



Windows

Digital Media Division

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Microsoft

Advanced Compression

- WMA audio compression

- 3rd generation advanced audio compression technology
- *Backward compatible with first implementation in 1999*
- Widely used on PCs and in CE devices
- Applications range from voice and low-bandwidth streaming to multichannel (7.1) and perceptual lossless compression
- Huge industry adoption – second only to MP3

- WMV9 video compression

- Up to 3X more efficient than MPEG-2 (HD at 6 to 8 Mbit/sec)
- Designed for HD/D-Cinema for best visual quality
- Half the MIPS requirements of H.264, only 1.5X of MPEG-2
- *Standardized at SMPTE as VC1; commercially accepted*
- Mandated by DVD Forum (HD-DVD), Blu-ray, USDTV/Voom (HD broadcast)

Enabling Technologies

From dial-up to Digital Cinema

- **Advanced compression**
 - Brings efficiency in storage and transmission
- **Digital Rights Management**
 - Copy management key to commercial content flow and new business models
- **PC/device connectivity**
 - Seamless integration between PCs and Consumer Electronics devices
 - Key to enabling new businesses and new consumer applications

Windows Media Player 10



Bold New Design

Choice of Online Stores

Choice of Devices



Smart Jukebox Features

Positive Press...



MAXIMUM PC



WMC Consumer & Retail Support

Part of the PlaysForSure™ Ecosystem



Media Center Edition eXtender

Consistent Media Center experience in the home



MCX Set Top

- Target customer: Enthusiasts and Influencers
- OEM Partners: HP and Linksys
- Launched 10/12.
- Retail price estimates: \$250-350
- 'Soft bundled' with wireless a+g router + merchandised in the MC PC aisle



MCX For Xbox

- Target customer: Enthusiasts and Influencers WITH Xbox consoles
- MS branded product
- Announced 10/12; Shelf (11/17)
- Retail price: \$79.99 for add on; total pkg w/console + wireless adapter = \$350)
- Will be merchandised in the MC PC aisle



Portable Media Center

- Family look and Feel
- Seamless Plug and Play – no drivers
- Works well with Media Center TV recording features and can synch from MCE view.
- Some content suppliers targeting content for PMC

WindowsXP Media Center Edition



WMC DRM Technology

Windows Media DRM 10 for Network Devices

- Allows device play music and video protected with Windows Media DRM
- Device streams content
 - Device cannot cache/store the content
 - Content is fully encrypted over the network
- Built on standard encryption technology
 - Secure channel: Public key cryptography – 1024-bit RSA; device is required to have a private key and it must be stored securely.
 - Content block cipher: AES with 128-bit keys supporting Electronic Code Book (ECB) and Counter (CTR) modes.
 - The hashing algorithm is Secure Hashing Algorithm 1 (SHA-1).
 - The Message Authentication Code (MAC) is AES One-Key Cipher Block Chaining MAC 1 (OMAC1).
 - Storage on the device must be provided for the DMR certificate and its certificate chain.
 - Output controls may be required for some content (e.g., CGMS-A television broadcast content).

WMC Common Scenarios

- View PC's **digital photo** collection on TV
- Stream **unprotected music** (e.g. ripped CDs) from PC to home audio system
- Stream **protected music** (e.g., MSN Music, Napster) from PC to home stereo
- Stream **personal videos** through from PC to TV
- Stream **recorded television** from PC to TV
- Stream **protected video** (e.g., Movielink, CinemaNow) through connected DVD or STB to television – or stream directly to display device

Windows Media Connect



Roku SoundBridge Network Music Player

2.0 software update now available.



Windows Media Connect



1 Simple

No Install Disks

3 Step Set-up

Manage Multiple Devices

Content from Multiple PCs

2 Safe

One-Time, One-Step Verification

Folder Sharing Rules

XPSP2 Advanced Security

Digital Rights Management

3 Compatible

UPnP and DLNA

Stream Protected Content

Supported by Microsoft

2 Options for PC Connectivity

Windows Media Connect

- Streams music, video, photos from any XP PC (w/SP2) to any digital media receiver device.
- Cannot expose the user experience of applications or services running on the PC.
- Can stream DRM protected content.
- Uses *local* device UI.

Media Center Extender

- Streams the complete Media Center experience music, videos, photos, live/recorded TV to a media receiver device.
- Can show 3rd party applications and services without changes to the receiver hardware.
- Can stream DRM protected content.
- Uses the *Media Center* UI.

E-Home Collaboration



Home Media Experiences



Content Protection / Rights?



Independent Distribution Scenarios

- Broadcast
 - DVB-T, DVB-S, DVB-C
 - DAB
- Internet Streaming
 - TCP, UDP, RTP, RTSP, HTTP
- Mobile
 - DVB-H, GPRS, 2.5G, 3G
- Physical Media
 - CD, DVD

Microsoft's Consumer Media Vision



Windows
Media Player



Digital Media
Devices



Networked
CE A/V Products

Automotive
Entertainment Systems



Mobile Phones,
Smart Phone,
Pocket PC



Portable Media
Centers



MCX Devices



Media Center
Edition PC

New Media Investments in '04

"Crescent" Wave



Windows
Media Player
"Crescent"



MSN Music



Portable Media
Centers



Next Gen
Devices with
"Janus" /MTP



New DM
SmartPhone
PPC



WMC for
Networked
Digital Media
Receivers

"Symphony" Wave



MCE
"Symphony"



MCE to TV



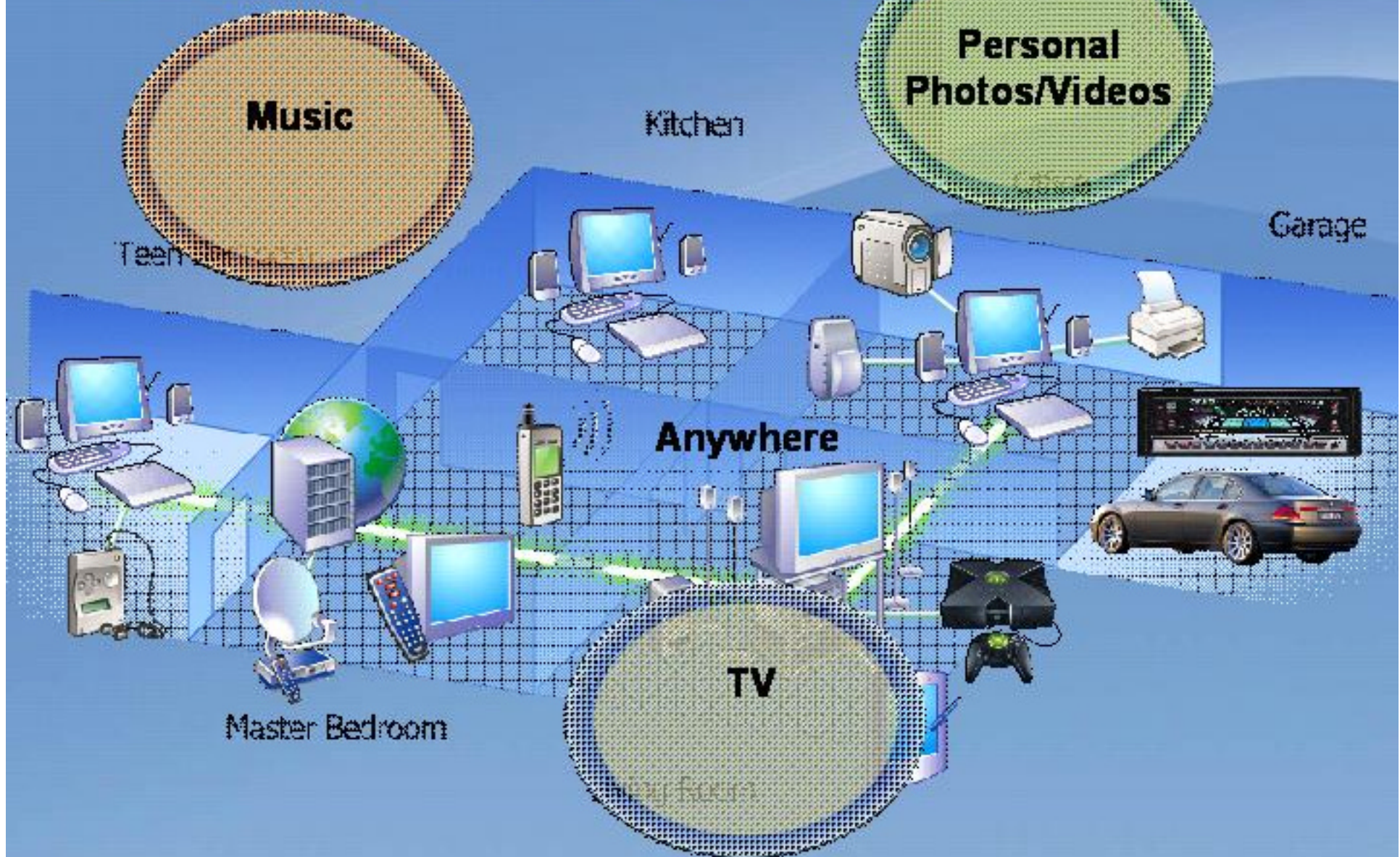
MCE "Extender"

MCE on XBOX



MCE-TVs

Consumer Vision for Media



Evolving Role of the PC



Productivity tool

Entertainment device

Reasons for change

- Ever increasing power/capabilities
- Electronic delivery of content (i.e. Internet)
- Flexible and easy storage of digital content

Digital Transformation



Film

DVD
High Definition
Interactivity
Online Distribution



Television

Digital TV
HDTV
IPTV



Consumer Devices

Multi-function
Intelligence
Networking



Cell Phones

Data Services
Multimedia
Intelligence



Photography

Film → Digital
Instant Gratification
Sharing Online



Music

Surround Sound
Online Distribution
Albums → Singles



Networking/Delivery

Broadband
Datacasting
Wireless Home Networking

The Digital Media Lifestyle

Michael Bohlin
Digital Media Division
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