

## A revolutionary Near-line Archival System - A clusterable, high availability solution -

### The Situation

According to recent estimates, more than 60% of the data in the world is stored in some form of database. If you consider that **at least 75% of that data** is infrequently or never accessed, this means that roughly 45% of the world's data is inactive and unnecessarily using database resources. For smaller databases, simply storing the entire **database** on a RAID array is usually feasible in cost and performance.

However, industry experts agree that databases may grow to over a **petabyte** in size in the next two to five years as a result of continual, almost exponential growth in the amount of data stored **worldwide** (Data Warehouses, CRM solutions). It is already common in many industries to find databases ranging in size from **hundreds of gigabytes to several terabytes**.

SANity™ DB NAS provides an **easy administrative** interface with which to configure and manage the process of selectively and transparently moving inactive data from **on-line databases** to more cost effective optical media (DVD).

### The Challenge

As **data requirements** grow, the storage and database management costs increase, while overall performance tends to decrease.

Experience is proving that cost effective management of these very large databases is very demanding. Database servers are being overloaded by inactive or infrequently accessed information. Therefore, the challenge is to easily and **cost effectively** support large databases while optimizing performance.

SANity™ DB NAS takes the load off your production servers and provides non-volatile, **long-term archival for transactional and business data**, while the near-line archived data remains available and can be accessed and queried.

*With SANity™ DB NAS, you keep your data on hand. No more searching for the correct tape archive, and not only is your archived data IMMEDIATELY available, but you never have to worry about accidentally overwriting important archived files.*



### Executive Summary

In today's fast-paced, **market-oriented** global business environment, a successful enterprise must be able to react to competitive forces, as well as respond to changes and internal demands. Such an enterprise must proactively implement **effective, flexible, modern** information systems. A high capacity, **fast, economic** and dependable data (e.g. Transactions) archiving system is a necessary element of such multipoint systems due to the ever-increasing amounts of data generated.

According to **leading analysts**, data, and the ability to access and use that data is increasingly crucial for a **company's success**. CRM and Data Warehousing initiatives are dramatically increasing the amount and quality of information available. Dependable systems are needed to support the **long-term storage** and ensured availability of this data.

CLARMONT I.S. Ltd's SANity™ DB NAS near-line **archival system** was designed not only to allow institutions and **enterprises to satisfy legal data availability** requirements, but also to provide a full-scope, dependable, efficient near-line database archival system, while ensuring **secure and rapid data-retrieval**. The system was developed to be **compatible** with a wide range of systems, allowing its easy integration into your existing IT infrastructure.

SANity™ DB NAS enables you to **selectively replicate and archive** data from even **geographically distant databases** within your organization. This near-line archive becomes a centralized repository for your important business data.

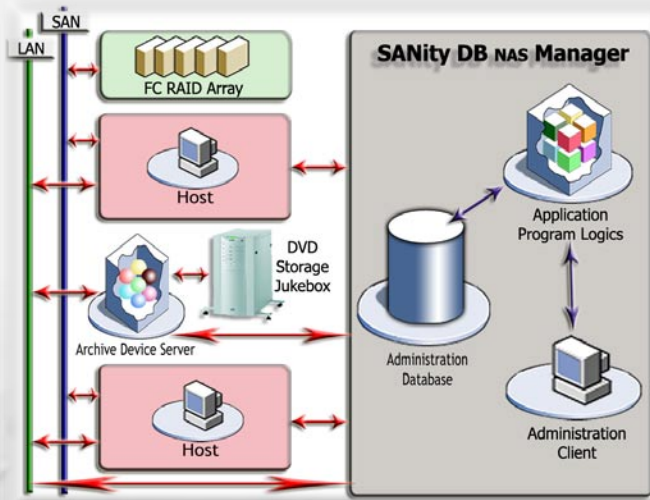
Today's business practices place significant emphasis on the speed and quality of services and related internal operations. For a service to remain competitive, the needs and requirements of its clients must always present a driving force.

Your company's business challenges and goals combined with regulations and **legal requirements for data retention** and retrieval make it vital to establish a high-performance, fast, flexible and dependable near-line archival system. It is highly advisable to implement a solution that can simultaneously reduce the load on existing **business systems**.

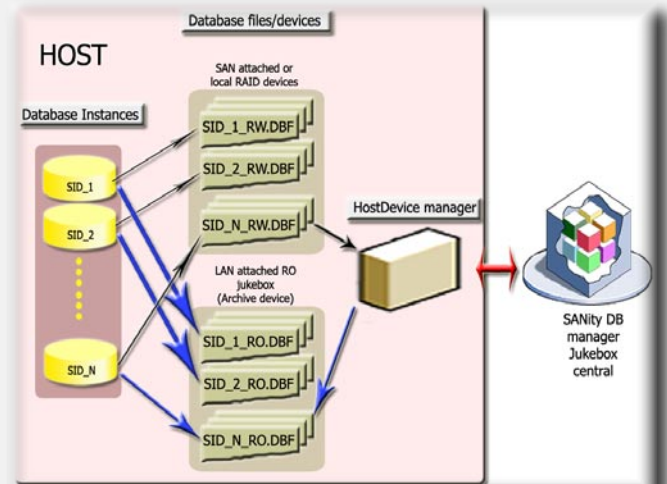
## Operation – short summary

The system is composed of 3 major subsystems:

The SANity™ DB NAS system is composed of distributed, intercommunicating Java components. With the aid of this system, a system administrator can move **read-only elements** in the given system to the archive and make them accessible to other systems, transfer these elements between databases, mirror archived data and create backups. Its **elements are the SANity™ DB NAS Manager** (diagram 1), the **Host Device** (diagram 2) and the **Archive Device** (diagram 3). The integrated operations of these three devices and associated services allows the system to provide clients with transparent access to the archived data.



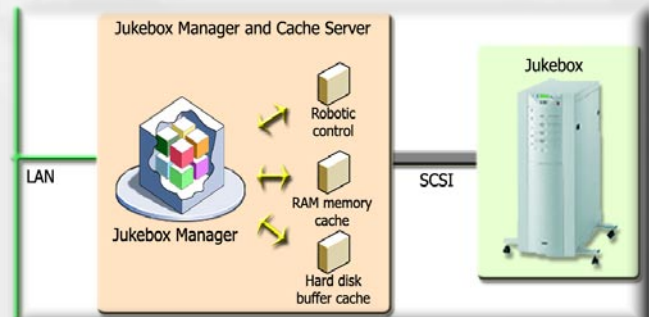
1.diagram - SANity DB NAS manager's architecture



2.diagram - HOST device's architecture

### HOST device component

The data is stored in **tablespaces**. These tablespaces are comprised of multiple physical files, or so-called raw devices. These tablespaces can be reconfigured so that the users have read-only access, and so are unable to modify them. The reconfigured tablespaces can then be stored on WORM, CD or **BD DVD\*** media, or on a **remote filesystem**. Consequently, each host needs access to a network attached DVD storage robot that can store these read-only elements, and also requires a local service that can recognize local read-only data and based on its configuration, transfer that local data (read-only tablespaces created on that host) to the DVD Storage Jukebox.



3.diagram - ARCHIVE device's architecture

### Manager component

- **Administration database:** This is where the metadata for the tablespaces stored in SANity DB NAS, along with data on the system's configuration and structure.
- **Host Manager Service:** Performs those tasks that can only be carried out on that specific host - file operations etc.
- **Central Manager Service:** This is where the administration tools and the tasks of the host servers are linked. This service accepts client requests and decides on how to carry them out.
- **Administration Tools:** Configure the archival process and carry out configuration and archival functions

### Features and Advantages

- Write protected DVD system ensures the safe recording and storage and protects against external effects and/or sabotage.
- Multiple DVD Storage units can be connected to multiple servers.
- Mirroring – Duplication of your data can be accomplished within a single DVD Storage and/or between devices.
- Open, standards based solution which can easily be configured to work with other systems.
- Reliable, hands-off operation.
- Multiple copies of the data can be created, even in different geographical locations.
- Highly scalable solution with schedulable, transparent archival.
- The DVD Storage can also be used as a NAS fileserver.
- Distributed architecture - the servers communicate using a solution built on standard CORBA.
- The same data can be simultaneously accessed by a separate OLTP or DSS system.

### ARCHIVE device component

- **DVD Storage Jukebox:** optical (BD\*) data storage library
- **DVD Storage Jukebox manager**  
This software controls and optimizes the media changing robot in the DVD Storage Jukebox, and also handles the caching of frequently accessed data. The DVD Storage Jukebox Manager can, and should, be run on a separate server, since both the archival and **management processes** can be highly resource intensive. The DVD Storage Jukebox manager is capable of managing multiple, daisy-chained, DVD Storage Jukeboxes, thus increasing the available storage capacity.
- **LAN :** The hosts are provided with access to the data via LAN, using NFS or SAMBA protocols.

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\* BD - Blu-ray technology media 50GB/media