# Plasmon Storage Solutions

## For Medical Image Archive Storage

### The Role of Storage in Medical Imaging

The healthcare industry is faced with major challenges in containing costs while facing increased budgetary constraints and limited resources. In addition, with growing pressure from governmental and private sectors, every hospital, clinic and private practitioner is searching for faster and more reliable means of processing, storing, retrieving and sharing medical images.

Historically, patient records have been stored on paper and film technology. Maintaining these records is manually intensive and expensive. In addition, access and sharing of these records is not cost effective. These issues have prompted a move to provide access to these records via digital storage. But, storing this information on magnetic disk is too expensive, thereby, requiring a more robust, cost effective storage solution. Enter Plasmon's automated storage solutions.

The key components of a PACS (Picture Archiving and Communication System) implementation are the modality interfaces, a network infrastructure, a database management system, image management system, short term image storage system, long term image archive, and diagnostic and clinical workstations. Key to this solution is the integration of the short-term and long-term image stores. There are several key factors to be considered, including:

- Data availability and reliability
- High capacity storage, scalable to multiple Terabytes
- Cost effective storage providing significantly lower $/MB than magnetic disk
- Obsolescence protection
- HIPAA compliance for data management, disaster recovery and security

The sheer amounts of data generated by PACS systems require storage solutions which can economically address these factors. Magnetic disk storage systems provide excellent performance, but do not address the reliability and cost objectives for long-term medical image archiving.

To compound the storage problem, new U.S. federal regulations for patient information security have resulted in increased demands for cost effective, scalable storage for medical images. Plasmon offers the storage industry's most complete range of storage options to meet these needs. As patient image resolution improves and storage requirements increase, Plasmon storage offerings easily accommodate this growth, allowing hospitals and clinics to protect their investment in storage and continue to grow as demands increase.

### Plasmon Approach to Medical Image Archiving

In combination with key Medical Image Archiving applications, a totally integrated solution for medical imaging can be delivered, which provides cost effective storage in addition to industry leading medical image archiving solutions. Plasmon can provide the appropriate automated storage solution to meet the specific scalability, cost, retention, and data permanence requirements of the specific installation environment.

Plasmon is positioned to offer automated storage solutions for 5.25 inch Magneto Optical, DVD and LTO/AIT Tape. Each of these storage technologies provides cost effective and highly scalable storage in addition to data permanency via tamper-proof Write Once media. Plasmon's wide range of storage options and unique ability to position the appropriate storage to meet the unique archiving needs of each Medical Imaging environment provides the best value proposition in the industry.

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## 5.25-inch WORM and Rewritable Magneto Optical

Plasmon offers 5.25-inch Rewriteable and WORM Magneto Optical (MO) disk solutions, which scale from 582GB to 5.8 TB. MO technology provides the highest degree of data permanency with its tamper-proof WORM technology. A robust cartridge based storage technology in addition to a best of breed archival life (30+ years) makes MO technology the best storage solution for those installations requiring the highest level of data protection. The media itself is virtually indestructible, and impervious to the effects of outside magnetic radiation. It is encased in a durable enclosure that protects the media itself from dirt and scratches. The durability of the cartridge is such that multiple load/unload cycles can occur without risk of failure. In addition, MO provides high performance access to data while still providing a low $/MB as compared to magnetic disk storage. Typical random data access times for MO in an automated library range from 5-8 seconds. Hence, for environments where repeated access to archived data is expected, MO is the right choice. MO technology has been used for data intensive applications such as banking and financial services, government, insurance, transportation, utilities, manufacturing, retail trades, services and healthcare. **For high performance, high access and security, MO is the preferred solution.**

## DVD

Plasmon offers DVD solutions, which scale from 564GB to 20.4TB. DVD technology provides a lower cost per MB storage solution than 5.25-inch MO, but does not provide the performance or data permanency of MO. DVD's roots are in the consumer/entertainment market where cost and capacity are key criteria. Using DVD for archiving is very attractive when price is considered. No other random access type of storage can deliver such a cost-effective price per MB. However, data access profiles need to be considered before considering DVD. When high access to archived data is expected, DVD may not provide the best solution. DVD is best suited for environments where archived data is accessed infrequently. Typical random data access times for DVD in an automated library range from 20-60 seconds. **When small footprint, random access, low cost and infrequent access requirements are expected, DVD is the preferred solution.**

## 5.25-inch Ultra Density Optical (UDO) disk

UDO is the next generation of 5.25-inch professional optical storage technology, delivering the performance of 5.25-inch MO, the longevity of 12-inch WORM, and the cost effectiveness of DVD. UDO utilizes violet laser and phase change media recording technology to provide a quantum leap in data storage densities. First generation UDO products will be 30GB capacity and are scheduled to ship in August 2003. Future generations will increase capacity to 60GB and 120GB and will provide full backward read compatibility. Both WORM and rewritable media will be available, packaged in cartridges physically identical to 5.25-inch MO to maintain library compatibility.

## Plasmon Medical Archive Server

To meet the increasing storage demands of the Medical Imaging marketplace, Plasmon has developed an innovative, cost-effective, and robust network based data storage solution. The Plasmon Medical Archive Server provides Network Attached Storage (NAS) connectivity to Plasmon automated optical storage (either Magneto Optical or DVD). Now medical applications can integrate directly with these storage solutions without any modifications. Additional benefits include:

- Single vendor storage solution simplifying the support
- Multiple digital modalities can share a single, highly scalable network based archive
- Support for both UNIX and Windows based client systems
- Simplified storage configuration and expansion

By combining the benefits of network attached RAID with the reliability and robustness of Plasmon optical storage, users get a high performance network archive storage solution. Key features of this solution include:

- Storage capacities from 700GB to over 40 TB, expandable as storage requirements grow
- Storage to archive media: Rewritable, WORM Magneto Optical, DVD-RAM or DVD-R
- Multiple copies of files to multiple media to support offsite copies as needed
- Automated media management providing dynamic capacity expansion as required
- Administration via remote interface and email event notification
- Performance of RAID with the cost effectiveness, robustness and reliability of optical storage

For those environments requiring a robust and reliable archive storage solution, with simple plug and play installation and lights out administration, the Plasmon Medical Archive Server is the solution.

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