

# DRCMR adapts to growing image storage needs with Red Hat Ceph Storage



DANISH RESEARCH  
CENTRE FOR  
MAGNETIC RESONANCE

The Danish Research Centre for Magnetic Resonance (DRCMR) at Copenhagen University Hospital Hvidovre in Copenhagen hosts a massive library of magnetic resonance images (MRIs) and analysis data to support brain disease research by its multinational, interdisciplinary team. To ensure its data storage would scale to meet future needs, the DRCMR worked closely with Red Hat to migrate its disparate storage resources to Red Hat Ceph Storage and adapt the new technology to meet business requirements. After a 3-year partnership, the center has adapted to a 400% increase in storage demand with a resilient, reliable, and easy-to-use solution.

## Software

Red Hat® Ceph® Storage

## Medical research

75 researchers and students



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**Ruben Vestergaard**

System administrator,  
Danish Research Centre for Magnetic Resonance (DRCMR)

## Benefits

- Established scalable data storage to accommodate 400% 3-year increase in demand
- Improve system resilience to maintain performance during outages or other issues
- Optimized Ceph to meet existing and future storage by working closely with Red Hat’s technology experts



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Danish Research Centre for  
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## **Scaling data storage to support innovative brain research**

The Danish Research Centre for Magnetic Resonance (DRCMR) is a European leader in using the latest magnetic resonance imaging (MRI) technology to examine the human brain’s function, metabolism, and structure. The DRCMR’s team attracts researchers and students from more than 25 countries worldwide to learn more about the brain and to understand and help prevent brain disease.

The center is responsible for safely and securely hosting a vast library of images, protected with strictly controlled access to comply with data protection laws. Access to use and storage for these images is essential to research teams’ innovative work. Historically, DRCMR had built its own systems running community versions of open source software, but as volume increased, the system became too complex.

“We did not have the funds for enterprise solutions, but by 2015, we had a number of standalone FreeBSD storage systems and managing our ever-growing storage demands became increasingly difficult,” said Torkil Svendsgaard, System Administrator at the DRCMR.

To accommodate growth without complexity, the center sought to unite its existing storage systems into a single, integrated resource that was easy to manage and expand as anticipated demand for image storage space continued to increase.

## **Deploying and optimizing a supported, software-defined platform**

Initially, DRCMR considered Intel Lustre software-defined storage, but then discovered that Red Hat Ceph Storage provided the key features and capabilities needed to meet its current and future requirements. The center worked with Red Hat to evaluate the technology and support options, including potentially reusing existing hardware to take full advantage of its investment.

“Ceph is a powerful, sophisticated storage option, but it can be complex if you’re new to the technology. Red Hat gave us a lot of help, including a detailed proof of concept, to get started with it quickly,” said Ruben Vestergaard, System administrator at the DRCMR. “With Red Hat’s support, we were confident that we would get the specification right from the beginning.”

Additionally, the DRCMR’s IT team worked with Red Hat’s technology experts to reuse existing storage hardware to support Red Hat Ceph Storage, optimizing the center’s investment and reducing the total cost of ownership (TCO). “Red Hat’s expertise meant that we saved time and avoided the potential cost of making mistakes,” said Svendsgaard.

Over a 3-year partnership with Red Hat, the DRCMR has adjusted its Ceph implementation to achieve the high performance and resilience needed to support its researchers’ data needs and prepare for future growth.

## **Supporting users with robust, scalable data storage**

### **Scaled data storage capabilities to meet user demand**

The DRCMR has used Red Hat Ceph Storage to successfully respond to massive increases in the volume of its MRI library from 200TB to 1PB, an increase of 400%.

“The feedback we’ve received is very positive,” said Svensgaard. “Users tell us that the solution helps them focus on their innovative research and be more productive.”

### **Improved system resilience**

With Red Hat Ceph Storage, the DRCMR can keep its MRI storage systems highly available and mitigate downtime or outages.

“Previously, if we lost a server to an issue or outage, we had to work hard for at least several hours to fail over to alternative hardware,” said Vestergaard. “With Red Hat Ceph Storage, we don’t have those worries anymore. We’ve even had cuts to the server’s power supply, but our storage system kept running, because it’s self-healing and always-on.”

### **Established collaborative vendor partnership**

The DRCMR continues to work closely with Red Hat’s expert support teams to troubleshoot any concerns or issues, as well as become more familiar with Ceph storage technology.

“We’re still learning about Ceph and building our skills, so working together with Red Hat has been essential for us to tailor our deployment to our business needs,” said Vestergaard. “Red Hat has provided a level of expertise beyond our capabilities here, such as changing kernel code, to make sure we have what we need to succeed.”

## **Expanding storage success to address new opportunities**

After its initial success with Red Hat Ceph Storage, the DRCMR is ready to apply its new technology and experience to new IT challenges and needs.

“Now we can look forward and discover new places that we could benefit from using Ceph, like hosting our virtual machines or archiving our software environment to easily reproduce results – possibilities we are actively exploring with Red Hat,” said Svensgaard. “With Red Hat’s support, there is so much more that we can achieve.”

## About the Danish Research Centre for Magnetic Resonance

The Danish Research Centre for Magnetic Resonance (DRCMR) in Copenhagen is one of the leading research centers in Europe within the field of biomedical MRI. A highly profiled international research team translates the latest advances in MRI to examine the brain's function, metabolism and structure.

*DRCMR agreed to participate in a case study about its use of Red Hat Ceph Storage as part of its subscription agreement with Red Hat.*

## About Red Hat



Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.



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