

The Better Way of Connecting External Storage

Oxford Semiconductor

Shenzhen, China

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Introduction

- Headline Data Rate – 1394 vs USB 2.0
- Bus Efficiency – 1394 vs USB 2.0
- Why is 1394 gaining ground?
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- Other Comparison – Bus Power, Cable Length, Application
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Data Rate – 1394 vs USB 2.0

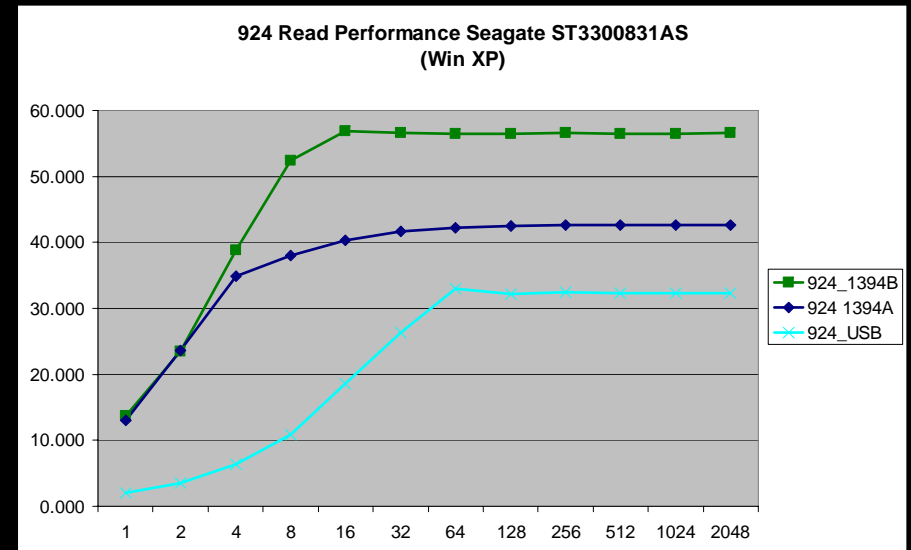
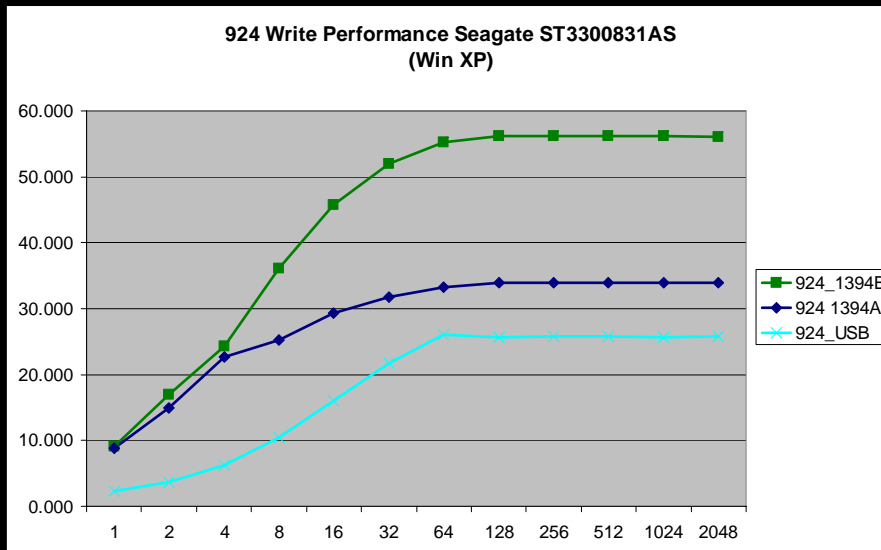
- **Headline Rate rates**
 - USB2.0 480 Mbits/s
 - 1394A (aka FireWire400) 400 Mbits/s
 - 1394B (aka FireWire800) 800 Mbits/s
- **BUT**
 - Headline data rates are deceiving & hide the actual performance of systems
 - USB uses a Master/Slave topology
 - USB Host controllers have low efficiencies low effective data rates
 - 1394 (FireWire) uses Initiator/Target topology

Bus Efficiency – 1394 vs USB 2.0

	Headline	Actual Read	Actual Write	Efficiency (Average)
USB2.0	480	264	208	49%
1394A	400	332	264	75%
1394B	800	712*	496*	76%

- Even though USB2.0 has higher headline data rates than 1394A, in reality it delivers much lower data rates due to poor efficiency

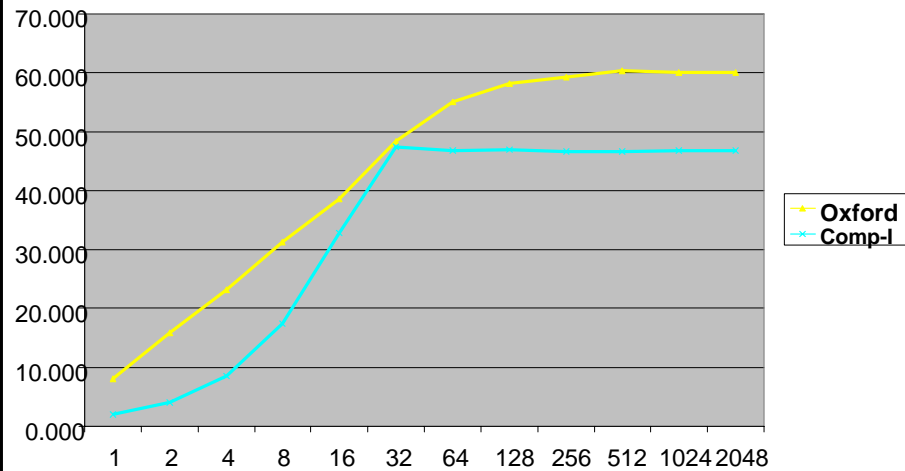
Why is 1394 Gaining Ground ?



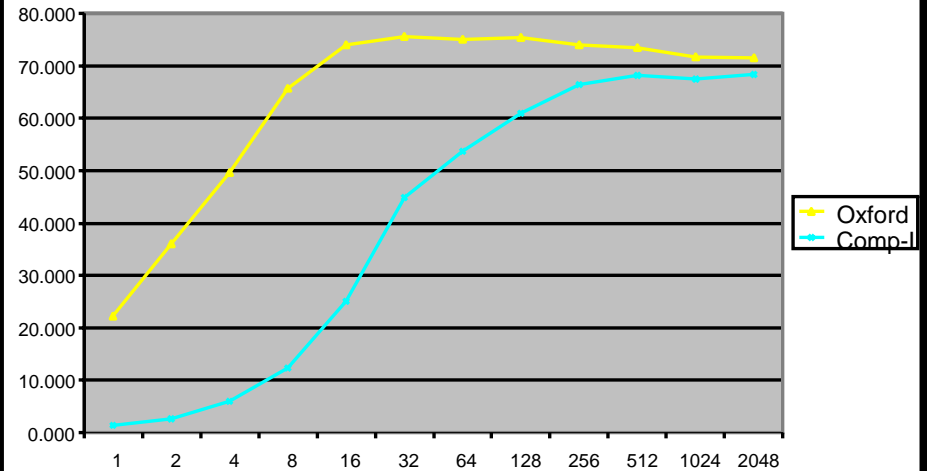
Improvements in HDD performance means that *even* for Single Disc systems USB and FW400 now become bottlenecks. FW800 has the bandwidth to meet the maximum HDD performance.

Oxford Performance with 1394B

Write Performance Seagate 7200
(Win XP)

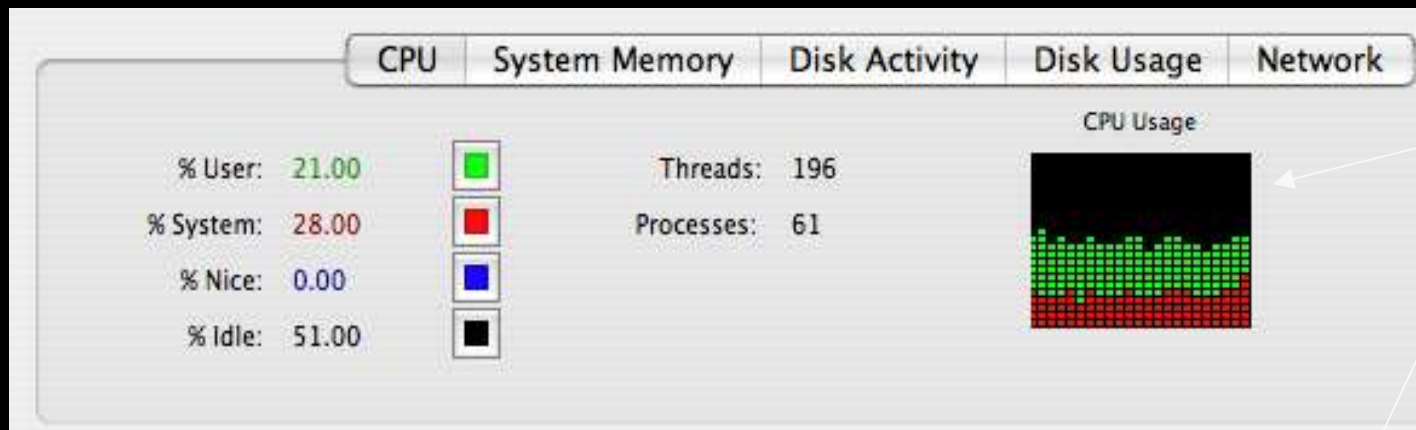


Read Performance Seagate 7200
(Win XP)



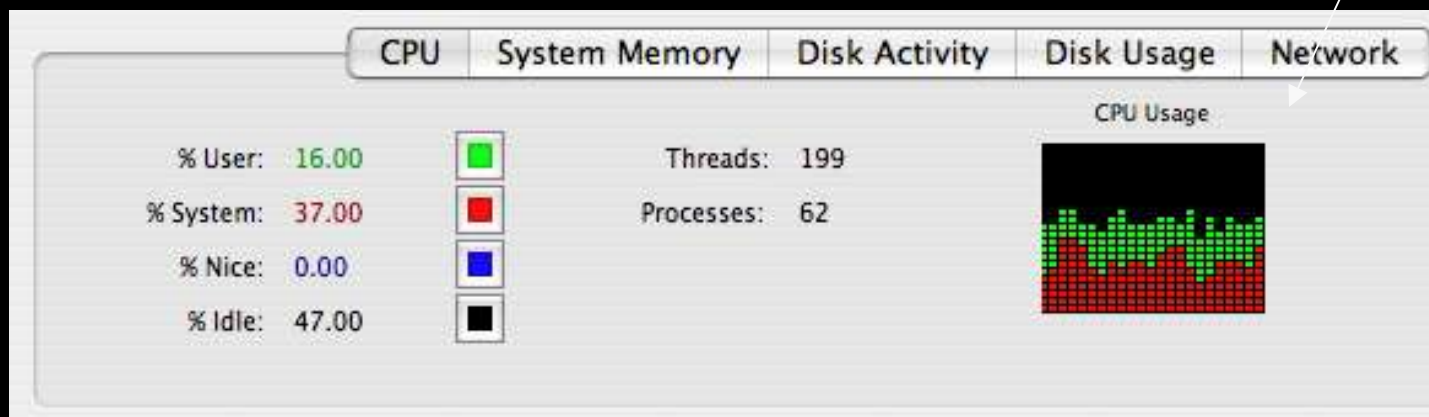
CPU Loading – 1394 vs USB 2.0

FireWire



USB2.0 has bigger average cpu loading and larger Variation in loading

USB2.0



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Other Comparison

	1394	USB2.0	eSATA
Bus Powered	8V-27V@1.5A	<u>5V@0.5A*</u>	None
Cable Length	4.5m-100m	3m - 5m	2m
Application	Various	Various	HDD Data Transfer Only

* USB Bus Power will not be able to drive 3.5" hard disk drive and will need 2 USB ports to drive 2.5" hard disk drive

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Enabling System Solutions

Storage Solutions

- Direct-Attach Storage Controllers
- Network-Attached Storage Controllers

Connectivity Solutions

- Serial Communication Bridges
- USB (Host, Peripheral, OTG)
- Network Connectivity Controllers

Emerging Solutions

- Connected Digital Lifestyle Future

Defacto Supplier of Market Leading Solutions

Worldwide Coverage



The Oxford Solution Advantage

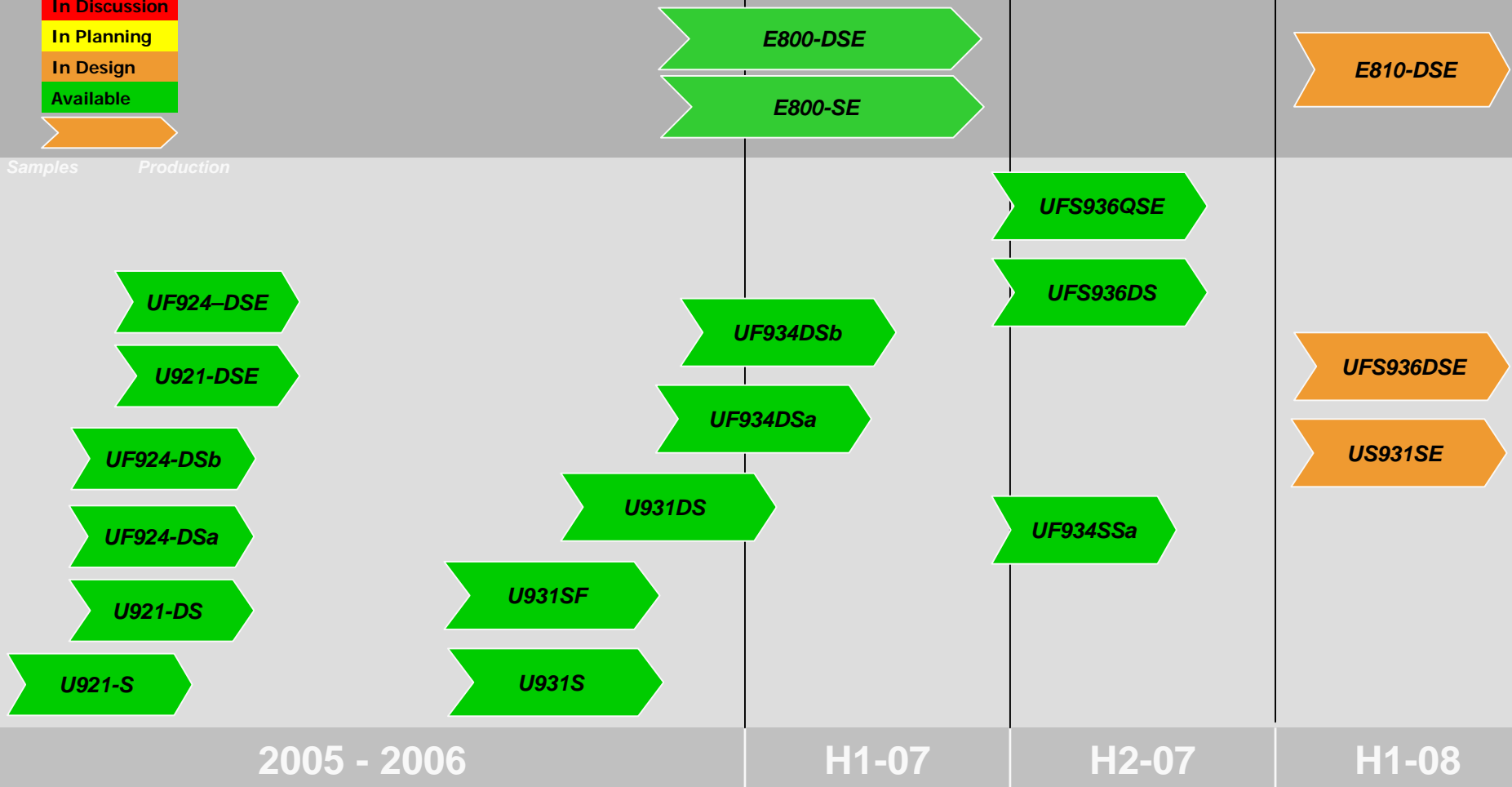
Easy to design-in, high-performance solutions...

Performance	Standard compliant, proven, high performance solutions with certified device drivers for a broad range of operating systems
Differentiation	Flexible customization and advanced feature capability
Time-to-Market	Fast time-to-market with complete platform solutions – drivers, reference designs, evaluation boards, design kits, and dedicated applications support
Quality	Eliminate risk with devices rigorously designed for reliability and verified to meet all compliance, certification, interoperability, performance, and data integrity requirements
Leadership	Over 15 years of industry firsts and high-performance leadership solutions

Oxford Semiconductor Storage Product



Samples Production



Oxford Semiconductor 93x Overview

	USB Family				FireWire			RAID controllers		
	U931-S	U931-SF	U931-DS	US931-SE	UF934-SSa	UF934-DSa	UF934-DSb	UFS936-DS	UFS936-DSE	UFS936-QSE
USB2.0										
eSATA			S-S OR DS			SATA to SATA OR dual SATA				
FW400										
FW800										
RAID 0										
RAID 1										
RAID 3, 5, 10										
Encryption										
Application	USB to SATA bridge	USB to SATA bridge with external flash for product customisation	USB / eSATA to SATA or USB to Dual SATA with disk striping	USB / eSATA to SATA bridge with encryption	USB / FW400 / to SATA bridge	USB / FW400 / eSATA to SATA or USB to Dual SATA with disk striping	USB / FW400 / FW800 / eASTA to SATA or USB to Dual SATA with disk striping	USB / FW400 / FW800/ eSATA to SATA bridge with disk striping and disk mirroring	USB / FW400 / FW800/ eSATA to dual SATA bridge with, RAID 0 or 1 and encryption	USB / FW400 / FW800/ eSATA to quad SATA with, RAID 0, 1, 3, 5 and 10 and encryption



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