The Design and Application of Data Storage System in Miyun Satellite Ground Station

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China has launched Chang'E-3 satellite in 2013, firstly achieved soft landing on moon for China's lunar probe. Miyun satellite ground station firstly used SAN storage network system based-on Stornext sharing software in Chang'E-3 mission. System performance fully meets the application requirements of Miyun ground station data storage.The Stornext file system is a sharing file system with high performance, supports multiple servers to access the file system using different operating system at the same time, and supports access to data on a variety of topologies, such as SAN and LAN. Stornext focused on data protection and big data management. It is announced that Quantum province has sold more than 70,000 licenses of Stornext file system worldwide, and its customer base is growing, which marks its leading position in the big data management.The responsibilities of Miyun satellite ground station are the reception of Chang'E-3 satellite downlink data and management of local data storage. The station mainly completes exploration mission management, receiving and management of observation data, and provides a comprehensive, centralized monitoring and control functions on data receiving equipment. The ground station applied SAN storage network system based on Stornext shared software for receiving and managing data reliable.The computer system in Miyun ground station is composed by business running servers, application workstations and other storage equipments. So storage systems need a shared file system which supports heterogeneous multi-operating system. In practical applications, 10 nodes simultaneously write data to the file system through 16 channels, and the maximum data transfer rate of each channel is up to 15MB/s. Thus the network throughput of file system is not less than 240MB/s. At the same time, the maximum capacity of each data file is up to 810GB. The storage system planned requires that 10 nodes simultaneously write data to the file system through 16 channels with 240MB/s network throughput.When it is integrated,sharing system can provide 1020MB/s write speed simultaneously.When the master storage server fails, the backup storage server takes over the normal service.The literacy of client will not be affected,in which switching time is less than 5s.The design and integrated storage system meet users requirements. Anyway, all-fiber way is too expensive in SAN; SCSI hard disk transfer rate may still be the bottleneck in the development of the entire storage system. Stornext can provide users with efficient sharing, management, automatic archiving of large numbers of files and hardware solutions. It occupies a leading position in big data management. Storage is the most popular sharing shareware, and there are drawbacks in Stornext: Firstly, Stornext software is expensive, in which charge by the sites. When the network scale is large, the purchase cost will be very high. Secondly, the parameters of Stornext software are more demands on the skills of technical staff. If there is a problem, it is difficult to exclude.