



## CASE STUDY

# Safeguarding Research at Sea: British Antarctic Survey Backs Up Scientific Data with Quantum Scalar Tape Systems

British Antarctic Survey (BAS) enables international scientists to conduct world-leading research in the Earth's polar regions. When it was time to equip a new research ship with backup data, Quantum won the contract with its Scalar tape libraries. The Scalar systems allow researchers to protect large volumes of critical research data while the ship is at sea. Once each research trip ends, the IT team can easily transport high-capacity tapes back to the data center in England, where the organization makes data available to a broad scientific community.



FEATURED PRODUCTS

### Scalar i3 Tape Library



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**Jeremy Robst**

IT Support Engineer, British Antarctic Survey





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**Jeremy Robst** - IT Support Engineer, British Antarctic Survey



**British Antarctic Survey**

## SOLUTION OVERVIEW

- Quantum Scalar® i3 Tape Library
- Quantum QXS™ SSD
- Quantum Q-Tier™ Software
- LTO-8 Tape Drives and Media

## KEY BENEFITS

- **Gained the capacity to back up huge volumes of research data** collected at sea on the organization’s newest research vessel.
- **Able to easily transport data to the UK office** by carrying high-capacity LTO-8 tapes on the plane.
- **Simplified installation and maintenance at sea** using converged tape systems with integrated server blades.
- **Minimized the footprint for backup storage** on a space-constrained vessel.

The RRS *Sir David Attenborough*, named after the renowned naturalist, is a brand-new, custom-built ship commissioned by the UK’s Natural Environment Research Council (NERC). Operated by BAS, the vessel is designed to be a state-of-the-art platform for scientific research in the Earth’s polar regions.

The ship is equipped with specialized laboratories and instruments to support cutting-edge scientific projects. “Researchers depend on a whole spectrum of modern technology to study water properties, sea animals, the sea floor, the atmosphere, and more,” says Jeremy Robst, the IT support engineer in charge of Linux systems, data storage, and backup systems for BAS.

Robst and the rest of the BAS IT team was tasked with implementing all the necessary information technology for the ship’s research “cruises,” which typically last between six weeks and two months. Providing sufficient data storage and backup capacity was a top priority.

“All of that research generates an awful lot of data,” says Robst. “As we planned for the new vessel, we estimated that researchers would produce roughly two orders of magnitude more data than on our previous vessel. That might mean anywhere from 10 to 100 TB during a single research cruise. We had to supply storage and backup equipment that could handle that data.”

## PROTECTING LARGE DATA VOLUMES WITH DIGITAL TAPE

While the IT group does use disk-based storage on ships, tape libraries play a key role in safeguarding research data. “The ship is a very expensive platform to run on a day-to-day basis, so it’s vital that we protect all of the data that researchers collect,” says Robst. “We initially store data on disk, then back it up daily to tape. If there are any hardware issues with the disk storage, we can restore data from tape during the cruise, there and then.”

Using tape also makes it easier to transport data back to the organization's office in Cambridge, England. "We could copy data to removable hard disks and then fly back to the UK with them. But if we're generating hundreds of terabytes on a single cruise, that's no longer feasible," says Robst. "With tape, we can store very large data volumes on compact media, and then simply put the tapes in our luggage when we head back to England."

### SELECTING CONVERGED QUANTUM SCALAR TAPE SYSTEMS—AVOIDING DISTINCT SERVERS

After the IT team evaluated tape solutions from multiple vendors, Quantum won the contract for the Quantum Scalar i3 tape systems. The Scalar i3 systems offer an integrated, converged design. "The tape library from another vendor required an extra server to act as the data mover," says Robst. "The Scalar i3 system allows us to have the library and server blade in one box. We can just plug it into the network and go from there."

That converged approach is particularly important when building an IT environment on a vessel that travels to the far reaches of the planet. "We're very keen to minimize. For every bit of equipment we take to sea with us, we have to take a spare," says Robst. "So if we were

using a library that doesn't include the blade, we would have to take a spare server as well."

The Scalar i3 also simplifies networking. "We're using 10 GbE over fibre," says Robst. "With the Scalar i3, it's just a single network connection—that was another important factor in the decision."

The team's familiarity with Quantum provided additional confidence in selecting Scalar systems. "We had used Quantum's StorNext onboard previous ships, and it was very useful. We were very comfortable implementing a Quantum tape solution," says Robst.

### DEPLOYING DUAL TAPE SYSTEMS FOR ADDED INSURANCE

The IT team is installing two Scalar i3 systems on the *Sir David Attenborough*. One supports the Veeam software used for daily backups from disk storage. The other uses the Scalar linear tape file system (LTFS), which supports file-system operations.

"With our dual-library setup, each Scalar i3 library can act as a spare for the other," says Robst. "If there's an issue with one of the libraries, we can always make a working one with the other plus the spare blades and drives that we bring along."

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**Jeremy Robst,**  
IT Support Engineer,  
British Antarctic Survey







## GAINING COMPACT STORAGE WITH LTO-8

Minimizing the storage footprint is vital on space-constrained research ships—even on a seemingly large, new vessel. By using Scalar i3 systems equipped with LTO-8 drives, the IT group can store up to 12 TB of data per cartridge, or 30 TB compressed.

The IT team can make copies of backed-up data using LTFS. Then, at the end of the research cruise, the IT team can simply pack up the copies and bring them back to the UK office.

## PREPARING FOR THE MAIDEN VOYAGE

The coronavirus pandemic slowed the installation of the IT environment on the *Sir David Attenborough*, but the IT team is ready to put the new storage environment through its paces. “We’re eager to get back on the vessel and continue our build,” says Robst. “We’re hoping that by the end of the year, we’ll have taken the vessel to sea to really experience how these systems can help assist with some important research.”

## ABOUT BRITISH ANTARCTIC SURVEY

British Antarctic Survey (BAS), an institute of the UK’s Natural Environment Research Council (NERC), delivers and enables world-leading interdisciplinary research in the Earth’s polar regions. The organization has skilled science and support staff based in England, Antarctica, and the Arctic. That staff works together to produce research that increases our knowledge of the planet and advances our understanding of the processes, vulnerability, and risks that arise from natural and man-made phenomena. BAS provides access to the UK polar research operation to not only British scientists but also the international science community.



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