

# All-weather satellite images stored for ready retrieval by researchers

HP StorageWorks File System Extender solution helps archive and manage satellite data for the Chinese University of Hong Kong



"With HP StorageWorks File System Extender, a wealth of data is now at the fingertips of numerous research institutes and individual scientists who can make important contributions to the safety and economic health of the region."

*Dr. Matthew Pang*

*Business Manager, The Chinese University of Hong Kong*

## Background

The Chinese University of Hong Kong's Satellite Remote Sensing Receiving Station is a critical component of the school's newly established Institute of Space and Earth Information Science and can collect up to six MBs of raw satellite imagery data per minute. The Station is the only all-weather capable satellite receiving station in South China. It captures and processes remote sensing data of natural disasters including landslides, subsidence, earthquakes, tsunamis, floods and typhoons. Covering over 2,500 kilometers - east to the Pacific Ocean, south to Indonesia, west to Bangladesh and north to beyond Beijing - CUHK required a highly accessible, scalable and available system for the long-term retention of the information.

"CUHK needed a logical strategy to manage the massive amounts of data being pulled into the project, so scientists across the region can access the satellite imagery for their research. The data also has to be stored for long periods of time to make long term predictions and to conduct historical analysis of natural disasters and their impacts on the neighboring countries and their people and economies," said Dr. Matthew Pang, Business Manager, The Chinese University of Hong Kong.

"The all-weather information collected and processed by the Satellite Remote Sensing Receiving Station will help us understand the long-term effects of natural disasters that will help the region prepare and cope when these potentially catastrophic phenomena strike, if the data can be properly maintained and made readily available to researchers," explained Dr. Pang.

## Situation

The first-phase of the project, now in full operation, was a jointly funded effort of the 863 High Technology Research and Development Program of the PRC's Ministry of Science and Technology and the Innovation and Technology Commission of the HKSAR government. As part of the Station's initial development, CUHK realized the need for a cost-effective data management and archiving solution. HP was selected to implement an information lifecycle management system.

"In addition to providing scientists and regional governments with valuable information relating to the impact of natural disasters, the Station is also expected to foster growth in new industries related to remote sensing data processing, software development, and other value-added professional services in Hong Kong and throughout the Pearl River Delta region," stated Dr. Pang.

## Solution

An official tender was issued requiring HP to meet stringent requirements for technical expertise, quality of software and equipment and reputation for efficient installation and post-deployment support. Along with the prime contractor of the project, Expert Systems, HP StorageWorks File System Extender (FSE) provides the archiving solution. The HP StorageWorks FSE solution is a powerful data management tool that offers cost-effective management of massive amounts of stored data, going far beyond the capabilities of traditional hierarchical storage management software.

HP used the FSE server to share file systems with the CUHK satellite server running Linux and multiple user computers running on Windows through NFS and CIFS formats resulting in a far more flexible architecture design. When the FSE server receives data from the satellite server, it immediately makes two data copies. One it will save to the HP StorageWorks 1500 Modular Smart Array system and the other is saved to the HP MSL6060 tape library. The FSE system is then designed to copy from tape to tape everyday as part of its backup



## Challenges

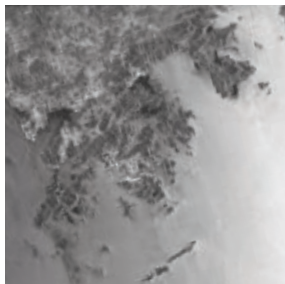
- Rapidly accumulating amounts of raw satellite imagery from all-weather ENVISAT satellite covering 2,500 km of the Asia-Pacific region
- Data must be highly available region-wide to researchers and governments
- Scientific study methods require long-term archiving of satellite images for historical analysis

## Solutions

- HP StorageWorks File System Extender (FSE), HP ProLiant ML370 server, HP MSL6060 tape library, HP StorageWorks 1500 Modular Smart Array
- HP to design and implement FSE as part of overall information life cycle management infrastructure, provide and define archiving rules for overall system

## Results

- Comprehensive archiving of satellite images based on logical storage policies, providing high accessibility and retention
- Enables faster backup and recovery of critical data by reducing the amount in primary storage
- Provides a scalable storage environment for future data growth



procedure, meaning CUHK's data is always available and reliable.

"We were looking for a data management solution that would provide us with very specific accessibility, ease of use and retention parameters. As a solution provider, HP's offering gave us an affordable, reliable and highly available solution that scales to our future data growth and backed by HP's outstanding service and support," said Mr. Isaac Chan, Computer Officer, The Chinese University of Hong Kong.

Along with the HP StorageWorks FSE software, HP also deployed a ProLiant ML370 server running Linux, HP MSL6060 tape library, and HP StorageWorks 1500 Modular Smart Array system. Additionally, HP Consulting worked closely with CUHK's engineers and IT administrators to develop logical and proactive policies for data management and interoperability.

### Results

The HP StorageWorks FSE solution provides CUHK with a real-time solution to their archiving and data management problem. "With so much riding on the outcomes and predictions of the Station and the impact they will have on the area mandate that we consider information management and archiving as critical components of the project," said Dr. Pang. "Untold number of lives, money and resources can be potentially saved as a direct result of research done using the Station's satellite data."

Utilizing HP StorageWorks FSE software solution and storage system, CUHK's Satellite Remote Sensing Receiving Station can now provide private and government scientists in Hong Kong, southern China, and neighboring countries like Indonesia, Taiwan, Thailand, Malaysia and the southwestern region of the sub-continent with readily accessible current and historic satellite imagery for disaster prediction and recovery efforts.

"HP is an invaluable partner on this project and one whose assistance and support has exceeded our expectations in terms of installation, operation and expert guidance. The tape library, in particular, has provided us with better than expected speed and performance," explained Mr. Chan. "The implementation went smoothly and without costly delays allowing us to meet the project's expected rollout date."

"Understanding the many natural catastrophes, both large and small, that impact on the regional economies will be a key driver of industry and technological development in a variety of areas, such as remote imaging, disaster preparedness and infrastructure planning and development for the rapidly growing countries of Asia," said Dr. Pang. "With HP StorageWorks FSE, a wealth of data is now at the fingertips of numerous research institutes and individual scientists who can make important contributions to the safety and economic health of the region."