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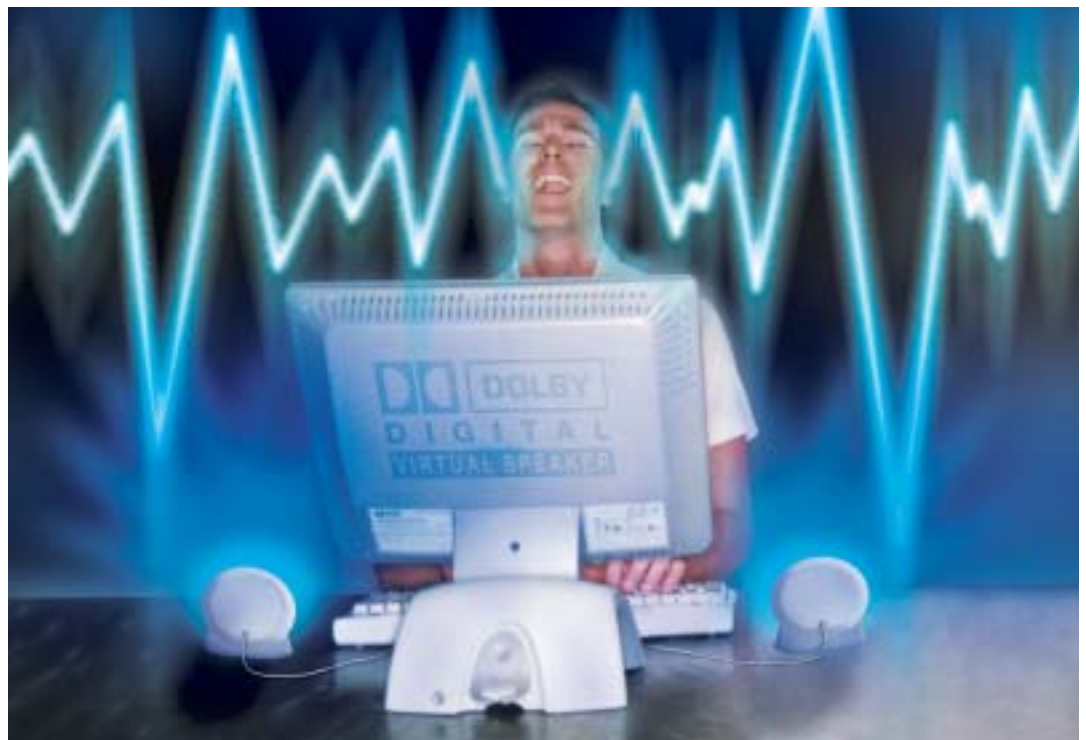
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New Dolby Virtual Speaker Technology Arrives



Dolby's newest innovation is Dolby® Virtual Speaker technology, a powerful next-generation signal process that provides believable, realistic 5.1 surround sound from as few as two speakers. It is ideal for incorporating into products such as PCs, TV sets, DVD players, and game consoles that have, or are likely to be used with, a two-speaker stereo configuration.

This technology was publicly announced in October 2002 at the Tokyo PC World Expo. Several major PC companies have already committed to incorporating it into their new products, and are likely to market and promote it aggressively to their consumers.

What it does

With Dolby Virtual Speaker technology, advanced psychoacoustic techniques are used to recreate the experience of listening to a complete 5.1 multichannel speaker system, using only two conventional speakers.

The proprietary new Dolby Virtual Speaker process convincingly creates the illusion of precisely placed surround speakers in the listener's room, transforming TV and movie viewing, gaming, and music listening into rich and exciting home cinema experiences.

When a surround sound speaker setup is not practical, only Dolby Virtual Speaker technology will deliver an accurate, natural, and realistic home cinema experience from multichannel programmes, as intended by the directors, sound mixers, and artists. The system's ability to work with Dolby Pro Logic® II, as well as Dolby Digital decoding, also enables the listener



continued on page 2

Micronas Enhances TV Audio with Dolby Pro Logic II

Semiconductor manufacturer Micronas is going to make Dolby Surround Pro Logic® II decoding available in the MAS 352yH range of Micronas TV audio coprocessors. Along with the successful MSP multistandard sound processor, the MAS forms a complete audio solution which brings Dolby Pro Logic II directly to the TV market. The MSP/MAS chipset promises to reduce development costs dramatically for TV manufacturers, since mid-range to high-end TVs are all based on one architecture, and existing TV designs can be upgraded to support new audio formats and features very easily.

Over the years, Micronas has brought various Dolby technologies to the TV market, including Pro Logic in 1996, and Virtual Dolby Surround in 1999. Recently the company celebrated sales of the 10 millionth Virtual Dolby Surround MSP Multistandard Sound Processor. "Integrating Pro Logic II is a logical next step for the Micronas product line-up,"

said Stefan Hepp, Micronas' marketing manager for TV audio. "There has been an enormous growth in the production of



Micronas chips soldered on a PCB for TV audio. Pro Logic II is located in MAS 3529H.

surround sound TV sets, so we are keen to provide the latest features to meet that demand."

The first TV with Micronas' new Pro Logic II and Dolby Digital decoders is expected to be available in Europe by summer 2003.



DOLBY VIRTUAL SPEAKER TECHNOLOGY

Dolby Virtual Speaker listening modes



Reference mode



Wide mode

Dolby Virtual Speaker technology arrives, continued from page 1

to experience natural, convincing surround sound from stereo sources such as music CDs.

How it works

Dolby Virtual Speaker technology creates the illusion of listening to a multichannel loudspeaker system, and works by modelling the effects which a room conveys on sound sources with far greater precision than was ever previously possible. Sound sources enable us to ascertain their location in the room because they arrive at our ears via both

direct and indirect paths. The indirect path consists of reflections from the room we are in. By accurately simulating the indirect contributions, it is possible to simulate the effect of being surrounded by a full 5.1 speaker system, whilst only using two speakers.

For the effect to be convincing, it is necessary to prevent sounds intended for the left ear from reaching the right ear and vice versa. Therefore, in addition to its advanced modelling methods, Dolby Virtual Speaker technology incorporates a technique known as crosstalk cancellation.

Applications

Dolby Virtual Speaker processing provides the ideal solution when listeners want home cinema surround sound, but can't afford a full home cinema system or are unable to fit one into their homes. It is equally ideal for those who want mobile home cinema surround sound from a laptop, boom box, portable DVD player, or other portable device.

Dolby Virtual Speaker technology will soon be available on integrated circuits for inclusion in consumer electronics.

Games Development Update

Dolby has continued to work closely with developers and publishers within the video-gaming industry. In recent months, new developments have emerged and an ever-increasing number of games titles now feature Dolby® audio technologies.

In April, Dolby Pro Logic® II was announced as the latest audio technology for the Nintendo® GameCube™. Using Factor 5's MusyX development tool, Pro Logic II allows developers to deliver enveloping, cinema-style surround sound during gameplay. *Star Wars Rogue Leader: Rogue Squadron II* was the first game ever to feature Pro Logic II and has been released on Nintendo's GameCube.

Dolby announced in May that it had entered into an agreement with games

developer Criterion to design value-added tools which would help developers and publishers produce games with high-quality surround sound across all major platforms. The first result of this partnership saw the integration of Dolby's Pro Logic II Interactive Content Encoder with Criterion's RenderWare® Audio on the PlayStation® 2. RenderWare Audio will provide the highest possible level of support for Dolby audio formats on all other platforms, including the Xbox™, Nintendo GameCube, and the PC. Simple to use and fully interactive, RenderWare Audio enables the sound designer to place and move sounds at run time, in response to inputs from the game engine and/or the user, thus creating a surround experience comparable to DVD.

Spider-Man: The Movie, released by Activision in June, was announced as the first gaming release where Dolby Laboratories' audio technologies had been simultaneously implemented across all three next-generation gaming platforms.

Key video games released with Dolby sound in 2002

Game	Platform(s)	Audio
Burnout 2: Point of Impact	PS2	Dolby® Pro Logic® II
Halo	Xbox™	Dolby Digital
Spiderman: The Movie	GameCube™ PS2 Xbox	Dolby Pro Logic II Dolby Pro Logic II Dolby Digital
Star Wars Rogue Leader: Rogue Squadron II	GameCube	Dolby Pro Logic II
Super Mario Sunshine	GameCube	Dolby Pro Logic II
Turok 4: Evolution	GameCube PS2 Xbox	Dolby Pro Logic II Dolby Pro Logic II Dolby Digital

New titles due for release by the end of 2002

Legend of Zelda	GameCube	Dolby Pro Logic II
Minority Report	GameCube PS2 Xbox	Dolby Pro Logic II Dolby Pro Logic II Dolby Digital
Sega GT 2002	Xbox	Dolby Digital
Star Wars: Bounty Hunter	GameCube PS2	Dolby Pro Logic II Dolby Pro Logic II
The Matrix	Xbox	Dolby Digital
Tony Hawks Pro Skater 4	GameCube PS2 Xbox	Dolby Pro Logic II Dolby Pro Logic II Dolby Digital

Hundreds of games titles have now been released with Dolby sound. For a full list, please contact Sarah Dawson, smd@dolby.co.uk



Hear the Latest on Dolby Headphone



Pioneer SE-DIR1000C with
Dolby Headphone processing

Pioneer Electronics has chosen Dolby® Headphone technology for their new stand-alone headphone system. The new SE-DIR1000C was released in July and is the world's first cordless headphone system which incorporates Dolby

Headphone technology – the process that allows you to experience surround sound over any set of stereo headphones.

Using Dolby Headphone technology, the Pioneer SE-DIR1000C provides realistic surround sound from multichannel sources, or stereo sources decoded through Dolby Pro Logic II. The natural and open sensation of the Dolby Headphone system greatly reduces “headphone fatigue”, which allows it to be used over extensive periods. Listeners can choose from three distinct listening environments – from a small reference room to a larger auditorium. In addition, the 50 mm-calibre speakers that are used inside the SE-DIR1000C headphone enable it to create powerful low level sound that actually maximises the overall surround sound effect.

Currently only available in Japan, the Pioneer headphone system retails for 60,000 Yen.

Dolbys In-Flight Entertainment Programme Expands
As of the end of September, Dolby Laboratories has taken over the management of the Dolby Headphone programme for In-Flight Entertainment from Lake Technology of Australia, who previously offered it as the Lake In-Flight Technology programme.

“With Dolby Headphone technology, passengers get a much more realistic portrayal of a soundtrack’s spatial qualities, so we want as many passengers as possible to enjoy this surround-sound experience in the air,” said Roger Dressler, director of technology strategy at Dolby Laboratories. “Our newly expanded IFE programme focuses on increasing the availability of Dolby Headphone programming by streamlining the process for airlines.”

The newest addition to the programme is Austrian Airlines, which joined Singapore Airlines, Qantas, Cathay Pacific, and Lufthansa in adopting Dolby Headphone technology on its aircraft. Austrian Airlines’ business-class passengers will be able to enjoy in-flight movies with the same surround sound experience they have come to expect from a 5.1-channel home cinema system.

H O M E C I N E M A

Home Cinema Straight from the Box



seeking a compact, fully integrated system.

Most theatre-in-a-box systems contain a central audio decoding

unit (with built-in tuner and amplifiers), multiple loudspeakers, and even an active subwoofer to complete the home cinema experience. Numerous models also include an integrated DVD player. Such solutions clearly satisfy the needs of many households, particularly where separate components and large speakers are not practical.

The majority of these systems feature Dolby® Digital 5.1 and Dolby Pro Logic® II decoding as standard, providing superior playback of DVD-Video discs as well as an exciting 5.1-channel reproduction of stereo CDs. Some of the latest systems also feature DVD-Audio playback with MLP Lossless™ technology, the high-resolution music format.



Panasonic SCDT300



Yamaha HTIB45

Austria Awaits New Programmes in Dolby Digital 5.1



ORF TV station, Vienna

The Austrian Broadcasting Corporation (ORF) is preparing to launch an innovative and extensive range of programming with Dolby® Digital 5.1 surround sound. As a public broadcaster, ORF produces and transmits a total of 13 radio and two main television channels, ORF 1 and ORF 2, which are complemented by nine regional TV channels. All broadcasts are available as terrestrial transmissions and via satellite. Technical director Andreas Gall recently announced that ORF has decided to use Dolby technologies for the transmission of multichannel audio via satellite. Both ORF 1 and ORF 2 will benefit from Dolby Digital sound, starting early next year. The enhanced services will initially be available to viewers of ORF's digital satellite services on Astra.

ORF will be the first European public broadcaster to launch a television service with Dolby Digital 5.1 sound, joining commercial broadcasters such as BSkyB, Premiere, and ProSieben. In addition to feature films, ORF is

planning 5.1 surround sound for broadcasts of live events and concerts, TV documentaries, and dramas. The broadcaster has been producing material in 5.1 for the last two years, mainly for DVD releases and in preparation for multichannel broadcasts. Programmes like *Arktis Nordost*, mixed in 5.1 by ORF's Florian Camerer,

have already gathered international recognition.

Broadcasting around the world Broadcasters in Europe already broadcasting in Dolby Digital continue with their success. Sky is now broadcasting over 100 movies per month in 5.1 to satellite subscribers in the UK. Teleclub has gone on air with Dolby Digital cable in Switzerland. TVN in Poland has recently started showing movies and some of their own prime-time entertainment programmes in Dolby Digital 5.1 surround sound, and extensive terrestrial trials have been conducted in several countries, including France and Spain.

From a worldwide perspective, the content being produced with Dolby Digital sound is still broadening. In the US, 450 stations are on air with Dolby Digital, 45 of which are in 5.1. Showtime has now enabled all 32 of its high- and standard-definition channels with Dolby Digital 5.1 sound, and the Winter Olympics in Salt Lake City and Super Bowl XXXVI were both broadcast in 5.1.

MOVIES SHOWING IN DOLBY DIGITAL 5.1 FROM SKY

NOVEMBER 2002

Sky Premier
Widescreen

- 15 Minutes
- 28 Days
- The 6th Day
- The Adventures Of Rocky & Bullwinkle
- Almost Famous
- Along Came A Spider
- Bamboozled
- Beautiful Creatures
- Best In Show
- Black And White (2000)
- Blow
- Bootmen
- Bounce
- Bread And Roses
- Bring It On
- Cast Away
- Center Stage
- Charlie's Angels
- Chicken Run
- The Closer You Get
- Coyote Ugly
- Dick Tracy
- Digimon: The Movie
- The Dish
- Double Jeopardy
- Dudley Do-Right
- Duets
- The Escort
- The Flintstones In Viva Rock Vegas
- For Love Of The Game
- Galaxy Quest
- The Gift
- Gladiator (2000)
- Gossip
- Gun Shy
- Hanging Up
- Hollow Man
- The Invisible Circus
- Joan Of Arc
- Keeping The Faith
- Liberty Heights
- Little Nicky
- Loser
- Love And Basketball
- The Luzhin Defence
- Mad About Mambo
- Magnolia
- The Man Who Cried
- Me, Myself & Irene
- Meet The Parents
- Memento
- Men Of Honor
- The Mexican
- Miss Congeniality

- Mumford
- My Dog Skip
- Nutty Professor II: The Klumps
- O Brother, Where Art Thou?
- One Night At Mccool's
- Oscar
- The Patriot (2000)
- Pay It Forward
- Pearl Harbor
- Pee-Wee's Big Adventure
- Play It To The Bone
- Pokemon: The First Movie
- Pokemon: The Movie 2000
- Proof Of Life
- Quills
- Rat
- The Replacements
- The Road To El Dorado
- Road Trip - Unseen & Explicit
- Rugrats In Paris: The Movie
- Save The Last Dance
- Snatch
- Soft Fruit
- Space Cowboys
- Spy Kids
- Stir Of Echoes
- Stuart Little
- Sunset Strip
- The Tailor Of Panama
- Thomas And The Magic Railroad
- Tigerland
- Titan AE
- Traffic
- Unbreakable
- Vertical Limit
- The Wedding Planner
- What Lies Beneath
- Where The Heart Is
- Woman On Top
- Wonder Boys
- X-Men

Sky Box Office
Widescreen

- 51st State
- Kiss Of The Dragon
- Spy Game
- Harry Potter And The Philosopher's Stone
- The Others
- Jeepers Creepers



Now at a Car Showroom Near You

Consumers desiring Dolby® in-car technologies can choose from a growing number of options in after-market products available through car audio retailers, websites, and catalogues. Dolby Digital 5.1 systems are available from leading manufacturers such as Alpine, Clarion, Kenwood, Panasonic, and Pioneer. Dolby's highly acclaimed Pro Logic® II has also recently been incorporated into products from Alpine and Clarion. And for those seeking the ultimate in high-resolution music, Panasonic offers a DVD-Audio/Video player combining Dolby Digital 5.1 and MLP Lossless™.



Volvo XC90 SUV



Toyota Brevis

Panasonic
CQ-DVR909

Since the introduction of Dolby's Surround In Motion™ programme last year, Volvo has launched the XC90 SUV with Dolby Pro Logic II as a factory-fitted premium option. In Japan, the Toyota Brevis is the world's first luxury saloon to incorporate a factory-fitted DVD-Audio/Video system with Dolby Digital 5.1 and MLP Lossless™ technologies.

"Thanks to the success Dolby has achieved in the cinema and home theatre markets, consumers now have heightened expectations for audio quality based on state-of-the-art surround sound. Dolby's Surround In Motion technologies are an important step forward in the evolution of mobile entertainment," said Martin Lindsay, director of business development, automotive entertainment, Dolby Laboratories.

A F T E R - M A R K E T

After-Market In-Car Products Featuring Dolby Technologies

Alpine recently announced its PXA-H700 integrated surround processor, which can be combined with an in-dash receiver head unit or a DVD changer to create in-car multichannel surround entertainment. In keeping with Alpine's component system approach – which enables consumers to build the system that best meets their needs by combining Alpine products – consumers can add Dolby® Digital and Pro Logic® II surround decoding capabilities to any Alpine Ai-NET head unit, at any time, to experience exhilarating multichannel sound, whether viewing in-car DVD movies or listening to music from FM radio, satellite radio, or CDs.

"Alpine is firmly committed to pushing the envelope for high-quality mobile multimedia sound, so we're incredibly excited to incorporate decoding for Dolby's breakthrough Pro Logic II in our new PXA-H700," said Stephen Witt, Alpine's vice president of brand marketing. "Combine this multichannel sound

capability with Alpine's exclusive digital sound-tuning technology, and the PXA-H700 raises both the excitement and quality of in-vehicle entertainment to a new standard."

The Alpine PXA-H700 will join a host of other new Alpine components that help consumers expand their in-car entertainment system to provide a multichannel audio-video experience.

Clarion is now shipping its DXZ925 CD/receiver head unit with Sirius DARS capability, a product

expected to be an extremely popular after-market component for Dolby Pro Logic II technology. The Clarion DXZ925 product is not only one of the first Sirius-ready units available on the market, but is also the first CD/receiver head unit to provide mobile surround for audio-only applications. This product signals the evolution from conventional two-channel stereo systems to 5.1-channel mobile surround.



Alpine PXA-H700

DVD-Audio Reaches Record Highs

After only two years, sales of DVD-Audio/Video players in the US have exceeded the numbers of CD and VHS products sold in their respective launch periods. VHS sales in the US were estimated at 550,000 units, while CD sales were around 800,000. Since the introduction of the DVD-Audio format, reported product sales have exceeded 925,000 units*.

DVD-A players – the choice is endless

With 40 different models from over 12 manufacturers, there is now a great choice of players for the consumer. The format has not limited itself to standard players – multi-tray and multi-changer products are also available. Other exciting implementations include home theatre-in-a-box systems, car head units, and portable players. Prices are as varied as the choice of products, starting from as low as £300 / 480 euros. PC software players are expected in the near future, and car manufacturer Toyota has already announced the first OEM factory-installed DVD-Audio system.

Software success stories

With over 350 DVD-Audio titles available from over 30 record labels, DVD-Audio is becoming a mainstream format for music releases. No longer just a format for the niche audiophile market, albums from pop artists such as Metallica, Queen, Crowded House, Missy Elliot, and The Corrs are already available, with albums from Linkin Park, Alanis Morissette, and R.E.M. on the way. On April 23rd, the release of Dishwalla's album *Opaline* became the first DVD-Audio disc to be released on the same day as the CD version – a pattern that is likely to be repeated more and more, as new projects are mixed specifically for release in high-quality 5.1 surround sound.

The new format is also being supported by no less than 165 retailers, and with titles comparable with CD prices, the popularity of DVD-Audio is anticipated to grow immensely in coming years.

* Source: US Consumer Electronics Association for VHS, CD, and DVD-V; Matsushita for DVD-A.



Yamaha DVD-S2300 SUF



Pioneer DV-656A-S



Panasonic DVD-RA82



Kenwood DVF-R9050-S



Meridian 598



Denon DVD-1600

Apple Adopts AAC for QuickTime 6



July 16th saw Apple launch version 6 of its hugely popular QuickTime™ media platform. QuickTime is Apple's industry-leading, standards-based software for developing, producing, and delivering high-quality audio and video over IP, wireless, and broadband networks. Last year, 80 million users downloaded QuickTime

Player via the Internet, while tens of millions additional copies were distributed via digital cameras, software titles, and enhanced music CDs. With this new version, Apple has fully embraced the international MPEG-4 standard by incorporating native support for MPEG-4 video and MPEG-4 AAC audio. In the 100 days since its launch, there have been more than 25 million downloads of QuickTime 6, demonstrating strong demand for the open standard MPEG-4 format upon which QuickTime 6 is based.

Users of QuickTime 6 can now create and experience online content using the high quality of MPEG-4 AAC, which delivers the same audio quality as MP3, yet needs only half the bit rate. This makes downloads quicker, streaming easier, and improves the quality of online content. And because QuickTime 6 uses MPEG-4, content created using QuickTime Pro can be replayed using any device compatible with MPEG-4, from next-generation mobile phones to set-top boxes, as well as many popular PC media players.



The free QuickTime 6 player can be downloaded from the QuickTime 6 website www.apple.com/quicktime/, which also features examples of MPEG-4 video and audio content, found at:

www.apple.com/quicktime/gallery/mpeg4.html and www.apple.com/quicktime/gallery/aac.html.

U S E F U L W E B - L I N K S

www.dolby.com – everything you need to know about Dolby Laboratories can be found here!

www.dolby.com/in-car – Dolby's technologies for in-car entertainment, Surround in Motion™.

www.dolby.com/dolbyheadphone – all the latest on Dolby Headphone technology, including technical information, products, and listener reviews.

www.dolby.com/games/players – information and FAQs on connecting the latest game consoles to home theatre systems, for maximum sonic impact!

www.aac-audio.com – information on MPEG AAC, including licensing details and listening test results.

www.smr-home-theatre.org/surroundex/ex.html – a list of current and upcoming DVD titles featuring Dolby Digital Surround EX™ soundtracks.

www.imdb.com – the Internet Movie Database – everything on movies and DVD can be found here.

www.highfidelityreview.com – a comprehensive source of DVD-Audio information, including reviews and a complete list of all releases.

www.apple.com/quicktime – the QuickTime 6 website, with a free downloadable QuickTime player, featuring MPEG-4 AAC, as well as examples of video and audio content.

For the most current information about Dolby Laboratories, please visit www.dolby.com.

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