Quantum

CASE STUDY

National Administration of Surveying, Mapping and Geoinformation Charts a Better Course with StorNext

When a leading geoinformation and mapping agency in the People's Republic of China found itself running out of space and processing power, they turned to Quantum StorNext® scale-out storage for a solution. The results were higher performance, improved collaboration, faster project completion, and more secure data.

FEATURED PRODUCTS

StorNext 5

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Huang Lei
Account Manager, Nikoyo China

The StorNext AEL tape archive provides a cost-effective storage tier for files that are not actively being worked on, freeing up the high-performance disk. The movement of data from disk to the tape archive is managed automatically by StorNext based on user-defined policies. And access to data in the archive is simple—the files in the tape archive appear to be in the same file system location that they were originally.

SOLUTION OVERVIEW

- StorNext 5 Scale-out Storage, including:
  - StorNext M662 Metadata Appliances
  - StorNext G302 Gateway Appliances
  - StorNext QD6000 Storage
  - StorNext AEL Tape Archive

KEY BENEFITS

- **Accelerates workflows with high-speed** primary disk, to enable faster completion of projects
- **Handles demands of massive data growth** with a large-scale tiered archive solution that can handle the large number of files and keep up with future data growth—affordably
- **Enables flexible access to critical data,** across several different types of operating systems and networking topologies
- **Offers disaster recovery and data protection** features via the ability to archive multiple copies and versions (including off-site copies)

When there is a major movement toward urbanization in a country the size and scale of the People's Republic of China, it inevitably creates challenges for urban planners. One important part of the solution is technology associated with digital surveying and mapping, and that is where the Heilongjiang Branch of the National Administration of Surveying, Mapping and Geoinformation (NASMG) plays a key role.

MODERN MAPPING IS COMPUTE AND DATA INTENSIVE

Governed by Heilongjiang Bureau of Surveying and Mapping, the NASMG is dedicated to gathering aerial photogrammetry and remote sensing data and developing geoinformation systems based on it, with a special expertise in city environments. The mapping of fast-growing urban areas is a compute- and data-intensive activity. Typical projects combine high-resolution Light Detection and Ranging (LIDAR) images—a kind of laser-pulsed version of radar—with advanced aerial photography. The raw image data is analyzed through multiple steps that account for vegetation, slope, and other factors to extract object-oriented identification of structures, and, finally, to create accurate maps. This type of geoinformation processing combines the work of multiple researchers using different applications on different computer platforms. The work is highly collaborative, involving researchers inside the NASMG, in other sections of the National Administration, and international organizations.

PREVIOUS STORAGE INFRASTRUCTURE OVERWHELMED BY GROWTH

Faced with a petabyte of existing data created over a 10-year period, ever-increasing data from higher-resolution imaging, and the need for a high-performance, parallel workflow, the NASMG team recognized that they needed to re-architect their storage infrastructure if they were going to keep up with the growing demand for their services. They needed a high-performance system that would allow multiple

team members to access files and carry out high-speed analysis at the same time. The new system would need to provide extreme reliability, support for multiple platforms, and the ability to easily scale to accommodate future growth. It also needed to be economical, with support for both high-performance Fibre Channel connections and Ethernet LAN connections. And the team needed to provide a way to store, preserve, and protect their assets for many years so the data could be reused in the future.

STORNEXT SCALE-OUT STORAGE PROVIDES AN END-TO-END SOLUTION

The NASMG team selected Nikoyo (China) Electronics Systems, Ltd.—an integrator headquartered in Beijing that specializes in high-performance storage systems using leading international suppliers—to help them choose a system that could meet their needs.

"When we looked at the needs of NASMG, we knew that the best system for them would be an integrated StorNext scale-out storage solution from Quantum," says Huang Lei, Account Manager Nikoyo (China) Electronics, Ltd.

In the new system, StorNext QD6000 RAID arrays provide high-performance primary storage, while dual-redundant StorNext M662 Metadata Appliances manage access to data in all locations using a file system interface. Access to the data is provided over Fibre Channel connections, but also over 10GbE Ethernet connections using StorNext G302 Gateway Appliances. A StorNext AEL tape archive provides a cost-effective storage tier for long-term retention.

STORNEXT SOLUTION ENABLES HIGH-SPEED AND COLLABORATIVE WORKFLOWS

Data is ingested into the system using high-speed disk arrays, making it available to the research teams for analysis. StorNext supports all major operating systems—Linux, Windows, UNIX, and Mac—and it allows multiple users to access the same file sets at the same time to increase collaboration and complete mapping projects more quickly.

For high-performance analysis, workstations connect to the data pool through a Fibre Channel SAN fabric at link speed. StorNext manages the storage to optimize the use of disk resources, to enable multi-channel parallel processing, to ensure bandwidth quality, and to enable load balancing. The result: an optimized SAN architecture that enables high-performance collaboration. Ethernet connections to the same files can be used for remote locations or for tasks requiring lower performance. The StorNext system also scales easily, allowing NASMG to quickly add capacity and include it transparently as part of the common pool of storage available to the team.

ARCHIVING AND LONG-TERM RETENTION BECOMES AN AUTOMATED FEATURE

The StorNext tape archive provides NASMG with two key features—expanded low-cost storage for archiving and an automated system for providing long-term protection of assets. The StorNext AEL tape archive provides a cost-effective storage tier for files that are not actively being worked on, freeing up the high-performance disk. The movement of data from disk to the tape archive is managed automatically by StorNext based on user-defined policies. And access to data in the archive is simple—the files in the tape archive appear to be in the same file system location that they were originally. To access any file in the file system, the users simply select the file; if the file is in the tape archive, then it will automatically move from the tape archive back onto the high-speed disk. For protection, StorNext automatically creates copies of working files on tape, allowing them to be moved to off-site locations to provide data-level disaster tolerance for all of NASMG's assets.

"All the results show that Quantum's StorNext scale-out storage solution, along with support from Nikoyo (China), is meeting all of the image processing, analysis, storage, and archiving needs of NASMG today—and will continue to do so long into the future," says Li Jing Rui, Senior Engineer, NASMG.

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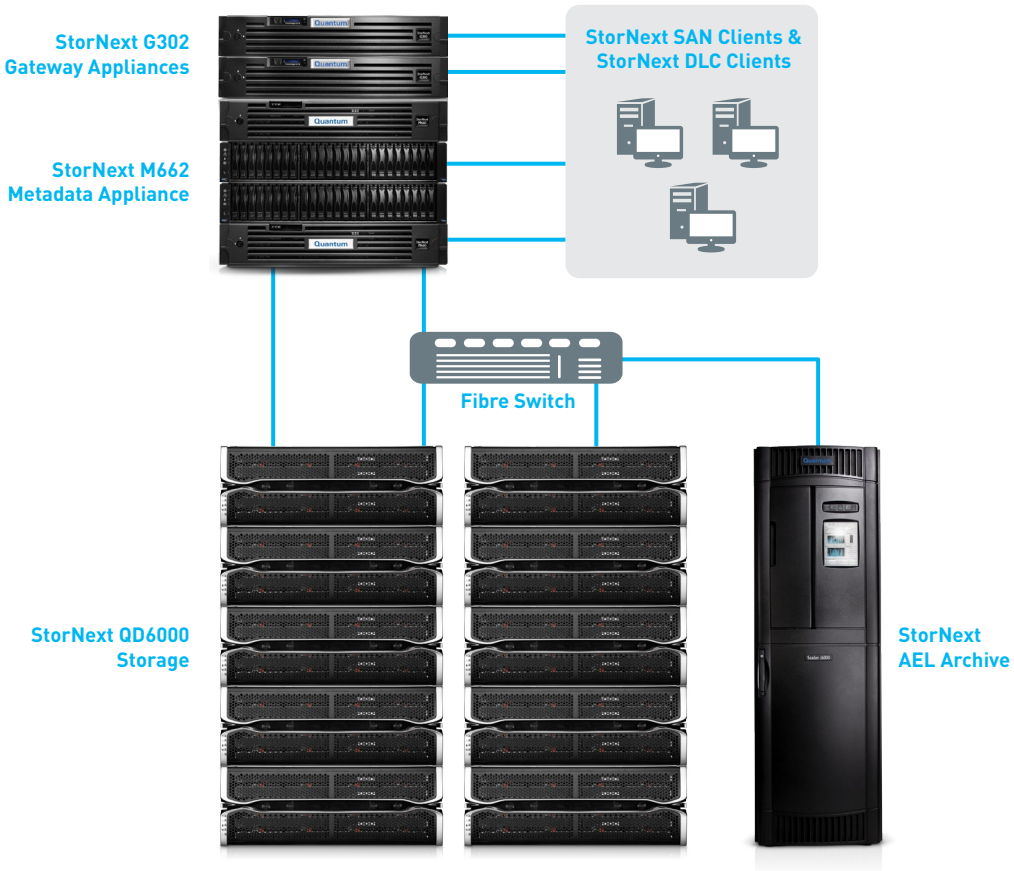
Li Jing Rui
Senior Engineer,
Heilongjiang Branch of National Administration of Surveying, Mapping and Geoinformation



StorNext Scale-out Storage Solution for the Heilongjiang Branch of the National Administration of Surveying, Mapping and Geoinformation

ABOUT THE HEILONGJIANG BRANCH OF NATIONAL ADMINISTRATION OF SURVEYING, MAPPING AND GEOINFORMATION (NASMG)

Governed by Heilongjiang Bureau of Surveying and Mapping, the Heilongjiang Branch of National Administration of Surveying, Mapping and Geoinformation develops aerial photogrammetry and remote sensing applications, produces a variety of thematic maps, integrates geoinformation systems, constructs geospatial databases, and carries out R&D in the field of 3D geoinformation systems. In addition, it is responsible for province-wide collection, management and distribution of remote sensing resources and data, management and provisioning of basic surveying and mapping results, and the maintenance of technological archives.

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