

1394 Product Seminar Presentation

Shenzhen, China

April 10, 2008



Benefits of 1394 in the PC

Dave Thompson
System Applications Engineer
LSI Corporation
dave.thompson@lsi.com



3/2/2008

Agenda

- Growth of 1394 in PC's
- 1394 "by Design" Benefits
 - High bus efficiency
 - Practical Bus power
 - Guaranteed bandwidth
- Special WinXP 1394 feature
 - 1394 over IP
- Special MacOS 1394 feature
 - FireWire Target Disk Mode
- 1394 from LSI

Growth of 1394 in PC's

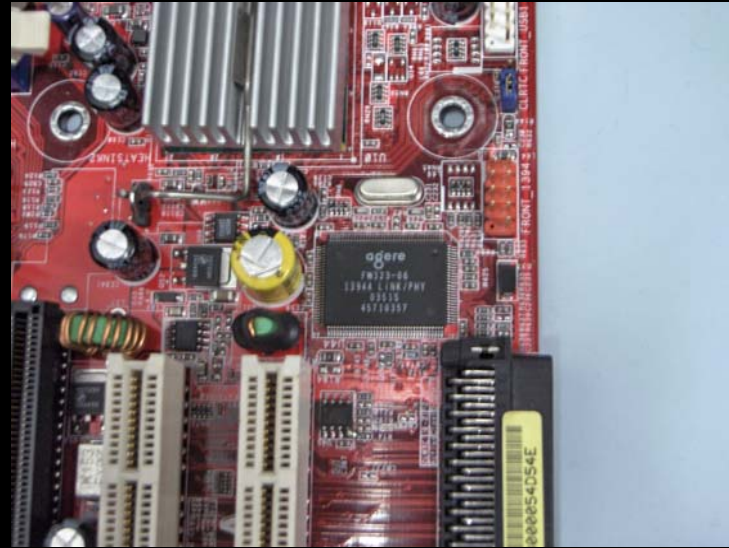
- Today-Windows PC with 1394 on the mainboard, \$325 Fantastic!



1394 started on the mainboard with Apple in the PowerPC G3 and graduated to all of the Apple platforms, early iPods and iSight cameras

Growth of 1394 in PC's

- 1394 appeared on PC mainboards starting in 2001



Now 1394 is in approximately 75% of HP's desktops and most manufacturer's Laptops

The add-in 1394 card market has expanded four-fold:

PCI cards, Cardbus Cards, PCIE cards, Express Cards

1394 “by Design” Benefits

- 1394 is a multi-purpose bus that has enabled:
 - DV camcorders to become a major consumer product
 - With guaranteed quality real time operation
 - External Hard disk/CD/DVD to become a major consumer product
 - For the first time bus powered, no power bricks!
- 1394 is a multi-purpose bus that is also best in class:
 - Data transfer benchmarks
 - Bus power for peripherals
 - Video/audio quality of service



High bus efficiency

- By its design as a peer-to-peer bus, 1394 bus control is distributed and is not confined by a single bus node
- By contrast, USB is designed to be controlled by a single host as master, polling each of the bus nodes to see if they require access to the bus
- Based on the mechanics of 1394 and USB and evidenced by dozens of benchmark reports, 1394a easily achieves 2x the bus throughput at a lower symbol rate (400Mb/sec compared to 480Mb/sec) than USB
 - A significant energy/bit transferred benefit

High bus efficiency

	Time to move 1 Gbyte of content	Time to move 10 Gbyte of content	Time to move 80 Gbyte of content (A high end Apple iPod)
I/O Interface	1000 Photographs OR 250 MP-3 (128kbps audio quality) OR 4 minutes uncompressed video	10000 Photographs OR 2500 MP-3 (128kbps audio quality) OR 3 DVD Movies	80000 Photographs OR 20,000 MP-3 (128kbps) OR 24 DVD Movies OR 12 HD DVD Movies
USB 2.0	72 seconds	12 minutes	96 minutes
Specified Speed: 480 Mbps			
Typical Speed: 120 Mbps			
1394A	25 seconds	4.1 minutes	33 minutes
Specified Speed: 400 Mbps			
Typical Speed: 320 Mbps			

Practical Bus Power for Peripherals

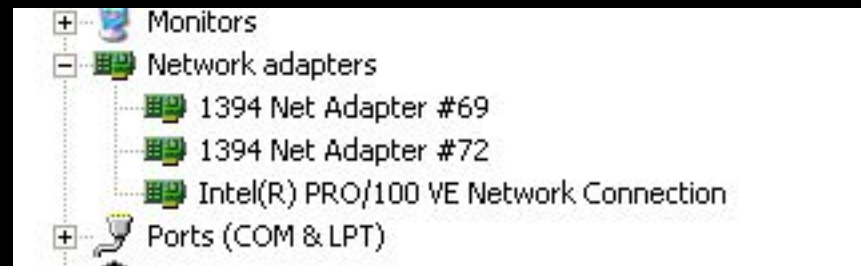
- Bus power designed into 1394 is much more than the power available with USB or eSATA, for example:
 - 1394 provides up to 30 volts +/- 10% and up to 1.5 amperes for a maximum power of approximately 45 watts!
 - USB by comparison provides 5 volts and up to 0.5 amperes for a maximum power of 2.5 watts, 1/20th the power designed into 1394 specifications
 - No evidence of USB increasing the available bus power
- This means products can be designed without the need for power bricks or power dongles
 - No more forgotten or lost power bricks!

Guaranteed Bandwidth

- Bandwidth reservation mechanisms designed into 1394 are non-existent in USB and Ethernet
 - USB and Ethernet add-on specs fail to provide solutions for more than one peripheral
- Simple experiment:
 - Plug in an active USB conferencing camera
 - Plug in a USB mouse or keyboard
 - Plug in a USB external disk drive
 - Try copying a file to the USB external disk drive
- By contrast, networks of 1394 IIDC based cameras can efficiently operate on a single 1394 network

WinXP 1394 Special

- Have you noticed the 1394 Net Adapter in Device Manager when a 1394 host controller is installed?



- Two WinXP computers can be connected via 1394 cable and can share files over the 1394 connection
 - Benefit results from IP over 1394 support in WinXP
 - All the typical ethernet applications work over the 1394 network connection

Apple OS 1394 Special

- FireWire Target Disk Mode (TDM)
 - Essentially turns an Apple desktop or laptop into a 1394 external hard disk drive (HDD)
 - Entered by holding the “T” key down during system boot
 - Useful for file transfer and backup
 - Useful for also OS disk repair

1394 Solutions from LSI Corporation

- History of High Volume shipments to PC OEMs and ODMs
 - 150M 1394 ports shipped since 1998
- Industry Leaders in 1394
- Proven I/O Standard Products, Interoperable Connectivity
- Flexible Solutions
 - Multiple standard buses supported
 - Easy speed transitions via pin for pin compatibility
- Systems Experience and Customer Support
- Proven IP Ready for Integration
 - PCIe and PCI Expertise
 - Low power, low cost designs, Small form factor packages
- Continuing Investment

1394 Solutions from LSI Corporation

- FW843 1394b Phy
 - Single 3.3v supply
 - 24.576MHz crystal
 - 84mlcc package, 0.5mm BGA planned
- FW643 1394b PCI-Express Host Controller
 - Single chip, native PCI-Express
 - Supports 8 isoc contexts, integrated 1394b phy
 - Dedicated FIFO's (8k, 4k async; 8k, 8k isoc)
 - 0.5mm and 0.8mm BGA package offerings





3/2/2008