

# Digital Storage and Applications at 2008 ICCE and 2008 CES

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# 2008 CES



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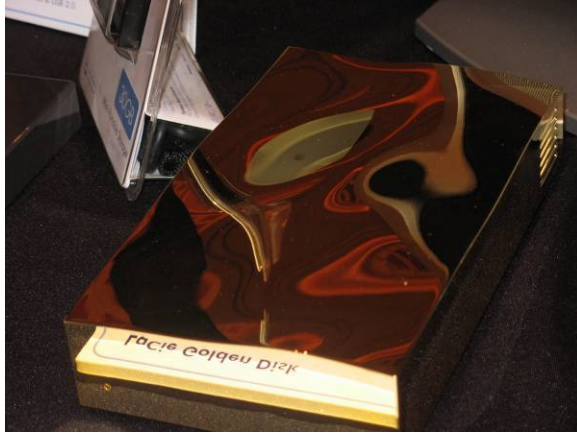


# External Storage 1

- 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



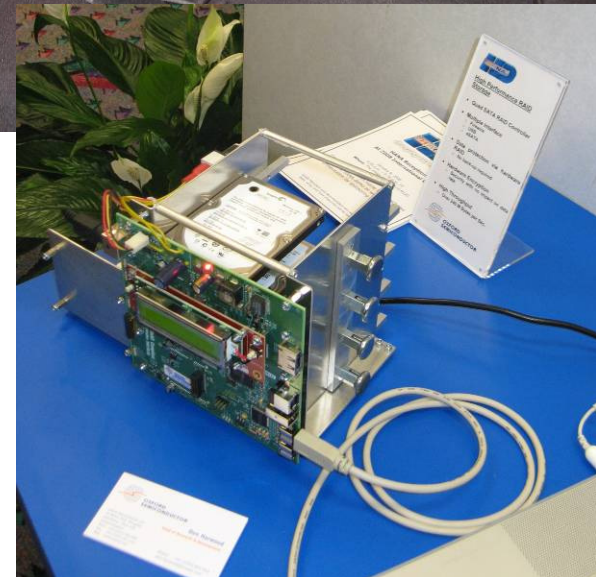
# External Storage 2



# External Storage 3



Oxford Semi  
Prototype at  
MoCA Press  
Conference



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# External Storage 4



2008, 0

# Mobile External HDDs



Growing Category of  
Products

2008, Coughlin Associates

# 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



# 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



# 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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## New Media for the Age of Full-Hivision "iVDR-Secure"

**HITACHI**  
Inspire the Next

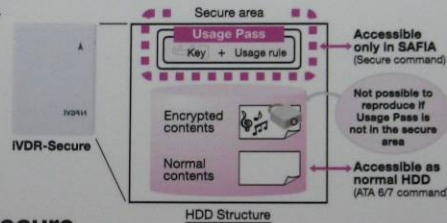
### 1. What is iVDR ?

The iVDR is new medium that provides a capability of sharing various contents, including movies, music and programs, over a broad range of devices such as information appliances, home servers, video recorders, automobile AV device and personal computers.

- iVDR : Information Versatile Disk for Removable usage  
More detailed information can be found at <http://www.ivdr.org/>.
- SAFIA : Security Architecture For Intelligent Attachment device  
More detailed information can be found at <http://www.safia-lb.com/>.

### 2. Features of iVDR-Secure with SAFIA

- (1) Contents encryption and secure transfer protocol for strong security.
- (2) Integration of contents encryption key and usage rule into the Usage Pass for secure access to contents.
- (3) Secure and high-speed transferring as characteristics of HDD.
- (4) iVDR-Secure can be used as a normal HDD.



### 3. Main Line Up of iVDR-Secure

Cartridge type (removable)			Built-in type
iVDR-Secure	iVDR-Secure Mini	iVDR Card (1.8 inch) Under consideration	(3.5 inch)

### 4. iVDR-Secure Specifications (Cartridge type)

	iVDR-Secure	iVDR-Secure Mini	iVDR Card (Under consideration)
Dimensions (WxHxD)	80mm x 12.7mm x 110mm	80mm x 10mm x 67mm	73mm x 7mm x 60mm (Temporary)
Shock resistance	More than 900G (When not in operation)		Under consideration
Environment temperature	-40 ~ 85 °C (Recommendation)		Under consideration
Connector durability	26pin iVDR original / Connect & disconnect 10,000 times		Same as iVDR-Secure/Mini (Temporary)
Interface	Serial ATA		Same as iVDR-Secure/Mini (Temporary)
HDD structure	Tamper resistant module to be arranged in HDD		Same as iVDR-Secure/Mini (Temporary)

Hitachi, Ltd.

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# iVDR 2

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# 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



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# Storage in Set Top Boxes and DVRs 2



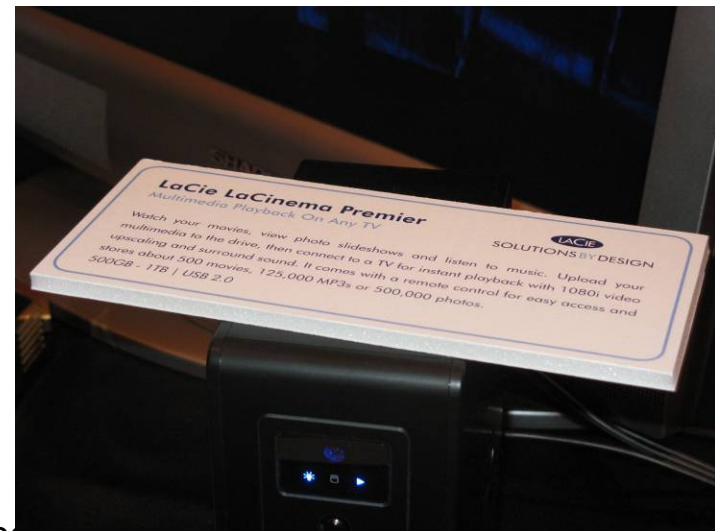
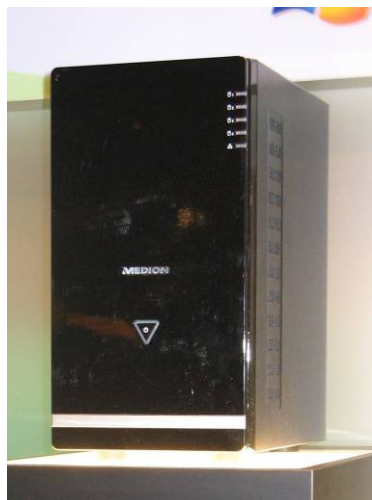
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# Media Servers

- 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

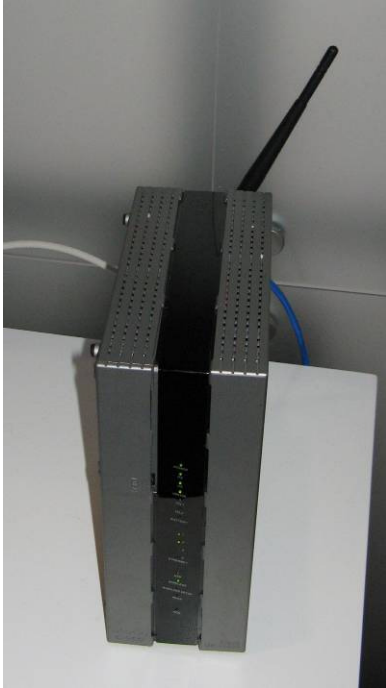


# Media Servers

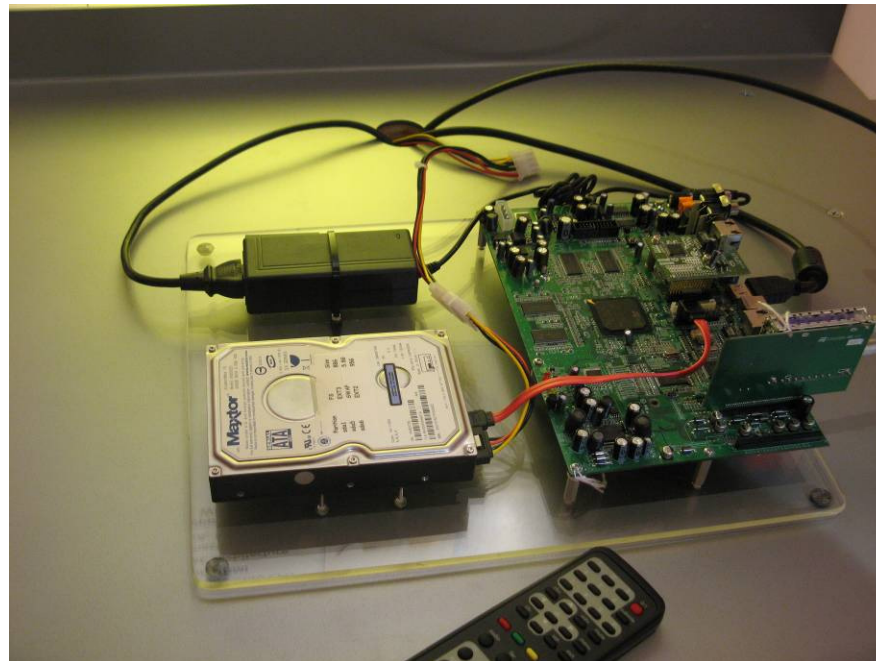


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# Media Servers 2



Cisco



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# Automobile Storage



## Automotive Application

### Media On Demand In-Car Infotainment Solution

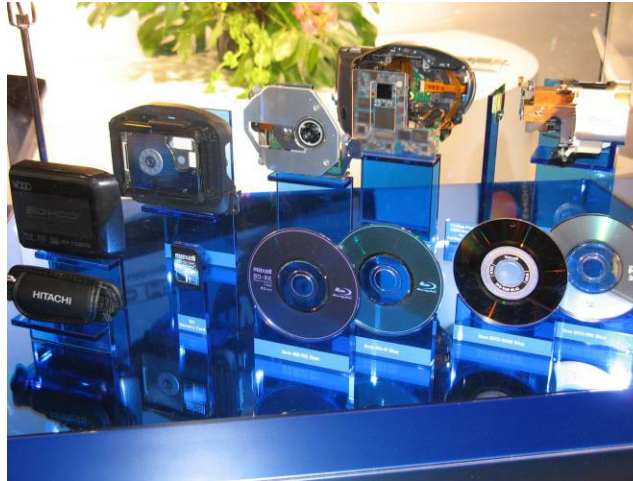
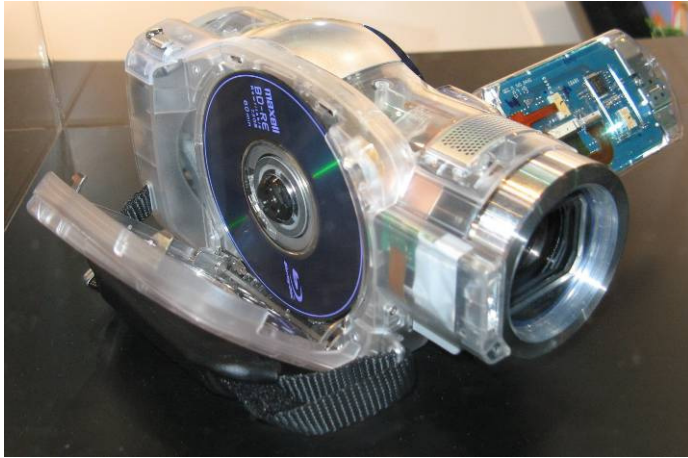
VMOD™ by Visuallogic®  
A compact, powerful computing module that combines a Toshiba automotive-grade hard drive with an Intel® processor and simple plug and play operating system that let's consumers download virtually any digital media into their vehicles. The module is paired with software and head 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

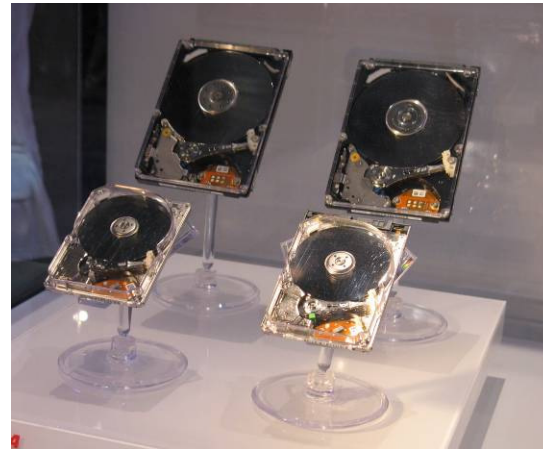
New Breed of  
Inexpensive  
Flash-Based  
Camcorders

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# Hard Disk Drives



Fujitsu



Toshiba



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

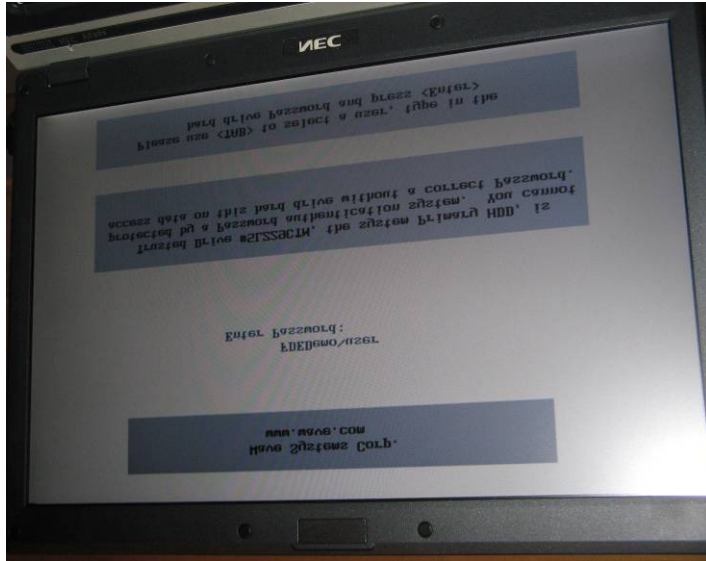
Samsung  
Spinpoint F1,  
1 TB 3.5-inch  
drive



Spinpoint N2, 160GB	Spinpoint A1, 40GB
 <ul style="list-style-type: none"> <li>- Industry's highest capacity of up to 160GB</li> <li>- Designed to meet the surging capacity requirements from multimedia applications</li> <li>- Advanced free fall sensor enhances reliability by helping the drive to protect itself in the event the drive is dropped while functioning.</li> </ul>	 <ul style="list-style-type: none"> <li>- Ultra compact 1.3 inch hard drives up to 40GB with 3,600 rpm</li> <li>- Optimization for portable music players, mobile phones, camcorders and PMP</li> <li>- Optimized System On Chip (SOC) technology consumes less power, enabling longer mobile device use times</li> </ul>

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# Hard Disk Drives 2



Seagate FDE Password Login



- Seagate showed internal and external FDE encrypted HDDs



# Solid State Drives (SSD)



Inexpensive PCs



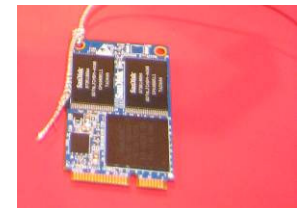
Samsung

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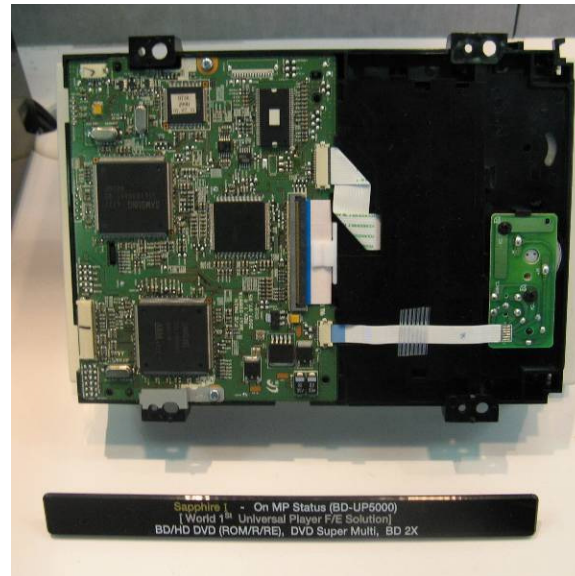
SanDisk

SanDisk Vaultler





# 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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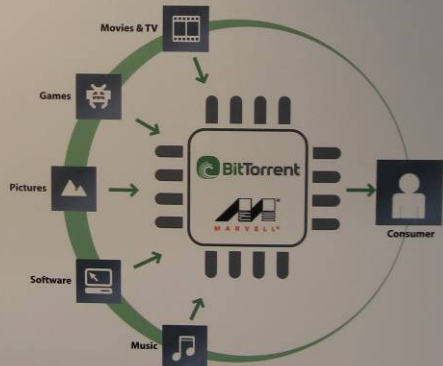


# Content Distribution

## BitTorrent Certified for Marvell



- Embedded BitTorrent™ optimized for Marvell Chipsets
  - BitTorrent file downloads without the PC
  - SHA-1 hardware acceleration for faster downloads
  - Reference web browser based user interface
  - HTTP API for easy integration on media vaults, set-top boxes or home routers
  - BitTorrent DNA™ streaming support
  - Fully compatible with all standard BitTorrent clients



MOVING FORWARD  
FASTER®



## HIPSERV™



### Software Optimized for Marvell Media Vault

- Personal digital media software platform for CPE devices such as media vaults, set-top boxes, or home gateway/routers
- Easy-to-use home network management and personal digital media server solution
- Modular operating environment and applications suite for any Marvell-based embedded device
- Securely store, manage, distribute, and share your digital photos, music, and videos from any connected device – anywhere, anytime!



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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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