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SanDisk

SSD Purchase Process and Positioning Research

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This research was initiated by SanDisk Corporation and executed by Greenberg on the behalf of SanDisk Corporation

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Executive Summary

The process of specifying and procuring business notebooks is a routine and low-interest task. However, for US businesses, SSD represents something new and valuable to the IT audience and the end-user: The issue is not if but when the technology will become mainstream.

The technology itself is not seen to solve a single problem but to offer broad incremental improvement. Successful messaging can be built on four pillars: ***Speed/Performance****,* ***Power/Efficiency****,* ***Less Weight****, and* ***Reliability.*** *Across businesses****,*** *the OEM has a pivotal role in advocating and accelerating adoption of the technology.*

Introduction

This wide-ranging study was commissioned by SanDisk to explore the broad industry issues around the introduction of SSD technology. The findings here are an extract from a larger international study and are specific to the US market. Although SanDisk initiated the project, the discussion was centered on the issues facing the category as a whole.

Research Objectives

The project aimed to provide guidance on how the SSD deployment decision process will work for notebooks in large and enterprise businesses, and to identify the key issues and individuals involved.

The research is focused on category-wide benefits of SSD technology and will be used to create messaging to IT decision makers in large companies (1000+ employees) who are responsible for purchasing notebook computers in the organization.

Methodology and Sample

Primary qualitative research was conducted in the US amongst IT decision makers (ITDMs) in enterprise and large businesses.

Four focus group discussions	*October 13th and 14th*
New York City, NY	*2008*

We spoke to respondents from a range of vertical industries, including office supplies, financial services, transportation, packaged goods, cosmetics and professional services.

Key Findings - Overview

While technology has a growing importance inside major companies, hardware is felt to be an increasingly commoditized category. PC technology has plateaued with a proven wintel combination offering gradual increases in performance and gradually falling prices. Software and data occupy far more time and professional energy for ITDMs. Although hardware selection is important to end-users, it barely registers on an IT decision-makers' priorities.

As a result, notebooks are bought and selected in a linear and predictable way, with little variation. Hardware is specified and allocated based on a narrow set of perceived user needs. In most cases, companies establish basic criteria of size, performance and weight, then align to a product road map developed by an OEM. The type of hard drive is low on a list of essential components. Service is a vital component of any purchase decision, and the OEM has a significant role in recommending and validating any new technology

There is low immediate awareness of SSD – it is seen as an expensive, emerging technology. However, SSD is seen as an inevitable development, a question of time and price, not *if* but *when*. Potential barriers to widespread adoption include an apparent trend towards 'empty' data-free PCs, called also thin client PCs, especially in sensitive industries such as healthcare and financial services. While some businesses deploy reactive security measures like online encryption and tracking, some are eliminating the risk of resident data altogether.

Of the messages we exposed, it was clear that SSD benefits needed to be close to the technology itself and framed around the individual user experience. Higher order, company-wide benefits lacked credibility for what was seen as one small component.

When SSD did appeal, it was not seen as a solution to a single problem – more an incremental improvement across a number of dimensions. There were thus four main benefit 'pillars' that supported the product's appeal:

- Performance (speed)
- Reliability

- Power/Efficiency
- Less Weight

Benefits associated with mobile usage – reliability and to a lesser extent, weight – were generally seen as more relevant.

While current cost was an issue, all respondents projected a fall in price to a point where it could be considered. There was a surprising harmony across groups and businesses around the acceptable premium: 10-15% of PC cost or $200USD, per notebook.

The brand name of any SSD installed on a corporate notebook was felt to be irrelevant. The PC OEM name was the only brand of significance to ITDMs in a purchase decision, as the PC OEM would be accountable for any issue with the component. The Intel/processor example was seen to be the only exception to this rule, and for many, an exception that was increasingly less important.

Business Context

Technology has an increasingly critical role within corporations, commanding significant resources and growing respect. While business practices may vary between industries, there are many similarities in the issues that the IT function faces. Across different types and size of business, the overall dependency on technology is rising, but there is a relative fall in the primacy of hardware, especially end-user PCs, as a business-critical tool.

The IT Decision Maker has many important projects and emerging technologies to consider – virtualization, systems integration, security, hosting, database and web-based initiatives were all highlighted. In this context, the selection and deployment of a PC is a well-worn, unchallenging, and often mundane task that is quickly pushed down the organization. This was especially marked in enterprise companies – CIOs had better things to do with their time.

Purchase Process

The purchase process for a notebook has many organizational quirks, but the workflow is conceptually similar across both businesses and countries. The process was very familiar – and had now come to be casual and loosely structured; the attitude was that the decision really came down to price once a vendor could match specifications and SLA.

For most companies, this process occurs as part of a product update within a larger existing replacement plan. In the US, the notebook replacement cycle was 2-3 years, and part of the budgeting calendar for IT generally included an allowance for a proportion of the notebook fleet to be replaced within the next financial period.

In discussing notebooks, of far greater concern to most ITDMs we spoke to was the software 'image:' the standardized set of applications and permission sets that would be installed across all corporate notebooks. This was where significant change could happen (new applications introduced, new security measures enacted, etc.) or where problems could occur (issues with drivers, server access, remote connections, etc.). The primacy of this issue in the minds of ITDMs and in the discussion served to place the limited role of hardware into greater context.

Every company we spoke with tended to have a narrow range of available notebooks, labeled in different ways depending on the culture and sophistication of the business. There were three broad organizing principles at work, and within each, there were three levels of model:

1. ROLE	2. WEIGHT	3. COST
EXECUTIVE	LIGHT	EXPENSIVE
MOBILE WORKER	MEDIUM	MEDIUM
DESKTOP REPLACEMENT	HEAVY	CHEAP

These sets of three tended to align with the product plan of each PC OEM, with pre-configured options at each level. Over and above this, there was often a C-Level 'override' when senior executives could pretty much demand, and get, whatever they wanted.

As each company began its procurement process, there was usually a phase of consultation where IT confirmed the needs of each department or division. New software being deployed might change performance specifications, as would new security policies or regulation. With this information, IT then developed an updated configuration aligned to the three levels of notebooks. This was not done in isolation however, and vendors were either passively involved (via websites, promotional materials), or actively involved, contributing different possible configurations to build into a final RFP.

Part of the process involved some form of end-user input, however cursory. Sometimes this was simply a review of helpdesk tickets and major issues, other times a more formal pilot program for certain users. But the input was treated with little respect; ultimately people were given the machine that matched the need as it was defined *for* them. One exception to this appeared to be professional service firms where end-users were often senior executives – lawyers, consultants and brokers. In these situations, user opinion and demand was taken very seriously, and the higher-end model was tailored to meet their needs.

These vertical industries represent a sweet spot for SSD in terms of both their fit with SSD benefits and their distinct end-user biased purchase process. These industries also seemed to take a more sophisticated/lavish approach to notebook procurement, selecting over-specified machines to allow for easy extension of product lifecycle, so that a planned 24-36 months could slip to 48 or 60 months without too much worry. In one extreme case, partners in a professional service firm were given a dollar allowance and the freedom to buy any machine with an OS of their choosing. Chaos appeared to be the net result from an IT point of view.

Once an RFP was issued, the process moved to evaluating different bids and testing different hardware within a corporate environment, with the appropriate software image.

The evaluation here was generally done by IT departments themselves, although trial machines were sometimes offered to senior executives. Barring equipment failures or compatibility issues, the models were then purchased.

Information sources and the role of the PC OEM/Vendor

Across all businesses, the vendor/PC OEM was the primary source of specific notebook information. US respondents tended to rely on the OEM to bring them usable new technology on a regular, predictable upgrade cycle. This could be done as part of the regular sales meetings, as a response to an RFP, through update emails and mailers, or even specific vendor events. Independent magazines, websites and consultant reports were all also referenced, but the buck always stopped with the OEM. Respondents were all confident and comfortable with their level of notebook hardware knowledge and didn't feel that there was much more to learn. Their interest, if any, was more in notebook form factor and design.

In larger companies, the decision to use a certain vendor was already made before the process began. Longer-term, larger relationships meant that it was the model more than the brand that was being evaluated. In the US, the only three credible brands for the size of companies we spoke with were Dell, HP and Lenovo, and contracts had often been switched between all of them over the years. Larger issues/contracts often determined this choice: the ability to supply globally, existing contracts for servers or other services.

The Role of the Notebook

As the deployment of notebooks continues to grow inside US businesses, the issue of data security is growing. In conceptual terms, the essential purpose (and justification) of a business notebook was mobility: Notebooks enabled managers to extend working hours and add flexibility to the workforce. However, as the form-factor has become more popular, notebooks (and the data within them) are becoming more dispersed and more at risk.

The reaction to this, and to increased regulation, is a move towards greater data security with many businesses locking down notebooks and limiting data access. In particularly sensitive/regulated industries, there is a push towards data-free, thin-client–like configurations for end-user PCs. Other businesses are increasingly wary of the liability notebooks represent, and are adopting more reactive security measure (tracking, encryption) rather than absolute prevention/prohibition.

Notebook Configuration

Across businesses, IT professionals were looking for the same basic components in a PC. Within the three-model construct of available machines, the following components were identified:

- *Weight* – screen size being an indicator of this
- *Performance* (speed) – broken down into two components:
    1. Processor, although there is less choice here, and many are just standardizing on dual core
    2. Memory – RAM. 2GB is bare minimum – some specifying 8GB

These are the top three variables. After that, the following are all considered:

- *Hard Drive* – mainly defined by capacity (100GB was seen as ample for most), occasionally by speed, and very rarely, by type of drive (HDD vs SSD).
- *Operating System* - Windows XP® was universally preferred, 'a perfect marriage' with current hardware. Windows Vista® was not widely being considered by businesses. Most were looking to skip to Windows® 7.
- *Type of optical drive*: Some standardize on r/w just because the cost difference is negligible. Others see this as a security risk, so prohibit writing ability, others exclude it altogether as irrelevant to business.
- *Security features* – locking USB ports, encryption, tracing software

- *Connectivity* – WiFi, Bluetooth and cellular PCMA (for some, fear of contract commitment, additional costs, etc.)
- *Added value* – cameras, biometrics, etc.

While ITDMs were clearly capable of making an informed decision, the reality is that many simply followed the product road map of a PC OEMs choosing the representative models from their range. A pre-configured PC suggests stability, mass production, economy, and low risk. All sweet words to an IT decision maker.

Reaction to SSD

Immediate familiarity with SSD technology was generally low, apart form a few early evangelists, informed either through access to the C-Level vanity notebooks that used SSD or Mac-air envy. However, most respondents understood what the technology was and its basic principles. In general terms, there was almost a universally positive interest in the technology. It appealed to their engineering instincts, and fit in with the general wave of technology/digitization. No moving parts are going to be better than moving parts. While respondents were wary of the current price, they saw SSD as an inevitable advance, part of a process of continuous technological improvement, helping further eliminate errors, delays and failures. It was just a question of when, not if.

Reaction to Messages

In terms of the messages themselves, there was no silver bullet in either market. Even the most committed SSD advocates saw the technology as an incremental improvement across many dimensions, and felt that a single benefit placed too great a weight on one attribute, and thus stretched credibility.

There were four strong primary messages:

- Speed
- Power Efficiency
- Less Weight
- Reliability (US)

While other messages close to these benefits had appeal for some (rugged, green, etc.), they ultimately laddered back to these core four. The messages that generally fell flat were ones that attempted to reach too high: competitive advantage, helping IT achieve goals, and TCO (with its particular slant towards productivity).

Some key messages exposed are shown below:

Reliable – Solid State Drives (SSDs) give greater protection of your company's valuable data, because they have a Mean Time to Failure (MTTF)* up to 6 times higher than Hard Disk Drives (HDDs) and are virtually impervious to shock from drops and falls.	While not universal, HDD failure was a definite US pain-point. Even one failure was seen as one too many, and this seemed to be an intuitively valid claim.
Faster performance – A notebook with an SSD boots its OS and launches applications up to twice as fast as an HDD, resulting in greater user productivity, and fewer help desk calls due to slow laptop operation.	Speed is the currency, latency is the curse – boot time and application launch are the perfect symbols of both. The second part of the benefit is less compelling – speed is a benefit in itself.
Data Protection – With a Mean Time To Failure (MTTF)* of 2 million hours, an SSD is the most reliable way to keep the data on your mobile computers safe.	Engineers quibble over data and standards but this benefit was better captured in Reliability.
Green – An SSD makes your company greener, because they run much quieter and cooler than an HDD. They consume less power, and they are light and slim.	An appealing and topical angle for many, but preferred as an implication of Power Efficient.
Power efficient – SSDs consume as little as 50% of the power consumed by HDDs, which means 10-15% longer battery life (up to 30 minutes per charge) and greater end user productivity.	Another individual pain-point that the technology intuitively would seem to answer. The green tinge helps.
Lighter weight – SSDs help lighten the load on your mobile workforce, because they weigh only 44 grams—less than half the weight of an HDD. And they fit into the latest slim laptop designs.	While the specific weight seems too small, the overall benefit speaks to desirable design and form-factor.

*MTTF up to 2M hours based on ongoing SanDisk reliability tests. The MTTF calculation does not take into account disk endurance.

Cost Premium

Whilst the existing cost premium differed there was a surprisingly consistent and harmonious opinion on how much of a premium an SSD should command. The consensus was that the technology became acceptable and mainstream at a premium of around 10%-15%, or $200USD, per laptop. The discussion on price was also instructive, as the lifetime cost of notebooks was becoming so small in relative terms: Once software and support costs had been built into the equation, the drive represents a very small piece of that equation.

Brand

The brand name of any SSD installed on a corporate notebook was felt to be irrelevant. The PC OEM name was the only brand of significance to ITDMs in a purchase decision, as the PC OEM would be accountable for any issue with any component. It was pointed out that the brand name of the component only became an issue in case of product failure or recall.

The Intel/processor example was seen to be something of an exception to this rule, although for a few, there was less absolute need for Intel, and a feeling that, again, the OEM was accountable. In either case, the Intel example was seen as inapplicable to other components.

The Challenge for SSD Manufacturers

As SSD technology becomes widely available, the task is to accelerate adoption when the price/performance ratio is at its most favorable. While there is enthusiasm for SSD, this is not a technology that is in anyway going to change the basic procurement/configuration process. The opportunity is to help PC OEMs and their customers reframe expectations about disk and data security. The risk is that SSD won't get noticed and will become just another acronym.

Recommendations

1. **Focus most on OEMs**

   The most efficient/ efficacious approach would appear to focus on an OEM push supporting them with build the right set of appealing messages for their customers. OEMs are the principal channel of information for notebooks – we know that they will sell SSD; the critical issue is how they sell SSD.

2. **Demonstrate Strength in Depth**

   The research has shown that the role of the brand is relatively unimportant in the procurement decision. With less competitive concerns, there is an opportunity for SSD manufacturers to combine resources and create a compelling case for the technology. In this environment, the industry can present clear, objective data that can help prove that SSD is stable, reliable and superior to HDD.

3. **Show OEMs what customers want**

   This research has revealed a level of dependency that customers have on OEMs that is not always obvious in such a competitive world:

   - Show OEMs what customers want and where SSD fits in, packaging the benefits of SSD for OEMs to sell in a consistent way.
   - Show OEMs the Sweet Spot: more senior mobile Information workers and information-dependent industries.

4. **Help OEMs persuade customers with the power of the crowd**

   We know customers want the reassurance of mass deployment; can SSD suppliers build a database of the companies, industries, and countries where SSD is deployed? Can we gather success stories of units shipped, GB deployed, data saved, and business won? Can major companies be asked to endorse the technology standard? Can a consortium create this as a shared resource for all OEMs and customers?