EFD (Embedded Flash Drives) Are Not SSDs

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Solid State Storage – Need Definition

- ## Not everything is a SSD
    - Market confusion when every type of SSS is counted as SSD
    - Adoption of common definition enables alignment of NAND type with usages

- ## Controller sophistication defines Storage
    - Flash Cards and USB Drives – simplest controller
    - EFD (Embedded Flash Drives) – some wear leveling, 8-bit ECC, mobile application, minor writes
    - SSD – integrates wear leveling, write amplification, 100+ bit ECC, compute centric, capable of 100Ks+ IOPS random writes, handle high capacities

- **EFDs standardize, gain volume as Applications increase**
  - EFD evolve from DOC, OneNAND, iNAND, Managed NAND to eMMC
  - Applications: Handsets (Smart phone, feature), Media Players, DVC, STB, TV, eReader, Gaming, GPS, Automotive, Printers, PC cache, Tablets +

- **EFD converge/migrate to SSD in Tablets**
  - Media Tablets consumption centric = EFD
  - PC Tablets – creation/compute = more writes = SSD
  - EFD – 2011 (55 M) ; 2014 (161 M)
  - SSD – 2011 (.5 M) ; 2014 (50 M)

- **NV Memory and Storage dedicated Market Research**
  - Founded in 2000 to qualify and quantify Flash and NV storage markets
  - Provides subscriptions on Flash (NOR, NAND) Qtrly shipments, annual demand forecast (165 applications +)
  - SSD Qtrly for Enterprise, Client, Commercial plus SWOT
  - EFD and Card annual
  - NVM Market Shares
  - NVM Emerging Technologies
  - emFlash – true embedded Flash on die with logic

- Consulting –
  - Emerging NVM
  - Business models
  - Expert Witness