



## What is the impact of tablet PCs on the future of the HDD market?

An analysis of digital consumption and hard drive demand



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## Summary

The introduction of Apple's iPad brought a new wave of mobile devices to the consumer marketplace. Their attractive display, ease of use, popular applications (known simply as apps), long battery life and the "new-shiny-toy" factor allowed their sales to rise to unprecedented levels – selling 300,000 in the first day of their release and 3 million in the first 80 days. Recognizing consumers' attraction to these types of devices, many other well-known electronics companies are rushing to get their product to consumers and service providers to capitalize on this rapidly emerging market. In 2011, approximately 40 to 50 new vendors are anticipated to introduce their own version of the tablet PC offering. In addition, the explosive popularity of tablet PCs has caused many to question if these flash-based products will replace HDD-based mobile PCs (laptops and netbooks) and furthermore, encroach on future HDD demand. Various analysts are predicting that the cannibalization effect on mobile PCs to be in the range of sub 10% to as high as 38% in 2011. While opinions on the near-term impact on the mobile PC segment vary, most experts agree that digital content will continue to grow at the current historical rate. IDC reported that the "Digital Universe" will grow to 1.2 zettabytes (1.2 million petabytes) this year.<sup>1</sup>

From our internal assessment, we see no sign of a slowdown in the foreseeable future and predict the continuing growth of digital content creation and replication at 54% CAGR during the next 5 years. Arguably, there will be some level of cannibalization of mobile PCs, specifically in the netbook segment. Concurrently, we are observing the rise in personal storage demand for various HDD forms ranging from external drives, home Network Attached Storage (NAS) to the use of cloud storage.

We believe that, as tablet PCs evolve to provide richer digital content spurred by new capabilities such as video conferencing as well as easier connectivity via USB to external devices, HDD personal storage demand will increase at a much higher rate than the rate at which mobile PCs with local HDD storage may be replaced by tablet PCs.

## Tablet Market Dynamics and Use Case

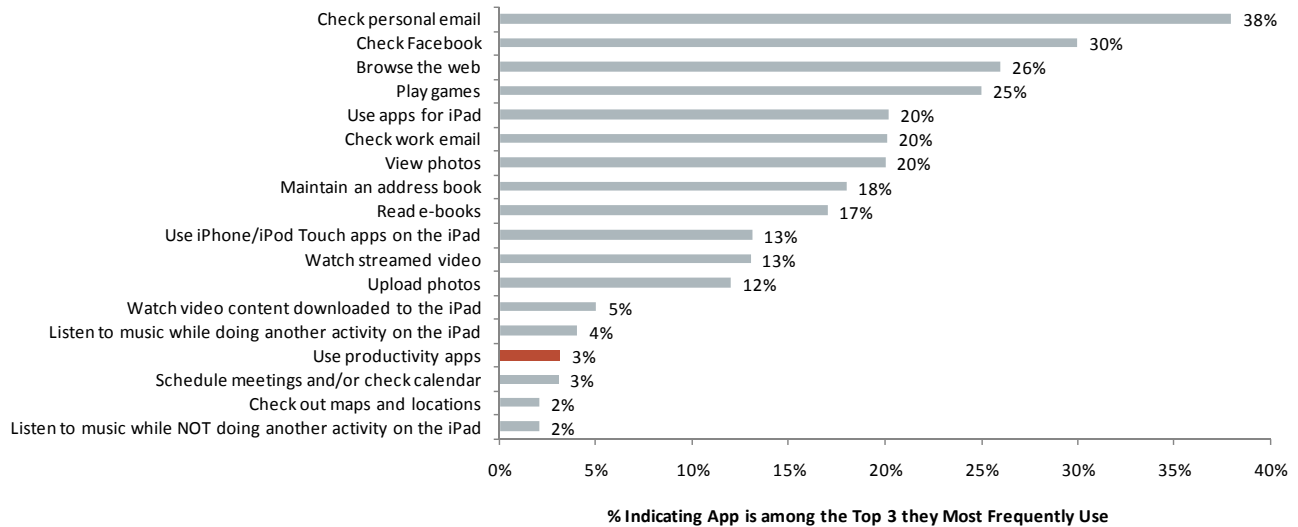
While Apple's new lighter and thinner iPad2 is already rumored to come out early 2011 with better resolution and new features like a camera for video-conferencing and picture-taking, others such as Samsung with Galaxy, RIM with PlayBook, Dell with Streak and HP with Slate 500 are all pursuing the tablet market and thereby increasing the competitive landscape. As a result, Apple's share of the market is expected to decline to a range of 65% to 75% in 2011 down from mid 80% this year. With all new vendors competing for the remainder of the Total Available Market (TAM) that is expected to grow to 40 to 55 million units next year, we expect new products will be introduced with innovative features and capabilities, a greater number of interactive applications and competitive pricing to not only differentiate their offering from other tablet PCs but from mid to low-end mobile PCs as well. We believe the primary application of tablet PCs will continue to be for mobile consumption of entertainment-based media and social networking while mobile PCs, with their higher computing power and storage capacity, will continue to function as the primary device for producing, replicating, and storing various digital content. According to a Parks Associates report (see Figure 1 for excerpt), only 3% of the users of iPad/tablet PCs use the device most often (top three use-cases) for productivity applications.

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<sup>1</sup> (IDC-IVIEW, Sponsored by EMC, "The Digital Universe Decade - Are You Ready?" Doc.# IDC\_925, May 2010).

## Most Used iPad/Tablet PC Apps (Q4/10)

"Please select THE THREE applications that you use MOST on your iPad/tablet PC."  
Among BB HHs who purchased an iPad/tablet PC in 2010, n=120, ±8.95%



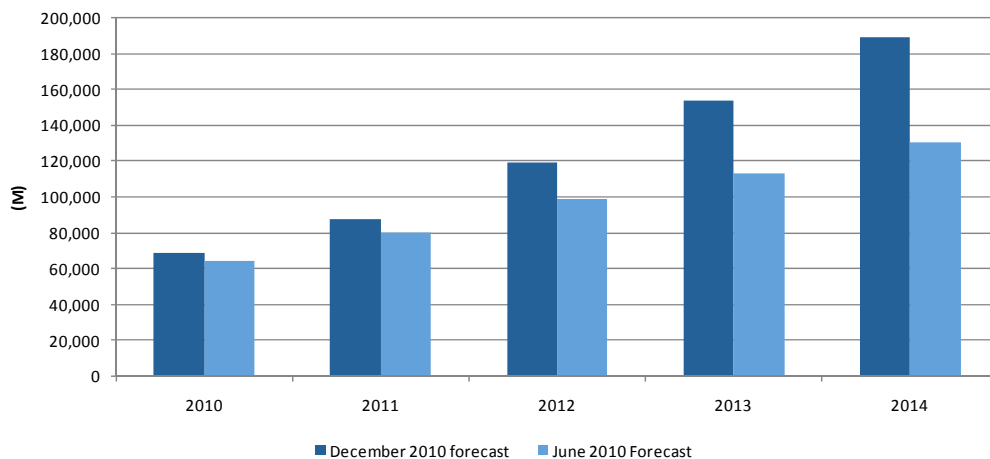
(Figure 1) Source: CDP 2010 Holiday Intentions, Parks Associates 2010

## Net Effect on Data Creation and HDD Storage Demand

In the near future, we believe tablet and mobile PCs will be used cohesively to create and consume new digital content and to access existing digital content. Various vendors are adding SD expansion slots, mini-USBs, USB 2.0 ports, micro-HDMI, etc. to their product offering. These enhancements will enable consumers to take full advantage of their personal digital content stored on a device such as the home NAS and accessing it from a tablet PC. Vice versa, any new content generated on tablet PCs can be easily transferred to a personal storage device for replication and storage. This emerging trend has been noted by IDC as they have increased their forecast of HDD unit demand for personal storage (PS) devices from June 2010 to December 2010.

## Worldwide HDD Shipments for Personal Storage Devices, 2010-2014

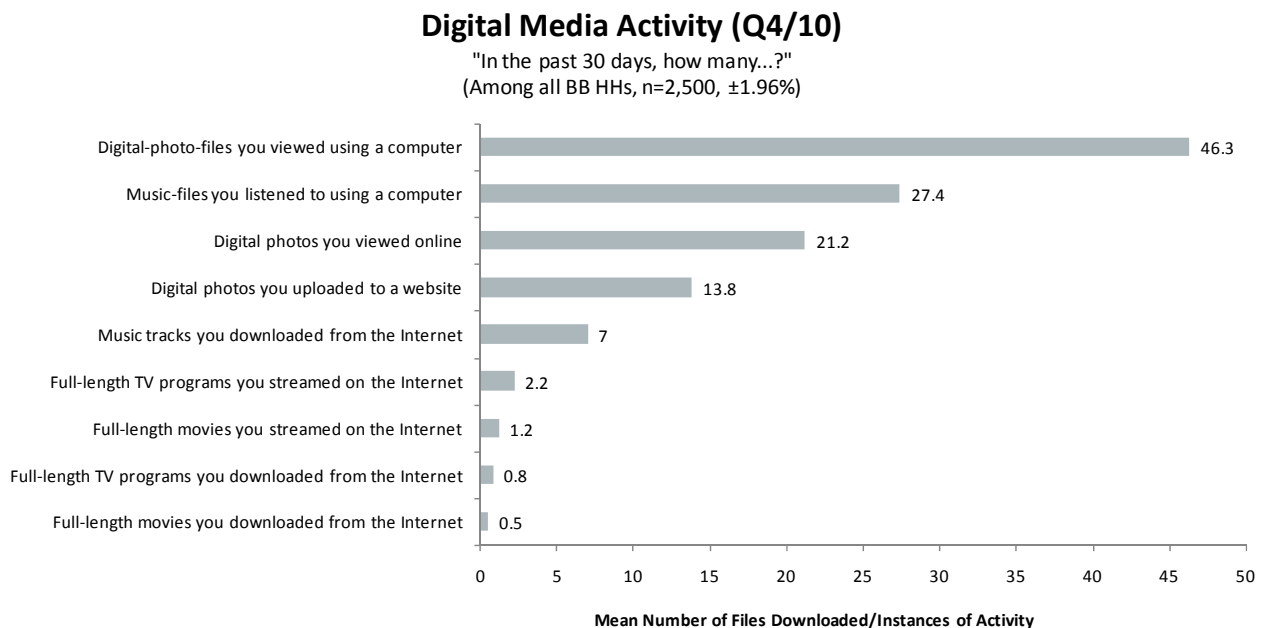
Comparison of June 2010 and December 2010 Forecasts



(Figure 2) Source: IDC, WW 2010-2014 HDD Forecast Update, IDC#226082, Dec. 2010

## Analysis

Consider the following generic example, based on the most popular media activities as surveyed by Parks Associates (See Figure 3). If a consumer initially loads a portion of their existing digital content for use on their new tablet, such as 500 photos and some videos, plus 500 songs and some apps, this is already around 6GB. Now assuming that same consumer takes an additional 100 photos with their 10 megapixel camera and some videos, as well as downloads 10 new songs plus some apps each month, this is already around another ~1 GB. Now assuming a few TV shows or a movie is downloaded in HD each week, this is another 12 GB per month. If this consumer were to continue on this trajectory of media consumption, approximately 45GB of memory/storage will be needed in just 3 months. Over the course of a year, this would be over 98GB more than the maximum capacity (64GB) iPad currently available on the market. Because of the sheer capacity needed by today's technology-savvy consumers, there will need to be a secondary storage solution – either in the form of a mobile PC, external hard drive, or a cloud-based storage service. It's safe to say, any device that can provide consumers with an easier way to generate content and transfer data will increase the need for HDD storage capacity.



(Figure 3) Source: CDP 2010 Holiday Intentions, Parks Associates 2010

## Conclusion

There is no doubt that tablet PCs will be adopted as part of the NAND flash-based mobile computing arsenal along with Smartphones, slimmer and lighter mobile devices, etc. These devices will continue to fuel consumers' insatiable desire to consume and produce data. While there may be some level of cannibalization of traditional mobile PCs near term, there is a strong correlation between the recent popularity of the new emerging mobile devices and the growing demand for HDD-based personal storage devices. We believe that tablet PCs, due to their convenience and ease of use leading to a higher propensity for data consumption and production will further increase the need for HDD-based storage capacity – in whatever non-local form dictated by technology and economics. Any cannibalization amount of mobile PCs in terms of HDD units is arguably offset by the higher increase in the HDD units required to support the personal storage demand.

## About Xyratex

Xyratex is a leading provider of enterprise class data storage subsystems and storage process technology. The company designs and manufactures enabling technology that provides OEM and disk drive manufacturer customers with data storage products to support high-performance storage and data communication networks. Xyratex has over 25 years of experience in research and development relating to disk drives, storage systems and high-speed communication protocols.

Founded in 1994 in an MBO from IBM, and with headquarters in the UK, Xyratex has an established global base with R&D and operational facilities in Europe, the United States and South East Asia.



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