

# CASE STUDY

**ORGANISATION: RAI  
RADIOTELEVISIONE ITALIANA**

**INDUSTRY: BROADCASTING**

**APPLICATION: DIGITAL  
RADIO ARCHIVE**

**SOLUTION: PLASMON  
G-SERIES G638 POWERED  
BY UDO WITH NETSTORAGE  
OVM SOFTWARE**



## ***RAI Radiotelevisione Italiana builds a digital radio archive on UDO***

### **RAI RADIOTELEVISIONE ITALIANA**

RAI selected a Plasmon UDO (Ultra Density Optical) library to create an archive of its intranet browsable radio programming and other audio content. UDO properties such as media longevity and low Total Cost of Ownership made the blue laser technology the ideal solution for a stable and scalable archive.

### **COMPANY PROFILE**

RAI Radiotelevisione Italiana is Italy's leading radio and television broadcasting company. RAI started its broadcasting services in 1954 and its coverage soon spread throughout the entire national territory. Over the past 50 years, the public broadcaster has been a witness to all major events in the country's history and has contributed to shaping Italian lifestyle and customs. With 21 sites in Italy and another 11 sites around the world, RAI has grown over the past 10 years into a truly international broadcast institution.

### **REQUIREMENTS FOR A DIGITAL RADIO ARCHIVE**

RAI has been using Plasmon G-Series optical libraries since 2001, with two existing G638s. These libraries have a total of 1276 pieces of 9.1GB MO (Magneto Optical) media and 18 drives, providing an archive capacity of almost 12TB. Content stored on these libraries mostly includes mp3 format data. A few years later, RAI launched a new initiative designed to preserve radio programming and other audio content.

The objective of the digital radio archive project is to store the programming of four radio channels (Radiouno, Radiodue, Radiotre, Gparlamento) along with 80,000 tapes of music and 300,000 hours of 'Storico' audio programmes and documentaries. With the radio broadcasts totalling 96 hours a day and the music tapes growing at 3,000 a year, a solution was needed with high initial capacity and flexibility to scale over time. On-air data average file size is 350MB, for a total archive size of 4.2TB, while 'Storico' programmes and music content average file size is a few tens of kilobytes for a total archive size of 1.7TB.

RAI specified the key requirements for their archive solution:

- ◆ The chosen technology must allow completely transparent access to the archive or applications and users
- ◆ Access to the archive must be available 24 hours a day, 7 days a week

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- ◆ Read performance for last year's data must be less than 20 seconds and allow up to 100 users (5 concurrent users at any time)
- ◆ Read performance for older data must be less than 3 minutes and allow up to 1000 users (200 concurrent users at any time)
- ◆ The overall archive solution must generate minimal ongoing media maintenance and administration
- ◆ The Total Cost of Ownership of the archive over years of operation must remain low and competitive.

## RAI SELECTS UDO

RAI evaluated different storage technologies, including a tape library, a RAID system and a UDO (Ultra Density Optical) optical library, comparing them against their key requirements.

The tape library configuration performed well on capacity and price, but failed to meet the access performance requirements. On the other hand, the RAID system offered excellent access performance but its operating and maintenance costs were too high. RAI was also concerned about the overhead and cost of maintaining tape media over the entire lifecycle of their archive and were also uncomfortable with the idea of managing a long-term archive on volatile magnetic disk.

By contrast, the UDO optical library met all of the mandatory criteria defined by RAI. All optical libraries (the two existing MO libraries and the new UDO library) are controlled with NetStorage's HSM (Hierarchical Storage Management) software so that files are migrated automatically from 1st tier storage (primary hard disk) to 2nd tier storage on the library. This configuration delivers an optimal response time for recent files kept on hard disk while the access time to older documents archived on MO and UDO are well within RAI's performance and longevity requirements. In fact, a G-Series library with UDO provides less than 10 second random access to any file in the archive.

RAI also looked carefully at the Total Cost of Ownership of a UDO archive and concluded that UDO's low acquisition, operating costs and data longevity made the blue laser technology the obvious technical and financial choice for their digital radio archive assets.

Fabio Berardi, Project Manager, RAI ICT (Information and Communication Technology) explains: "For RAI, UDO was the natural choice to evolve and improve performance on its radio archive."



*RAI subscribes to Plasmon's Guardian level Service Direct maintenance program for all its G-Series libraries. This level of coverage provides 9/5 technical support with a 4-hour on-site service response.*

## IMPLEMENTATION OF THE UDO SOLUTION

RAI selected a Plasmon Enterprise G-Series library 'Powered by UDO' with 6 drives, 638 pieces of 30GB UDO media and a corresponding capacity of 19.1TB.

The library was purchased from PDS (DICOM Group), Plasmon's main Distributor in Italy, and Terasystem was selected as the Solution Integrator.

The UDO library is controlled by NetStorage's OVM (One Volume Manager) Storage Management Software. OVM transforms the UDO library into an online, direct access mass storage device and makes archive access completely transparent to applications and users.

NetStorage and Terasystem first implemented a pilot installation so that RAI engineers could subject the solution to extensive system testing and identify any customisation required to the OVM software. The library was installed in just one day, with the software installation taking an additional day. With all software enhancements in place, the solution went live a few weeks later.

The new UDO library and two existing MO libraries and installed at RAI are connected to two Sun Solaris Servers with the OVM software installed via fibre channel interfaces through a dedicated router. This architecture is completely integrated with RAI's existing SAN (Storage Area Network).

Factoring in the daily growth of RAI's radio material archive, the new 19TB UDO G-Series library will be at full capacity by December 2006. By that time, new libraries will be added to the architecture that will also be improved with the addition of a new storage level made of low cost disk. UDO's roadmap for the future will ensure data access continuity and investment protection with backward compatible 60GB and 120GB formats.

RAI chose UDO for its radio digital archive as the technology offers the high capacity, robustness and scalability demanded by its data-intensive application. The ability to remove media from the UDO library also provides RAI with a convenient option for future off-line media vaulting in order to further reduce storage cost as archive assets age.

Fabio Berardi concludes: "Plasmon, NetStorage and Terasystem make a really successful team so we knew from the start that our digital radio archive was in good hands. We have been using Plasmon products with NetStorage's software for many years now and we find them extremely reliable. Thanks to the UDO technology, we can continue using optical libraries, which are perfectly suited to our requirements, and benefit from excellent performance at reduced costs."

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