Digital Storage and Applications at 2008 ICCE and 2008 CES

Tom Coughlin

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# 2008 CES

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External Storage 1

- External Storage was all over the CES including many mobile backup devices as well as desktop devices
- There were Direct Attached Storage (DAS) as well as Network Attached Storage (NAS)
- Several companies were showing mostly eSATA interface external storage for DVR expanders
- One company, Clickfree, showed a portable external storage device that backed up automatically when it was plugged in without backup software on the computer or a button to touch
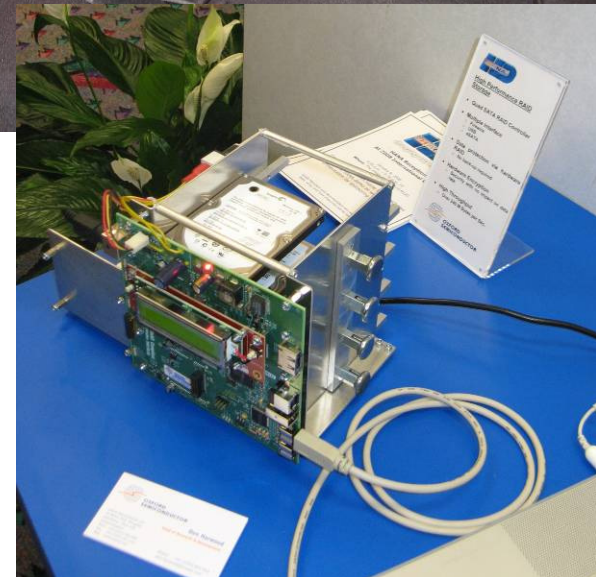
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External Storage 2

Sentry Safe
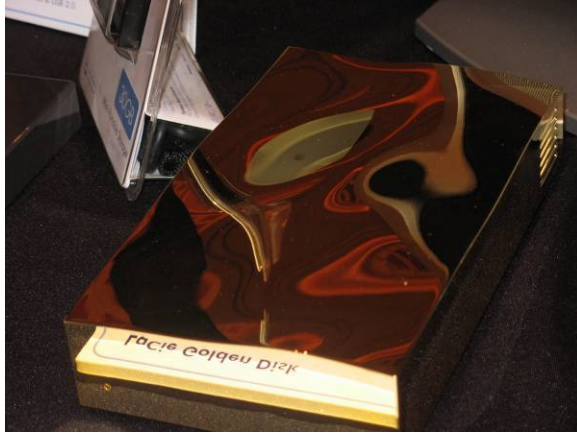
External Storage 3

Marvell Booth

Oxford Semi Prototype at MoCA Press Conference

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External Storage 4

ReadyNAS™
Duo

HD/Gaming
5GHz
Wireless-N
Networking
Kit

Netgear

DNS-323
2-Bay Network Storage
Enclosure

D-Link

DSM-G600

Wireless Network Storage Enclosure

FreeAgent Pro

OneTouch 4 Plus

2008,

Mobile External HDDs

Growing Category of
Products

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Personal Area Network Storage (PANS)

Seagate's DAVE

- A hard disk drive-based external storage device with wireless connectivity allows storage expansion, streaming and content aggregation

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Removable HDDs

Seagate Removable Drives

Imation Odyssey

- There were several products with removable hard disk drives for large capacity removable storage—these are complete drives in portable packages

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iVDR

- Seagate announced that they were joining the iVDR Alliance, promoting a format of removable hard disk drives that has been in development, primarily in Japan for the last 5 years

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iVDR 2

Storage in Set Top Boxes and DVRs

- Many HD set top boxes shown
- DVR expanders from several vendors allow DVR expansion
- Internet and home networks allow sharing content

DVR Expander

THE SLINGBOX FAMILY

Slingbox PRO

Slingbox SOLO

SlingCatcher

Slingbox PRO HD

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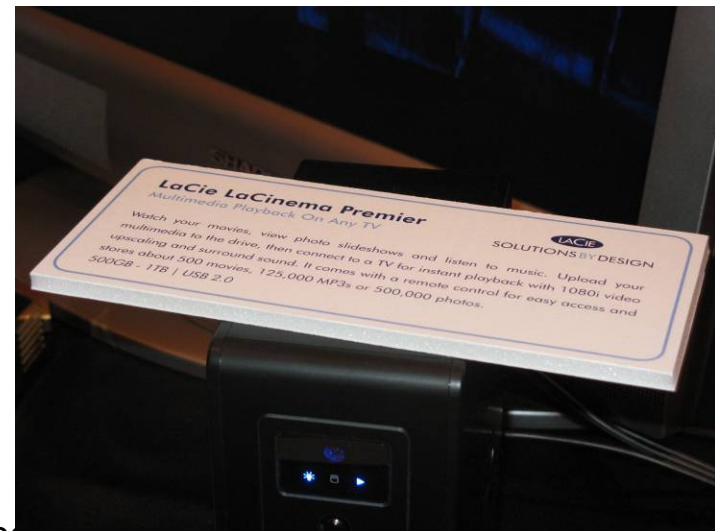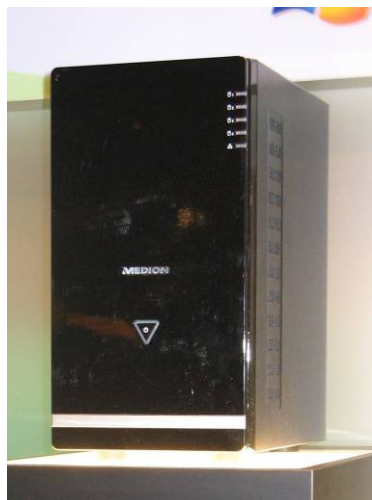
Storage in Set Top Boxes and DVRs 2

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Media Servers

- Microsoft introduced Home Media Server Software and HP used it to show a Home Media Server Product (their goal was to make this easier to use)

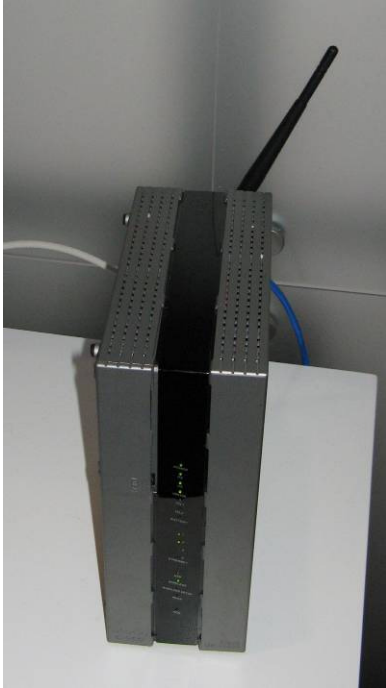- Many other companies had home media servers including some very inexpensive systems
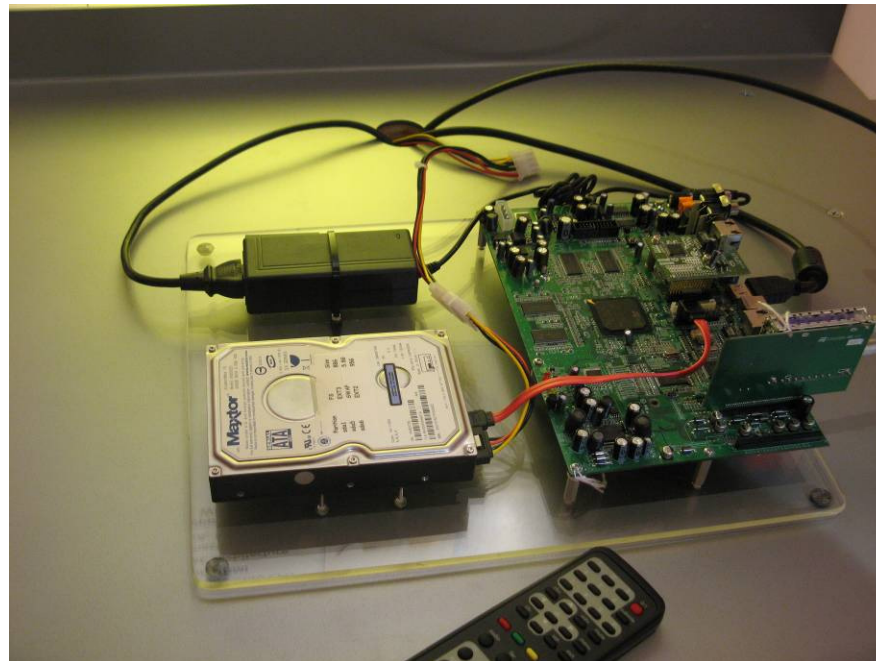
Media Servers

Media Servers 2

Cisco

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Automobile Storage

Automotive Application

Media On Demand In-Car Infotainment Solution

VMOD™ by Visualogic®
A compact, powerful computing module that combines a Toshiba automotive-grade hard drive with an Intel® processor and simple plug and play operating system that let's consumers download virtually any digital media into their vehicles. The module is paired with software and head rest monitors to offer a complete user experience in an automotive-friendly package.

TOSHIBA
Leading Innovation >>>

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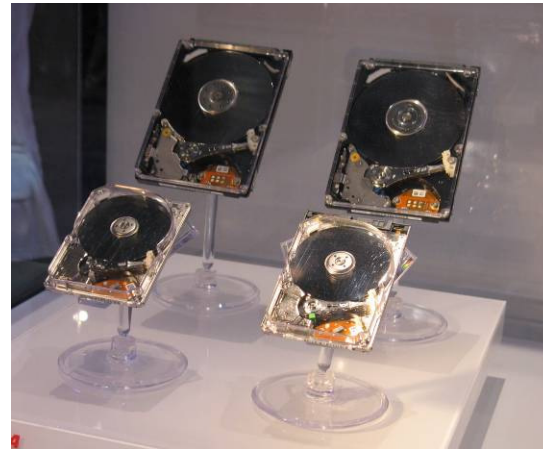# Camcorder Storage
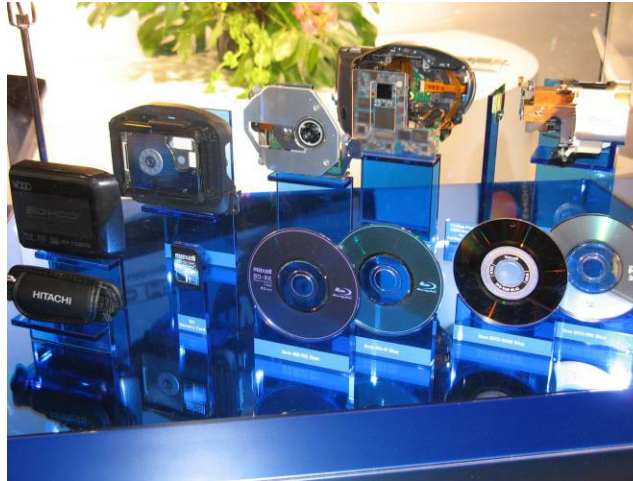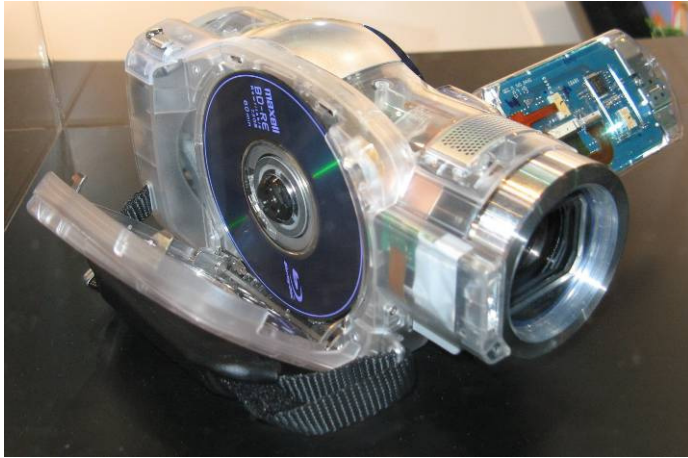
Combination
Blu-ray and
HDD
Camcorder,
Hitachi

New Breed of
Inexpensive
Flash-Based
Camcorders

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Hard Disk Drives

Seagate

PipelineHD Series

The gold standard in high definition performance and capacity

- A perfect match for high definition content with capacity that allows consumers to expand their digital content libraries while enjoying best-in-class performance
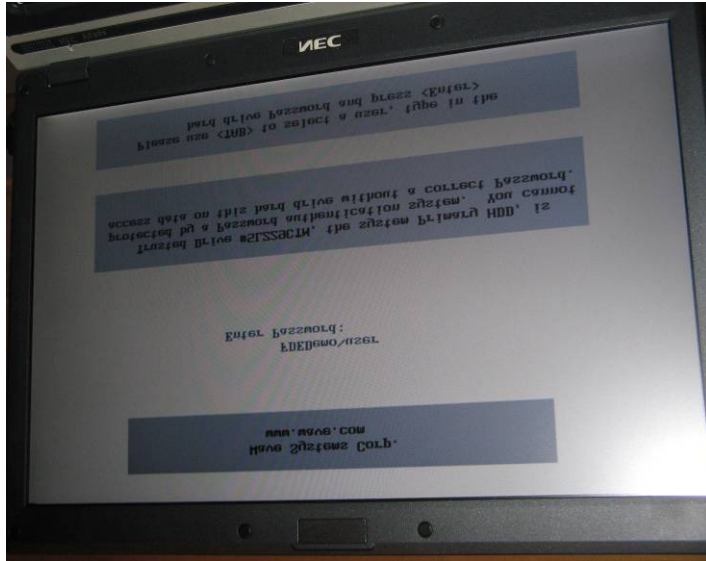- Capacities: 320 GB, 500 GB and 1 TB
- Interface: SATA

Samsung
Spinpoint F1,
1 TB 3.5-inch
drive

Toshiba

1.8 inch HDD mockup sample
with microSATA interface connect

Fujitsu

Spinpoint N2, 160GB

- Industry's highest capacity of up to 160GB
- Designed to meet the surging capacity requirements from multimedia applications
- Advanced free fall sensor enhances reliability by helping the drive to protect itself in the event the drive is dropped while functioning.

Spinpoint A1, 40GB

- Ultra compact 1.3 inch hard drives up to 40GB with 3,600 rpm
- Optimization for portable music players, mobile phones, camcorders and PMP
- Optimized System On Chip (SOC) technology consumes less power, enabling longer mobile device use times

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Hard Disk Drives 2

Seagate FDE Password Login

Maxtor BlackArmor™
Secure portable hard drive for safe transport and peace of mind

- Designed for carrying your personal information and sensitive documents
- Seagate Secure™ technology—hardware-based full disk encryption
- Automatically locks when drive and USB cable removed from PC
- 5-year limited warranty

- Seagate showed internal and external FDE encrypted HDDs

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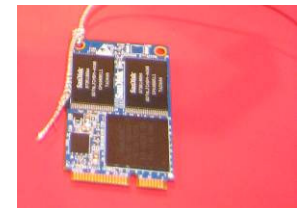# Solid State Drives (SSD)

Intel Z-P140

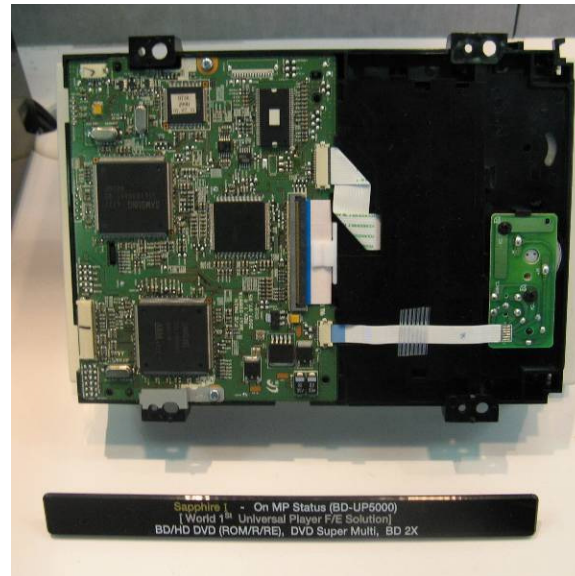Inexpensive PCs

SanDisk

Samsung

SanDisk Vaulter

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Optical Storage

- Warner Brothers announced that they were dropping the HD-DVD format and rumors were that Dreamworks and Universal could follow
- The HD optical format war may be close to resolution—Blu-ray wins

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Flash Memory
LG

Sandisk Ducati

Corsair
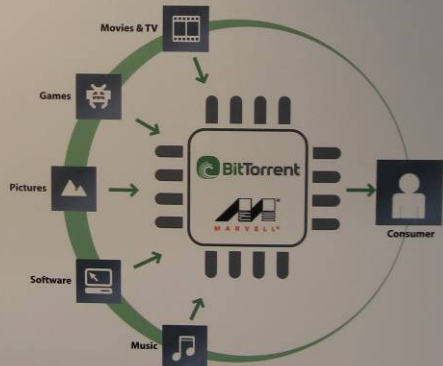
Team

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Content Distribution

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Kiosk Content Distribution

At IBM Booth

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3D HD Video

Source: Opportunities for 3D on Blu-ray Disc, P. Newton, F. Scalori, F. Bruls, Philips Research
Laboratories, Paper 4.3-6, 2008 ICCE Conference

Format	2D	2D + Depth	2D _ depth + occlusion	Stereo	Stereo + depth
Size after coding in %	100	130	150	150	180
Bandwidth (video only)	15	20	23	23	27
Playing time in min. HD-DVD	190	140	120	120	100
Blu-ray	310	240	210	210	170

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