# German Aerospace Center Stores and Protects Millions of High-Definition Satellite Images on the Scality RING

The Earth Observation Center in Oberpfaffenhofen, Germany uses remote sensing and custom analytic methodologies to tackle tough issues in environmental and climate science, mobility and planning, civil security and the prevention and management of natural catastrophes.

The Photogrammetry and Image Analysis department is the main consumer of data storage. The team started with six million files, with many files exceeding one terabyte, and the need to access those files on up to 40 client workstations at once. Each scheduled imaging mission increased the volume of files by multiple terabytes. The growing amount of data, and the need to access files in parallel, which was simply impossible on the existing infrastructure, drove the need for a new storage solution.
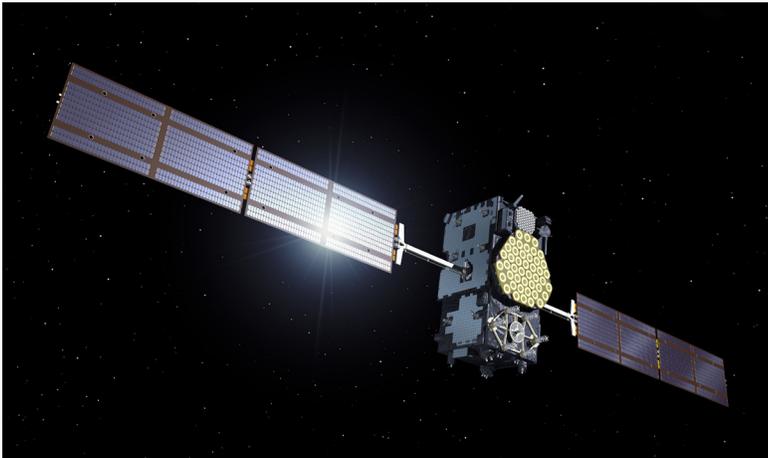
"The limits of our server storage and each of the attached NAS systems were quickly reached when new satellite data arrived for processing by our systems. The data for individual projects were scattered across different storage systems. Backing up data had become a continuous process, increasingly time consuming and complex. This was further complicated by the need to find available capacity for a system that had reached its scalability limit. Most of the problems during our automatic processing arose due to this problem of limited and highly fragmented disk-space."
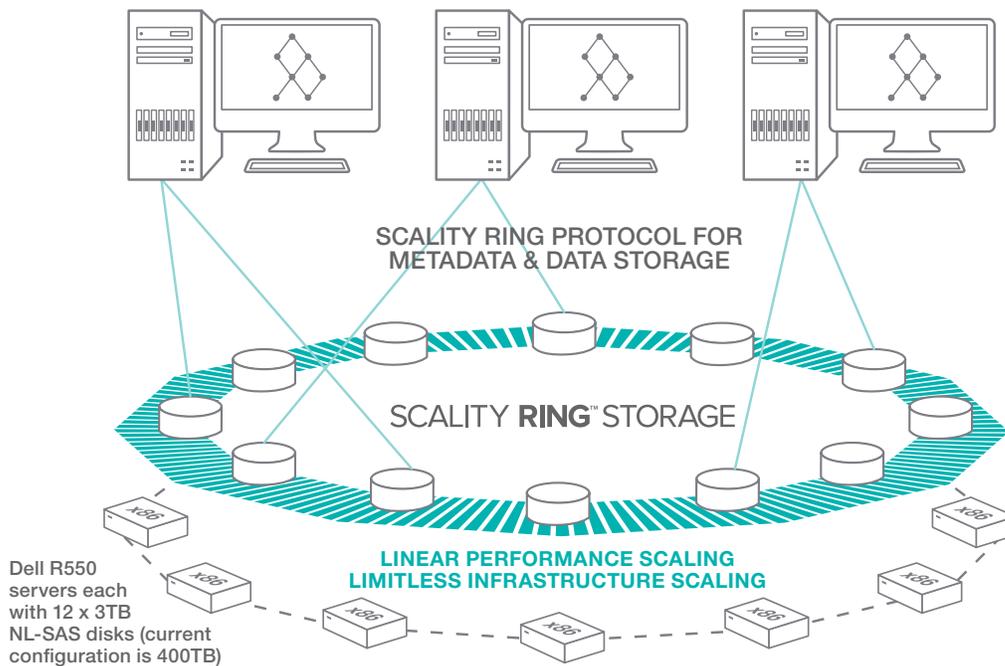
DLR had challenging storage requirements

> Unlimited file size and number of files
> Ease of integration with DLR's existing custom image processing tools
> Remote access of images: remotely access images using HTTP-based protocols
> High performance parallel data access to allow the team of forty engineers and scientists direct access to the data, often simultaneously
> Support for highly parallel and I/O intensive processes, such as bulk image manipulation
> Data durability and resilience, to protect unique, expensive and irreplaceable information assets

Scality RING solution

"We surveyed different systems including open source solutions, but found the Scality RING proposed by our hardware partner Dell to be the only solution which complied with all of our requirements, and allowed the system to expand on any type of hardware."

Scality Solution for DLR – Logical View

SCALITY RING PROTOCOL FOR METADATA & DATA STORAGE

SCALITY **RING**™ STORAGE

Dell R550 servers each with 12 x 3TB NL-SAS disks (current configuration is 400TB)

LINEAR PERFORMANCE SCALING
LIMITLESS INFRASTRUCTURE SCALING

Scality's RING was chosen due to its:

> Intrinsically parallel architecture that enables parallel processes to be handled efficiently and without system bottlenecks
> Extreme resilience, guaranteeing unrivaled durability for irreplaceable data
> High performance for I/O intensive tasks
> Native scalability, ensuring that the system could grow seamlessly and cost effectively
> Unified storage approach, that accommodates both DLR's file system needs (using Scality's file connectors), and remote access requirements (using an object connector).

"After a test installation of the Scality RING on different machines at our IT partner netplace GmbH in Munich, we performed several stress tests. These included removing hard disks during operation, and turning machines on and off. Following these tests, it was clear that the Scality RING would meet all our stringent performance, durability and scalability requirements."

Results

"We no longer have to struggle to maintain a NAS system that cannot scale, and no longer have to worry about the time-consuming job of managing backups. All requirements, including massive parallel access from over 40 machines for automatic processing, automatic replication and ease of expansion using different hardware have been met."

The Center's satellite images are currently stored on the RING and accessed for processing and analysis. The Earth Observation Center has used these images to model topography, land use patterns and additional geo-related topics. They have even used the images to support a mountain climbing expedition by developing a highly accurate 3D model of the Karakoram mountain range, home of the venerable K2 Mountain. These 3D images allowed the climbers to accurately analyze and review ascent routes prior to the climb. This is the first time that images of this quality have been published, and Scality's RING storage solution helped make this possible.

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