



Application Note

88SE9130 HyperDuo

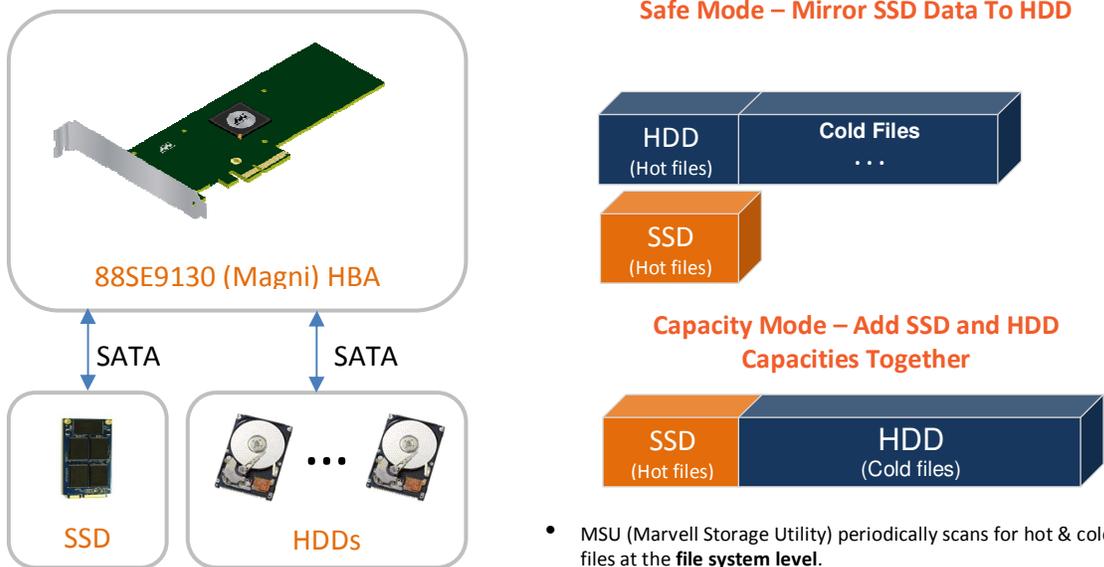
Performance and setup guide

Overview

This Application Note provides overview of Marvell 88SE9130 HyperDuo features, lab test performance result and quick steps to create HyperDuo from Marvell BIOS.

Marvell HyperDuo offers a break-through technology for new generation 6Gb/s SATA Controllers. Configured with 1 hard drive and 1 SSD, it offers an innovative technology to allow users to take full advantage of HDD- low cost, high capacity with SSD high performance benefits.

In addition, HyperDuo provides intelligent algorithms to automatically migrate hot data to SSD region while enabling all data to be safely stored on a larger capacity SATA hard disk drive (HDD).



Reference Performance Data

Since HyperDuo solution is targeted for high performance note book, desk top and workstation platforms, PCMark program is chosen for the performance comparison since the benchmark profile simulates typical PC application. (PCMark test program : <http://www.futuremark.com/benchmarks/pcmarkvantage/introduction/>)

PCMark Vantage Advanced 64-bit benchmark reference score (Windows 7 64 bit)

	SSD standalone	Marvell HyperDuo (SSD+ HDD)		HDD standalone
PCMark HDD score only	Micron 256GB 6G/s	Capacity Mode	Safe Mode	WD 1TB 6G/s
	28179	25675	15278	5580

Note: Benchmark scores are dependent on many factors such as SSD and HDD performance, chipset type, CPU speed and memory configuration. About numbers are for reference only, result may be vary on different systems.



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Steps to create HyperDuo form Marvell BIOS

1. Connect one HDD and one SSD to Marvell 9130 controller.
2. Enter Ctrl_M during Marvell Controller POST display to enter into BIOS Menu
3. Select "HBA 0: Marvell 0" and Enter
4. Hit Enter " Configuration Wizard" selection dialog box
5. Hit "Space bar" to select SSD and HDD, an "*" will appear next to the device after it is selected.
6. After SSD and HDD are selected, hit Enter
7. "HyperDuo: Safe" option is highlight. This is the default selection.
8. Hit enter, a pull down menu will appear with 4 options - " Safe", Capacity", "RAID 0" and "RAID 1"

Continue from step 8 to create "HyperDuo Safe Mode"

9. Select "Safe" mode from the pull down menu
 - **Note: Safe mode synchronizes SSD data to HDD for mirrored protection. As a result, performance will be slower than Capacity mode.
10. Moving with down key, user can highlight "Keep Original Data: yes". This option will keep HDD original data.
 - ** Note: If this option is selected, controller will do automatic background sync up from HDD to SSD which could take from 30 minutes to couple hours. During this time, performance to the Safe Mode HyperDuo disk will be degraded. Any performance testing during background initialization running will not be optimized.
11. Select "Next"
12. " Create Virtual Disk – Do you want to create this virtual disk ? " dialog box will pop up. Select "yes" and Safe Mode HyperDuo virtual disk is created.

Continue from step 8 to create "HyperDuo Capacity Mode"

13. Select "Capacity" mode from the pull down menu
 - **Note: Capacity mode augments SSD and HDD capacity without mirroring. The best performance for HyperDuo is achieved via Capacity mode.
14. Select "Next" (warning – all data on HDD and SSD will be erased)
15. "Create Virtual Disk – Do you want to create this virtual disk?" dialog box will pop up. Select "yes" and Capacity Mode HyperDuo virtual disk is created.

Windows and driver loading.

For Windows 7 and Vista, no driver is needed for SE9130 controller. Inbox AHCI driver will be automatically loaded by Windows OS supporting AHCI.

Optional Marvell Windows miniport driver and MSU (Marvell Storage utility)

Please refer to MSU User Guide. User can use MSU tool to manually move "hot Data" from non-optimize region (cold data) to SSD high performance region.

* Contact Marvell for miniport driver if Windows XP support is needed.