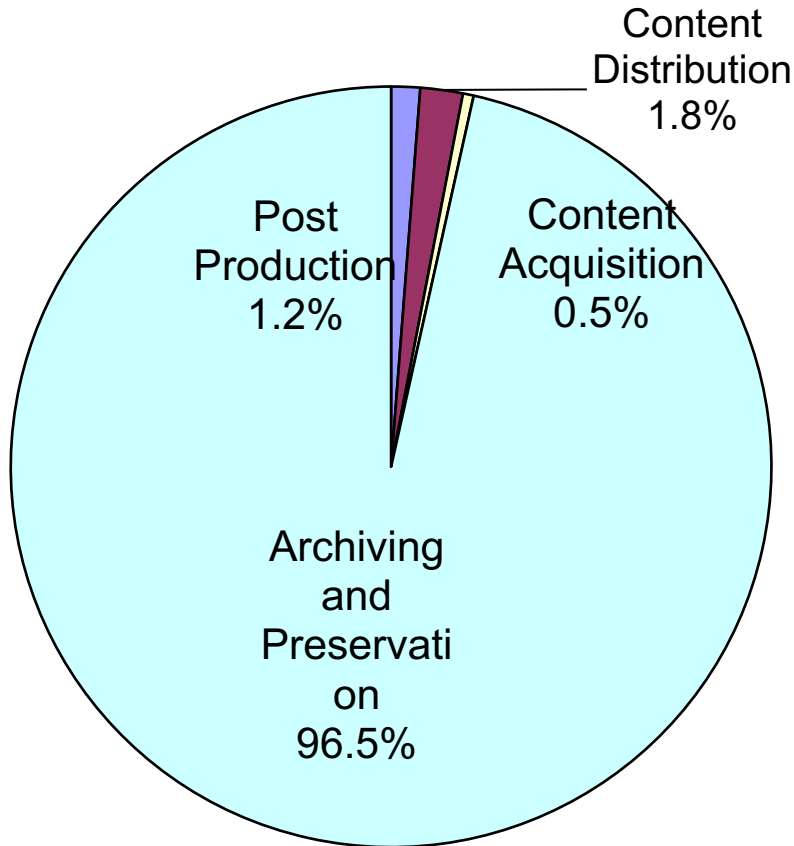




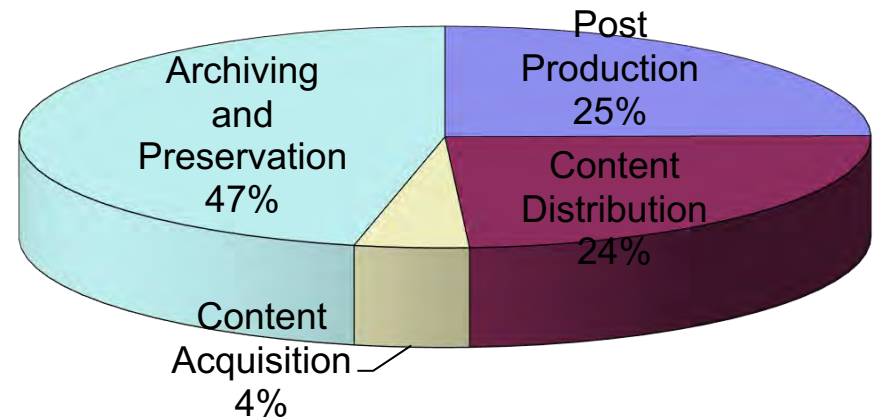
Archiving and Flash Memory

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2013 Media and Entertainment Market



**Storage Capacity
Market Share**

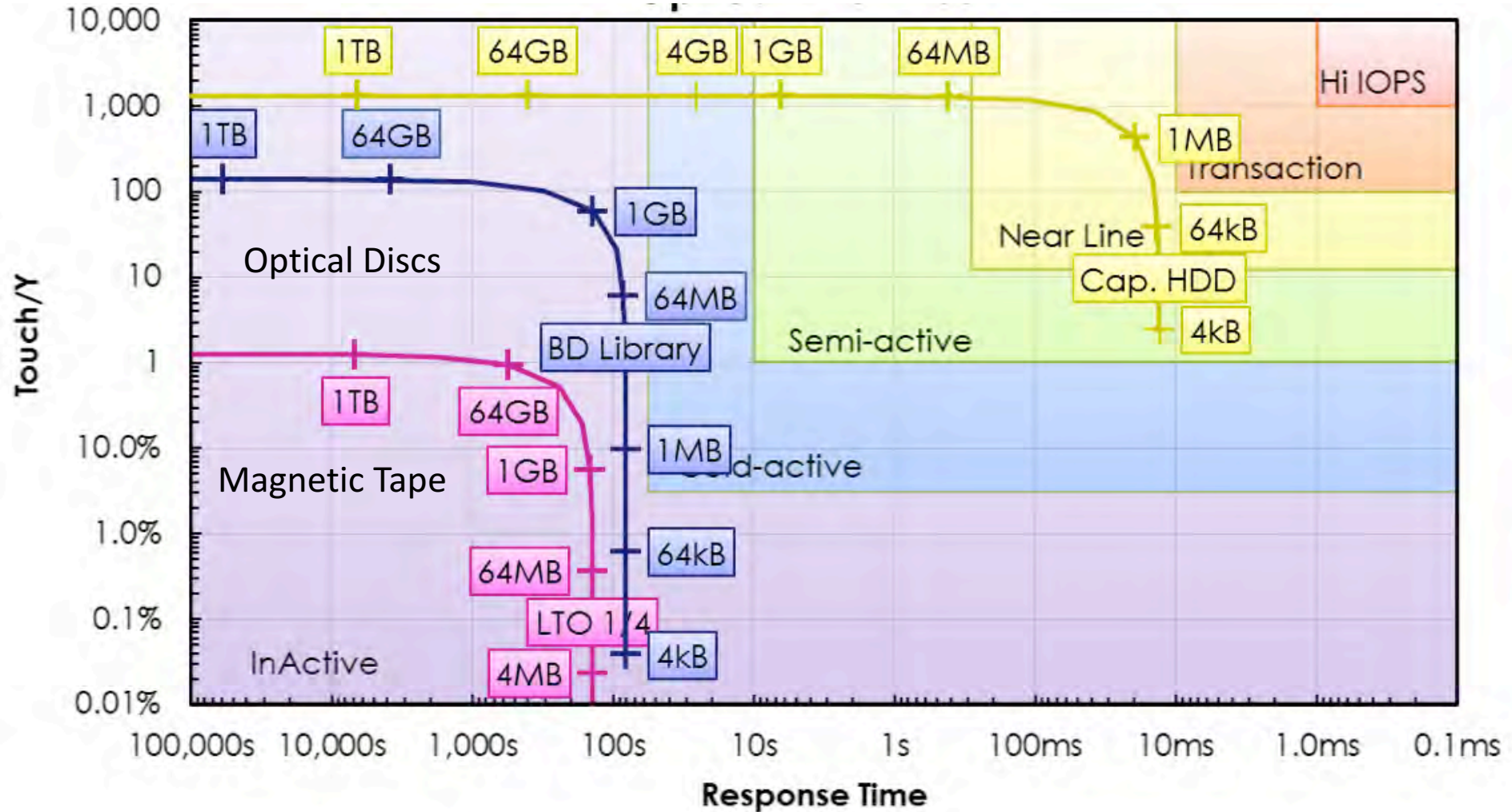


**Storage Revenue
Market Share**

Archive Storage Technology

- Traditional Archive Storage Technology
 - Magnetic Tape
 - Optical Discs
 - High Capacity HDDs (especially for active archives)
- Active Archives
 - Because of demand for access to content many archives are actually more like content libraries—they are active archives
 - Could flash memory have a role in an active archive

Comparison of archive storage devices



Flash Memory in Archives

- Flash memory is finding a role for caching content to be written or read from archive media
- Flash memory can be used to store metadata for content in an archive, allowing faster searches
- Tiering between technologies such as magnetic tape and HDDs is common in archives.
- Could flash memory fill a useful tier for an active archive—say with HDDs?

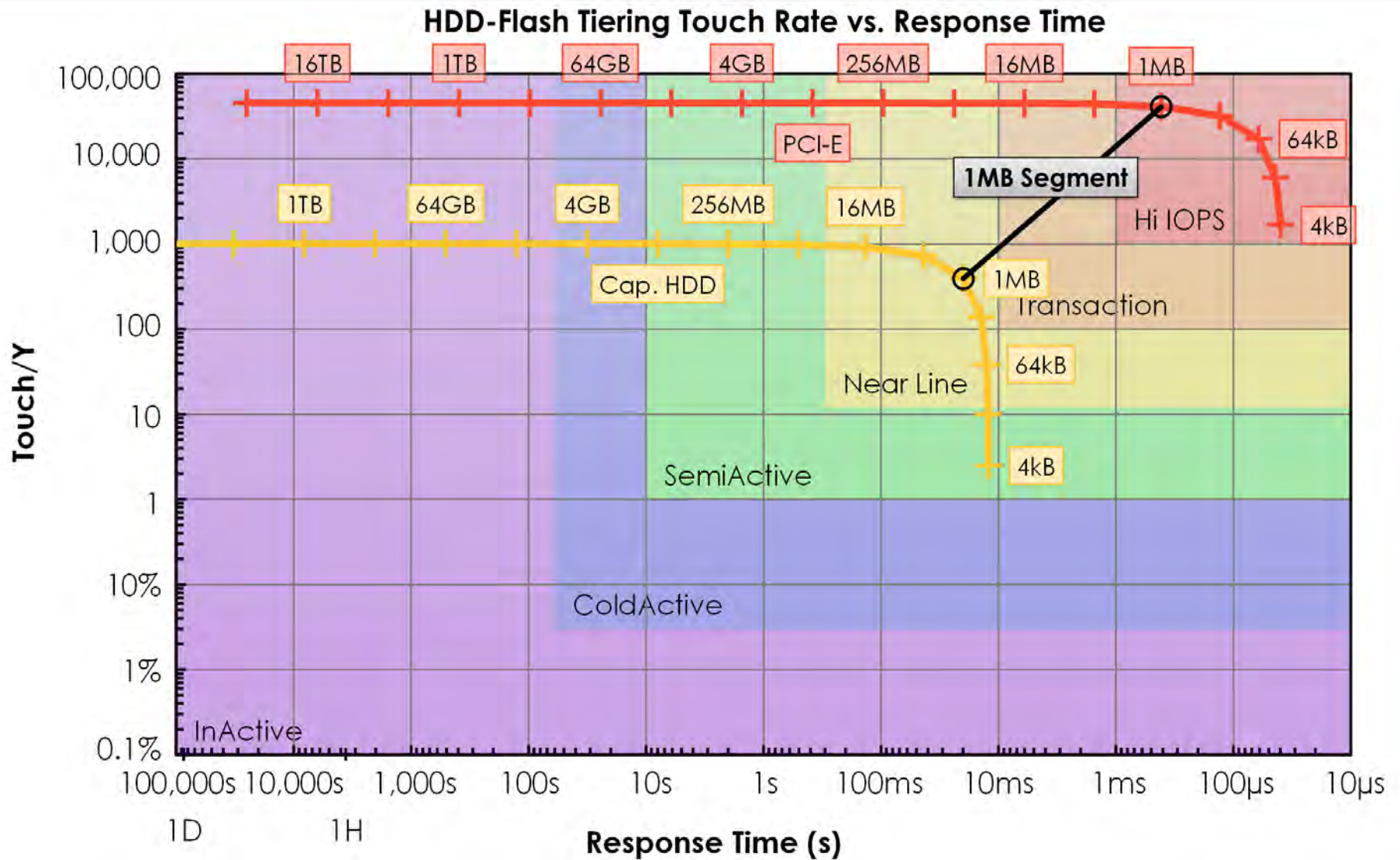
Flash Memory as an Archive Cache

- Spectra Logic introduced their Black Pearl archive appliance using flash memory to cache content to be written to or read from magnetic tape
 - Mounted magnetic tape is capable of very high data rates that flash memory can support
- Other companies, such as XenData have introduced their own versions of flash memory archiving caching appliances that can speed up writing and reading from magnetic tape

Flash for an Archive Metadata Database

- Flash memory can also be used in a media metadata database, allowing fast search and retrieval of archived content stored in a tape or HDD-based library.
- Thus, flash memory is a useful cache or metadata storage media for content archiving applications.

HDD-Flash tiering/caching touch rate chart



Flash Memory as a Performance Archive Tier

- This may make sense for active archives where the flash is in front of the HDD, giving a better performance than the HDDs could provide by themselves
- We should expect to see more flash memory serving an active archive front end in the next few years, particularly as the cost of flash memory declines
 - It doesn't take much to make a difference

Flash as an Archival Media

- At the 2013 Flash Memory Summit, Jason Taylor, from Facebook suggested the idea of cold flash memory for archive applications
- He suggested that a very low endurance slow write-once solid state storage would safe on power, have high density storage capacity and would still have higher performance than HDDs, tape or optical discs
- The problem is that this goes against the way the flash memory is made today and it would take a lot of changes to reduce the 10X+ cost difference per GB of HDDs or even more for tape.

References

- 2014 Digital Storage in Media and Entertainment Report, Coughlin Associates, <http://www.tomcoughlin.com/techpapers.htm>
- Touch Rate White Paper, Steve Hetzler and Tom Coughlin, under Special Reports in: <http://www.tomcoughlin.com/techpapers.htm>

A scenic view of a beach with waves crashing against dark rocks. The foreground is a wide expanse of golden sand. A long, dark shadow of a person is cast across the sand from the left side. The word "Thanks" is written in a white, elegant script font across the middle of the sand.

Thanks