

Data Acquisition

INTRODUCTION

Data acquisition applications typically require high-speed, highly reliable data recording. The data storage industry has been focused on SAN and NAS networked storage systems for the last few years. While these communication and data transfer protocols are useful in data acquisition after the data has been recorded, the real need in data acquisition is still in raw data recording speed to a very reliable direct-attached data-recording unit. Data lost due to slow connections or unreliable recording units are often not reproducible and are lost forever. Thus SAN and NAS devices are typically inappropriate since they often slow data recording and introduce extra components that might fail at an inopportune moment. Once recorded, data can be moved by SAN or NAS to lower cost disk storage units for continued on-line access and processing and finally to tape for archival and off-site storage for backup and disaster recovery.

KEY CHARACTERISTICS

- Data is produced at high rates
- No data can be lost
- Data recording cannot slow data acquisition
- Optionally: Multiple copies are recorded

REQUIREMENTS

- High-speed recording
- High capacity
- High reliability
- Affordable cost

TYPICAL ENVIRONMENTS

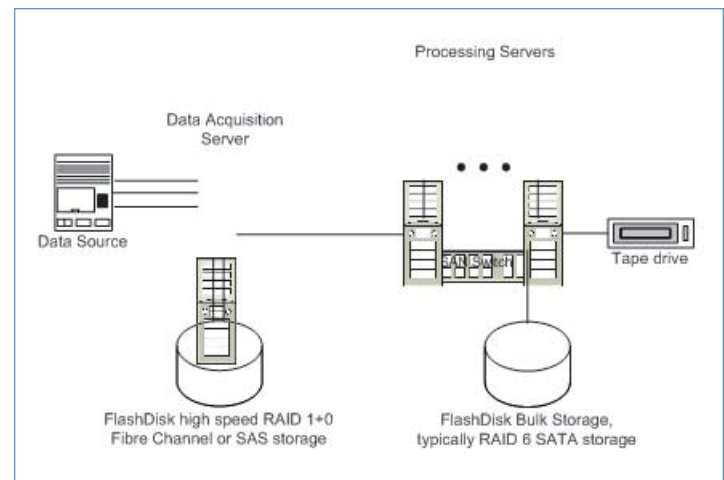
- Scientific Experiments
- Geophysical Exploration
- National Laboratories
- Defense Applications
- Communications
- Medical Imaging
- Factory Floor Statistics
- Biomedical Research

BENEFITS

- High-speed data recording
- High reliability storage
- Affordable

HOW IT WORKS

Data acquisition computer with sensing devices attached is equipped with one or more high-speed, multi-ported disk arrays, directly attached with either Fibre Channel or SAS host channels. The data acquisition programs read data at full speed and write data to the disk arrays - also at full speed. Optionally, the data acquisition server is connected to SAN, NAS or tape device to off-load data at the end of the recording session for processing and more cost effective permanent storage. The off-loading can occur at the data acquisition site or after a mobile unit is returned to a base location. The disk array can be configured as RAID 1 mirroring, RAID 5 parity or ultra-reliable RAID 15 storage arrays for reliability as needed. For harsh environments, a ruggedized disk array can be used in the field or mobile environment for added data protection from shock, vibration, dust, temperature extremes and humidity.



The data acquisition server is directly connected to the high-speed, highly reliable disk arrays. Data is then copied to less expensive disk arrays for storage processing and backup to tape.