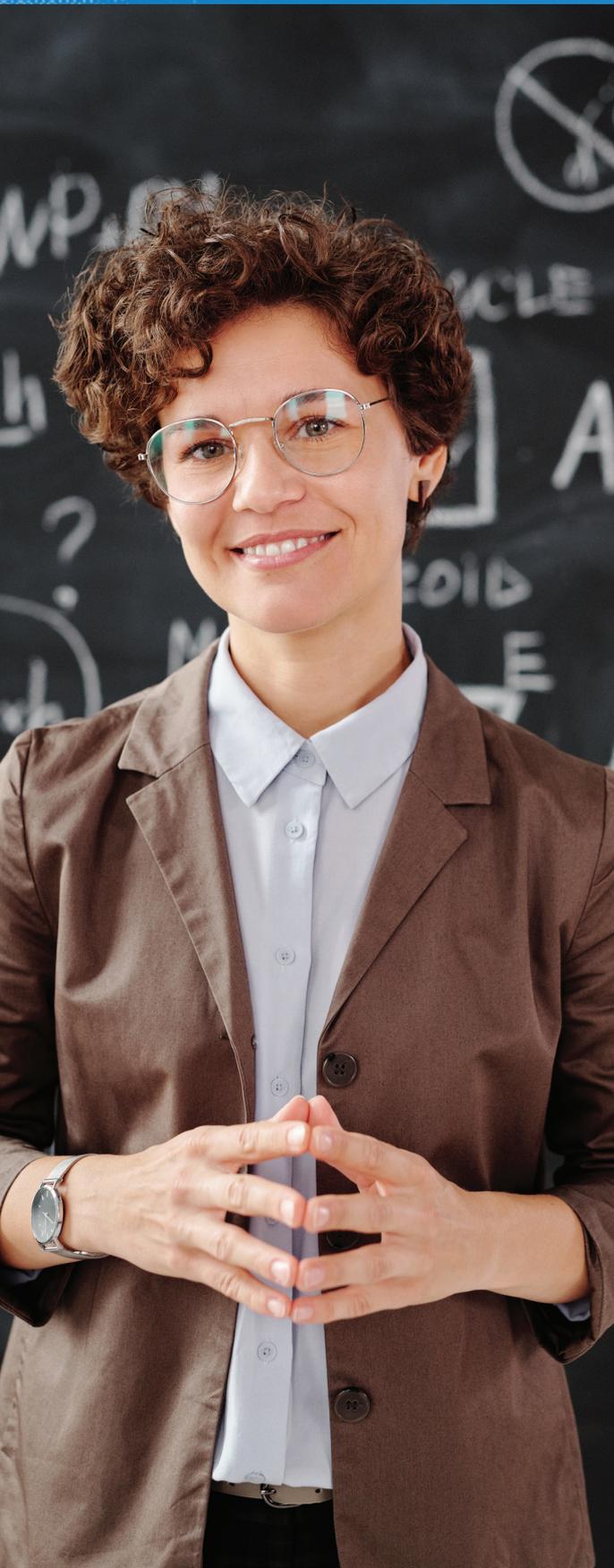


Availability of OnlyOffice for all users



# The implementation

Setting up a high-performance Nextcloud environment with an external S3 storage and OnlyOffice



From the beginning of the project, it was clear that performance and availability were the focus. Therefore, a setup with redundant load balancers, a very powerful caching and multiple frontend servers was chosen. In the backend, a multi-master MySQL cluster is used instead of a single-master database.

After a few tests, the S3 storage could also be connected in such a way that it did not cause any noticeable delay for the user when accessing the data. On the contrary, in the end, the user tests for this setup were convincing across the board and even exceeded expectations.

After the intensive test phase, all teachers were invited to use the Nextcloud on the due date. From the very first day, the Nextcloud was well received and has seen a steady increase in access.

## The outlook

*More users, expansion of monitoring and more*

Later this year, an ELK stack will be added to the Nextcloud environment. The ELK Stack will facilitate the analysis of log data for continuous operational improvement. In addition, the circle of users will be expanded. Another idea is to release the Nextcloud desktop sync client in the future, but to force the use of the virtual drive to keep files online.



# The results

By using Nextcloud, Luxembourg provides its teachers with a GDPR-compliant and up-to-date cloud.

## GDPR-compliant cloud hosting

By operating in our own data centre and with a Luxembourg provider, DSGVO-compliant operation can be realised.

## Service from a single source

As a Nextcloud Gold Partner, HKN can answer all questions or call in Nextcloud GmbH at any time if required. Through the Nextcloud subscription, the Ministry of Education also has the security of a long lifecycle support of the Nextcloud.

## Very good performance

The cluster setup with caching, database cluster and current hardware shows that a very performant Nextcloud can easily serve thousands of users without waiting times.

## Scalability

The cluster setup also ensures that it will be possible to react quickly to increasing demands in the future.

## ScaleUp HKN Open Cloud

Together with HKN GmbH in Düsseldorf, ScaleUp Technologies has built up the Open Cloud offering. At a total of three locations in Germany, in Hamburg, Berlin and Düsseldorf, we offer GDPR-compliant cloud solutions that are operated in ISO 27001-certified data centres and with 100% green power supply.

## The Ministry of Education, Children and Youth

The IT department of the Ministry of Education in Luxembourg, Centre de gestion informatique de l'éducation (CGIE) is responsible for the IT of the Luxembourg education sector. This includes all national administrative bodies, services, schools and institutions under the Ministry of Education.