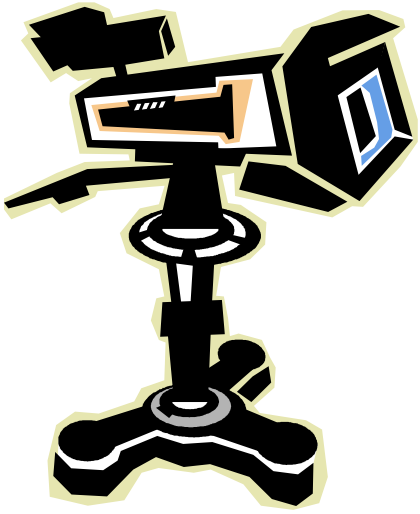
2009 Digital Storage for Media and Entertainment Report

-- Digital Storage for the Creation, Editing, Archiving and Distribution of Entertainment Content --



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Coughlin Associates

Digital Entertainment Series

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Acknowledgements

This report is the result of extensive interviews with many people and companies from throughout the entertainment content value chain including storage component and systems companies as well as companies that incorporate storage into their content creation applications. The list of companies contacted is extensive and the data we gathered over several months is pretty comprehensive, not all of it is included in this report. Our thinking and projections were shaped by many inputs. In particular we would like to thank the following companies and organizations for their help and information: Avid Technologies, Chan and Associates, Inc., DataDirect Networks, Dolby, Edit Chair, Facilis, EFILM, Exavio, Fox, Front Porch Video, IBM Media and Entertainment Division, Isilon, Pathfire, Maximum Throughput, NetApp, Omneon, Panasonic, Quantum, Rourke Data, SeaChange, Seagate, SGI, Sony, Sun, Turner Broadcast, Technicolor, Warner Brothers.

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Executive Summary

This report is the seventh report on data storage and emerging applications and the fifth report on data storage and the entertainment market published by Coughlin Associates.

Data storage is a key element in the digital transformation of content creation, editing, distribution and reception. Data capacity increases, form factors, lowered product prices and growing familiarity with digital editing and distribution are key components in the continued growth and development of entertainment. Because of the large file sizes required for high resolution images there is increasing demand for high capacity storage devices. The entire content value chain of content creation, editing, archiving, distribution as well as consumer electronics content reception devices provide an overall accelerating feed-forward mechanism. This drives growth in data storage for entertainment content applications.

For many archiving and distribution applications where content is relatively static low cost/high capacity ATA storage, optical disks and tape-based storage libraries will predominate.

Access density requirements and increasing volumetric density requirements for storage systems used for content creation, editing, archiving and distribution drives the use of smaller form factor storage devices in this market. It may also open up additional requirements for the various elements in the high end storage hierarchy.

We list some key points of the report in the following list.

Key Points

- Creation, Distribution & Conversion of video content is a huge demand driver for storage device manufacturers
- As image resolution increases storage requirements explode.
- The development of HD TV and other high resolution venues in the home and in mobile devices will drive the demand for digital content
- Between 2008 and 2014 we expect more than a 12X increase in the required digital storage capacity and over 16X growth in storage capacity shipments per year (from 2,424 PB to 39,722 PB).
- About 85% of the total storage capacity will be used for content archiving and preservation in 2008. We believe that this will increase to 97% of total capacity by 2012 due to improved ROI on converted content and lower costs for conversion and preservation.
- In 2008 we estimate that 57% of the total storage media shipped for all the digital entertainment content segments was tape with about 32%

optical, about 7% hard disk drives and 4% flash memory (mostly in digital cameras and some media distribution servers).

- By 2014 tape units will increase to 61%, optical decline to about 15%, hard disk drives increase to 19% and flash increasing somewhat to 4.9%.
- Total revenue for storage media will increase more than 2X from 2008 through 2014 ($387 M to $807 M)
- Total revenue for content and distribution storage will increase about 2.8X from 2008 through 2014 ($3.5 B to $9.9 B)
- The single biggest application (by storage capacity) for digital storage in the next several years as well as one of the most challenging is the conversion from film and other analog formats to digital content
- Over 13 Exabytes of digital storage will be used for digital archiving and content conversion and preservation by 2014
- The creation of content retrievable databases make new distribution models possible
- Adoption of digital cinema is proceeding apace with theater subsidies established and using the DCI standards
- There is a pressing need to develop policies and procedures for format conversion to combat format obsolescence
- Up to 1,600 Terabytes may be required for a complete digital movie production at 4K resolution and some production is moving to some 8K and stereoscopic production. These are expected to increase storage requirements significantly.
- Non-linear editing requires high performance disk drives and increasing amounts of network storage. Over the forecast period direct attached storage will decline significantly in the editing environment.
- ATA HDD arrays are becoming the dominant mode for readily retrievable fixed content storage.
- Magnetic tape will remain as an archival media although use in other applications will lessen, particularly content capture
- Hard disk drives for “active archival” applications will begin to gain some momentum, many of these solutions will include energy saving features such as MAID
- Digital cameras using optical media, flash memory, and hard disk drives will gain momentum over traditional video tape
- Increasing demand and profitability are resulting in capacity increases and capital equipment spending by storage and component companies.
- Digital Theater projection is enabled by less expensive projection technology and inexpensive fixed content storage.

The data presented in this report is subject to change as the content storage market develops. We have additional information that we have gathered in addition to that included in this published report. We will continue to monitor and develop our models of this market as time goes on. We would be glad to work with customers on specialized presentations or reports and in general to conduct

research to answer specific questions on a project or ongoing basis.

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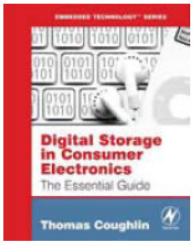

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Tom Coughlin is available for technical and market consulting on digital storage devices, systems and applications. Clients have included, Network Appliance, PriceWaterhouseCoopers, Quantum, LSI, Pillar Data, and Seagate Technology.

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