British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Delivering High Performance, Scalable Storage Infrastructure for the British Antarctic Survey

Above: Halley Research Station

Formed in 1962, the British Antarctic Survey is world renowned for delivering and enabling interdisciplinary research in the Polar Regions. Its skilled science and support staff, based in Cambridge, Antarctica and the Arctic, work together to deliver research that uses the Polar Regions to advance our understanding of Earth as a sustainable planet.

Its vision is to address issues of global importance and help society adapt to a changing world. In doing so, the BAS is responsible for most of the UK's scientific research in Antarctica.

The Problem

The BAS storage and backup systems have operated successfully for well over a decade, but this legacy technology was nearing end of life and close to capacity. As Jeremy Robst, Head of Linux Systems at the BAS, explained, "Our existing solution had performed well, but the administrative and management overhead was becoming very significant. In addition to improving performance, we also needed to increase storage and backup capacity alongside our ability to scale as our requirements increased in the future."

As well as its daily operational storage and backup requirements, the BAS operates a High Performance Computing department, which delivers technology infrastructure, connectivity and support for its scientific specialists. A further, growing element of their data collection and analysis strategy will be the role played by their new polar research ship, the £200 million RRS Sir David Attenborough, which is expected to commence polar operations in 2021. Together, these underlined the need for a storage solution which would maximise performance, flexibility and would effectively grow to meet future needs.

The Solution

A publicly-funded organisation, the BAS fulfils its procurement requirements via competitive tender.

01623 705330
sales@nexstor.co.uk
nexstor.com

5 Acorn Business Park
Commercial Gate
Mansfield NG18 1EX

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Above: Antarctic Field Camp

At the conclusion of the initial tender process, Nexstor was selected as technology supplier for a project to replace and expand its general archive storage tier, with a 1 petabyte requirement.

As a vendor agnostic storage and backup specialist, Nexstor approach customer requirements with a bespoke analysis of their needs and recommend the most appropriate solutions. For the archive storage project, a resilient twelve node Qumulo-based solution was installed at their Cambridge headquarters.

"Nexstor provided a solution that very effectively balanced price, scalability and performance," said Robst. "In addition, their integration skills played a key role in the project, delivering a solution that is more simple to use, more scalable and offers greater functionality, such as cloud analytics."

A second tender process also resulted in the selection of Nexstor, this time to deliver a Qumulo-based flash storage solution for the High Performance Computing department. With current capacity now at 1.5 petabyte with the capability to quickly and effectively expand capacity as their needs grow.

Benefits

"We have seen very significant improvement across every key metric, from performance to latency and bandwidth," said Robst. "Our storage and backup infrastructure is more available, delivers much greater redundancy and has no single point of failure, which is particularly important for a data-driven organisation such as the BAS."

He continued, "In the future, we will certainly need to add more storage capacity. This is due to a number

"Nexstor provided a solution that very effectively balanced price, scalability and performance"

of factors, such as the impact of the work being done on the RRS Sir David Attenborough." To meet these needs, the density provided by the Qumulo solution enables the BAS to add further nodes within their server environment, maximising efficiency.

The experience, project management and implementation skills offered by the Nexstor team have played an important role in the successful delivery of the solution. "The effective, coordinated relationship between the BAS and Nexstor technical teams has been key in moving from tender process to installation and rollout. Their vendor impartiality gives us confidence that we're sourcing the most appropriate solution and achieving maximum value for money."

Looking ahead, the BAS plan to build on the power consumption benefits delivered by the Qumulo hardware as part of a drive to improve the environmental performance of its technology infrastructure and wider zero carbon strategy.

"As the primary storage platform for the organisation, this is a critical, long term solution," explained Robst. "Everyone working at the BAS — 100 scientists and 100 back office professionals — relies on the technology to get their vital work done, and we're now well placed to grow as required in the important years ahead." ■

Below: RRS Sir David Attenborough

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