



The Market Opportunity of Solving Data Erasure on SSD

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What's Wrong With This Picture?



**Your Operating System...
Watch Out!**

Data Erasure: Full Drive vs. Selective



**BCWipe
Total WipeOut**



BCWipe



#1 Customer Challenge: Classified Data Spills

- > “Classified Spills (also known as contaminations or classified message incidents) occur when classified data is introduced to an unclassified computer system or to a system accredited at a lower classification than the data.”

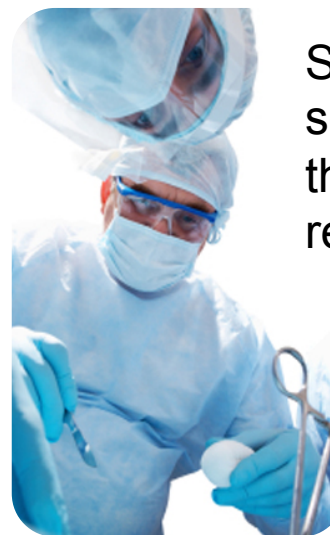
- DSS ISFO Process Manual for C&A of Classified Systems under NISPOM

- File moved to wrong location
- Accidental email distribution
- Modified document containing ‘Tracked Changes’
- DoD classification change





DoD De-Facto Standard to Clean Up Data Spills



Surgically remove selected data while the rest of your files remain safely intact

Also for Compliance...



BCWipe



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The Problem on SSD

- > Full drive erasure
 - No reliable verification (3rd party)
- > Selective erasure
 - Flash Translation Layer* (FTL) makes in-place overwriting ineffective
 - *all advanced technologies like wear leveling, garbage collection, compression, encryption implemented in FTL
 - No reliable verification (3rd party)



Proposed Solution Steps

1. Reliable identification (for device-specific wiping methods)
 - SSD model, controller and firmware capabilities
2. Logical to physical location mapping (for verification)
3. a. Read data from physical location (verify to prove no traces left)
or
b. Read physical block status ('erased' = no data can be recovered)
4. Write data to a physical location bypassing Flash Translation Layer (optional; would speed up process)



SNIA SSSI Data Recovery/Erase Special Interest Group (DR/E SIG)



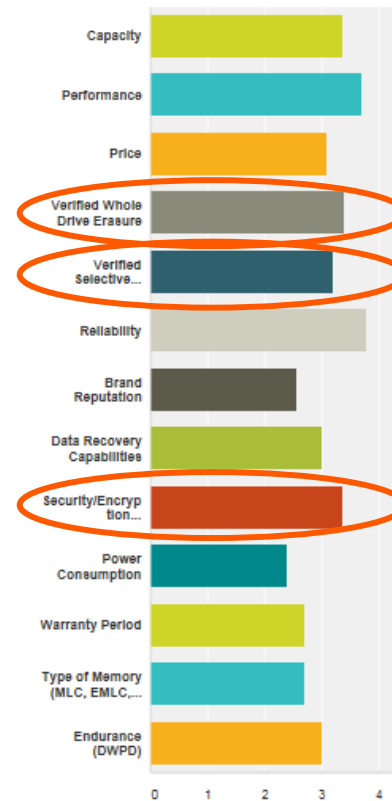
Market Survey Results – February 29, 2016

Incl. 58 organizations, each with total storage assets of
100+ devices & 100+ TB capacity



Please rate how important you consider the features listed below in your storage purchase decisions:

	Not Important	Somewhat Important	Important	Very Important	Total	Weighted Average
Capacity	0.00% 0	6.90% 4	48.28% 28	44.83% 26	58	3.38
Performance	0.00% 0	0.00% 0	27.59% 16	72.41% 42	58	3.72
Price	0.00% 0	17.24% 10	53.45% 31	29.31% 17	58	3.12
Verified Whole Drive Erasure	1.72% 1	13.79% 8	27.59% 16	56.90% 33	58	3.40
Verified Selective Erasure	6.90% 4	20.69% 12	17.24% 10	55.17% 32	58	3.21
Reliability	0.00% 0	0.00% 0	18.97% 11	81.03% 47	58	3.81
Brand Reputation	3.45% 2	50.00% 29	32.76% 19	13.79% 8	58	2.57
Data Recovery Capabilities	6.90% 4	17.24% 10	43.10% 25	32.76% 19	58	3.02
Security/Encryption Capabilities	0.00% 0	15.52% 9	31.03% 18	53.45% 31	58	3.38
Power Consumption	12.07% 7	46.55% 27	29.31% 17	12.07% 7	58	2.41
Warranty Period	5.17% 3	36.21% 21	41.38% 24	17.24% 10	58	2.71
Type of Memory (MLC, EMLC, etc.)	10.34% 6	29.31% 17	37.53% 22	22.41% 13	58	2.72
Endurance (DWPD)	3.45% 2	18.97% 11	48.28% 28	29.31% 17	58	3.03



Erasure/Security ranked high in importance, just after Reliability/Performance

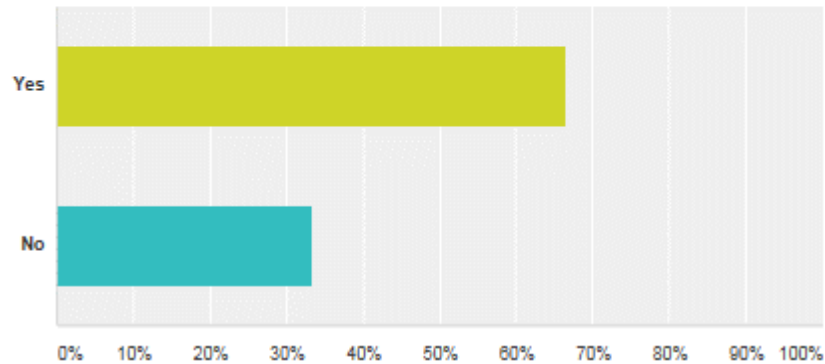




Use Case – Full Drive Erasure

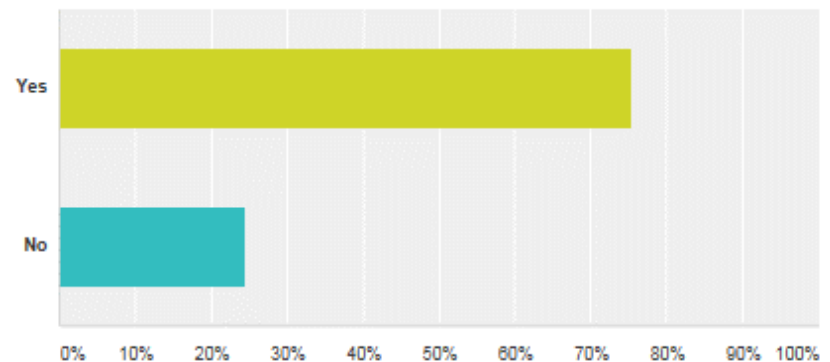
Does the absence of support for full drive erasure on solid state storage prevent you from deploying solid state storage in certain applications?

Answered: 57 Skipped: 1



Does the absence of support for third party verification of full drive erasure (when full drive erasure is supported by the device) on solid state storage prevent you from deploying solid state storage in certain applications?

Answered: 57 Skipped: 1

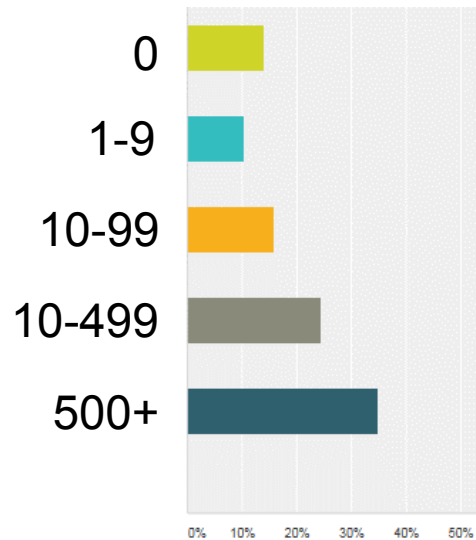




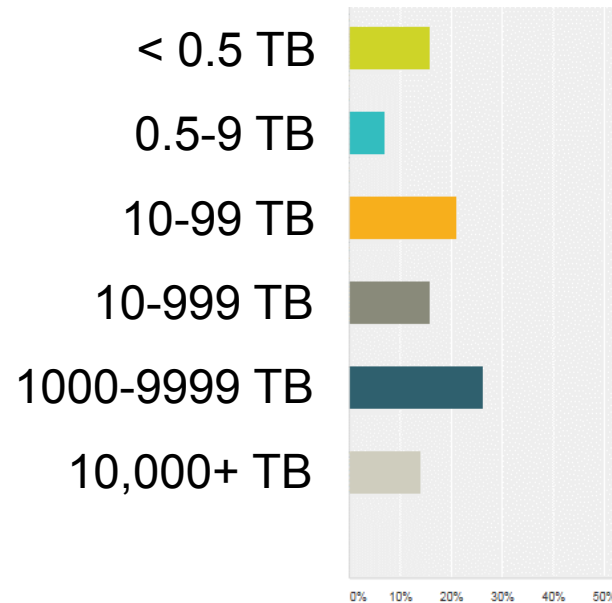
Use Case – Full Drive Erasure

If full drive erasure with third party verification were available, what is the total amount of storage you would migrate to solid state?

Number of Storage Devices



Total Storage Capacity (TBs)



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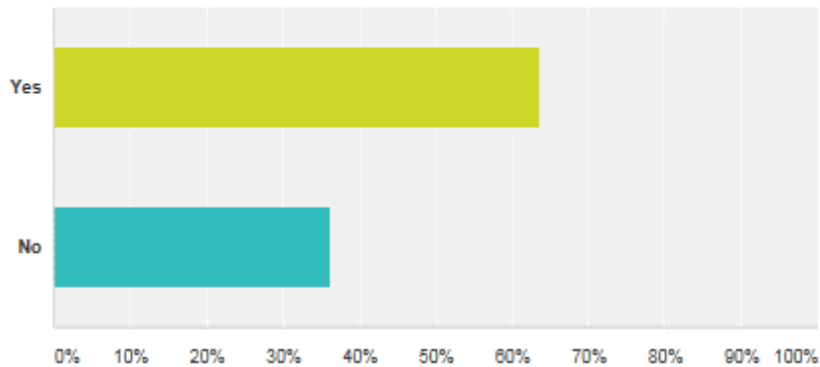




Use Case – Selective Erasure

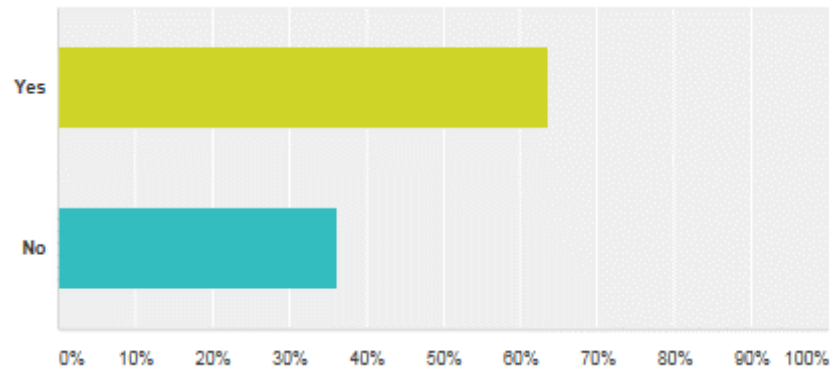
Does the absence of support for selective file erasure on solid state storage prevent you from deploying solid state storage in certain applications?

Answered: 55 Skipped: 3



If selective file erasure were available on solid state storage, would you require support for third party verification of selective file erasure operations?

Answered: 55 Skipped: 3

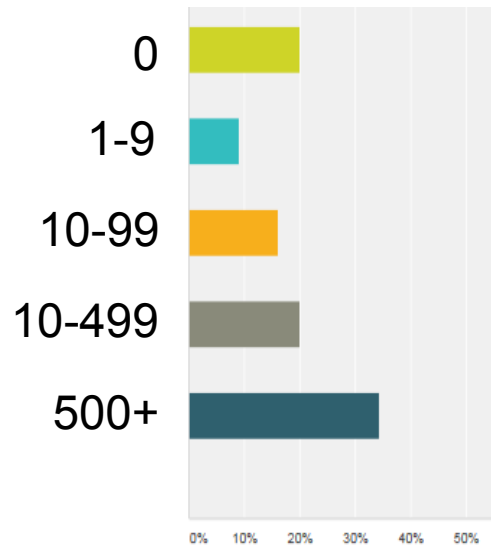




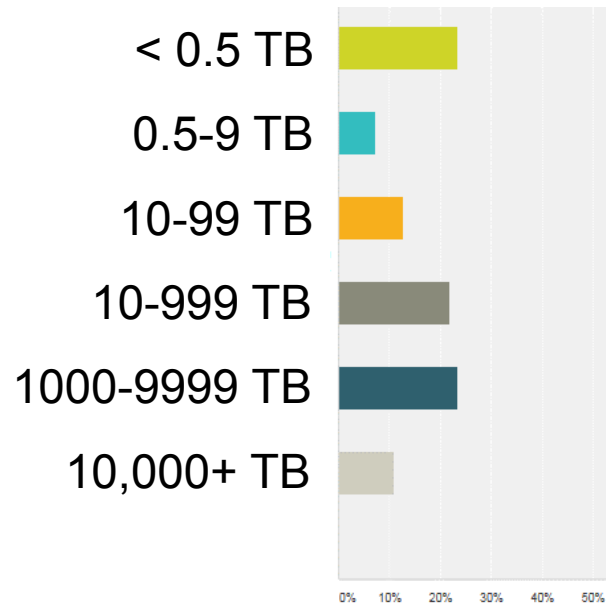
Use Case – Selective Erasure

If selective file erasure with third party verification were available, what is the total amount of storage you would migrate to solid state?

Number of Storage Devices



Total Storage Capacity (TBs)



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Thank You! So...

- Is this enough to act?
- Can we solve this?
- What are the next steps?

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