Flash SSD market adoption model in the notebook market. Why it will happen long before bit price parity or floor price kick in.

If we exclude hostile environments where only flash will survive, because of temperature or operating G force then in the current market flash SSDs are cost effective in 2 situations.

1 - at the low capacity end - where the total cost of the drive (floor price) is more important than the cost per gigagbyte. Source:- Handy - http://www.storagesearch.com/semico-art1.html

2 - at the high end of enterprise networked storage, SSDs costing $20,000 to $1 million are proving cost effective as application accelerators because they offer vastly superior random IOPs to HDD based systems. The point here is that SSDs are not replacing disk storage - but they are replacing entire servers. So a customer can typically do the same job with 3 servers which would otherwise require 6 to 10 servers. Also, in the case of end of life servers such as Alpha, or monopoly constrained architectures like SPARC - the users can get more performance using the SSD than any CPU upgrade choice available to them. Source:- Kerekes - STORAGEsearch.com

Notebooks are not in the spaces described above.

So, how will flash SSDs impact the notebook market in the short term - 3 years? - We have to divide the notebook market into 2 parts.

1 - the luggables and desktop replacements. These typically weigh 2 to 3 kg. The weight enables users to get similar CPU and disk performance to what they get on desktops. This is NOT a segment in which SSDs offer any advantage.

2 - the sub 1kg notebook market - power notebooks - used by people who have to travel a lot and fit and carry notebook, clothes etc for a week into carry on flight luggage. This is a market where power users already pay a 3 to 1 price premium to get their notebook under 1kg (compared to the luggables) but because of power and other technology constraints they are getting CPUs which are 1/3 to 1/4 the speed of what is available on the desktop.

If we look at the current needs of the market for notebooks (2) the disk size is typically 30 to 60 GB. Flash SSDs will not be cheaper than HDDs in this size range for many years. So what's the trigger event that will make SSDs attractive in this part of the notebook market.

It's not going to be cost per / bit. These customers are already paying 3 times as much as notebooks (type 1). Saving a few bucks isn't the issue.

It's not going to be increased battery life. These customers can, and often do buy bigger batteries, or the high priced notebooks already give a day of operating use.

I think it's going to be when adding the SSD increases the overall powerpoint performance by a factor of 3 say - to the same level which is only available in a notebook / deskbook which weighs 2kg more.

Let's say a notebook oem can squeeze in 16GB of high performance flash SSD to supplement a 60GB HDD either in a hybrid drive or as a 2nd miniature drive. In today's market if that can deliver an application speedup of x3 then how much of a premium are users going to pay for that?

$500?

$1,000?

So the value of the SSD is that today it can offer 3GHz CPU performance (desktop) in a sub 1kg notebook. The same argument holds true in succeeding generations as CPU speeds for both desktops and notebooks get faster. In the meantime the SSDs will get bigger too - at a faster rate than the critical applications like powerpoint development get fatter.

So, as I've said in some previous articles on STORAGEsearch.com - in the LONG term SSDs compete will head to head with processors from Intel and AMD - because fast SSDs will either enable less CPUs to do the same job, or will extend the market life of users' current systems and slow down the server / PC replacement cycle.

That summarises my insights into the disruptive impact of the SSD market - with a new twist applied to your notebook segment.