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From the **Editor**



WELCOME TO ISSUE two of *Active Home*, the only plain English guide to the world of home entertainment. As with our sister publication, *Computeractive*, our goal is to cut-through the jargon surrounding technology, and to help you make the right choices when buying. Here you'll find reviews of the latest products, features on new developments, plus step-by-step workshops and expert advice on how to get the best from your existing kit.

The good news is that it's now even easier to enjoy the digital life. As a shining example, in this issue we found that you can pick up a complete home-cinema package, including a DVD recorder and surround-sound speaker set, for just £150. Even more groundbreaking is the fact that digital TV is now available from under £30 – that's less than a full tank of petrol (or a new PlayStation game).

Unlike Sky or cable television, Freeview provides more channels and interactive services through your TV aerial, with no complicated forms to fill out or subscription charges to pay. Clearly, there's never been a better time to see what all the fuss is about. We compare the latest plug-in-and-go receiver boxes on page 57

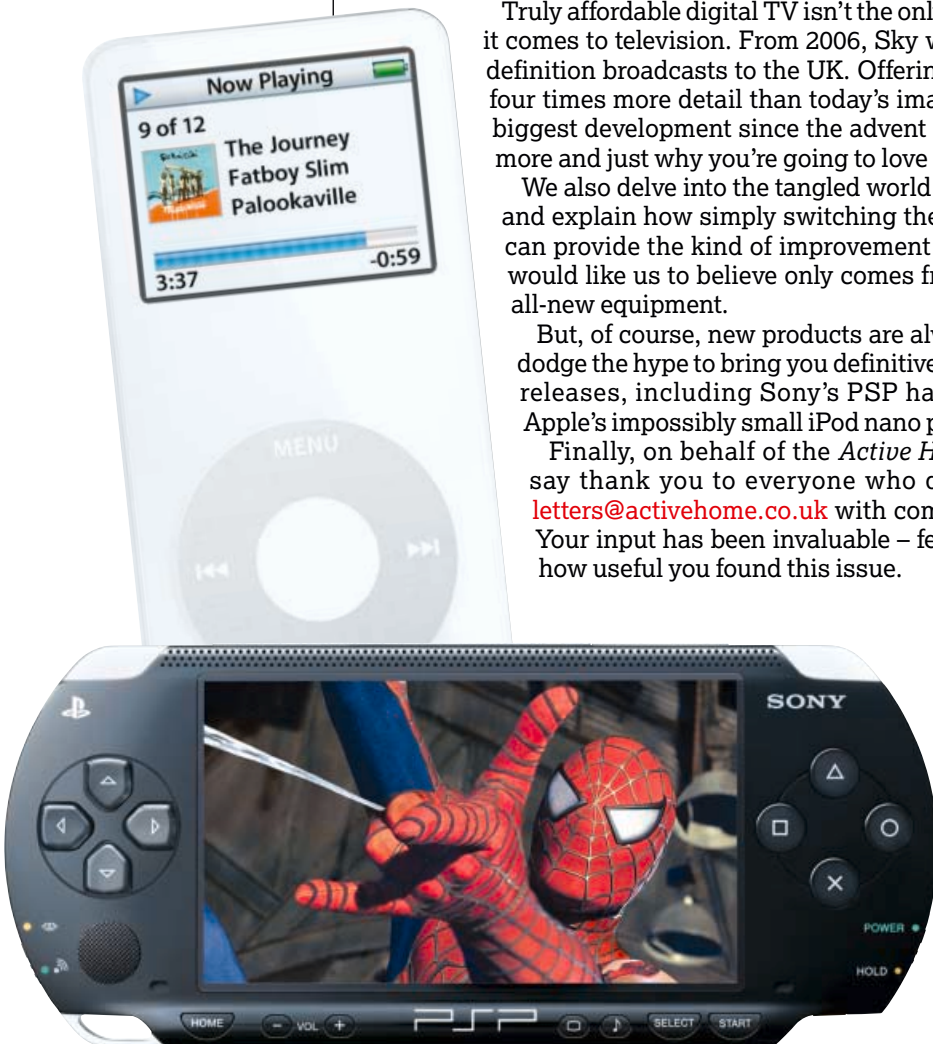
Truly affordable digital TV isn't the only exciting news when it comes to television. From 2006, Sky will be bringing high-definition broadcasts to the UK. Offering pictures with up to four times more detail than today's images, it's possibly the biggest development since the advent of colour. To find out more and just why you're going to love it, turn to page 8.

We also delve into the tangled world of cables on page 16, and explain how simply switching the leads you use really can provide the kind of improvement some manufacturers would like us to believe only comes from splashing out on all-new equipment.

But, of course, new products are always exciting and we dodge the hype to bring you definitive verdicts on the latest releases, including Sony's PSP handheld console and Apple's impossibly small iPod nano portable music player.

Finally, on behalf of the *Active Home* team, I'd like to say thank you to everyone who dropped us a line at letters@activehome.co.uk with comments on issue one. Your input has been invaluable – feel free to let us know how useful you found this issue.

Chris Cain
Editor, *Active Home*



Regulars

12 Home Comforts

From a fireplace with a built-in TV to a waterproof radio and computerised picture frames, we look at the latest gadgets designed to enhance your digital home



83 Competition

Enter our *Active Home* competition for a chance to win a fantastic Denon Smart Life S-301 home-entertainment system worth £1250!

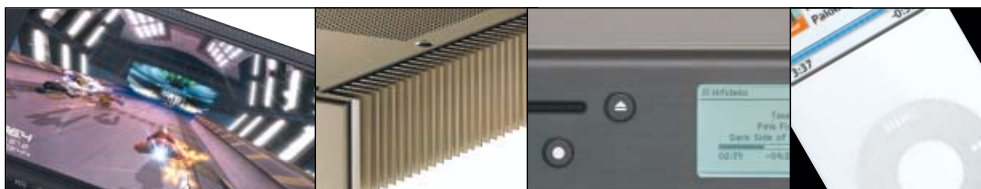


Hot new products

12 pages full of the very latest home entertainment and digital lifestyle products

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Editor-in-chief Dylan Armbrust
Editor Chris Cain
Production Editor Naomi MacKay
Art Editor Nick Palmer
Deputy Art Editor Sharonjit Samrai
Contributing Editor Jonathan Parkyn
Contributors Paul Allen, Scott Colvey, Anthony Dhanendran, Cliff Joseph, Gordon Laing, Luke Peters, Rory Reid, Tim Smith, Will Stapley
Editorial Assistant Anna Lagerkvist
 Sorry, no technical or buying advice.

ADVERTISING

Advertisement sales hotline 020 7316 9208
Display ads 020 7316 9606
Sales Manager Paul Button
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MARKETING AND CIRCULATION

Brand Marketing Manager Tim Webb
Marketing Executive Kieran Proverbs
Subscriptions Controller Harriet Cumming
Newsstand manager Emma Smyth
Reprints & Buy It/Great Value Awards Kieran Proverbs 020 7316 9180

PRODUCTION

Production Director Joanne Hurst
Production Manager Cathy Mahoney
Digital Production Controller Rebecca Yegliss
Production Controller Luke Humphreys

PUBLISHING

Publisher Richard Wilson
Publishing Director Anita van der Aa
Chairman and Chief Executive, VNU Business Media Europe Ruud Bakker

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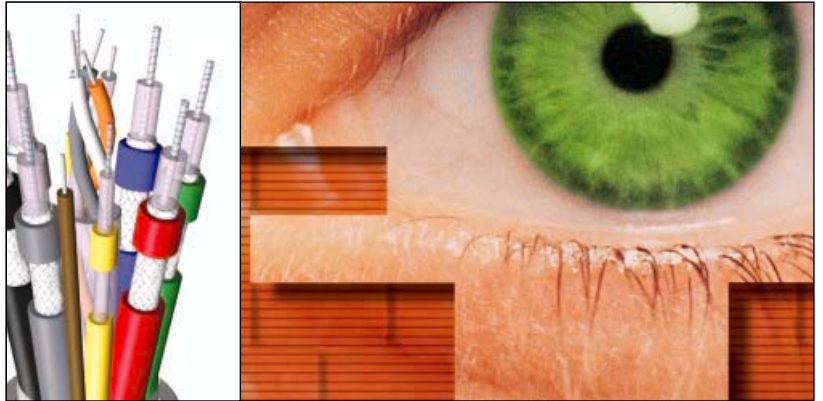
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High-definition pictures are set to revolutionise TV, video and gaming across the UK. Find out how, and what you need to be ready to enjoy this new technology

16 The right connections

If you thought a cable was just a cable, think again. We explain how simply having the right leads on your hi-fi or DVD player can make movies and music look and sound better than ever



Group tests



37 All-in-one home cinema

Neater and easier-to-use than traditional entertainment setups, all-in-one systems bring you home cinema in a box. We test packages to suit all pockets from £150 to £1,250



47 DAB radios

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57 Freeview receivers

Offering more than 30 TV and radio channels without a costly subscription, Freeview offers a real alternative to satellite or cable. We test and compare eight of the latest models to find the best way to join the digital revolution

COVER STORY

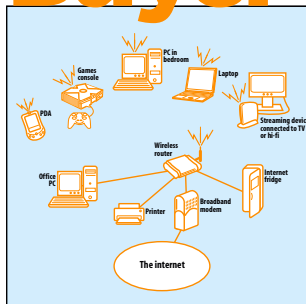


Workshops

67 15 pages of easy-to-follow, step-by-step guides to setting up your digital home and getting the most out of technology including:

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Buyer's guide



85 Our ultimate expert guide to buying the right home-entertainment equipment – full of valuable advice and explanations of the latest digital technologies

The bigger picture

High definition is the most exciting thing in TV since colour. But how does it work, and what do you need to consider when buying a new set? We explain all

High-definition TV is set to revolutionise home entertainment across the UK. Packing up to four times more detail than current broadcasts, it's by far the most exciting thing to happen to the small screen since the advent of colour.

All subjects benefit from this huge improvement in realism and quality, whether you're watching Hollywood blockbusters, wildlife documentaries or the big match – it really is almost as if you're there. Viewers in Japan, Australia and North America have enjoyed high definition for some years, and now it's our turn.

That said, high definition, or HD for short, isn't just limited to TV programmes. New DVD players on the horizon will also deliver high-resolution, wide-screen movies, while the next generation of consoles promises high-definition gaming. Sky is committed to launching its highly anticipated **HDTV** service during 2006.

While it's clear that HDTV is set to have a major impact, there's already a great deal of confusion about it in the market. Many older or cheaper TV sets claim high-definition capability, for example, but they may not actually work with all future services. Then there's the high-definition material itself: where can you get it, and is it actually worth having at the moment?

Over the following pages we'll answer all these questions and many more. We'll explain what high-definition technology is, how it works, and what you really need to enjoy it. We'll also preview the forthcoming services and help you to avoid equipment that isn't up to the job.

TV Formats

To enjoy high-definition images you need a box that can deliver high-definition pictures, and a compatible TV to display them. However, as with all new technologies, there are many different options and products available. Fortunately, they're all relatively easy to understand once you know their capabilities and differences.

Ordinary TV pictures in the UK, whether from broadcasts, DVD movies or games consoles, are created using a standard

▼ Panasonic's TH50PV500 is a 50in Plasma TV that's ready for high-definition pictures



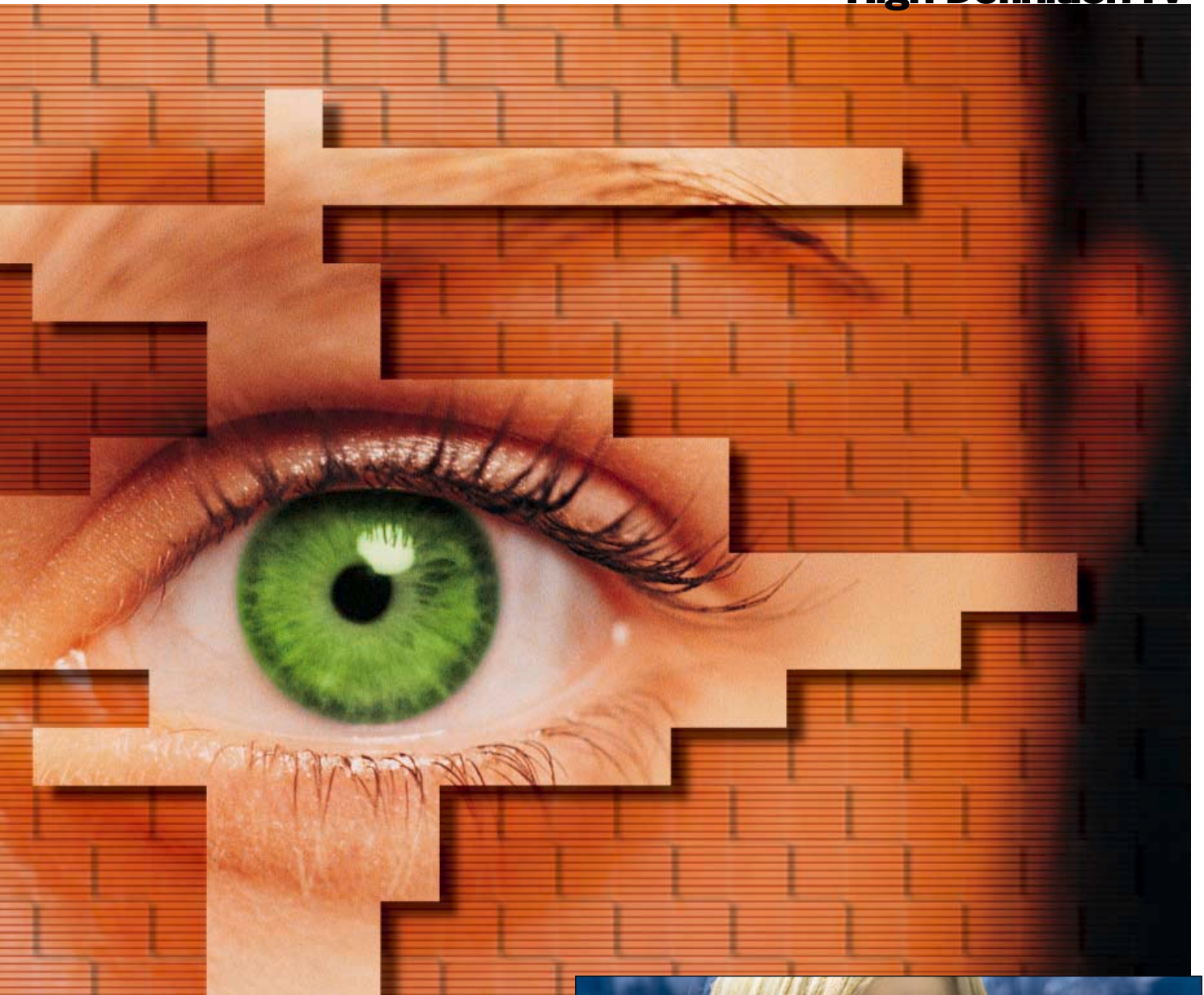
called **PAL**. This generates a colour picture made up of 576 horizontal lines, with 25 pictures shown every second in order to give the appearance of smooth motion.

The PAL TV standard doesn't show all 576 lines of each picture at once. It splits each picture into two frames – the first consisting of only odd lines (1, 3, 5 and so on), and the second consisting of only even lines (2, 4, 6 and so on). These two frames are then shown in quick succession to give the impression of a complete picture.

This technique, known as **interlacing**, saves space when transmitting TV signals, and allows more channels to be offered. The downside is that you end up with a picture that doesn't look as steady, or handle fast motion as well as one where all the lines are drawn simultaneously. The latter is known as a **progressive** picture, and is the type used by computer monitors.

TV standards can therefore be described by their number of lines, the number of pictures per second, and whether the picture is interlaced (i) or progressive (p). The PAL standard is consequently described as 576i/25 – it has an interlaced picture with 576 lines, refreshed 25 times per second.

Most of the TVs we have at home can only



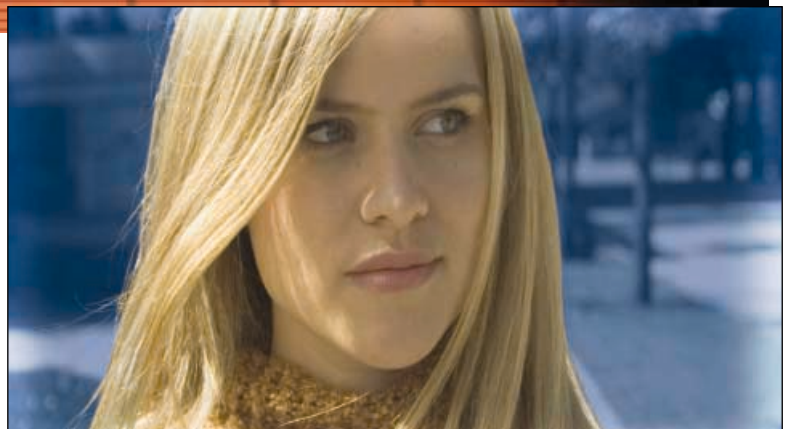
display interlaced signals, but some newer models can also handle progressive signals. This can be exploited by the 'progressive-scan' mode offered on many better-quality DVD players. This mode still uses 576 lines, so there's no more detail than before, but the player generates a progressive picture that's steadier and better at handling fast action. This format is therefore known as 576p/25 or 'PAL Progressive'.

HD formats

It comes as no surprise to learn that HDTV pictures feature more lines than today's PAL ones, but typically, there are actually two different HD formats in use. The first has 720 horizontal lines in a progressive format, known as 720p, while the second uses even more lines, 1080 in total, but in an interlaced format known as 1080i. Both are widescreen.

1080i clearly has more lines than 720p and therefore can resolve more detail, but 720p is progressive, so has a steadier picture, which also handles fast action better. In reality, it's a case of swings and roundabouts, with some content providers preferring to use one over the other. So, since high-definition pictures can come in either format, it's important for an HDTV to handle both.

Interestingly, some of today's higher-end standard definition DVD players can electronically scale their picture into a high-definition format for use on



▲ Microsoft's WMV HD format shows just how good high-definition video can look on a PC. You can check out some excellent examples, including movie trailers, at www.wmvhd.com

HDTVs. This won't show the extra detail of a true high-definition signal, but should produce a picture that looks better than standard definition.

HD connectors

Today, we commonly use **SCART** cables to connect various boxes to our TVs, but these can only handle standard signals. To connect HD boxes to HDTVs, you'll need different types of plugs and cables.

One way to deliver high definition is using a component cable, which employs three separate round plugs. Component can also be used with standard video,

and is found on the back of many DVD players. It can also be used to deliver signals from progressive-scan DVD players.

Movie studios and TV broadcasters don't like component connections because they're analogue and unsecured against piracy. So, to protect their precious new material, they developed a digital system for HD boxes and TVs called High Definition Content Protection, or **HDCP** for short.

HDCP requires a special digital plug, either the DVI standard used by most PCs, or a new connector called **HDMI** (High Definition Multimedia Interface), which can carry both audio and video on one cable – a bit like a high-definition digital SCART.

The important thing to understand is that if a box outputs a signal with HDCP, it will need a TV with HDCP to display it. If your TV doesn't have HDCP, you'll either see nothing at all or just a downgraded standard definition signal. And annoyingly, while all HDMI plugs support HDCP, some older DVI plugs don't. So don't assume that a TV or a PC monitor with a DVI plug is necessarily going to work with digital high-definition boxes.

HD-ready TVs

There may not be a great deal of high-definition content available in the UK today, but that's all going to change during 2006. Consequently, if you want to watch HDTV in the future, and are in the market for a new TV today, it's crucial to buy one that's technically ready. Of course, an HDTV will also show ordinary PAL signals.

A true HD-ready TV must fulfil three criteria. It must be able to handle the two most common high-definition formats, 720p and 1080i, and it should be able to resolve the detail these formats contain, which means it should offer a minimum of 720 lines. Sets with 1080 lines are best, but these are currently very pricey.

Third and finally, since most forthcoming high-definition boxes for the UK are likely to employ protected digital outputs, it's crucial to buy a TV with the right plugs. You'll need either a DVI or HDMI plug that supports HDCP protection.

If a TV fulfils all three requirements it can honestly be described as 'HD-ready', and a new logo has been designed to help buyers identify

suitable products in stores (see page 11). Even so, it's important to verify all three criteria before buying, as many older or cheaper sets may claim HD-readiness, but might actually downscale high definition to standard definition, or only offer unprotected analogue inputs. It's still important to have component inputs to support HD camcorders or traditional DVD players, but most HD boxes will demand a TV with digital plug supporting HDCP.

HD broadcasts

Today, a small amount of high-definition material is broadcast to the UK by the Euro-1080 satellite (see www.euro1080.com), but the big change will come when Sky launches its HDTV service in 2006. From launch, Sky HD will include Sky Sports, Sky One, Artsworld, one Sky Box Office channel and two Sky Movies channels. Movies promised at launch include *Spider-Man 2* and *House of the Flying Daggers*.

To receive Sky's service you'll need a new Sky HD set-top box. The first model will include hard

If you are in the market for a new TV today, it's crucial to buy one that's technically ready

disk recording facilities like the current Sky+, and will feature both digital HDMI and analogue component outputs, the latter supporting older sets without digital inputs. We expect subsequent boxes will only have digital plugs though, demanding a TV with HDMI. For more information, visit www.sky.com/hd

Cable TV providers are also likely to broadcast HDTV, but there have been no firm announcements yet. Unfortunately, the high quantity of data required by HDTV means we're unlikely to ever receive it over traditional TV aerials.

HD TV shows

Many TV companies have been producing their premium shows in high definition for some time. Most big US shows including *Desperate Housewives*, *24* and *ER* are all made in high definition. The BBC has also been making many of its major drama and documentaries in this format, both for future UK broadcasts and for sales to current international HD broadcasters.

The Blue Planet was one of the BBC's biggest HD productions to date. Major sporting events are also filmed this way.

HD DVD

DVD proved consumers were happy to replace their VHS tapes with a better-quality format, and now Hollywood hopes we'll do it all again for HD. Unfortunately, there

◀ Denon's high-end A1XV DVD player has a wide array of connectors including both HDMI and DVI for connection to an HD display



▲ A handful of HD DVDs, such as the American version of Coral Reef here, are already available for PC users

Top 5 tips when buying a high-definition TV

- 1: When buying a new TV for HD, check that it's branded as HD-ready. This should ensure that it's compatible with future services
- 2: Confirm that the TV has at least 720 lines of resolution. The very best, albeit most expensive, models have 1080 lines
- 3: A true HD-ready TV must support the two most common HD video formats, technically known as 720p/50 and 1080i/25. Check this
- 4: Make sure the set has a digital HDMI or DVI plug that supports the HDCP copy protection system. Some older or cheaper sets may have DVI, but don't support HDCP
- 5: Older or cheaper HDTVs may only have analogue component inputs. These may work with HD camcorders and Sky's first HD box, but other devices are likely to demand a digital HDMI or DVI plug with HDCP.





▲ Sky's HD set-top-box will feature a built-in hard disk to record shows, just like a Sky+ box

are two rival disc-based formats fighting for our wallets. They both look like DVDs but use special blue lasers to read the massive amount of data packed onto them. Sadly, the two systems are incompatible with each other.

In one camp are Toshiba and NEC. They have developed a format that is backed by the official DVD Forum, called HD-DVD. In the other camp are Sony, Philips, Pioneer and others who have developed a format called **Blu-ray**. Technically speaking, Blu-ray has the edge over HD-DVD, but both can store a high-definition movie, and possibly record a high-definition show, should broadcasters like Sky let us.

During 2005, both camps met countless times to try to agree on a single unified format, but each time talks have failed. So it looks like both formats will launch with players and a selection of movies in early 2006. It's impossible to tell which will win, or if both will co-exist, although we strongly believe the movie studios and stores would prefer to produce and stock one HD format.

If you have a feeling of déjà vu, you're not alone. It's just like Betamax versus VHS in the Eighties. So unless you're happy to take what might be an expensive gamble, we'd advise waiting until either one format wins or both look like being around for the long term.

In the short term, you may be interested in checking out a handful of American DVD movies that come with a second disc containing a high-definition version in Microsoft's WMV format. These are designed to play back on PCs with Windows XP, which in turn could be connected to an HDTV if you wish. These titles are mostly Imax documentaries but they're a good demo for an HDTV while you wait for other services to arrive – see www.wmvhd.com for more info. Discs can be bought from www.playusa.com

HD camcorders

If you can't wait for discs or broadcasts, why not create your own material? Several camcorders are now available which can actually record

► Microsoft's Xbox 360 will be the first console available that supports high definition on all titles

high-definition video. Sony's HDR-HC1E is the smallest and most affordable yet, recording 1080i HD video, and selling for £1,499.

It records onto standard Mini-DV tapes and can store 60 minutes on each. The camcorder connects to HDTVs using an analogue component connection, but can also deliver standard-definition video to normal TVs with conventional cables.

HD gaming

The next generation of games consoles is also set to take full advantage of high-definition quality. Microsoft's Xbox 360 will be first out of the gates in time for Christmas, followed by Sony's PlayStation 3 around Easter and Nintendo's (codenamed) Revolution later in 2006.

Technical details of Nintendo's console remain unconfirmed, but the Xbox 360 and PS3 will both deliver standard signals to older TVs and HD pictures, bringing a new realism to gaming. In fact, Microsoft has officially declared that all games developed for its next system must support high definition, surround sound and widescreen displays as standard. Meanwhile, the PS3 will also feature a Blu-ray drive for playing HD movies on Blu-ray discs.

The big picture

High-definition TV broadcasts and video look fantastic, but today's standard equipment has by no means become redundant. Normal TVs will continue to work, and there'll be plenty to watch on them for years to come – and let's face it, before we heard of high definition, most of us were pretty happy with DVD. So why buy into the format?

Most manufacturers agree that on sets below 26 inches, the differences between standard and high definition are negligible. It's only at larger sizes that improvements are noticeable. On large screens, standard video looks soft, with visible horizontal lines. In contrast, high definition allows big pictures to remain pin-sharp up-close. Quality fanatics, whether they're into sports, movies or TV shows, will love it.

Even if you have no intention of getting HDTV services in the next year or so, investing in an HD-ready set is a sensible move for the future. So if you're in the market for a new large TV, do consider HD. Just make sure you follow our buying tips to ensure it really is prepared for all eventualities.



Jargon buster

- **Blu-ray** A new format that will deliver high definition on DVD-sized discs.
- **HDMI** High Definition Multimedia Interface. Single connector which delivers digital HD video and digital audio between HD boxes and HD TVs. Normally employs HDCP protection.
- **HDCP** High Definition Content Protection. Digital copy protection system employed by many HD boxes to prevent piracy. Needs a TV which understands HDCP in order to view HD picture.
- **HDTV** High-definition Television. Refers both to high-resolution, widescreen digital broadcasts and the TV sets that receive them.
- **Interlacing** A method for producing TV and video pictures using two frames, one with odd lines and the other with even lines. This saves space when transmitting, allowing more channels.
- **PAL** Phase Alternating Line. Standard used for generating colour TV pictures in the UK.
- **Progressive** A method for producing TV and video where each picture on screen is a complete frame. Steadier than interlaced video and better suited to fast motion.
- **SCART** A standardised 21-pin connector for two-way traffic of video and audio signals. It is used across Europe to connect TVs, video recorders and other domestic audiovisual equipment.

For more on Jargon Buster visit:
www.activehome.co.uk



► Look out for this logo when you're shopping. It tells you a product is HD-ready

Sight & Sound

New and up-coming must-haves for the style-conscious digital home owner



HP f2105 widescreen monitor

It's all very well having a PC with a DVD player, but you're going to want a good display to watch movies. HP's 2105 is a 21in widescreen model that will show the latest blockbuster in all its glory. An added benefit of widescreen is that it gives a far larger working space for general PC use. It's easy to display two documents alongside each other, or to view a double-page spread in a word processing or desktop publishing project.

The 2105 sports both DVI and VGA video inputs, is height adjustable, and includes a set of integrated speakers and two USB ports. It costs £549.

www.hp.co.uk

JVC Everio MG30 camcorder

With a 30Gb hard disk inside the case, the latest Everio from JVC allows budding directors to shoot between seven and 37 hours of footage before downloading their rushes via a USB connection to a PC for viewing and editing. The camcorder also has a connection enabling it to be linked to a TV or video cassette recorder for convenience. The MG30 will be available for around £650.

www.jvc.co.uk



Picture House Firelight Modern Plasma TV

Large displays for the home are now considered hot stuff, and none more so than the Firelight Modern. The flame-effect electric fire glows warmly, while the huge plasma screen is hidden inside the fireplace. When needed, the screen is raised for viewing. Both are remote-controlled, so you can have flicker-free TV or a flickering flame-effect electric fireplace at the touch of a button. Downlights are built into the fireplace to add ambience to the room. Prices start from £3,800 for the 37in model. www.plasmafireplace.co.uk

Philips WACS700 Wireless Music Centre

Rigging a wireless network around the home can be tricky. If all you want to do is listen to music, then the Philips WAS700 provides a simple way to access your favourite tracks around the house.

CDs can be copied and stored using the built-in CD player, or you can attach the main unit to a PC to transfer a digital music collection. Songs can be sorted by artist or genre using the remote control, and transmitted to the supplied music station, which can be placed anywhere in the home.

A centre and station package is £599. Extra stations cost £199, and up to five can be connected. The main unit has a 40Gb hard disk – enough for about 750 CDs' worth of music.

www.consumer.philips.com



2TechVisuals Wallflower 2

Digital photography has made it easier to share your snaps with others via email and on the web, but enjoying them at home usually means either gathering the family around a PC or messing about with printers. The Wallflower 2 can connect to a wireless network and display images from your collection while mounted wherever you want it.

This digital photo frame can also play videos with sound or songs from your digital music collection via a built-in speaker. If you don't have a wireless network, the Wallflower 2 has a 30Gb hard disk – enough space for thousands of images – or you can plug in a USB wireless adapter. This 12.1in frame costs £599.

www.2techvisuals.co.uk



Pure Oasis Weatherproof DAB radio

Digital audio broadcasting (DAB) has taken the crackle out of radio, and the latest set from Pure can cope with the odd splash of rain, too. This £120 travelling companion can be charged at home from the mains and then taken into the great outdoors for up to 15 hours of entertainment. The aluminium casing and rubber bumpers are built to withstand the elements, and there are connections for iPods and other digital music players so you can enjoy your own music collection. A USB port allows you to link the Oasis to a PC for updates to the DAB standard or new features from Pure.

www.pure-digital.com

Yamaha YSP-800 digital sound projector

Anyone who's heard a 5.1 surround-sound system in action will know that you can't beat the effect when watching films. Finding room for all of those speakers and trailing wires, however, is not always easy. Yamaha's neat solution is a single-box sound projector that directs focused beams of audio around the room to create the illusion of surround sound. The effect is very impressive.

The YSP-800 follows on from the flagship YSP-1 reviewed last issue, bringing this technology to a more affordable £599. The unit will even set itself up by sensing the best angles using a supplied microphone.

www.yamaha-uk.com





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The right connections

However good your video and audio kit, if you're not getting great results it could be the cables that are at fault. We explain how to make the right connections

While most of us happily spend hundreds, even thousands, of pounds on home-entertainment hardware, few people stop to consider the cabling used to connect it all together.

If the right lead doesn't come in the box and we can't salvage one from an obsolete piece of kit, it's simply a case of nipping down the road to pick up the cheapest one. After all, it's only a cable.

But your system is only as good as its weakest link, and the connections and cables you use can dramatically affect picture and sound quality. Something as simple as switching between outputs and swapping leads can breathe new life into your CD collection, or improve the picture quality on DVD movies. So, how do cables differ and what can you do to get the best from your system?

Socket to me

The first step on the road to making the most of your existing kit is to use the best methods of connection available. Typically, this is easier said than done. With video alone there are at least five popular types of signal and socket – RF, **composite video**, **S-video**, **SCART** and **component video** – and not every product has the same options available. Modern devices also include **DVI** and **HDMI** plugs for digital video connections, just to add to the confusion.

As a rule of thumb, digital video connections give the best picture, but these can only be found on the latest devices. If you don't have this option, go for either component video or **RGB** via SCART, followed by S-video and finally composite. Avoid RF connections if at all possible. For more information on different types of video connection and how

they work, see our Television Buyer's Guide on page 84.

When it comes to audio, most products have **phono** connections for analogue signals and phono or **Toslink** (optical) connectors for digital output. Again, we'd recommend using digital connections where possible – if only for the simplicity of having one cable, especially in surround-sound setups.

That said, according to Alan Gibb at The Chord Company, CD players can sound better using analogue ports. 'Most CD players should be used by their analogue outputs,' he says. 'The manufacturer has probably gone to some lengths to optimise these for maximum performance.'

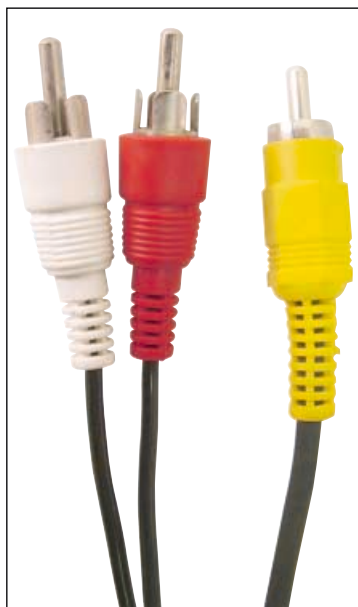
The science bit

Even when you use the best outputs available, the build quality of cables can impact on your system's performance. It's all very well having a great DVD player and a state-of-the-art plasma TV or amplifier, but if the signal from one to the other is being distorted, you're not going to get the performance you've paid for.

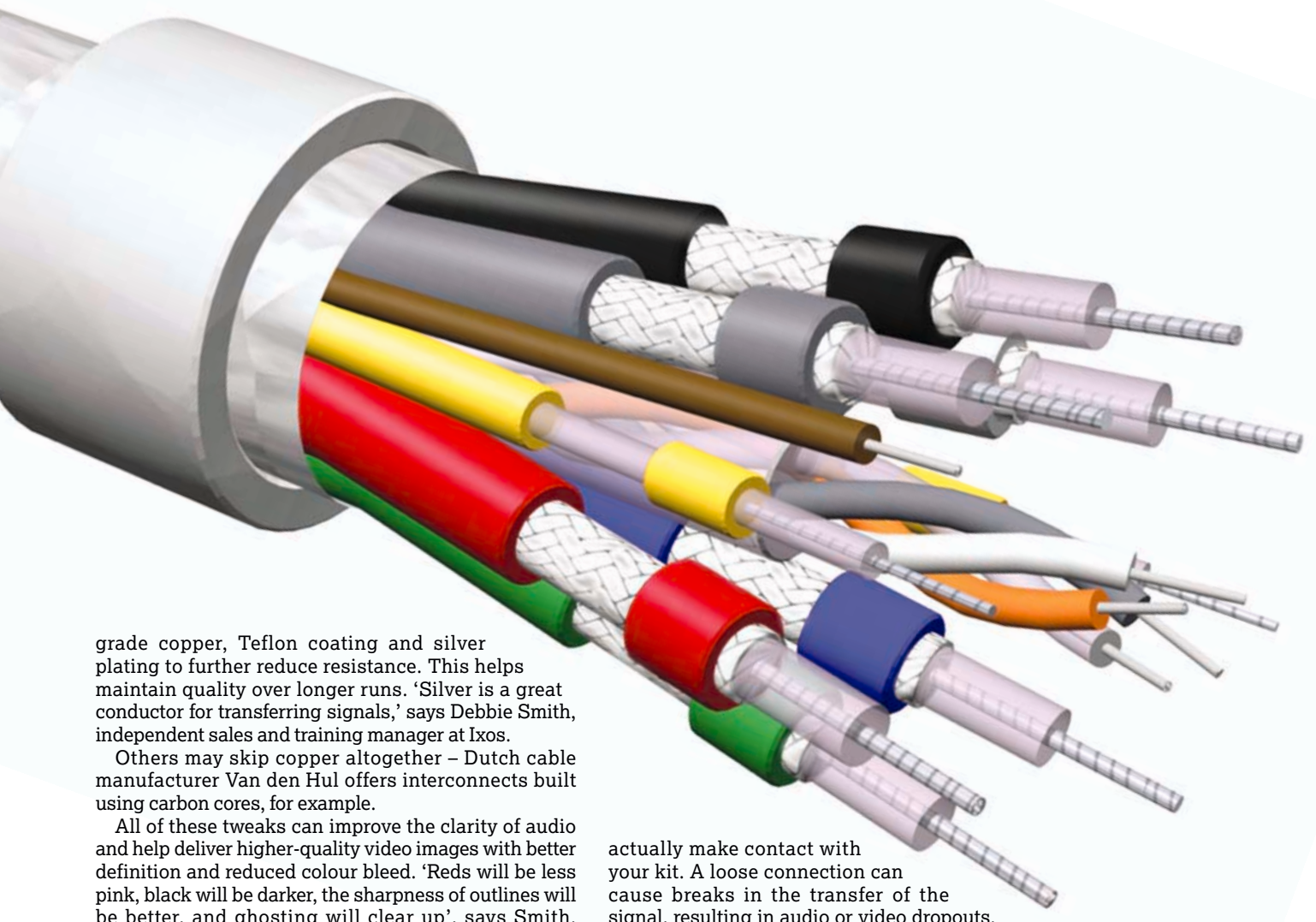
At a general level, there are three main parts of a cable that will affect signal quality; the conductor, the shielding, and the connectors. The conductor is the part of the lead that actually carries information and, in most cases, this is copper wire. The gauge (thickness) and purity of the copper used can make or, literally, break a connection.

Free-in-the-box cables may be made using unprocessed Tough Pitch Copper (TPC), which contains oxygen particles and other impurities. This is fine for power leads but these impurities can interrupt the smooth flow of video and audio signals, resulting in duller sound or the loss of fine detail on pictures.

Cables that use Oxygen Free Copper (**OFC**) have fewer impurities and allow signals to flow better with less degradation. For increased performance, top-end cables are manufactured using even higher-



◀ Swapping in-the-box leads like these for well-constructed cables can prove a cost-effective upgrade



grade copper, Teflon coating and silver plating to further reduce resistance. This helps maintain quality over longer runs. ‘Silver is a great conductor for transferring signals,’ says Debbie Smith, independent sales and training manager at Ixos.

Others may skip copper altogether – Dutch cable manufacturer Van den Hul offers interconnects built using carbon cores, for example.

All of these tweaks can improve the clarity of audio and help deliver higher-quality video images with better definition and reduced colour bleed. ‘Reds will be less pink, black will be darker, the sharpness of outlines will be better, and ghosting will clear up’, says Smith. However, they do make things more expensive to produce.

Shields up

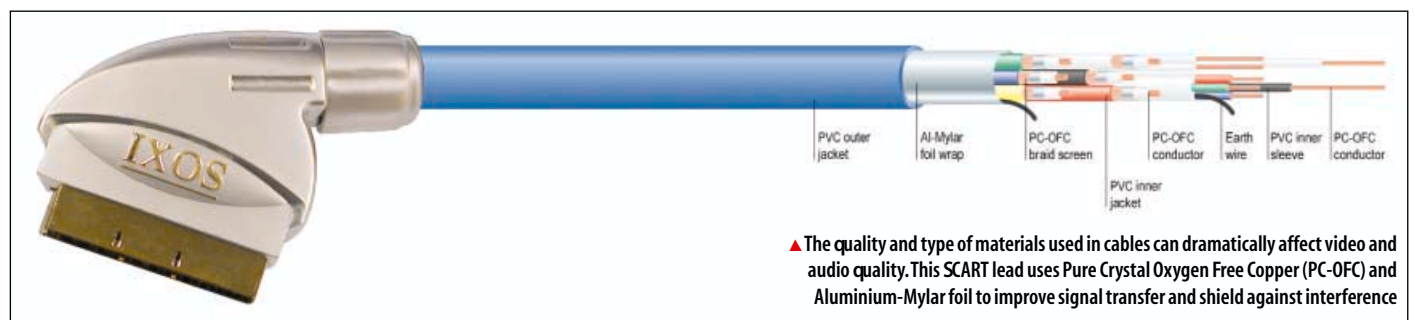
Shielding is used to protect the signal running through a video or audio cable from radio frequency (RF) and electromagnetic (EM) interference. If you’ve ever heard your office phone or a speaker buzz when someone calls you on your mobile, you’ll know all about this. Items that cause interference range from poor mains cables through to fridges, hairdryers, radios, mobile phones and computers. A setup with unshielded or poorly protected cables can suffer from audio hisses and pops, ‘snow’ noise on video and other anomalies.

Finally, the connectors are the parts of a lead that

actually make contact with your kit. A loose connection can cause breaks in the transfer of the signal, resulting in audio or video dropouts. Good cables should fit snugly (some SCART leads actually lock into position) and are often gold plated to deter oxidation and maintain a good contact.

Optical audio leads are made of fibre-optic material and use light rather than electrical pulses to transmit their signals. As a result, they are immune from RF and EM interference. However, as with copper, the grade of fibre-optic material can vary, and the quality of connectors, including how polished they are, can also affect performance.

It’s also worth noting that cables used for video and coaxial digital audio should be rated at an impedance of **75ohms** to match the signal coming from your source device. A mismatched lead can reflect some signal



▲ The quality and type of materials used in cables can dramatically affect video and audio quality. This SCART lead uses Pure Crystal Oxygen Free Copper (PC-OFC) and Aluminium-Mylar foil to improve signal transfer and shield against interference

Jargon buster

- ▶ **Component video** A connection where brightness and colour information are carried separately.
- ▶ **Composite video** A type of video signal in which the red, green and blue signals are mixed together.
- ▶ **DVI** Digital Video Interface. A video connection offering a purely digital connection.
- ▶ **HDMI** High-definition multimedia interface. A specification that combines audio and video into one digital interface.
- ▶ **OFC** Oxygen-free copper. High-quality copper ideal for video and audio cables.
- ▶ **Ohm** A unit of measurement for electrical resistance.
- ▶ **Phono** Common connector used to link video and audio devices to each other.
- ▶ **RGB** A high-quality form of component video that splits the signal into separate red, green, and blue channels.
- ▶ **SCART** A standard 21-pin connector for two-way traffic of video and audio signals.
- ▶ **S-video** A higher-quality video connection that carries brightness and colour information separately.
- ▶ **Toslink** A digital connection using light to transfer signals.

For more on Jargon Buster visit:
www.activehome.co.uk

Useful web links

- Ixos**
www.ixos.co.uk
- Lindy**
www.lindy.com
- Pure AV (Belkin)**
www.pureav.com
- QED**
www.qed.co.uk
- Supra Cable**
www.jenving.se
- The Chord Company**
www.chord.co.uk
- True Colours**
www.true-colours.com
- Van Den Hul**
www.vanden Hul.com

frequencies back at the source, resulting in ghosting or loss of detail and colour on video, and interruptions to the precise timing used on digital audio.

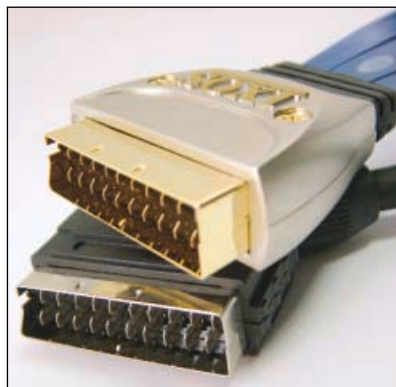
Spending wisely

Understanding how and why the quality of cables can make a difference is one thing, but just how much should you spend on them?

Is it best to simply buy the most expensive leads you can find?

As our own straightforward hands-on tests proved (see box below), well-designed cables really can transform your system. However, they can't give you what isn't there – if you've opted for a £30 DVD player or CD player, spending twice as much on a lead for it is unlikely to yield great results. Instead, the best solution is to try to match the connecting cables to the build quality of your hardware.

Experts suggest spending roughly 10 per cent of the total cost of your setup on cabling. So, for example, if you have a £250 CD player, a



◀ Gold-plated connectors help maintain a good contact between devices

£300 amplifier, and £200 speakers, you should spend about £75 on interconnects and speaker cable. However, this is just a basic guideline. Good cable manufacturers offer a range of products to suit different budgets and levels of equipment. The Chord Company will advise

on cables to match your specific kit online at www.chord.co.uk

The other thing to remember is that there's no substitute for picking the brains of a specialist dealer, and auditioning products before you buy. Any dealer worth their salt will allow you to test products instore or, better still, try them out at home after putting down a deposit. When you can't see or hear a difference, there's no need to spend any more.

So, the next time you're thinking about upgrading your kit, make sure your cables are up to scratch first. It could both surprise you, and save you money in the long run.

Plug and play

Before we started to look into the world of cables, we have to admit we were dubious about just how much impact changing a few leads could have. Build quality is one thing, but how that translates into visible and audible differences is another matter. And these things are notoriously subjective. So, we decided to find out. For audio, we tested the digital coaxial output of a Pioneer 737 DVD player with several cables from Ixos and The Chord Company to see if we

could hear a noticeable difference. Moving from a no-name lead to even the cheapest of the brand-name products produced remarkable results.

By far the most impressive was the Ixos XHD608 at £49.99. This really did transform the soundstage into an almost 3D experience, creating an amazing difference with CDs ranging from rock and dance to classical. Music became more detailed and involving, and we also heard new surround detail with DVD movies. Quite unexpected. However, the Ixos was not alone. We got virtually the same effect using Chord's Digital Signature, and some preferred the slightly more open feel this cable gave their favourite material. However, while it is a great product, at £200 it wasn't

£150 better with our player. Chord's £79.95 PRODAC Pro Digital also turned in a sterling performance, though it clearly couldn't match its more expensive cousin.

Interestingly, all of the coaxial cables delivered a more pleasing sound than the optical leads we tried. Video tests didn't provide as much of a revelation, but the improvement was noteworthy. While it was instantly apparent that even the best composite cable is no match for an RGB SCART, we saw a noticeable difference when upgrading from a free-in-the-box SCART lead to QED's RGB-only SQUART and the Ixos XHT611. Both offered improved colour saturation, depth and definition. However, this benefit was pretty much destroyed using a typical multi-SCART adaptor.



◀ The Ixos XHD608 transformed our sound experience
▶ Chord's Digital Signature gave great results, but costs £200



They say that staying in is the new going out. Hardly surprising really.



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The North's **largest** hi-fi and home entertainment show

We're offering readers half-price entry to the Home Entertainment Show 2005, the North's largest hi-fi and home-cinema event – and you'll be entered into a fantastic prize draw too. Don't miss it!

If you're thinking of buying a new hi-fi, replacing an old TV, or you just want to experience the very latest in audio and video technology, then visit the Home Entertainment Show on 29 and 30 October at the Renaissance Hotel, Manchester.

In association with *Active Home*, and sponsored by Practical Hi-Fi, one of England's leading retailers, the North's largest hi-fi and home-cinema event will be showcasing the most exciting and innovative products in home entertainment.

Here you'll find the biggest names in the consumer electronics industry, including Sony, Denon, KEF, Acoustic Energy, Harman Kardon, Boston, Sharp, Onkyo and Teac. You can also check out the more specialist brands, such as Cyrus, REL, Sugden, Bel Canto, Dynaudio, ART, Proac and Focal JM Labs.

HD ready

Want to know more about high-definition television? The Home Entertainment Show 2005 will showcase the latest in Plasma, LCD and DLP technology from Pioneer, Panasonic, Fujitsu, Sony and Sharp. Yamaha will be showing off its 3Chip DLP DPX-1200 projector, while Infocus will be demonstrating its latest Screenplay product lineup.

Every year, the Home Entertainment Show is the first place to see, hear, feel and buy the very latest hi-fi and



Practical Hi-Fi

Show information

Opening times

Saturday 29 October 9.30am-5.30pm

Sunday 30 October 10am-5pm

Entry Adults: £6 Accompanied children: £Free

home-cinema gear. This year is no exception, and Sony will be demonstrating its genre-redefining Qualia SXR LCD projector.

Sound advice

High-quality sound is a major feature of the Home Entertainment Show, where three floors will be brimming with state-of-the-art products. Among the companies making their debut this year are Pathos, Unison Research, GRAAF and Audio Physics. Also joining the ranks are debutants Audiolab, who promise some tempting A/V and two-channel audio products. Even more exciting, Acoustic Energy/Boston will be launching a

new technology, currently being kept under wraps. Keep an eye on the show's website for more information.

The right connections

Your home-entertainment centre is only as good as its weakest link, so you'll also find the best in hi-fi and A/V accessories. Covering everything from furniture and brackets to headphones, speaker cables and interconnects, leading lights such as Alphason Designs, Apollo, Sennheiser, IXOS and The Chord Company will be on hand to show you the best buys.

Finally, advice rooms and sales centres will be provided by Practical Hi-Fi, with experts on installation and multi-room guidance. The sponsor is also running a clearance centre, so you might just pick up a bargain, too.

The Home Entertainment Show 2005 is all set to show the latest and greatest in Manchester's prestigious Renaissance Hotel.

For more information log on to www.home-entertainment-show.co.uk

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Plus enter this year's fantastic competition for your chance to win one of three fantastic prizes!
All you have to do is fill in your name and address below and drop this into the designated competition box at the show's entrance.

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For further information on this year's show, including full exhibitor listings, product information and directions please visit:
www.home-entertainment-show.co.uk

Just some of the great products on show...

Denon Smart Life S-301

Denon's exciting new Smart Life S-301 system heralds a breakthrough in home-theatre technology. This neat and compact unit offers Dolby Virtual Surround Sound from 2.1 speakers, and can handle Dolby Digital and DTS audio. The high-quality Faroudja DCDi-equipped progressive-scan DVD player also supports DVD-Audio and Super Audio CD, and has an HDMI digital output for maximum picture quality on the latest TVs. Perhaps its most interesting feature is the front-mounted connectors for attaching MP3 players or external storage devices to form a music server. The Smart Life S-301 offers 280 watts of audio power through its metal-constructed, three-way speakers. www.denon.co.uk



Pioneer PDP 436XDE and PDP 503XDE

Pioneer's sixth-generation plasma screens continue to amaze, and are now slimmer and sexier than ever before. Supporting both 1080i and 720p screen resolutions, the latest PDP436 and PDP503 models are true HD-ready panels, and feature Pioneer's unique 'waffle rib' and 'Pure Colour Filter' technology to offer a level of brightness and contrast that has never before been possible with plasma displays. The 43in and 50in panels are both equipped with HDMI and full component connections, and simply have to be seen to be believed. www.pioneer.co.uk

KEF KIT200

The KEF KIT200 5.1 home-theatre system comprises a high-gloss black DVD player with five matching three-way, three-drive unit satellite speakers and a jet black subwoofer. The main unit is based on the multi-award winning KIT100 model, and comes complete with satellite/cable, TV and VCR inputs as well as a choice of composite, S-video or component (including progressive scan) outputs. The system is easy to set up, and the five stylish satellite speakers and subwoofer are built to extract the very best from any music track or movie. www.kef.co.uk



Yamaha YSP-800

The YSP-800 Digital Sound Projector brings Yamaha's amazing virtual surround-sound system to a truly affordable level. Based on its flagship YSP-1, this new model also introduces automatic room calibration. By monitoring and analysing the audio environment with a microphone, IntelliBeam technology automatically sets the best beam angles and modes, while optimising the level and frequency response of each beam. This makes initial setup both extremely simple and acoustically perfect. Five different beam modes provide true multi-channel surround sound from just one speaker. The YSP-800 is compatible with Dolby Digital, DTS, Dolby Pro Logic II and DTS Neo:6 sound formats. www.yamaha-uk.com



Sony PlayStation Portable

Is Sony's handheld games console the ultimate toy for grown-ups?



Almost nine months since its Japanese launch and at least half a year after our American cousins got their mitts on it, the PlayStation Portable (PSP) is finally available in the UK. After all the waiting, all the hype and all the controversy surrounding the purchase of imported units, the PSP could very easily have been something of a letdown. Thankfully, it isn't.

The crucial thing about the PSP – and the reason we're reviewing it in *Active Home* – is that it's something of an all-round portable media centre.

Obviously, a PlayStation-branded product is, first and foremost, a games console. But the sleek handheld device can do a whole lot more than let you play *Space Invaders*. Like the PS2 before it, Sony's portable can also play movies, either shop-bought on the **UMD** disc format that the PSP uses or ripped from your existing collection of videos or DVDs and transferred to the device's removable Memory Stick Duo (see box below). The system has a 4.3in screen,



▲ The PSP plays movies on UMD discs

We say

GOOD POINTS It's just brilliant.

There, we said it

BAD POINTS Expensive; possible dead pixel problems; tinny speakers; poor battery life

Overall ★★★★★

It might not be the iPod killer that some excitable reviewers have claimed, but the PSP is without doubt a major landmark in the evolution of mobile technology. Oh – and it's a darn good games console too.

Contact 0870 511 1999

Website www.yourpsp.com

Buy www.activehome.co.uk/activeprices

£180

which might not sound big but, assuming it doesn't suffer from any of the flaws mentioned later, the 16:9 widescreen **LCD** panel is actually pretty good. It's crisp and colourful, particularly when watching UMD discs, although – if you can work out how to get them there – films played back from a Memory Stick look pretty good too.

As well as movies, the versatile little fellow can play music (in **MP3** or **ATRAC** format) and image files that are stored on its Memory Stick, effectively doubling up as a Walkman and mobile photo album. What's more, it has wireless capabilities built in. Not only can you play games with other PSP owners either head-to-head or over the internet, but wherever you can join a wireless network or find a **Wi-Fi** hotspot you can also surf the web using the device's very own browser.

With all of these functions it's easy to forget that the PSP can actually be used to play video games. As a gaming device, Sony's pocket rocket definitely doesn't disappoint. It may lack the innovation of the Nintendo DS's touch-screen, but its

sheer power and sharp 3D graphics put the PSP leagues ahead of the Game Boys and N-Gages of this world. In fact, graphically, the PSP has much more in common with the PS2 than any of its handheld rivals.

A games console is, of course, only as good as its software, so we're pleased to announce that the PSP's launch catalogue is full of excellent titles. *Lumines* is an obvious stand-out choice, with its dangerously addictive Tetris-style gameplay and block-rocking beats. It's not necessarily the best one to show off the PSP's graphical finesse, however. For that, you might want to opt for the futuristic racing of *Wipeout Pure* or the arcade thrills of *Ridge Racer*. It's the portable version of *Grand Theft Auto*, however (*Liberty City Stories*, out soon), that has got a lot of gamers watering at the mouth.

Clearly taking its cue from Apple, Sony has squeezed all the PSP's functionality into one extremely desirable package. Slightly too big for a back pocket, the PSP pushes the 'portable' boundary a little further than Nintendo might dare, but the slim, black slab of fun is truly a masterpiece of design. Indeed, the inevitable PSP envy that non-owners will suffer from after seeing one in action will probably result in more sales than any clever million-dollar advertising campaign ever could.

That said, the PSP isn't perfect by any stretch of the imagination. A worrying number of Japanese and American users, for example, have reported 'dead' **pixels** on their LCD screens straight out of the box. And it looks like British gamers are in for a similar treat. Our test system had at least four pixels on the blink, and relevant web forums are already beginning to buzz with UK gamers complaining of strange dots on their PSP screens.

Quite why Sony hasn't fixed this rather obvious flaw in time for the European launch is beyond us. Nine months is, after all, long enough to make an entire human

DID YOU KNOW?

You can rip your DVD collection to your PSP in the same sort of way that you convert CDs into MP3s to put on an iPod. Actually getting video from your PC to your PSP is, however, a slightly complicated procedure. First you'll need to use a special decrypting program to extract the video data from your DVD, and then you'll have to get it into the right file format so that your PSP can understand it. And here's where it gets difficult, since the console refuses to recognise any video that hasn't been encoded as MPEG4 files using a very specific set of criteria. Fortunately, there are a number of applications available to help you create files that meet the PSP's strict requirements, including the commercially available *X-00M Movies on PSP* (£25 from www.x-oom.co.uk). Even better news is that there's also an extremely good freeware program, *PSP Video 9* (www.pspvideo9.com), that will do the same thing for nowt. For a useful guide to converting DVDs to PSP movies, have a look at this page from an unofficial PSP forum: www.mobiledeviant.com/forum/showthread.php?t=901

Enjoy music in every room with the Sonos Digital Music System P26



Apple does it again! Why you'll love the new iPod nano P28



The Denon DM35DAB. It may be small but it's big on sound P38



▲ The Memory Stick port adds a whole additional dimension to the PSP, effectively turning it from a games console into a fully-fledged portable media centre capable of playing music and movies and browsing photos



▲ The USB port allows you to connect your PSP to a home computer in order to transfer music, movies and photos to the console's Memory Stick. Once plugged in, the PSP shows up as a storage device in My Computer



▲ The PSP includes both a joypad and an analogue controller to suit all games

being, let alone address a few manufacturing issues like these.

There are a few other issues, too. The PSP's built-in speakers are tinny, which means that the unit really needs to be used with a good pair of headphones. Not the ones that come with the console, though. Wary of multiple kiddie deafness-related lawsuits, Sony has bundled the PSP with a set of 'ear-friendly' buds. Loosely translated, this means that they're not loud enough, which is particularly problematic when you're trying to watch a movie. As such, we thoroughly recommend investing in a separate pair.

This leads us to yet another gripe. The console is already pretty expensive, but if you want to get the most from your shiny new PSP you're going to have to shell out a sackload for additional accessories. If you're serious about taking advantage of the portable music, movie and photo features, then a larger Memory Stick than the paltry 32Mb one provided is crucial. To give you an idea, the £99-ish 1Gb Memory Stick stuck inside our test unit currently holds one two-hour movie, a couple of album's worth of tunes and a dozen or so snaps, along with our game saves and system data – and there's little room to spare.

On top of that, if you want to get all your tunes, pics and videos onto the handheld, you'll have to factor in the cost of a **USB** cable too, since Sony has, rather infuriatingly, deigned not to include one as

As a gaming device Sony's pocket rocket definitely doesn't disappoint

part of the Value Pack. When you tot up the scores, a spanking new PSP along with essential extras could easily end up setting you back more than £300 – and that's before you've bought any games or UMD movies for it. Pretty expensive for a toy.

Except that Sony clearly isn't aiming the PSP at the under-fives. Its sleek design and media functions make it the closest thing to the Swiss Army device that grown-up gadget addicts have been pinning for.

Tech spec

- 4.3in, 16:9 widescreen TFT LCD
- 480 x 272 pixels resolution with 16.77 million colours
- Wireless network compatible (IEEE 802.11b)
- UMD disc drive
- USB 2.0 port
- 32Mb Memory Stick Duo card
- Infrared port
- Play MP3, ATRACplus, WAV music
- Browse JPEG, BMP, TIFF photos
- Watch MPEG4 movies on Memory Stick
- Built-in speakers
- Dimensions: 6.7 in x 0.9 in x 2.9 in (WHD)
- Weight: 280g (including battery)
- AC adapter, battery pack, headphones, wrist strap, pouch, screen cloth and free *Spider-Man 2* UMD movie offer included in Value Pack



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active
Home



◀ The Sonos Digital Music System is one of the best music streamers around

We say

GOOD POINTS Straightforward to set up and use; great remote control; extremely versatile
BAD POINTS One ZonePlayer needs to be connected to a router or a computer; doesn't support DRM-encrypted files

Overall ★★★★★

Brilliant in almost every way. If you can afford it, then buy it.

Contact 0808 234 6596

Website www.sonos.com/uk

Buy www.activehome.co.uk/activeprices

£698

Sonos Digital Music System

Control your digital music collection from the palm of your hand

We see plenty of new and interesting gadgets here at *Active Home*, but it takes something rather special to get our pulses racing. The Sonos Digital Music System is the granddaddy of wireless music streamers and, although these devices are as common as burnt Brits in summer, it's unquestionably the best product of its type.

In short, it allows you to stream **MP3**, **WMA**, **AAC** and **FLAC** digital music files from a computer to a Sonos ZonePlayer (receiver) using either a wired or wireless connection. However, unlike products from Netgear (MP-101), Creative (Sound Blaster Wireless Music), Pinnacle (ShowCenter), and Apple (AirPort), the Sonos comes with a fancy remote control allowing you full access to your computer-based music collection and direct links to internet radio stations.

One of the Sonos' many plus points is the installation procedure. All you have to do is connect one ZonePlayer to your computer via a network cable, load the software, and it's configured – no need to

worry about things like security settings.

The ZonePlayer has 802.11g wireless networking built in, so just connect it to a hi-fi using the phono sockets or, as the ZonePlayer has a built-in amplifier, attach a pair of standalone speakers and a sub-woofer to the connectors on the back. A ZonePlayer can also be attached to a router, if you have one.

Sonos uses its own music server software to talk to the ZonePlayer but, rather than having to load your entire music collection into a new database, just show the Sonos software where the music resides on the computer and it will do the rest.

The Sonos Controller can be used to navigate music by artist, album, genre, composer, playlist, or by the folder structure that already exists on the computer. It doesn't yet support **DRM**-encrypted or **WMA Lossless** formats but may later on via a **firmware** update. Sound quality is outstanding.

The Controller has a 3.5in colour screen which, along with song information, displays the artist, the album, the next track queued up to play, and even album art. A large iPod-esque scroll wheel and centre button are used to navigate through the menus and playlists, while there are additional buttons for playback and volume adjustment. The controller has

a light sensor that will only activate the backlight when it detects movement, which conserves battery power.

Up to 32 ZonePlayers can be simultaneously connected to one computer, although we doubt this could be managed on a completely wireless network. If you have got more than one player, though, each can be named depending on its room location or 'Zone'. This means only one controller is needed for multiple ZonePlayers; just pick the Zone you want to connect to from a list and you can set each ZonePlayer to play different tracks from one computer, or have them all playing the same thing. You can even attach a line-in source to one unit and have it broadcast audio to every other ZonePlayer in real-time, which is brilliant.

So, is there really nothing wrong with the Sonos? Well, the Controller can't scroll through long track, album or artists' names. Plus, at least one Player has to be permanently connected to a router or PC. The biggest turn-off, though, is the price. At £698 for one ZonePlayer and one Controller, it's expensive. Sonos is offering two ZonePlayers and one Controller for £949, but it's hardly an incentive.

However, if you want the best music streamer available and can justify paying big bucks, then it's a no-brainer.

Tech spec

- 802.11g Wi-Fi for streaming
- Remote control with LCD
- Phono in/out
- MP3/WMA/AAC/Ogg Vorbis/FLAC/WAV/AIFF support

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TISC 1619

Advent DHE 1000

A Media Center PC with a retro look but plenty of connection options



Compared with other entertainment equipment residing in most lounges, such as DVD players and widescreen TVs, the DHE 1000 Media Center PC is likely to be the most unattractive. Advent could have done a far better job with the aesthetics – it looks more like an old VHS video recorder – and the green LED screen only adds to the retro look. Navigation buttons are situated next to this display, while a flap running along the bottom reveals a multi-format card reader (supporting all major cards except the xD PictureCard), audio and video inputs, headphone and microphone jacks along with one FireWire and two USB 2 sockets.

The DHE 1000 is based around an Intel Pentium 4 processor, running at 3GHz, and 1Gb of Ram, which is more than enough for a Media Center PC. The 128Mb nVidia GeForce 6600 graphics card will be able to play most of the latest 3D games, but you'll have to turn down detail levels and use relatively low resolution settings.

Storage space is important on any Media Center PC as your music, pictures

▲ The DHE 1000 is a quality Media Center PC, but it could have done with a better design and a digital TV tuner

and videos will all be clamouring for disk space. Advent ships a 250Gb hard drive as standard and, should you start to run out of space, the dual-layer Lite-on DVD burner will come in handy when archiving data.

Media Center 2005, the latest version of Microsoft's entertainment operating system, can support two TV tuners, allowing you to record one program while watching another, or record two programs simultaneously. Thanks to the Avermedia dual-tuner Advent supplies, you'll be able

It looks like an old VHS video recorder - and the green LED screen only adds to the retro look

to take full advantage of this feature. A single RF-input splits the signal, so you only need one aerial cable. However, since only analogue tuners are supplied, you can't pick up digital Freeview broadcasts. You could attach a separate USB Freeview receiver, but it's not an ideal solution.

The standard Media Center remote control is joined by a thin, light and compact wireless keyboard, complete with a trackball instead of a mouse. As you'll see from the picture, no monitor is supplied with the DHE 1000 – instead it's designed to hook-up directly to your television set. That's not to say you can't attach it to a spare monitor, and

We say

GOOD POINTS Connection options; dual-tuner

BAD POINTS No digital tuner; bulky and dated design

Overall ★★★★★

If its looks and lack of a digital tuner don't put you off, the DHE 1000 is a quality Media Center PC.

Contact 08702 420 444

Website www.pcworld.co.uk

Buy www.pcworld.co.uk

£999

both analogue (VGA) and digital (DVI) monitor connections are offered. Two sets of composite and S-video outputs are available on the rear of the PC. There's no SCART socket, but Advent has been thoughtful enough to include a composite/S-video to SCART converter.

Other ports on the rear of the unit include individual audio outputs for a 7.1 surround-sound speaker system, digital audio outputs (both optical and coaxial) and two IR blaster ports. The latter allow you to connect the DHE 1000 to a Sky or cable TV set-top box. The IR blaster cable attaches directly to the IR port on your receiver, allowing Media Center to change channels for scheduled recordings. A fiddly setup, but it works with most set-top boxes.

During testing, the DHE 1000 generated a fair amount of heat, which was mainly emitted from the rear of the PC. Air vents

on the top of the box are accompanied by a warning that it should be allowed plenty of breathing space – so placing it in a small TV cabinet or stacking another unit on top of it is not recommended. Noise levels are reasonably low and shouldn't interrupt your viewing.

At just under £1,000, the DHE 1000 is reasonably priced. We'd have liked to see a more stylish design and the option of digital TV tuners, but we can't complain about the range of outputs and overall quality of the system.

If you're looking for a Media Center PC to hook up to your TV, the DHE 1000 is well worth considering.

Tech spec

- Intel P4 3GHz ● 1Gb Ram ● 250Gb hard disk ● 128Mb nVidia GeForce 6600 graphics card ● Lite-on dual-layer DVD writer ● Avermedia dual analogue tuner ● VGA, DVI connectors ● S-video, composite in/out ● Cyberlink PowerDVD & Power2Go ● MSWorks 8

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Apple iPod nano

Apple's latest iPod is the sexiest yet

Well, Apple has gone and done it again. Just when everyone was expecting it to announce an upgrade to the popular Mac Mini, it goes and unveils something completely different. Enter the somewhat oddly-named iPod nano.

We say

GOOD POINTS Superb design, compact; lightweight and stylish; but also solidly built

BAD POINTS Lower capacity than the iPod mini, no dock included

Overall★★★★

As always with Apple kit it's a little pricey, but its gorgeous design will have the nano selling like hotcakes.

Contact 0800 0391010

Website www.apple.com/uk

Buy www.activehome.co.uk/activeprices

£129/£179

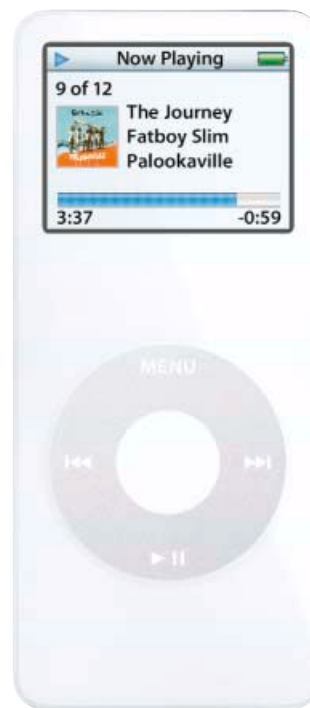
The 'nano' bit refers to the fact that it is remarkably small. The unit, available in both black and white, measures just 9cm high, 4cm wide and is 0.84cm thick. In other words, it's smaller than a credit card in height and width, and only about half a centimetre thicker. Its storage capacity is lower than that of the now-defunct iPod mini, though. There's a 2Gb model (holding approximately 500 songs) available for £139, or a 4Gb model (1,000 songs) for £179 – which just happens to be the price of Sony's PlayStation Portable.

But although it's small, it has more in common with the larger iPod than the miniature iPod Shuffle. The nano has a very clear and sharp 1.5in colour screen, and it has the iPod's ability to display digital photos or album artwork downloaded from your Mac or PC. It's

also well constructed. We had expected it to feel a bit lightweight and plasticky, but it's metal with a plastic front panel, and it feels nice and solid.

The nano can connect to either a Mac or PC via a USB 2 cable, and you can synchronise contacts and calendar information from your computer. There's no dock unit included, but Apple does provide an adaptor that allows you to use it with existing iPod docks or other accessories, such as speaker systems.

Instead of using a small hard disk, the iPod nano is built using a simple **flash** memory card. This has no moving parts, so it provides better battery life, lasting up



to 14 hours on a single charge.

Apple's designers have outdone themselves again, and the iPod nano has the all-important 'techno-lust' factor that will have you drooling after one even if you've already got an iPod.

Tech spec

- MP3 and AAC music player ● 9 x 4 x 0.69cm (HxWxD) ● 22g ● 14hr battery life
- 1.5in colour screen ● USB 1.1 and 2.0; audio mini-jack

LG 3200TFK

LG's latest display is ideal for Media Center PCs

This surprisingly thin and light LCD panel can act as both a computer monitor and a TV. As a monitor, it's nothing short of excellent – at the screen's native resolution of 1366 x 768 pixels, the display is clear and sharp, even when extremely close-up. Of course, with such a large screen, it's not necessary to sit too close, and the display is

clear from a couple of feet away as well. It would be an ideal display for a Windows XP Media Center PC – with a wireless keyboard and mouse it's possible to use the PC from the other side of a room.

As for its television credentials, things aren't quite so clear-cut. The TV tuner module is optional and is an analogue model, rather than a digital (Freeview) one. However, this isn't a major problem and you can always add an external receiver to increase the channels available.

Picture quality is good but standard television can look poor on LCD and Plasma screens larger than 30in. Things will improve once UK **HDTV** broadcasts start (see our feature on page 8), and the LG is capable of displaying high-definition pictures using a suitable decoder, albeit only at the lower 720p resolution.

There are plenty of inputs on the back including **component**, **VGA** and **DVI** (with **HDCP**) video connections. Unfortunately, there's only one **SCART** socket, which could



mean some juggling of cables if you have several devices. As expected, component video and digital inputs offered the best-quality pictures, and DVDs looked particularly good with a Denon DHT-550SD player in progressive scan mode.

The LG 3200TFK is supplied with a

pair of stereo speakers that bolt onto the side of the screen, or can be left off altogether should you already have separate speakers.

This is a well-made screen that's easy to use and can provide an excellent picture if you have the appropriate equipment.

Tech spec

- 32in widescreen ● 500cd/m2 brightness ● 500:1 contrast ● 2x 10w speakers
- 178 deg horizontal and vertical viewing angle ● 7.2Kg ● Teletext with Fastext
- RF antenna, Scart, composite video, S-video, component video, VGA, DVI
- 964mm x 104mm x 540mm (WxDxH) inc speakers and stand

We say

GOOD POINTS Great with a PC; plenty of inputs; decent built-in speakers

BAD POINTS Doesn't support 1080i HDTV; only one SCART socket

Overall★★★

A great monitor that also delivers good video and TV pictures with the right equipment.

Contact 0870 6075544

Website www.lge.co.uk

Buy www.activehome.co.uk/activeprices

£1,200

Optoma H27

Impressive and affordable home-cinema projector

Projectors are coming down in price to the point where they offer a genuine alternative to large-screen plasma or LCD television sets. And Optoma's H27 is one of the best low-cost projectors we've seen so far.

We say

GOOD POINTS Easy-to-use home projector that provides good image quality at an attractive price

BAD POINTS Relatively low resolution doesn't support true HD; manual is a bit heavy-going at times

Overall★★★★

Good image quality and simple controls make this an excellent choice for the home-cinema fan.

Contact 01923 691800

Website www.optoma.co.uk

Buy www.activehome.co.uk/
activeprices

£699

There are a number of projectors in the sub-£1,000 category that provide good image quality, but which lack additional options such as a **DVI** connector to accept a digital signal from a computer. The H27, in contrast, costs just £699, but has a comprehensive set of input connectors including composite, component and S-video, SCART, VGA and – thankfully – DVI. That covers most types of home video

equipment, games consoles and computers, so you can use the H27 in conjunction with just about any type of device you're likely to own.

We also admired the ease with which we were able to set it up. The H27 automatically detected both our laptop and domestic DVD player, and began playing movies right away.

The zoom and focus controls on the body of the projector allowed us to adjust the image quickly and easily. Additional options, such as brightness and contrast, freeze-frame and aspect ratio, are all available from the onscreen menu,



which can be activated either by using the buttons on the projector itself or with the supplied remote control.

However, Optoma gets a slight slap on the wrist for claiming the H27 is 'high-definition compatible'. Like most projectors in this price range, the H27 has a relatively low maximum resolution – in this case 854 x 480 – which isn't adequate for true HDTV. What Optoma means is that the H27 accepts a high-

definition signal, then scales it down to suit its own lower resolution.

To be fair, though, few projectors in this price range offer a true high-definition display, and the H27's combination of ease of use, image quality and input options make it one of the best home projectors available for less than £1,000. (And it's got a built-in air-purifier too. Honest.)

Tech spec

- Digital light processing (DLP) projector with 854x480 resolution
- 277 x 236 x 105mm (WxHxD)
- 2.5Kg
- Aspect ratio – 4:3 and 16:9
- Supports PAL and NTSC formats
- Composite, component, SCART and S-video, DVI and VGA inputs
- Built-in air-purifier

Sony RDR-HX510

Sony adds a whole new layer to DVD recording

Initially, we got pretty excited by the prospect of Sony's RDR-HX510, one of the first DVD recorders that promised compatibility with dual-layer blank discs.

We know what you're thinking – not another recordable DVD format, right? Well, dual-layer DVD+R and DVD-R both work just like their standard single-layer

versions, except that they have double the capacity. In this instance, the RDR-HX510 can write to dual-layer DVD+R discs (along with single-layer DVD+R/RW and single-layer DVD-R/RW), but not dual-layer DVD-R. It's a bit confusing, and we wish that manufacturers would just swallow their pride and make all their DVD recorders compatible with all blank discs.

Using a dual-layer DVD+R certainly makes a difference to recording times. You can record nearly four hours to a single disc at standard quality – up to nearly 15 hours if you use the recorder's lowest quality setting. But, since DVD+R is a write-once only format, you won't be able to erase your discs and record to them again. For this, we'll just have to wait until some bright spark invents dual-layer DVD+RW or DVD-RW – neither of which are likely to be compatible with the RDR-HX510.

Dual-layer aside, the RDR-HX510 is a fairly unremarkable digital video recorder. It comes with an 80Gb built-in **hard disk**. This isn't massive



by today's standards, but adequate for temporary storage. Sadly, though, unlike many other hard disk-based recorders, the RDR-HX510 doesn't have a built-in EPG (**Electronic Programme Guide**). This means there's no nice, easy way of selecting programmes for timed recording. For this you'll have to resort to the stone-age joys of Video Plus.

Picture quality is excellent for recordings on either disk or disc. Standard Play (SP) recordings look just like the original broadcasts, although there are two even higher-quality settings (HQ and HSP), should you wish to use them.

All recordings to DVD use an 'intelligent' automatic chaptering system too, which is useful.

On the playback side, the RDR-HX510 is compatible with dozens of disc formats, with the notable omission of DVD-Audio and **SACD**. It also features a component video output and **progressive scan** feature, which can produce a high-quality image on compatible TV sets. When we played a shop-bought DVD movie through a standard **RGB SCART**, however, the image quality wasn't as good as that of many much cheaper dedicated DVD players that we've tested.

We say

GOOD POINTS Dual-layer DVD+R recording; progressive scan output; automatic chaptering

BAD POINTS No EPG; average playback quality

Overall★★★★

Dual-layer offers double the recording time. But the perfect DVD recorder is still a little way off, it would seem.

Contact 0870 511 1999

Website www.sony.co.uk

Buy www.activehome.co.uk/
activeprices

£399

Tech spec

- 80Gb hard disk
- Records to DVD-R/RW, DVD+R/RW and dual-layer DVD+R
- MP3 music playback
- JPEG photo browsing
- Progressive scan
- Digital optical/coaxial audio output
- 1x RGB SCART input
- 2x composite/S-video inputs
- 1x RGB SCART output
- Component video output
- 1x composite/S-video output

NHJ MPM-202

A powerful portable media player with a difference

Microsoft-powered portable Media Center devices haven't really taken off in the UK, but companies are still churning out compact multi-media players at a rate of

We say

GOOD POINTS Easy to use; good recording features; lots of storage space

BAD POINTS Much bigger than an MP3 player; no support for bookmarks; below-par screen quality

Overall ★★★

A nifty multimedia gadget with lots of features, but a poor screen lets it down.

Contact 0870 027 2127

Website www.nhjapan.com/ united_kingdom

Buy www.activehome.co.uk/ activeprices

£375

knots. The latest we've seen comes from Japanese manufacturer NHJ.

The MPM-202 has a 60Gb hard disk inside its chunky frame and a 3.5in screen on the front, with a resolution of 480 x 234 pixels. As well as being able to play **MPEG4** videos, MP3 and WAV music files and JPEG images, it can be set up to record TV broadcasts directly to its hard disk.

This is quite unusual and, much to our surprise, works well. Once the unit is docked in its cradle, you can attach a TV aerial to the connector on the back and tune analogue TV channels automatically or manually.

Recording options are fairly basic. There's an option to change the quality, to provide between 16 and 65 hours of recording time, plus an S-video socket on the cradle for recording DVD movies from a DVD player. There's no bookmark feature when watching video, though, so to continue from where you left off, you have to fast-forward through the movie.

The MPM-202 can also be



connected to a TV using composite video and audio cables, which is nice for playing photo slideshows.

Other digital media can be transferred from a computer via USB and organised into obvious folders such as My Movies. Files can also be imported straight from SD or CompactFlash memory cards.

Sound quality is pretty good using the headphones. Picture

quality is okay, but only when facing the screen straight on.

Navigating through the menus is simple enough, and the jog-wheel and buttons are intuitive to use.

For just shy of £400, this is a competent high-capacity portable media player. If the screen quality was a little better it could have achieved much better marks.

Tech spec

- TV recording
- 60Gb hard disk
- MPEG4/MP3/WMA/JPEG support
- 3.5in screen
- S-video input
- Composite video and audio outputs

Creative Soundblaster X-Fi Elite Pro

Creative's latest soundcard is optimised for home entertainment and audio creation

Creative Labs' latest **sound card**, the X-Fi Elite Pro, uses a new processor designed to enhance audio from even substandard-quality sources.

We say

GOOD POINTS Superb sound quality, even from compressed files; also good performance from games

BAD POINTS More expensive than most standard sound cards; few specially written games are available

Overall★★★★

Unbeatable sound quality but best suited to those who are already upgrading, or who need the best – for others, it might be worth waiting for prices to drop.

Contact No UK sales number

Website www.creative-europe.com

Buy www.activehome.co.uk/ activeprices

£250

It's also optimised for home entertainment and audio creation, as well as for games.

The card has three modes, switched using the supplied software, which adjust the setup to provide optimal performance for the task at hand.

But does the X-Fi sound better than the on-board sound from a PC? The answer is a resounding yes. The entertainment mode has two main tweaks. The CMSS-3D technology remixes the sound to fit it to the number of speakers you have – so a stereo source, such as a music file, will come through a 5.1 surround-sound system on all the speakers. Some speaker systems do this anyway, but the X-Fi's version sounds far sharper and cleaner.

Another enhancement is the crystalliser, which tweaks the treble and bass in compressed music to



repair and replace sound that was lost. The card can also deliver 24-bit, 192-KHz DVD-Audio playback, should you have access to DVD-Audio discs. Audio creation mode also gives access to this ultra-high audio format, so for anyone creating music on a PC, the X-Fi is an extremely good choice.

Finally, the gaming mode improves on the number of simultaneous sounds available. That said, games must be specially written to make best use of the X-Fi.

The only downside is the cost – £100 up to £250 for the full version (reviewed) with a breakout box with extra ports.

Tech spec

- Creative X-Fi processor
- 64Mb RAM
- 24-bit/96KHz
- Output: stereo to 7.1
- Digital in/line in/microphone/aux in (on card)
- SPDIF in/SPDIF out/phono in/optical in/optical out/midi in/midi out/headphone out/line in/microphone in/Creative remote DIN port (on breakout box)
- Dolby/THX certified
- Creative drivers and software suite, Cubase LE, Wavelab Lite, Amplitude LE

Freecom **MediaPlayer-3**

A portable USB hard drive that doubles as a media player

PCs are becoming more and more suited to the idea of the digital home. However, for those who don't yet have their computers hooked up to the living-room hi-fi and a big-screen television, there is another way to enjoy digital music and video.

We say

GOOD POINTS Superb playback quality; can be controlled without using a television screen

BAD POINTS Twice the price of a standard external hard disk

Overall★★★★

Not the most elegant way to play media files on a television or hi-fi, but the playback quality is excellent

Contact 01423 704700

Website www.freecom.com

Buy www.activehome.co.uk/activeprices

£220

Freecom's MediaPlayer-3 is a portable hard disk that connects to a computer via the USB port. However, it's also a media player (hence the name). Connect it up to a television or hi-fi system using the supplied leads and it can output video and audio files, using a display on the TV to navigate between files.

Playback quality is very good, and unlike some similar players that require a remote control, this one has a small LCD screen on the front panel, so it can be controlled using the front-panel buttons without plugging it into a TV. It can also be plugged directly into a hi-fi and used to play music without having to connect up the television as well.

It is quite expensive – roughly twice the price of the equivalent external hard disk – but the extra money obviously buys a media player as well as the storage capacity. The 160Gb version we looked at is enough for 20 DVD-format films, or more than 100 films in compressed form, or around

40,000 songs in MP3 format. There are other models available, starting at 80Gb and going up to a whopping 400Gb, at £380.

It's not the most elegant solution, since to transfer new files you have to unplug it from the TV, plug it into the PC, then unplug it and plug it back into the telly. Also, one minor point is that the glossy black-case is easily susceptible to fingerprints, though the silver version tends to stay cleaner.



Tech spec

- 160 Gb storage ● USB 2 connection ● Sockets: Power, composite video, component video, s-video, left/right audio, SP/DIF optical audio ● Supported formats: MPEG1, MPEG2, MPEG4, DivX 3.11/4.0/5.0, XviD, DAT, VOB, MPG, MPA, M1V, M2V, AVI, AC3, DTS, MP1, MP2, MP3, WMA, ASF, Ogg Vorbis, AC3 ● Software: Dr DivX encoder
- Remote control, LCD screen

Hermstedt **Hifidelio**

Rip your CD collection to this hi-fi hard disk, and stream music, too

While the Sonos (reviewed on page 26) is an outright audio-streaming device, the Hifidelio offers more features for the general music fan. The most notable difference is its ability to rip music CDs and store them on its internal 80Gb hard disk.

It takes around 40 seconds to rip a

We say

GOOD POINTS Quick to rip; can stream audio from a computer; nice design

BAD POINTS Pricey; limited search features; tricky to configure networking options

Overall★★★★

A competent and useful music machine for the front room. It's expensive but extremely versatile.

Contact 020 7368 3333

Website www.hifi-wifi.co.uk

Buy www.activehome.co.uk/activeprices

£599

one-hour CD at the highest MP3 quality setting and attach relevant ID3 tag information, such as the artist's name. This time can be reduced by dropping the audio quality, which will also allow you to store more songs on the player. At near-CD quality MP3, the 80Gb Hifidelio can hold around 15,000 songs. It's also possible to rip in other audio formats such as AIFF, WAV and FLAC, and to burn archived music onto recordable CDs.

You can stream music from a PC to the Hifidelio using either its built-in 802.11g wireless adapter or wired Ethernet. The device will even show up in iTunes, allowing music to be streamed from the player to the computer. Getting the two things talking to each other isn't straightforward, though, and takes a good read of the manual.

A jog wheel on the front of the device is used to scroll through tracks and control the menu system. You can't search for a track, artist or album by letter, but pressing the numeric keys on the supplied remote jumps through the list.



The LCD screen is quite small and, unless you've got hawk eyes, you won't be able to navigate music or the menus from afar.

On occasion there was a gap between the transitions of tracks, which got worse when streaming music from a computer. Actual audio quality, though, is very good, especially when connected to a hi-fi or amplifier via one of the two digital outputs.

You can also connect a portable music player, such as an iPod, to the Hifidelio, using one of two USB ports

on the rear. You can then browse the contents on the backlit screen and play the songs. Using the line-in socket on the back of the machine, external audio can be recorded, edited, tagged and stored on the hard disk.

Priced at just under £600 for the 80Gb version (the 160Gb model costs £200 more), the Hifidelio isn't cheap by any means. However, it's a neat audio gadget that is relatively simple to use and, for most music fans, will free up a shelving unit that was once full of CDs.

Tech spec

- MP3/AIFF/WAV/FLAC recording ● 802.11g Wi-Fi for streaming ● CD-RW drive
- Analogue & digital connectors ● 80Gb hard disk

Sanyo DC-DAB03



Sanyo offers up a micro hi-fi system with DAB that gives you a good bang for your buck

Unlike the digital radios reviewed on page 47, the Sanyo DC-DAB03 is a standalone micro hi-fi that offers CD and MP3 playback as well as DAB.

With a main unit and two small speakers, it's discreet enough to fit in a bookcase, but powerful enough to

churn out 100W (total RMS).

Setup is simple. Like most all-in-one hi-fis, you just connect the colour-coded captive speaker cables to the back of the main unit, attach the supplied radio aerial, plug in the power and it's ready to go. Tuning in digital radio is also a cinch; press the DAB button and all available stations will be automatically found and stored. You switch between stations using the CD playback buttons on the left.

When a clear DAB signal is received, sound quality is excellent. At most volume levels we were surprised with the clarity and punchy bass, although flicking the jog-wheel around to the high figures brings in a little distortion. However, at acceptable volume levels, the Sanyo is perfectly suited to front room, kitchen or bedroom listening.

The DC-DAB03 can also play CDs and MP3 files that have been burned to a CD-R or CD-RW disc. The ID3 tag



of each MP3 will appear on the backlit LCD screen when played, but you can't browse a CD full of MP3s by information such as album, artist, track or genre. The DC-DAB03 won't automatically switch to CD-mode when a disc is inserted either; this has to be done manually.

Other features include an FM radio with RDS, a bass boost and four sound presets. However, we ditched the likes of Rock, Pop and Classical in

favour of the standard preset, which offered the most balanced audio.

There's also a timer and clock, and a comprehensive remote control. On the back of the unit are phono plugs for attaching an external audio source, such as an iPod.

For £150 the DC-DAB03 is a good-sounding micro hi-fi. It's not bursting with clever features, but it's a solid little performer that won't break the bank.

We say

GOOD POINTS Clear, punchy sound; MP3 playback; digital radio
BAD POINTS No support for ID3 tag browsing

Overall ★★★★★

Looks and sounds great. For the price, it's a very good buy.

Contact 01923 246363

Website www.sanyo.co.uk

Buy www.activehome.co.uk/activeprices

£150

Tech spec

- DAB ● CD player ● MP3 playback from CD ● 100W total RMS ● Phono inputs

Denon D-M35DAB

Denon's micro system costs, but it's a quality product

The D-M35DAB is a CD and digital radio system that's intended to fit in with Denon's existing range of micro hi-fi components. Sporting a solid design, a brushed silver coat, and accompanied by a pair of wood-encased speakers, it's immediately obvious why this system costs twice as much as the Sanyo DC-DAB03.

Although the Denon is aimed at those who are serious about audio, it's very easy to set up and operate. Just attach the supplied co-axial DAB aerial to the back and insert the chunky speaker cables into the clips. Two 'foam-damping plugs' are also supplied. These can be inserted into the rear of the speakers to improve bass response when positioned on a shelf or a stand. We found they worked very well in practice, tuning the bass level to a setting that suited our listening environment.

The main unit is very basic, consisting of a CD player, a big volume dial and a few operation buttons. The D-M35DAB automatically switches to CD mode when playing an audio CD and will display CD-text if available. It will also read MP3 and WMA tracks from a CD and will scroll the name of the track along its two-line LCD.

DAB digital radio stations can be automatically or manually tuned and sound absolutely fantastic through the two-way speakers, which deliver 22 watts per channel.



CDs also sound out of this world and, providing you have the speakers positioned correctly, it's hard to believe that such a rich and full sound is coming from such a small system. A bass-boost option can also be switched on, which added extra punch to lower-quality MP3 and WMA files.

The remote control is rather more simplified than other Denon products we've seen, which is actually a good thing!

On the back of the system are two analogue audio inputs, two analogue audio outputs, a pre-amp output for a subwoofer, and an optical output for connecting digitally to a recording device.

As a complete system the Denon costs £380 (the head unit is £300 on its own). It's dear when compared to products like the Sanyo but you're paying for all-round quality, and Denon's latest micro system is up there with the best of its kind.

We say

GOOD POINTS Deep, rich sound; Quality components; MP3/WMA playback
BAD POINTS Not the most affordable option for DAB

Overall ★★★★★

Pay decent money and get a decent micro hi-fi, it's as simple as that.

Contact 01753 888447

Website www.denon.co.uk

Buy www.activehome.co.uk/activeprices

£380

Tech spec

- DAB receiver ● Optical output ● MP3/WMA playback ● 22W output ● Two-way speakers

Podgear **HouseParty**

A pair of compact iPod speakers for less than £50

Compact speaker systems for the iPod usually fall into two main categories. The 'cheap and cheerful' end of the spectrum typically cost around £50. These are generally adequate for

We say

GOOD POINTS Compact, affordable and portable; good sound quality; USB connectivity for syncing your iPod with a computer
BAD POINTS Lacking power in its sound output; requires mains power supply; no remote

Overall ★★★

Good sound quality for the price, but a bit more bass and a remote control would make all the difference.

Contact 01494 522 721

Website www.podgear.net

Buy www.activehome.co.uk/activeprices

£50

listening to music in the background, but the sound quality tends to break down as you crank up the volume, so they're not suitable for those of the partying persuasion.

If you're looking for speakers with a more substantial sound, you have to look at more expensive speaker systems from companies such as Altec Lansing or Bose, whose products come in at £100 or more.

The new HouseParty speakers from Podgear fall into the first category, costing a very reasonable £49.99.

The unit is neatly designed, with both speakers housed within a single, solidly constructed white plastic casing. Sitting between the speakers there's a docking bay that will hold most iPod models, apart from the early first- and second-generation models (see www.apple.com/support/ipod for details). Podgear also includes adaptors that allow you to insert an iPod Mini or iPod Shuffle into the dock. There's a USB port at the back



that allows you to sync the iPod with your computer, but there's no remote control. It won't run off batteries either, so you need to power it from the mains at all times.

Each of the speakers is rated at 6W, which is higher than Altec Lansing's popular iM3 speakers, which cost more than twice as

much. But the HouseParty lacks the enhanced bass of the iM3, so it doesn't sound quite as deep or solid. Even so, the sound quality is pretty good for a set of speakers in this price range, and the HouseParty is perfectly adequate for listening to music at home or for taking on holiday with you.

Tech spec

- 250 x 95 x 85mm (WxHxD)
- output – 2x 6 Watts stereo
- Frequency range – 50Hz-20KHz
- USB port
- auxiliary input connector
- compatible with iPod 3rd generation and later, iPod Mini and iPod Shuffle

Logitech **Wireless Headphones for iPod**

No more snagged cables, thanks to Logitech's wireless headphones

There have been rumours for some time that Apple would be adding some sort of wireless capability to the iPod. This has yet to happen, so Logitech has decided to do the job itself by

We say

GOOD POINTS Wireless convenience; handy built-in remote controls for your iPod

BAD POINTS Headphones could use a bit more volume; flimsy plastic construction

Overall ★★★

A nice idea, but the quality of the actual headphones is a little disappointing.

Contact 01753 870900

Website www.logitech.com

Buy www.activehome.co.uk/activeprices

£100

producing a set of Bluetooth wireless headphones for the best-selling portable music player.

The headphones are supplied with a small Bluetooth transmitter that plugs into the headphone socket on the iPod or iPod Mini.

Logitech has also added a nice little touch of its own by building a set of controls into the headphones. The left-hand earpad has a circular control pad built into it – similar to the circular control wheel on the iPod itself. Pressing the button in the centre of the pad turns the headphones on and off, while four buttons positioned around the outer edge of the pad allow you to raise or lower the volume and to skip tracks forwards or backwards. So you can stick the iPod in your pocket and control it from the headphones.

The Bluetooth side of things works well. Reception is good, and we were able to leave the iPod on a desk while we wandered around indoors with the headphones on.



The headphones and the Bluetooth transmitter both have built-in rechargeable batteries that last for about eight hours.

The only problem is that you're mostly paying for the convenience of the wireless features, rather than quality. To be fair, the headphones

do provide quite good sound quality but they're not terribly loud and their plastic wrap-around design feels rather flimsy. The convenience of wireless headphones does have its attraction, but we suspect that anyone paying £99.99 will value sound quality above convenience.

Tech spec

- Bluetooth wireless headphones
- 30ft range
- rechargeable battery
- 8-hour battery life
- built-in power, volume, forward/back controls
- compatible with iPod and iPod Mini

Jargon buster

- ▶ **AAC** Stands for Advanced Audio Coding. An audio compression format.
- ▶ **ATRAC** Stands for Adaptive Transform Acoustic Coding, which is Sony's proprietary audio file-compression system, similar to MP3 but with additional security features designed to prevent piracy of copyright material.
- ▶ **Component video** A connection where brightness and colour information are carried separately for a better-quality picture. S-video is a lesser form of component video.
- ▶ **Composite** A type of video signal in which the red, green and blue signals are mixed together.
- ▶ **DRM** Digital Rights Management. Technology that controls or restricts the use of digital media such as music and movies, to protect copyright and illegal copying.
- ▶ **DVI** Digital Video Interface. A video connection that provides a purely digital connection. Commonly found in PCs and high-end video equipment.
- ▶ **Electronic Programme Guide** Displays TV schedules on-screen, and lets you point and click on the ones you would like to record.
- ▶ **Firmware** Basic software permanently stored on a device (such as a graphics card) that controls its basic operation. Firmware can be upgraded using a process known as 'flashing'.
- ▶ **FLAC** Free Lossless Audio Codec. An open-source format for audio files. Popular for trading live music.
- ▶ **Flash memory** A special type of memory that maintains its contents even when the host machine, such as a palm top computer, is switched off.
- ▶ **Hard disk** A high-capacity disk drive used to store files.
- ▶ **HDCP** A specification that protects digital entertainment content.
- ▶ **HDTV** High-definition television. Refers both to high-resolution widescreen digital broadcasts and the TV sets that receive them.

For more on Jargon Buster visit:
www.activehome.co.uk



◀ Toshiba's Qosmio G20 lets you watch DVDs or TV without using Windows

Toshiba Qosmio G20

A large, impressive-looking notebook with Windows Media Center

The Qosmio G20 is a desktop-replacement notebook that runs the Windows XP Media Center Edition 2005 **operating system**. It's a Centrino computer, using an Intel Pentium M-760 **processor** running at 2GHz, with 1Gb of memory. This makes for a fairly fast machine that will happily run games and other demanding software. This is partly due to the presence of the nVidia GeForce Go 6600 **graphics card**, which has 128Mb of its own memory.

An integrated analogue TV tuner means you can use this notebook to watch, record and pause live terrestrial (not digital) television. You can play CDs, DVDs and watch TV without loading Windows in 'Qosmio Player' mode, but this can only be achieved using the supplied remote control, which is annoying.

The 160Gb hard disk is a good size for a notebook running Media Center.

The 17in 'TruBrite' widescreen display, which allows for a better contrast than most screens, leaves DVD movies and TV looking very sharp. The large screen does add weight, and at 4.3kg it's unlikely this notebook will leave the home very often.

The case is well designed; the gloss black finish looks smart, though it is susceptible to dirt and fingerprints. The touch-sensitive media control buttons arranged above the keyboard are well

We say

GOOD POINTS Absolutely packed with features; spectacular sound and picture quality
BAD POINTS Heavy and bulky; no DVI port; gloss finish susceptible to dirt

Overall ★★★★★

It's expensive but it has almost all the Media Center features you could want.

Contact 0870 442 4424

Website www.toshiba.co.uk

Buy www.Activehome.co.uk/activeprices

£2,000

laid-out, and the keyboard itself is pleasant to type on, although a little small, and there is no numeric keypad.

The built-in Harman/Kardon speakers mean the G20 is one of the best-sounding notebooks we've seen. There is a digital output for connecting to a hi-fi or 5.1 surround-sound system, too.

Other features include a double-layer recordable DVD drive (for all disc formats bar DVD-RAM), all the familiar ports and sockets, Wi-Fi and a 4-in-1 memory card reader. It's missing a DVI port, though.

Other software includes Microsoft Works Suite 2005 and Office OneNote 2003, ConfigFree and Sonic RecordNow.

With two hours' battery life, the Qosmio G20 isn't great in the portability stakes. But as a small Media Center PC, it's one of the most fully featured we've seen.

Tech spec

● Intel Pentium M-760 ● 1Gb Ram ● 160Gb hard disk ● 128Mb nVidia GeForce Go 6600 graphics card ● 17in widescreen display ● Double-layer recordable DVD drive ● 2hrs battery life ● 4-in-1 memory card reader

Hush E2 MCE

A near-silent Media Center PC for your living room



Hush is a German company, which has evolved the concept of Microsoft's Media Center Edition (MCE). The key feature of all the company's computers, as you might have guessed from the name, is that they make virtually no noise. They're fan-less, and the only murmur comes from the DVD drive or hard disk when in use. While fan-less PCs aren't uncommon, the way Hush has achieved this with the E2 MCE is unusual.

Instead of fans, which cool components that run very fast and thus heat up very quickly, there are two of the chunkiest heatsinks you're ever likely to see. They're made of extruded aluminium and are the secret to the Hush's ultra-quiet personality. Heat pipes run from the processor and the graphics card to the back of the heatsinks,



but its strengths lie with what Media Center Edition has to offer. This includes the ability to schedule and record TV programmes and pause live TV. If there's one slight disappointment it's the hard disk, which will be eaten up very quickly once music and video are stored.

A monitor isn't included but there are VGA and DVI outputs for analogue and digital monitors respectively, and the PC can be connected to a standard TV via Composite or S-video – there's no SCART adapter, though. The E2 is fitted with twin analogue TV tuners, so you can view one channel while recording another. Wi-Fi is also built in.

The Hush E2 MCE comes in three colours – bronze, black or aluminium. The sleek front panel is disturbed only by a big illuminated power button and two panels, one containing sockets for USB, FireWire and audio, and the other the front of the recordable DVD drive that supports plus and minus disc formats but not dual-layer.

It goes without saying that you can get a PC, even a Media Center PC, for a lot less money than the price of the Hush E2 MCE. What you're paying for is a machine that has the design right. If you're going to put it in your front room, then it won't look out of place and runs as quiet as a mouse. The only changes we'd like to see are digital tuners in place of the analogue ones provided here (available as an option), and a larger hard disk.

▲ It's oh so quiet...
The Hush E2 MCE has heatsinks to keep it cool, and plenty of connection options

We say

GOOD POINTS Almost completely silent; good system performance; twin TV tuners

BAD POINTS Analogue TV tuners; high price; smallish hard disk for storing recorded TV programmes

Overall ★★★★★

A superbly engineered, near-silent PC which just about deserves its daunting price tag.

Contact no UK sales number

Website www.hushtechnologies.net

Buy www.hushtechnologies.net

£1,715

and conduct enough heat away from them to keep them all running smoothly.

And there's quite a lot inside that could get warm. This computer uses a 2.8GHz Pentium 4 processor with 512Mb of memory and a 200Gb hard disk. The graphics card is an 128Mb ATI Radeon 9600, which is a comparatively high-performance card in a fan-less PC. In short, this computer will be able to perform most tasks you throw at it and cope quite well. It's not the most powerful PC we've seen,

Tech spec

● 2.8GHz Pentium 4 ● 512Mb Ram ● 200Gb hard disk ● 128Mb ATI Radeon 9600 graphics card ● Built-in Wi-Fi ● VGA, DVI, composite, S-video inputs ● Twin analogue TV tuners ● Recordable DVD drive

Jargon buster

- ▶ **Infrared** An interface that allows you to transmit data cordlessly between devices with infrared ports.
- ▶ **LCD** Technology used to create low-power, slim display panels.
- ▶ **MP3** A standard for compressing digital audio.
- ▶ **MPEG4** A method of compressing digital video.
- ▶ **NTSC** The television broadcast system used in the United States.
- ▶ **PAL** The broadcast TV standard used in much of Europe and Asia, alongside Secam.
- ▶ **Pixel** Short for picture element, the smallest part of an image.
- ▶ **Progressive scan** Provides a more film-like image display for viewing DVDs on a television.
- ▶ **RGB** A high-quality form of component video that splits the signal into separate red, green, and blue channels.
- ▶ **Rip** To digitally extract the music data from a CD-ROM or audio CD.
- ▶ **SACD** Super Audio CD. A high-resolution audio CD format.
- ▶ **SCART** A 21-pin connector for two-way traffic of video and audio signals.
- ▶ **Sound card** An expansion card that lets a PC create sounds – game sound effects, music, and so on.
- ▶ **Subwoofer** A speaker designed to reproduce deep bass sounds only.
- ▶ **S-Video** A high-quality video connection.
- ▶ **USB 2** A standard that allows easy connection of peripherals to a PC.
- ▶ **UMD** Universal Media Disc. An optical disc format developed by Sony and holding games or movies to be played on the Playstation Portable games console.
- ▶ **VGA** Video Graphics Array. A very basic standard for graphics output.
- ▶ **Wi-Fi** The 802.11b or 802.11g standards used for wireless networks.
- ▶ **WMA** Windows Media Audio. A compressed digital music format.

For more on Jargon Buster visit:
www.activehome.co.uk

Samsung recommends Microsoft® Windows® XP Professional



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One-kit wonders

With living room space forever at a premium, there's a growing trend towards all-in-one home-entertainment systems. We take a look at seven of the latest designs

If you're in the mood to treat yourself to a smart new home-entertainment system, some people would tell you to go out and buy a DVD player or recorder, radio receiver, CD player, speaker set and a fancy amp to connect everything together. Others, meanwhile, would advise you simply to avail yourself of an all-in-one system that has everything you need in one tidy package.

There's certainly been a rise in the number of manufacturers offering complete systems, designed to get you watching and listening as soon as possible. Even the giants of the hi-fi world are getting in on the act. However, while these all-encompassing kits

can be cheaper than buying separate devices and, by their very nature, are much simpler to set up and operate, are they jacks of all trades and masters of none? We decided to find out.

Over the next few pages we put to the test seven of the latest all-in-one home-entertainment kits from some of the industry's best-known names.

Can the bargain-basement offerings compete with the costliest kits, or is it really possible to justify spending well over a grand on a premium-brand deal that seemingly pitches up with fewer features than the very cheapest models? Read on and we'll reveal all the answers.

Bose 3.2.1GS II £1,250

Bose is a brand name that will be familiar to anyone who's ever lusted after electrical items of enormous prestige advertised primarily through the Sunday broadsheets, style magazines and, er, the back page of *Private Eye*.

In short, it's part of an elite audio-firm establishment whose names are so famous – so revered, in fact – that its members don't ever mention the prices of their wares. Well, after all, if you have to ask the price...

Of course, that is a complete load of twaddle. You should never be afraid to ask. However, you may well quiver when you hear the answer.

For this test, Bose sent us its brand new 3.2.1GS II system – one of its least-extravagant offerings. It comprises a main disc-playing unit, two **satellite speakers** (or 'visible speakers',



to use Bose's preferred terminology) and a burly **subwoofer** (nay, 'Acoustimass module'). You also get a universal remote control and an instruction disc that informs you how to best

For £1,250 you might well expect a bit more. Where's the ability to record DVD?

set up this little lot. However, for £1,250, you, like us, might well expect a little bit more. Where's the ability to record DVD for example? You'll

find it in equipment priced at £150, so why not here?

Certainly for this price, like us you would probably expect to see high-quality construction throughout, but the 3.2.1's

DVD tray is remarkably shaky.

In tests, however, it became clear just why Bose has the reputation that it does. The 3.2.1GS II delivered the goods with exceptional sound reproduction and video playback. The audio really did seem to be coming at us from all directions, even though it's emitted from just two satellite speakers and the – admittedly enormous – subwoofer.

Why bother with six speakers when results this good can be attained from just three? The unit also looks good (though some might say the appearance is an acquired taste), and it's simple to use.

There's no denying that the 3.2.1GS II is great performer, and we'd absolutely love to own one – who wouldn't? But at this price, the Emperor should buy some new clothes.

AT A GLANCE

- 5.1 surround-sound emulation through two speakers and a subwoofer
- Includes helpful set-up guide on DVD to get you started
- AM/FM tuner with RDS
- Universal remote control – control other devices with the Bose handset

Denon DHT-550SD £750

As with Bose, Japanese giant Denon is a well-respected member of the audio-firm aristocracy. However, with the unpacking of the DHT-550SD, there isn't the same immediate sense that you may have been slightly cheated as there is with the Bose system. For starters, the unit comes with a full 5.1-speaker system, which means a subwoofer, a centre/voice speaker and four smaller satellite speakers.

The giant subwoofer is cast primarily from wood. The smaller speakers are crafted from aluminium, and sealed top and bottom by more wood. An extra seventh speaker (around £50) can turn this kit into a 6.1 configuration.

There are also two main units – the disc-playing device and a surround-sound AV receiver. These carry much the same styling as the speakers, but your first sight of the rear

This is clearly a machine for the entertainment buff

end of the receiver may prove overwhelming: there's close on 50 connectors, sockets and ports. This is clearly a machine for the serious entertainment buff, to the extent that it even has cable-binding, screw-closure posts rather than simple sprung clips.

Like many of the DVD players on test here, the Denon offers **progressive-scan** playback as well as more traditional video output options. Put simply, this has the potential to deliver much higher-quality video if

your TV supports it, and the technology is often found on **plasma** and **LCD** displays. Indeed, to most eyes the Denon's video playback was judged the best of the bunch – though this is often subjective. Audio performance was also up there with the Bose, delivering superb results from both DVD movie soundtracks

and standard CD playback.

The DHT-550SD is a fantastic premium kit aimed at those who want the simplicity and neatness of an all-in-one system without sacrificing too much in terms of performance and connectivity. It's still on the expensive side, but it's pitched at a far more reasonable price than the Bose.



AT A GLANCE

- Two main units – one disc-player and one surround-sound/receiver component
- Dolby Digital and DTS decoding for DVD movies
- Oodles of connections for video and audio buffs
- Aluminium-and-wood-encased speakers (5.1 configuration; 6.1 possible)

Goodmans **GHC304DVDR £150**

The Goodmans GHC304DVDR comes in at just £150, which, in comparison with the Bose or Denon systems, seems precious little to have to pay for a device that carries a longer list of features.

However, sometimes you do get what you pay for. While the Denon DHT-550SD delivers its audio delights through some beautifully-styled speakers encased in wood, and the Bose 3.2.1 GS has a bass speaker the size of a small suitcase and provides performance unrivalled in this group, the Goodmans' audio-outputting boxes do leave something to be desired. The sub-woofer (or 'bass driver', as you'll sometimes hear such devices called) is large, but it's lightweight, and not the solid piece of kit you might like.

Set the volume much above halfway and the sound progressively distorts, while the

unit itself is wont to jump around when the bass gets thumping.

The satellite speakers were also a tad disappointing. Perhaps because the previously tested Bose and Denon equipment tainted our ears, the Goodmans cubes proved limp performers. The sound was clean but lacked any depth. That's a difficult attribute to appreciate until you've actually listened to a

Not a bad little piece of kit - and for £150, who's complaining?

set of speakers like these back to back with much higher-quality audio devices.

The DVD unit itself has features in droves, and is by far the better half of the package. Not only is it a player, but it can record onto discs in the increasing popular DVD+R and rewritable +RW formats.

It's also fronted by a nice

menu system, which is easy to navigate with the remote control and has a fair smattering of help sections.

Unfortunately, despite having read and re-read the supplied instructions (both printed and onscreen) we sometimes found ourselves struggling to eject a

disc. Perhaps it was dodgy buttons on the unit or remote control, but on occasion the GHC304DVDR would simply just stubbornly refuse to acknowledge our requests.

On the whole though, not a bad little piece of kit – and for £150, who's complaining?



AT A GLANCE

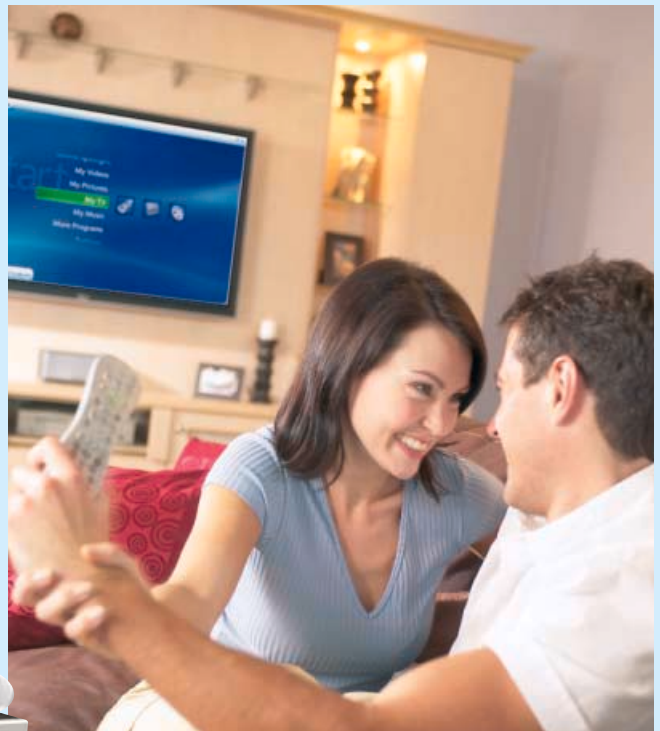
- DVD player and recorder (**DVD+R/RW**) for just £150
- Poor-quality speakers (5.1 configuration) that lack punch
- Easy-to-navigate onscreen menu system including help section
- All speaker cabling is colour-coded for easy setup

The PC alternative

As you might expect, here at *Active Home* we're advocates of the 'digital home' ideal, whereby one day multiple aspects of future homes will be controlled and managed by a single computer system – a device that will preferably be well out of sight, and even further out of mind. However, that day is not yet here, though plenty of firms are trying to speed its dawn.

Inevitably, Microsoft is at the forefront with its Media Center edition of the Windows **operating system**. In essence, this is a fantastically easy-to-use control system for all things multimedia – DVD playback, digital audio, television recording, photo viewing and so forth – but behind the scenes it remains reliant on good old-fashioned PCs. Indeed, many Media Center systems are instantly recognisable as desktop computers – hardly the kind of thing you want lurking beneath your sleek, widescreen TV.

Fortunately, some manufacturers are better than others at embracing Microsoft's idea and realising the vision of an all-in-one super system that doesn't resemble a beige-box PC. German manufacturer Hush is a good example: the company's new E2 MCE unit is a Media Center PC that looks more like a hi-fi separate. Designed precisely to appeal to home-entertainment fans, it is available in three attractive colours – aluminium, black or the particularly swish bronze. It runs Windows Media Centre and, among much else, provides a DVD-recorder drive and a 200Gb hard disk drive for programme recordings (or just normal PC stuff, should you so fancy). Sadly, at £1,715, it's a toy for the rich. See our review on page 35. Evesham's ebox is also an attractive and popular choice.



◀ Evesham's ebox is just one of several PCs that have been specifically designed to form a part of your home-entertainment system

JVC TH-S55 £250

Of all the home-cinema kits we tested here, JVC's THS55 comes with the slimmest main unit. At just 5.5cm high, it will slide into the thinnest of gaps in a home-entertainment stack. Unfortunately, its sturdiness seems to have suffered as a result. One of our testers inadvertently rested a hand on the top of the player during a disc-playback test and the result was a mechanical screeching that clearly indicated that resting anything on top of this unit (the centre speaker, for instance) would not be wise.

The design of the player's front panel is a little unusual, with the top projecting out further than the bottom. As a result, when viewed from too-acute an angle above, the small information display becomes obscured – either way it's tricky to read.

Those insignificant gripes aside, we liked almost every-

It will slide into the thinnest of gaps in a home-entertainment stack

thing else about this kit. The subwoofer was one of the biggest we saw, and carried a hefty bass track well. The small satellite speakers exude a design ethic that the engineers at Goodmans and Mustek should envy: they look good and reproduce authentically at all volumes. In particular, the omni-directional assembly of the rear channels means owners won't have to fiddle trying to get angles just so.

What's more, the remote control handset has buttons

representing each of the (5.1-configuration) speakers, so the volume levels can be controlled individually. Incidentally, the universal remote control can also be used to control TVs and videos, be they of JVC manufacture or not.

In terms of ease of use, the JVC was middling. Basic ope-

ration proved easy but we thought the onscreen display icons were a tad hieroglyphic.

This aside, with the TH-S55's impressive progressive-scan playback and broad disc compatibility (including the DivX format, if you're into creating your own movie discs), this is a good buy.



AT A GLANCE

- Compatibility with a wide spread of disc formats, including **DivX**
- Attractive speakers with omni-directional rear **channels**
- Universal remote control – control other devices with the JVC handset
- Individual volume controls for each of the six (5.1-configuration) speakers

Mustek R320 £170

Coming in at just £20 more than the similarly affordable GHC 304DVDR from Goodmans, Mustek's R320 set lists a near-identical set of technical specifications and functions. In brief, it's an all-in-one home-cinema kit that provides both DVD playback and recording, along with surround-sound audio in a 5.1-configuration. Indeed, in a dark room, you could be forgiven for mistaking these two kits.

The key difference here is that the R320 offers progressive-scan, which gets the best out of movies if you have a compatible TV. However, we'd be lying if we said that the R320 video playback was markedly better than the Goodmans device. Studying areas of picture detail close up revealed some improvement but there really wasn't much in it.

DVD recording uses either DVD+R or +RW discs (one of

each is thrown in – you only get one DVD+RW disc with the Goodmans). Depending on the quality setting you choose, you'll be able to record between 60 minutes and six hours' worth of TV programmes. Very basic editing functions, such as setting chapters and erasing content (only with DVD+RW discs), are also available. All of this is conducted through an onscreen menu system that seems to share some Far-Eastern heritage with Goodmans.

Around the back of the machine, there's the same lineup of ports and connectors as the GHC 304DVDR, meaning you get two **SCART** sockets (one input and one output) along with **composite**, **component** and **S-video** ports. It also has much the same radio



tuner, capable of receiving AM or FM broadcasts. The R320 can store up to 50 preset station frequencies, selectable via the remote and the onscreen menu.

When it comes to playback, the R320 can handle plenty of media types including video

content stored on **DVD-R/RW**, **DVD+R/ RW**, **VCD** or **SVCD**. It will also play traditional CDs or CDs that contain **MP3s** or JPEG photography.

All in all – uninspiring speakers notwithstanding – not a bad little package.

The R320 can handle plenty of media types

AT A GLANCE

- DVD player and recorder (DVD+R/RW) for under £200
- Poor-quality speakers (5.1 configuration) compared with rivals
- Easy-to-use onscreen menu system makes operation a breeze
- All speaker cabling is colour-coded for quick setup
- Progressive-scan playback for improved video performance

Separate ways

There are times when buying individual audiovisual components (otherwise known as 'separates') can be a preferable strategy to the one-box-fits-all option. If you have a large collection of vinyl records that you have no desire to dump, for instance, you may wish to integrate a traditional turntable into your home-entertainment setup. Of course, there's the possibility of piggybacking such a component onto an all-in-one system but – even if the requisite connections exist on your supposedly all-inclusive box – the aesthetics may not be at all desirable.

Equally, there's the future to consider. Buying even the very best all-in-one unit today won't help you a few years down the line when you wish to upgrade one or other facility (Blu-ray or HD-DVD anyone?). If you had instead chosen to go down the separates route, should the time come to update a particular part of your system, the old component can be readily removed from your home-entertainment stack and replaced with the new technology.

Finally, there's also the nagging concern about quality. If you're a demanding type, then everything about an all-in-one unit needs to be right from the off – and quite how are you ever going to be confident of that being so? You may be more than happy with the music playback and quality of the supplied speakers, but if the radio tuner is substandard or the DVD functionality is lacking in one way or another, there's no easy remedy. Well, other than somehow piggybacking a separate, but we've already been there...



▲ Buying separates allows you to get the quality you want from each component, rather than living with a substandard tuner or DVD player



▲ Buying separates will allow you to add new technology as it arrives, like this Blu-ray DVD player

Panasonic SC-HT530 £230

Panasonic decided to send us two devices for this test, to represent both the budget and premium ends of its range. The SC-HT530 is the cheaper model. But don't let that put you off; this is a great all-in-one offering. Indeed, apart from the price, the only real difference between the two kits is in the speakers; the player units are almost identical (more on that in the review on page 43).

Like most of Panasonic's new players, the SC-HT530 includes support for HighMAT discs. HighMAT stands for High-Performance Media Access Technology, and is a joint development between Panasonic and Microsoft. The plan is to level the compatibility issues that plague the disc-player market, meaning any disc bearing the HighMAT logo – or burned using HighMAT-compatible software and recording equip-



ment – is guaranteed to play in any other HighMAT device. Unfortunately, the HighMAT tag currently only applies to CDs, and it's the DVD-recording/playback market that would really benefit from it. DVD support is promised but by the time it arrives, we could well be reviewing 'next-generation' Blu-ray and HD-DVD equipment.

The SC-HT530's playback compatibility is pretty good, with most DVD formats covered, including DVD-RAM (though not those contained in caddies). And, like a few other devices here, it will happily

cope with discs containing MP3, WMA and JPEG files.

Peculiarly, the device itself is powered via a proprietary connector originating from the subwoofer. While this doesn't present any immediate problem, the owner is forever tied to the subwoofer for power: so let's hope you don't ever want or need to replace the speakers.

Talking of speakers, it comes with the expected 5.1 configuration – and the performance of

these was among the best we heard. In particular, we liked the ability to change audio-delivery delay times to each speaker. This means that the speaker output timing can be fractionally altered to reflect the layout of your room: if you can't position the rear speakers in their ideal position, say, a few milliseconds added or shaved off the delivery delay can help.

Overall video quality on the Panasonic was also excellent.

The device is powered via a connection from the subwoofer

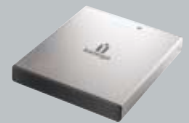
AT A GLANCE

- Ability to apply delays to individual speakers (5.1 configuration)
- Progressive-scan playback to make the most of high-end displays
- Wide range of DVD-playback support, including DVD-RAM
- Supports HighMAT disc playback on CDs

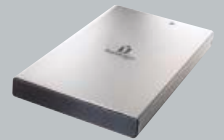


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*Hard
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www.iomega.com

Panasonic **SC-HT880W £599**

Round two for Panasonic and it comes out fighting once again. This home-cinema package has what is undoubtedly the most innovative feature of all those we looked at – the rear speakers require no cabled connection to the main system. In other words, you needn't fret about having to trail or duct lengths of wires around your living space's skirting or walls. It's a clean-living dream.

This trick is achieved by the inclusion of a wireless receiver, which is powered independently of the front half of the kit, and connects via cables to the two rear speakers. This is where the system differs from the SC-HT530 (see page 41). A wireless-transmitter card slides into a matching slot on the player, and that's pretty much all there is to it: the receiver picks up the signals and passes it to the rear speakers.

The receiver unit is small enough to be hidden behind furniture

And what a set of speakers! This kit comes in a box the size and weight of a washing machine, which is an early indication of potential imposition. Aside from the expectedly enormous subwoofer, there's a broad centre channel/voice speaker and four post-mounted satellites. Because

of this design, initial setup is lengthy (you need to bolt the speakers to said posts, which in turn much be attached to a stand) but, as noted, the payoff comes later, when positioning the rear speakers.

Video playback is excellent, and progressive-scan lets you get the most out of modern plasma and LCD displays.



The receiver unit is small enough to be hidden behind furniture, but also sufficiently attractive to merit display if concealment isn't possible: the only caveats are that it must be within 10m of the player

unit, and not placed on metal shelving. Oh, and don't use it near a microwave oven!

As with the SC-HT530, the delivery timings can be controlled to accommodate any ill-positioning of the speakers.

AT A GLANCE

- Ability to apply delays to individual speakers
- Progressive-scan video playback to make the most of high-end screens
- Wide range of DVD disc support, including DVD-RAM and HighMAT
- Post-mounted speakers, including wireless rear channels

Speaking up

Of course, it's quite likely that you already have access to most of the audiovisual functionality offered by an all-in-one device and simply fancy upgrading your speakers. For example, if you already have a serviceable DVD player (and/or recorder) but are still directing the audio through your TV's tinny speakers, it might be time to pump up the audio experience by investing in a surround-sound setup. Just like the all-in-one offerings reviewed here, these come in all shapes and sizes, and at prices to suit all pockets.

Right now, for instance, you could pick up a basic 5.1 surround-sound speaker set for a snip. The Acoustic Solutions AS133 5.1

Home Theatre

package is just a penny under £40, which buys you six speakers (four satellites, one centre/voice channel and one bass) and a remote-control handset. It's available at Argos. However, do bear in mind the advice offered up elsewhere in this feature, regarding the performance of low-cost speaker systems: generally, cheap audio kit will output less-than-delightful sound.

At the other end of the price and quality scale,

we took a look at Wharfedale's Diamond 9 HCP speaker package. The kit includes four sizeable satellite speakers, along with matching centre channel and bass drivers. At £500 it's as expensive again as some of the complete kits reviewed here but the money pays for audio quality with a reputation up there with Bose and Denon. More information at www.wharfedale.co.uk

Don't run out to the shops and buy the first surround-sound set that takes your fancy: there are compatibility issues to consider. For example, does your existing equipment have a built-in amplifier? Can you connect the speakers to your current DVD player using the supplied cabling, or will further purchases be required? The best

advice we can offer is to refer to the documentation that came with your home-entertainment devices and ensure you know what you're buying.



◀ Wharfedale's Diamond 9 HCP speaker set costs a hefty £500, but you get what you pay for

Best on test

Where at *Active Home* are big fans of these all-in-one home-cinema offerings.

While separate components are great for those who are passionate video- and audiophiles, that doesn't represent the vast majority of the public. That said, we loved Denon's two-unit DHT-550SD package, even though it wasn't the simplest to set up.

If you want to take the quick, simple and affordable approach to installing a home-entertainment system, then we think any one of these kits

would prove an ideal investment. From the cheap Goodmans to the embarrassingly-costly Bose, each one has its own peculiar pluses and minuses.

However, tradition dictates that we must single out a winner, and that's the Panasonic SC-HT880W. Previously mentioned quirks notwithstanding, it struck the best balance between quality, features, ease-of-use and value (though by no sensible measure is it cheap).

Even so, we reserve honourable mention for the Mustek R320. Even if you threw away the disappointing speakers, you'd

still be left with a DVD-player/recorder that offered loads of features at a lower cost than any other system here.

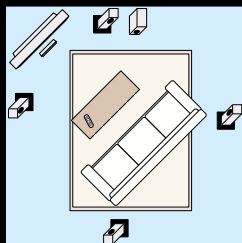


All in ones compared

MANUFACTURER	BOSE	DENON	GOODMANS	JVC
MODEL NAME	3.2.1GS II	DHT-550SD	GHC304DVDR	TH-S55
PRICE	£1,250	£750	£150	£250
TELEPHONE	0800 107 4999	01753 888447	023 9239 1000	0870 330 5000
WEBSITE	www.bose.co.uk	www.denon.co.uk	www.goodmans.co.uk	www.jvc.co.uk
SPECIFICATIONS				
MAIN UNIT DIMENSIONS (WxDxH IN MM)	349x254x83	435x360x80 (two units of this size)	420x340x59	435x304x55
CORE CONNECTIVITY	Composite, S-video, component, optical and coaxial digital audio	Composite, SCART, S-video, component, optical and coaxial digital audio	Composite, SCART, S-video, component	Composite, SCART, S-video, component, digital optical in
SCART SOCKETS	0 (but dedicated-to-SCART cable included)	1	2	1
RADIO TUNER	AM/FM with RDS	AM/FM with RDS	AM/FM	AM/FM with RDS
CORE PLAYBACK SPECIFICATIONS	DVD-Video, DVD-R/+R, VCD, CD-R/RW, CD-A, MP3	DVD-Video, DVD-R/RW, CD-A, VCD, CD-R/RW, JPG, MP3/WMA	DVD-Video, DVD-R/RW, CD-A, VCD, CD-R/RW, JPG, MP3	DVD-Video, DVD-Audio, VCD, SVCD, CD-A, DVD-R/RW, DVD-RAM, CD-R/RW, JPG, MP3/WMA, DivX
CORE RECORDING SPECIFICATIONS	N/a	N/a	DVD+R/RW	N/a
SPEAKER CONFIGURATION	2.1	5.1	5.1	5.1
PROGRESSIVE SCAN	Yes	Yes	No	Yes
RATINGS				
PROS	Unrivalled audio reproduction	Attractive aluminium-and-wood speakers that produce luscious sound	It's very, very cheap	Good all-round quality; the ability to control speaker volumes individually is handy
CONS	Excessive cost; limited features for the money	The receiver box is an audio buff's dream, which may mean nightmares for novices	The speakers are disappointing	Top casing is far too flexible for our liking
DESIGN	★★★★	★★★★★	★★★	★★★★
VIDEO QUALITY	★★★★★	★★★★★	★★★	★★★★
AUDIO QUALITY	★★★★★	★★★★★	★★	★★★★
FEATURES	★★★	★★★★	★★★★	★★★★
EASE OF USE	★★★★★	★★★	★★★★	★★★
DOCUMENTATION	★★★★★	★★★★	★★★	★★★
VALUE FOR MONEY	★★	★★★★	★★★★★	★★★★
VERDICT	While the video and audio output are great, the price tag is just too steep for what you get.	With superb sound, excellent picture quality, top design and sturdy construction, the Denon kit is a great buy.	The speakers are dreadful but the main device both plays and records DVDs, which is hard to fault at this price.	Lovely-looking and with good all-round performance, JVC's package gets a thumbs-up.
OVERALL	★★★	★★★★	★★★	★★★★

Setting up your speakers

In a truly square room, setup is usually straightforward. If you have the TV and home-entertainment equipment in the middle of one wall, then both the front left and right speakers should be at equal distances either side of the TV. Ditto the rear speakers, though ideally these should be placed behind the seating area. All speakers should be angled towards the listener, who should be in the centre. The centre speaker (which carries voice) should directly face the listener, while the subwoofer can be placed pretty much anywhere convenient.



If your home-entertainment setup is in the corner of a square room, the front left and right speakers may end up closer together than their rear counterparts. If so, adjust their angles accordingly.

If setting up in an L-shaped room, or similar irregular shape, you should mentally plot a square inside this. Then follow the rules as above, ensuring that the listener remains slap-bang in the middle of the imaginary square.

MUSTEK	PANASONIC	PANASONIC 
R320	SC-HT530	SC-HT880W
£170	£230	£599
+49 2131 62840 (Germany – no UK no.)	08705 357 357	08705 357 357
www.mustek.com	www.panasonic.co.uk	www.panasonic.co.uk
340x420x59	430x349x60	430x349x60
Composite, SCART, S-video, component	Composite, SCART, S-video, component	Composite, SCART, S-video, component
2	1	1
AM/FM	AM/FM with RDS	AM/FM with RDS
DVD-Video, DVD-R/RW, DVD+R/RW, CD-A, CD-R/RW, VCD, SVCD, MP3, JPG	DVD-RAM, DVD-Audio, DVD-Video, DVD-R/RW, DVD+R/RW, CD-A, VCD, SVCD, CD-R/RW, MP3/WMA, JPG, HighMAT	DVD-RAM, DVD-Audio, DVD-Video, DVD-R/RW, DVD+R/RW, CD-A, VCD, SVCD, CD-R/RW, MP3/WMA, JPG, HighMAT
DVD+R/RW	N/a	N/a
5.1	5.1	5.1 (two rear channels are wireless)
Yes	Yes	Yes
Affordability is its greatest strength	Good playback compatibility and ability to set speaker timing delays	Wireless rear speakers are a great idea, making for a clean setup
Much like Goodmans' cheap offering, the audio reproduction is lacking	Player is eternally reliant on the Panasonic subwoofer for its power	In small rooms, the speakers' appearance may prove imposing
★★★	★★★★	★★★★
★★★★	★★★★★	★★★★★
★★	★★★★	★★★★★
★★★★★	★★★★	★★★★★
★★★★	★★★★	★★★★
★★★	★★★★	★★★★
★★★★★	★★★★	★★★
Much the same as the Goodmans, with the added bonus of progressive-scan playback.	A well-balanced package; good-quality audio and playback compatibility at a fair price.	The wireless speakers make for a clean setup and, price aside, this is our favourite kit.
★★★★	★★★★	★★★★★

Jargon buster

- ▶ **Blu-ray** A new format that will deliver high definition on DVD-sized discs.
- ▶ **Channel** Refers to a channel of sound, such as left or right in stereo. Surround-sound systems often have 5.1 channels – front and rear stereo pairs plus a centre speaker and subwoofer for a bass channel.
- ▶ **Component video** A connection where brightness and colour information are carried separately for a better-quality picture.
- ▶ **Composite video** A type of video signal in which the red, green and blue signals are mixed together.
- ▶ **DivX** A video compression standard that allows high-quality video to be stored in relatively small files.
- ▶ **DVD+R/RW** Recordable DVD standard. DVD+R can only be written to once, whereas DVD+RW can be recorded on over and over again. DVD+R is more versatile but not as widely compatible as DVD-R.
- ▶ **DVD-R/RW** Recordable DVD standard. DVD-R disks can only be written to once, while DVD-RW can be recorded on time and time again. DVD-R offers better compatibility between players.
- ▶ **HD-DVD** A new format offering high-definition video on DVD-sized discs. Rival to Blu-ray.
- ▶ **JPG** JPEG images are compressed. The small file size makes them ideal for web use.
- ▶ **LCD** Liquid crystal display. Technology used to create low-power, slim display panels.
- ▶ **MP3** A standard for compressing digital audio. The sound quality of an MP3 file is close to that of CD audio but requires only a fraction of the storage space.
- ▶ **Operating system** A crucial piece of software which is so important that it loads automatically when you switch on a computer. Windows 98, 2000 and XP are operating systems, as is Mac OS X, Linux, and Palm OS (for the Palm handheld computer). Operating systems govern the way the hardware and software components in a computer work together.
- ▶ **Plasma** A display where each pixel is illuminated by a tiny bit of plasma.
- ▶ **Progressive scan** A method for producing TV and video where each picture on screen is a complete frame. Steadier than interlaced video and better suited to fast motion.
- ▶ **Satellite speaker** Compact, usually cube-shaped speaker designed to reproduce midrange and high audio frequencies. Satellite speakers should be used in conjunction with a subwoofer.
- ▶ **SCART** A standardised 21-pin connector for two-way traffic of video and audio signals.
- ▶ **Subwoofer** A special type of speaker designed to reproduce deep bass sounds only. Even on a stereo system, only one subwoofer is required because human ears cannot detect the direction of bass frequencies.
- ▶ **SVCD** Super Video CD. Disc that offers almost DVD-quality video on standard CDs.
- ▶ **S-Video** A higher-quality video connection that carries brightness and colour information separately.
- ▶ **VCD** Video CD. A compact disc format that contains low-quality video on a par with VHS tape.
- ▶ **WMA** Windows Media Audio. A compressed digital music format developed by Microsoft and played back through the latest versions of Windows Media Player. It allows secure encoding of music tracks but is less widely used than MP3.

For more on Jargon Buster visit:
www.activehome.co.uk

intempo

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★★★★★

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DAB
Digital Audio Broadcasting

Computeractive Issue 198
KTS-01 Intempo Digital

TURN IT ON!

Intempo Digital's award winning range of DAB radios and audio products has been designed to brighten up your listening, whatever your mood. Whether you choose the haute couture style of the Matthew Williamson-designed KTM-01, the domestic goddess-friendly KTS-01, or the sleek, sophisticated BB-01 you are assured of the same digital sound quality, and a whole host of great new stations in crystal clear stereo. All stations are automatically tuned in and stored in alpha-numeric order, so you can spend less time looking for your favourite new station, and more time singing along!

The iDS-01 lets you chuck out the headphones, and release your pent-up iTUNES! Synchronise and charge your iPOD, iPOD mini, iPOD photo or iPOD Nano, or simply use it to playback tunes from any other audio device, such as Shuffle, MP3, laptop or Walkman. With 2 x 6 watt stereo speakers and Super 3d Bass design its powerful enough for impromptu discos anywhere from your hotel room to your office (as long as your boss isn't around!!).



Intempo Digital products are available from John Lewis, Comet, Argos, Boots, Miller Brothers, Misco, Empire Direct, Micro Anvica, Savastore, Dabs, Amazon and all good retailers

WWW.INTEMPODIGITAL.COM

DIGITAL RADIO **turn it on**



A DAB hand

Still listening to the radio on a crackly old portable in the kitchen? You're missing out on more than 400 digital stations covering the UK. We look at the best digital radios on the market

Digital Audio Broadcasting, or DAB radio, is nothing new. The BBC actually launched its first service 10 years ago, and at last count there were more than 400 digital stations in the UK, covering everything from classical and contemporary music to talk radio, news and comedy. However, while many receivers are available, the uptake has been far from revolutionary.

This hasn't stopped radio manufacturers from launching new models in the hope that more people will realise the benefits of digital over traditional analogue broadcasts. Even the BBC is attempting to help the situation by introducing measures such as the recent 'Radio Amnesty'. Driven by an appeal to get radio donations to Somalia and Sudan, it allowed anyone to trade in their old analogue or portable radio for a 10 per cent discount on a selected range of DAB radios.

DAB delivers sound quality comparable to compact disc, along with a range of other benefits not found on traditional radios. Rather than making you manually tune stations, for example, a

digital radio will automatically scan and retrieve whatever stations are available and alphabetise them. Most will also display the name of the show and other information such as the current DJs and the name of the track currently playing.

Some digital radios even allow you to 'rewind' and 'pause' live broadcasts, just as users can using Sky+ and TiVo digital television.

As with traditional analogue broadcasts, digital radio is completely free to listen to, and comes without any hidden subscription fees.

There are a number of ways to listen to digital radio (see box on page 55) but the cheapest and simplest route is to simply buy a standalone receiver. Just plug it into the wall, hit the auto-tune button, and you'll be listening to a whole host of new channels in around 30 seconds.

To make it easier for you when choosing a DAB radio, we've looked at 10 different portable and pocket digital radios, ranging in price from £50 to £200.

Portable digital radios



active home
GREAT VALUE!

Alba **TRDAB2820PNK £50**

Alba may not be the biggest brand name here, but there's no denying that its products offer exceptional value for money. The TRDAB2820PNK is a portable dual-band DAB and FM radio that costs just £50.

It has 10 DAB and 10 FM station presets and digital stations can be organised alphabetically or by what you listen to most. Everything is controlled by 15 buttons on the front of the player and, while this radio comes with the most basic range of features, it's the cheapest way to get DAB into your home.

The plastic casing and build quality can't quite match the Roberts RD-50 and Intempo KTM-01, but the LCD display and sound quality aren't bad at all.

In tests both spoken voices and music were clear and well defined. The bass response isn't great and overall clarity is lost at high volume levels, but a set of phono ports on the back lets you connect the unit to a bigger sound system if you wish.

DAB stations are automatically detected the moment the

player is switched on, and you can manually tune both DAB and FM stations if you prefer. A built-in telescopic aerial can be extended if the area you live in has low DAB signal strength, but we found it worked fine when tucked away.

A flip-up handle is woven into the back of the player, and batteries can be inserted into the bottom if you want to take it away from the mains.

Those of a more masculine disposition will be pleased to hear this model comes in blue

Like the Pure Evoke-2XT, the Alba automatically updates its internal clock using the DAB signal. There's no alarm, but there's a headphone socket on the right of the player.

And that's about it. The TRDAB2820PNK is a basic, portable DAB radio that won't win any awards in the design arena but will be perfectly adequate for anyone wanting digital radio for the kitchen. The fact that you can hook it up to a larger stereo is also huge plus point.

Those of a more masculine disposition will be pleased to hear that this model also comes in blue.

Goodmans **GCR1930DAB £57**

Waking up to the voice of your favourite radio presenter is far more soothing than the brain-melting sound of an alarm buzzer. Designed for bedroom service, the £57 egg-shaped GCR1930DAB is one of the cheapest digital radios we've seen. But it still offers plenty of features.

For starters, you get four alarms (two radio and two buzzer) and a big snooze button on the top, which is in easy smacking reach for lethargic hands.

Tuning digital stations is simply a matter of pressing the auto-tune button. Ten favourites can then be preset into the radio's memory. Alternatively, you can just cycle through the alphabetised stations and pick whatever sounds best.

Two separate LCD displays show the time, the station you're listening to, and scrolling information concerning the current broadcast. Both displays are clear, and the intensity of the LED is adjustable. However, even at the lowest dimmer setting, we found the clock LED very bright, illuminating a small area of a dark room, which could annoy light sleepers.

The array of buttons and switches does seem a bit of overkill, and will probably leave some users reaching for the manual. Thankfully, this is clearly illustrated.

Sound quality is as expected for a radio of this size, price and purpose. The bass response is non-existent and the treble over-zealous, resulting in the 'tinny' effect that anyone with a bedside

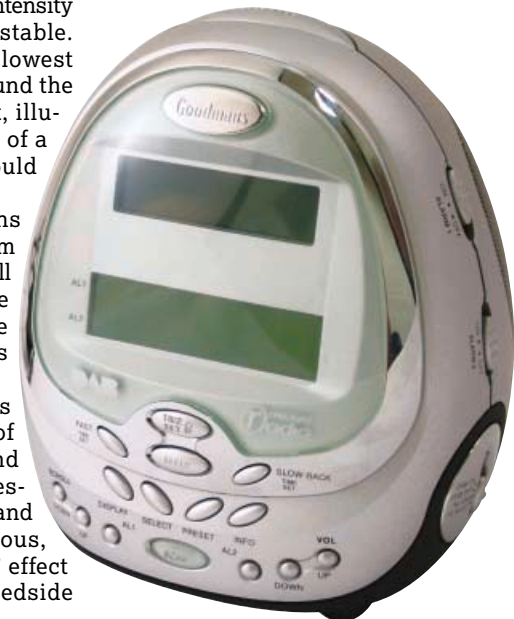
radio will be familiar with. That's not to say the audio quality isn't clear, though, and the Goodmans offers perfectly acceptable stereo sound for what it's designed for – 20 minutes of radio listening before you get up or nod off.

A line-out port is available for connecting to a larger sound system, and a headphone socket can be used if you don't wish to disturb the person lying next to you.

This is a mains-powered radio, but there's a small battery inside to preserve the correct time in case of a power cut. The back-up battery won't save your DAB station presets but it's easy to enough to get things back to the way they were.

The GCR1930DAB doesn't support FM radio and there's no pause or rewind function, but it does the job intended and offers a way to join the DAB revolution for under £60.

The Goodmans offers perfectly acceptable sound for early-morning listening



AT A GLANCE

- Mains/battery powered
- 20 presets (DAB & FM)
- Auto tune
- FM radio
- Auto clock updating
- Phono-out socket
- Backlight
- Headphone socket

AT A GLANCE

- Battery backup to preserve time
- 10 DAB presets
- Auto tune
- LCD screen
- Sleep function
- Two radio alarms
- Line-out socket
- Headphone socket



Intempo BB-01 £100

The award for the most blandly designed digital radio has to go to the Intempo BB-01. Apple may well have made white fashionable again with the launch of the iPod, but even it has started to introduce more exciting coloured models.

The BB-01 also looks a little odd, with small circular indentations that dominate the front of the player, presumably to complement the speaker grilles. This is combined with a bulbous fascia, which houses the LCD screen and control buttons.

We can't quite make up our minds whether this offering from Intempo is quite cool or hideously ugly. Personal preference will ultimately prevail, we guess.

Design issues aside, the BB-01 is, technically, a pretty good portable digital radio and portable stereo system. Tuning is automatic, and you can switch to FM radio if your favourite station doesn't broadcast in DAB. A telescopic aerial protrudes from the top of the unit when in use and can be tucked away nicely when carrying the radio by the handle.

The Intempo comes with a remote control for, among other things, changing stations, adjusting the volume and scrolling through the current broadcast information. All of

these functions can be carried out using the integrated buttons on the radio, but we found them quite fiddly, especially the three-way station-selection button on the front of the player. There's no power button on the remote, though, so you have to traipse over to the player to switch it off.

If you tire of radio, there's a CD player included which supports **CD-R** and **CD-RW** discs; and, like any portable music machine, it will run on batteries.

If you are lugging it around, the tethered mains cable can be tucked inside a removable panel on the bottom.

Sound quality is good and definitely one of the loudest on test here. The 5W **RMS** speakers might not be exactly thumping, but there's a bass boost option for adding extra bump to your music.

Unfortunately there are no pause or rewind facilities, the LCD screen is rather small and there's no line-out port. However, there is a headphone socket, which can also be used to connect the device to a larger sound system.

There are cheaper ways to get a DAB radio, but for £100 the BB-01 comes with some nice extra features. Just don't expect it to blow people away in the style stakes.

Don't expect the Intempo BB-01 to blow people away in the style stakes

Intempo KTM-01 £125

If loud, brash and garish strike a chord with anyone you know, then Intempo's KTM-01 could be their ultimate birthday present. Designed by New York fashion guru Matthew Williamson, this psychedelic digital radio is a limited-edition model. Intempo is also donating a percentage of profits from sales to the Make A Wish Foundation for underprivileged children.

Design aside, the KTM-01 is a very good digital radio. Technically, it's identical to Intempo's existing KT range, so it's both mains and battery-powered, and supports DAB and FM radio broadcasts. There are eight presets to provide quick access to your favourite stations and a two-line LCD screen that displays basic information about the current station.

While most people will want to have this model on display in the front room or kitchen, the KTM-01 also makes for a decent bedside radio thanks to a built-in alarm clock with sleep and snooze functions.

Sound quality is up there with

the best on test here. The 2W stereo speakers may sound pathetic on paper, but in practice they provide a clear, punchy sound that will be perfect for a small room. Even at the maximum volume level we had trouble noticing any distortion. You can connect the radio to a larger sound system, but only through the headphone socket.

Using the KTM-01 is pretty straightforward. The 10 silver option buttons are clearly labelled, and the large dial in the centre of the device makes it easy to adjust volume. We'd have liked to have seen a bigger LCD screen, which is perhaps this device's weakest point, but text is clear and legible.

There's no remote control but the top-mounted handle allows you to easily cart the radio down to the park.

The KTM-01 isn't the cheapest portable digital radio here, and is twice as expensive as Intempo's almost-identical KT-01. However, if style precedes your budgetary sense then the KTM-01 is perfect.

Intempo is donating a percentage of profits to the Make a Wish Foundation



AT A GLANCE

- Mains/battery powered
- Auto tune
- Manual tune
- FM radio
- **RDS**
- CD player
- Remote control
- LCD screen

AT A GLANCE

- Mains/battery powered
- 8 presets
- Auto tune
- FM radio
- LCD screen
- Alarm clock
- Sleep and snooze functions
- Limited edition



Pure Digital **Evoke-2XT £150**

Like the PocketDAB 2000, Pure Digital's Evoke-2XT is an improvement on a popular model. It's just pipped at the post by the Roberts RD-50 for price, but has some excellent features integrated into its cherry coloured frame.

The first, and most notable improvement, is the sound quality. It easily competes with the Roberts RD-50 in terms of audio clarity, and really takes advantage of the clear reception that DAB has to offer.

Another good feature is the line-in socket for attaching external audio sources such as iPods, CD players and the like. There's also an integrated FM tuner if a certain station isn't available on DAB.

With the kitchen being a popular room for radios, Pure Digital has included a countdown timer. It may not be the most enthralling aspect of the player, but could prove useful. As will the alarm that can be set to play a radio station or buzzer on request.

Another nice attribute is the automatic clock, which updates itself from the DAB signal

when British Summer Time starts and ends.

There's automatic tuning for DAB stations and, once the process is complete, you can have stations listed alphabetically or customised in the order you listen to them most.

Pure Digital has also shoehorned a **USB** port into the radio to support future **firmware** upgrades as and when they're available. These may be updates to the DAB standard,

The automatic clock updates itself when British Summer Time starts and ends

or new features released from Pure Digital. In any case, it's a nice option to have, though of course it will only be of use if you have a computer and a net connection.

The design is very retro, with dials and buttons on the front fascia providing quick links to the player's features. The LCD display may be small but it benefits from a high-**resolution** screen and uses white text on a blue background. You can also adjust backlight brightness.

In all, the Evoke-2XT is a high-quality portable DAB radio. The only thing missing is the ability to pause and rewind live radio.



Roberts **RD-50CFM £170**

DAB may be a relatively recent technology but that hasn't stopped radio veteran Roberts sticking with its renowned design. Mature radio fans will find the shape and build of the RD-50CFM very familiar. In fact, apart from the bits hidden inside the red leather casing, not much has changed aesthetically since the first 'Junior' Roberts radio was launched in 1947. Anyone with a soft spot for retro will find the RD-50CFM highly desirable.

Getting the radio going is straightforward enough. Simply attach it to the mains or insert four (D size) batteries, extend the gold aerial and press the auto-tune button. It took less than 30 seconds to find and store all our available digital radio stations.

There are two rotary dials for adjusting volume and changing stations, which feel far more refined than poking at plastic buttons. In between the dials is a bright, amber-coloured, two-line, LCD screen.

There's also a button for switching to FM radio (supporting **RDS**) and a button just for

tuning into Classic FM.

One of this model's best features is PausePlus, which offers similar functionality to that of a **PVR** (Personal Video Recorder). Just press the Pause-Plus button if the phone rings, and the broadcast will be stopped until you come back. The length of time you can pause a broadcast depends on the station, but on average in our tests it was 17 minutes. Roberts claims some stations

Any company that prides itself on supplying the Queen is likely to charge a royal price

can be put on hold for up to 40 minutes. You can also rewind 'live' radio. A line-out port lets you connect the radio to a larger stereo system.

Sound quality is excellent and there were no signs of distortion at maximum volume. At times things can sound slightly muffled, but because there's no way of altering bass or treble levels, you're stuck with what Roberts has deemed an acceptable sound quality.

Also, expect to dig deep into your pocket. Any company that prides itself on supplying radios to the Queen is likely to charge a royal price. In this case it's £170.

AT A GLANCE

- Mains/battery powered
- Six presets
- Auto tune
- FM radio
- High resolution LCD screen
- Adjustable backlight
- Auto clock updating
- Firmware upgradeable

AT A GLANCE

- Mains/battery powered
- Supports DAB and FM broadcasts
- Pause and rewind functions
- Auto tune
- LCD screen
- RDS
- One-touch access to Classic FM
- Headphone socket

Accept no imitations.



The new generation of Denon's legendary M Series miniature hi-fi systems.

Model shown: D-M35DAB.

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DENON

Pocket digital radios

Philips DA1000 **£100**

Philips' take on pocket DAB is the small and metallic DA1000. Coming a close second to the Sony in the design polls, the rounded DA1000 is a basic yet solid digital radio that comes in as the cheapest pocket device on test.

Like all the pocket players here, the DA1000 will only work outdoors, or near a window, which is a shame if you want to make a sneaky check of the cricket score in the office. However, once tuned in, the audio quality is very good, as are the bundled headphones.

Auto-tuning takes around 30 seconds and, once complete, flicking between stations is simple. There are four buttons on the front of the player for switching between DAB

and FM, selecting one of 20 preset stations, viewing station information and accessing the menu.

A four-way joystick allows you to navigate through the various options such as **EQ** and backlight illumination.

Anyone with large hands or fingers may find the controls a bit fiddly, but no more so than a mobile phone.

The two-line LCD display is clear and manages to squeeze a lot of information such as remaining battery life, time, signal strength and volume, along the top of the screen.

The unit runs on two rechargeable AA batteries, which offer around eight hours of playback on a single charge. Line-out and **optical** ports are nowhere to be seen, but a mains adaptor is supplied to charge the batteries and to power the player if tethered to a larger stereo system via the headphone socket.

At £100, the DA1000 is exceptional value for money for a device of this breed. Unlike the Sony, it feels sturdy and can easily take a few knocks. Its rounded edges mean that it should get no unwanted scratches if it's in a trouser pocket, and its lightweight physique should please the gym bunnies out there.

If all you need is a DAB device to carry around with you, the DA1000 is a cheap, safe bet. There's nothing out of the ordinary here but what it does do, it does well.

Anyone with large hands may find the controls a bit fiddly, but no more so than a mobile phone

active Home GREAT VALUE!



AT A GLANCE

- Mains/battery powered
- Rechargeable batteries
- 20 presets
- Auto tune
- FM radio
- LCD screen
- Backlight
- 60w x 110h x 21cm

Pure Digital PocketDAB 2000 **£200**

Ever since DAB radio hit the mainstream, Pure Digital has been a familiar name. The company's PocketDAB 1000 was one of the first pocket players and was generally well-received by critics and buyers alike.

The PocketDAB 2000 builds on this success by introducing some excellent multimedia features. For starters, as well as the standard array of DAB options; automatic tuning, scrolling station information and so on, it features an **SD memory card** slot. The unit comes with a **64Mb** memory card, which allows certain functions to be unlocked.

Most notable is the player's ability to pause live radio, or record radio shows to be listened to at a later date. We managed to record just under an hour of radio (from a **128 kbps** DAB radio broadcast) onto the supplied 64Mb memory card. We thought that was pretty good and, needless to say, investing in a bigger capacity card will offer longer recording time.

You can also save the scrolling text messages broadcast by most DAB stations, allowing you to refer back for phone numbers, names or web addresses.

The PocketDAB 2000 can also use the SD memory card to playback **MP3** files. These can be either recorded straight from a radio programme or transferred from a computer via a supplied **USB** cable. The amount of music depends on the size of the card, but we managed to get around an hour of near-CD quality MP3 audio onto the 64Mb card.

Navigating and using these additional features is very easy.



On the front of the player are shortcut buttons for storing text messages and pausing/recording/rewinding live radio. There are also buttons for changing EQ settings and switching between DAB and FM broadcasts.

Most notable is the player's ability to pause live radio, or record radio shows

The supplied headphones aren't as good as Sony's when it comes to audio quality, but they do have an in-line remote control to adjust

volume. One excellent feature, though, is the optical-out port allowing for a digital connection to a suitable amplifier. The battery life is also good, lasting around eight hours on its three rechargeable AA batteries.

The PocketDAB is let down by its size and screen. It's big and heavy for a pocket player and the screen is small, albeit sharp and readable. With all its additional features, we think its bulkiness is acceptable, but at £200 it's a little pricey.

AT A GLANCE

- Mains/battery powered
- Auto tune
- FM radio
- In-line remote control
- LCD screen
- MP3 player
- Live pause/record/rewind
- Store DAB text messages

Roberts **Gemini 15 £70**

In keeping with the rest of its range, Roberts' Gemini 15 is most suited to those wanting a compact digital radio for the outdoors. Roughly the size of a shoebox, it weighs just under 900g, and can run on mains power or four (D Size) batteries. It's also quite sturdy, so should fare well on a fishing trip or on a picnic.

The Gemini uses the same two-line, amber-coloured LCD screen as the Roberts RD-50CFM, which displays large, easy-to-read text. The scrolling information is a little disjointed, but you can still read it relatively clearly.

Finding radio stations proved to be a cinch; we didn't even need to press the auto-tune button. You can just plug the radio in, switch it on and in 30 seconds you have dozens of digital radio stations to choose from.

Flicking between the stations is also simple, with buttons provided for scrolling up and down the list. There's an 'advanced info' button for highlighting any extra information that a station is broadcasting, such as tele-

phone numbers for phone-ins, and the strength of the DAB signal being received.

Sound quality is very good and the one loudspeaker manages to strike a nice balance between bass and treble, at all volume levels. Although the sound won't travel that far in open spaces, as long as you're standing within a few metres of the device, you should be able to hear every-

thing quite clearly.

The side-mounted volume dial is well-positioned and saves you fiddling around on the front of the radio with smaller buttons.

Up to five digital stations can be preset for quick access, and there's a headphone socket for private listening. An extendable aerial is hidden behind the radio for better reception.

As a portable radio this is a great little device that's hard-wearing, compact and a good performer for its size.

It's not the best-looking device on test here and, like all Roberts radios; it's more expensive than others of the same ilk. However, your £70 buys a quality product.

This is a great little device that's hard-wearing, compact and a good performer



AT A GLANCE

- Mains/battery powered
- 5 DAB presets
- Auto tune
- Manual tune
- LCD screen
- Headphone socket
- 23w x 13h x 6cm
- 865g

Sony **XDR-M1 £139**

Sony's pocket digital radio is the smallest device here. It's also, in our judicious eyes, the best looking, with its glossy and matte black exterior.

It takes two AA batteries and tips the scales at less than 119g, which is great. Battery life is also impressive for a device of this ilk – reaching seven hours of use before needing a replacement.

Switching it on starts the tuning process and, providing you're outdoors and in an area where a DAB signal can be received; all available stations will be found within 30 seconds.

Audio quality in both DAB and FM modes is very good, and the supplied headphones are some of the best we've used, both for the sound and the in-line remote control that allows you to change volume, channel hop between stations, and switch between analogue and digital.

You can store up to 20 stations in both DAB and FM modes, which can then be accessed via a button on the front of the player. Also on the front fascia are the menu and navigations buttons as well as a button for attaining more information about a particular DAB broadcast.

Dig deeper into the menu and you'll find options for turning on a mega-bass mode (and it actually does what it claims), and a feature for editing names of preset radio stations.

There's no optical or line-out port, so the only way to hook this model to a larger amplifier is to use the headphone socket.



The XDR-M1 is certainly rugged enough to withstand a lot of pocket jostling

If you plan to do this, the mains adapter can be used to conserve battery life.

Perhaps the nicest part of the XDR-M1 is the four-line LCD screen. This contains plenty of information about the player such as the time, radio station and scrolling programme information. The text is sharp and sports a backlight option for use in dark environments.

Our only major gripe is the physical feel of the player. Although it looks fantastic, it's ultimately a device that is entombed in thin plastic, which gives it the impression of being 'cheap and nasty' (contradictory to its £139 price tag).

The XDR-M1 is certainly rugged enough to withstand a lot of pocket jostling, but you can't help feeling that it might well fall apart if it was given a serious knock or had an encounter with the pavement.

AT A GLANCE

- Mains/battery powered
- Auto tune
- FM radio
- In-line remote control
- LCD screen
- Headphone socket
- Bass boost
- Station re-edit

Best on test

When choosing a digital radio there are plenty of things to take into account, not least speaker quality and the range of features on offer. We looked at 10 different players, each offering their own spin.

With the pocket-sized players, we thought both the Sony and Philips looked great but were very basic in their feature set, which was justified by their price. If all you want is a digital radio to listen to DAB broadcasts then either of these is ideal.

However, if you require something with a bit more oomph, Pure Digital's new PocketDAB 2000 offers the user a few more features to play

with. It's the only pocket player with a pause/record and rewind function, and will even play back MP3 files.

When it came to the portable digital radios, all were good in their own way. The Goodmans is great for the bedside table, while the Roberts RD-50CFM looks and sounds absolutely fantastic, and is bolstered by its ability to time-shift live radio.



However, we whittled down the best two devices to the Alba, which offered exceptional value for money and had outputs to connect to a stereo; and the Evoke-2XT which was great in every aspect apart from

the lack of either pause and rewind features.

It's clear that DAB radio is here to stay, and with more than 400 stations to tune into, it shouldn't be too long before we see more and more people enjoying the benefits of going digital.



Digital radios compared

PORTABLE DIGITAL RADIOS						
MANUFACTURER	ALBA 	GOODMANS	INTEMPO	INTEMPO	PURE DIGITAL 	
MODEL NAME	TRDAB2820PNK	GCR1930DAB	BB-01	KTM-01	Evoke-2XT	
PRICE	£50	£57	£100	£125	£150	
TELEPHONE	0870 873 0078	0870 873 0080	0161 828 5219	0161 828 5219	01923 260511	
WEB	www.albapl.com	www.goodmans.co.uk	www.intempo-digital.co.uk	www.intempo-digital.co.uk	www.pure-digital.com	
TUNER (DIGITAL OR BOTH ANALOGUE AND DIGITAL)	DAB & FM	DAB	DAB & FM	DAB & FM	DAB & FM	
CONNECTIONS	Headphone, phono-out	Headphone/line-out	Headphone	Headphone	Headphone, line-in	
WEIGHT (KG)		1.3				
DIMENSIONS (WXHxD)	230 x 160 x 70mm	140.5 x 160 x 140.5mm	484 x 172 x 224mm	245 x 196 x 100mm	290 x 210 x 120mm	
PROS	20 presets, line-out socket, backlight, auto-clock update, customisable station order, excellent value	Alarm clock, snooze mode, 10 DAB presets, backup battery, cheap	FM radio, CD player, Bass boost, remote control, RDS, loud	Chic design, eight presets, FM radio, alarm clock, battery and mains powered, clear sound, simple to use	Six presets, FM radio, adjustable backlight, good sound quality, firmware upgradable, line-in socket, radio alarm, good LCD	
CONS	Plastic design	Tinny sound quality, cluttered facia, overbright clock LCD, no FM radio	Bland design, small LCD screen, no line-out	Garish, expensive, no line-out, small LCD screen	No pause/rewind functions	
DESIGN	★★★	★★★	★★	★★★★	★★★★	
SOUND QUALITY	★★★★	★★	★★★	★★★★	★★★★	
FEATURES	★★★	★★★	★★★	★★★★	★★★★	
EASE OF USE	★★★	★★	★★★	★★★★	★★★★	
VALUE FOR MONEY	★★★★★	★★★★	★★★	★★	★★★★	
VERDICT	Great value for money considering the whole package.	For a bedside DAB radio alarm this is good, but not for much else.	A good DAB boombox but will do nothing for the style-conscious.	Unique design and simple to use but panache means pounds.	Loads of good features for the price. Good sound quality, too.	
OVERALL	★★★★	★★★	★★★	★★★	★★★★	

How is DAB radio different from FM?

Just like traditional FM, DAB digital radio signals can be picked up using an aerial. However, instead of being made up of analogue sound waves, digital broadcasts are compressed data transmitted as a series of zeros and ones, which are then decoded by your receiver.

DAB broadcasts are far less susceptible to interference and distortion from high-rise buildings, hilly terrain and erratic weather conditions. Plus, as well as providing audio, the signal can also carry text and, theoretically, pictures, data and videos.

You can listen to DAB stations using an indoor aerial but, if you plan to use a digital radio in a basement, a steel-framed building, or somewhere with reinforced concrete, it's likely you'll need an external aerial to gain acceptable signal strength. If the signal strength is too low, you'll hear a garbling, rather than a hiss.

DAB radios don't need any manual tuning, and will automatically find and store all the available stations in your area.

It's also possible to receive digital radio broadcasts from other sources. Sky Digital offers radio stations towards the end of its channel list, and cable services, such as NTL, also contain a multitude of broadcasts. Perhaps the most exciting alternative is Freeview,



which will get you on the digital TV and radio bandwagon for around £40. However, it's important to note that these are Digital Video Broadcasting (DVB) services, not DAB, and the stations available will differ.

Jargon buster

- ▶ **CD-R** Blank CDs onto which information can be recorded – but only once.
- ▶ **CD-RW** Compact disc rewritable format, or blank compact discs which can be recorded on again and again.
- ▶ **EQ** A type of sonic effect that adjusts the timbre of a sound.
- ▶ **Firmware** Basic software stored on a device that controls its basic operation.
- ▶ **Kbps** Short for kilobits per second, which is a measure of data transfer speed.
- ▶ **LCD** Liquid crystal display. Used to create low-power, slim display panels.
- ▶ **Line-out** Connector used to link video and audio devices to each other, usually with a 3.5mm plug.
- ▶ **Mb** Megabyte. A measurement of storage capacity.
- ▶ **Memory card** Small cards that store computer data.
- ▶ **Phono** Common connector used to link video and audio devices to each other.
- ▶ **PVR** Personal video recorders store recorded TV shows on hard disk, rather than tape or DVD.
- ▶ **RDS** Radio Data System. Interprets coded data included with the radio signal to display the name of the radio station and interrupt other programmes with traffic reports.
- ▶ **Resolution** The amount of detail shown in an image.
- ▶ **RMS** Root Mean Squared. A way of measuring the power output of speakers.
- ▶ **SD memory card** Secure Digital card. A secure variant of the postage stamp-size solid-state MMC memory card used by some MP3 players.
- ▶ **USB** Universal Serial Bus. Allows easy connection of peripherals to your PC.

For more on Jargon Buster visit:
www.activehome.co.uk

POCKET DIGITAL RADIOS

ROBERTS	PHILIPS	PURE DIGITAL	ROBERTS	SONY
RD-50CFM	DA1000	PocketDAB 2000	Gemini 15	XDR-M1
£170	£100	£200	£70	£139
01709 571722	0870 900 9070	01923 260511	01709 571722	08705 111 999
www.robertsradio.co.uk	www.philips.co.uk	www.pure-digital.com	www.robertsradio.co.uk	www.sony.co.uk
DAB & FM	DAB & FM	DAB & FM	DAB	DAB & FM
Headphone/line-out	Headphone	Headphone, optical out	Headphone	Headphone
1.5	0.16	0.25	0.865	0.119
250x150x100mm	60 x 110 x 21mm	65 x 110 x 21mm	230 x 130 x 60mm	60 x 80 x 21.5mm
Pause/Rewind, Classic FM shortcut button, RDS, Leather-bound case, great sound quality	Rechargeable batteries, 20 presets, backlight, sturdy design	SD memory card slot, 64Mb SD memory card, MP3 playback, in-line remote, pause/rewind/record radio, good sound quality, simple menu system	Good sound quality for its size, 5 presets, good menu options	In-line remote, good sound quality, FM radio, Bass boost, Station re-edit, small and lightweight design, good backlight, 20 presets
Expensive, no presets	Fiddly controls, basic features, no line-out	Large, expensive, poor headphones	Expensive, no FM radio	Plastic feel, pricey,
★★★★★	★★★★	★★★	★★★	★★★★★
★★★★★	★★★	★★★	★★★★	★★★★
★★★★	★★	★★★★★	★★	★★★
★★★★★	★★★★	★★★★★	★★★★	★★★★
★★★	★★★★	★★★★	★★	★★★
Fanastically featured and good looking, but expensive.	Good value for money if all you want is a pocket DAB radio.	Expensive but you do get a multi-talented media player.	Small, compact, durable and good sound, but pricey.	Lovely design but feels cheap. Good sound, though.
★★★★	★★★★	★★★★★	★★★	★★★★

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Seeing is receiving

You don't have to pay out for satellite or cable TV to see more than the usual five channels. Freeview allows you to get more than 30 digital stations, including E4 and ITV2 – and all you need is a receiver box. With prices starting at £30, we tested the latest models to see what you get for your money

Simple to install and easy to use, Freeview has become a real alternative to Sky and cable for anyone looking to move beyond the standard five terrestrial TV channels. The service provides the UK with more than 30 digital TV and radio stations, and you don't need to sign up to a monthly contract – there's just a one-off cost for a receiver box. What's more, it all works through your existing TV aerial.

While mainstream channels such as BBC One, ITV1 and Channel 4 carry the big-name programmes, you'll find new shows aired on Freeview that aren't available on the standard analogue terrestrial network. There's also good news for people with widescreen TVs. While traditional analogue broadcasts are formatted for normal 4:3 displays, Freeview lets you watch many of your favourites in true 16:9 widescreen without stretching or showing horizontal bars.

Sound quality also gets a shot in the arm. Although the relatively

small **bandwidth** of the Freeview network means it can't transmit **Dolby Digital** sound as used on DVDs, you can use a suitable set of speakers to get **Dolby Pro Logic** surround audio, which gives surround sound from a stereo signal. It's not as impressive as Dolby Digital, but still far better than ordinary stereo.

On top of this, Freeview channels can provide extra services with their programmes. You can access these services by hitting the red button on your remote – for more about this see 'Push The Red Button' on page 63.

Perhaps the best news is that Freeview really does bring the benefits of digital TV to the masses, as you can pick up a basic receiver for under £30. There are models with seven-day programme guides, twin digital tuners, and even **hard disks** that allow you to record programmes, just like the Sky+ service. So, say farewell to a lack of choice and poor-quality pictures, and hello to the world of digital television as we compare Freeview boxes.

Alba STB2 £50

Alba kicks off our group test with the low-priced STB2. The physical design is attractive enough thanks to the curved edges, while the channel and power buttons on the front are handy if you temporarily lose the remote.

One immediate concern we had was that the STB2 only includes a now-and-next **EPG** (electronic programme guide), so you will only be able to get programme details for each channel's current show and the one immediately following it. This is a real shame because the majority of receivers these days are capable of housing a complete seven-day EPG. A future update may be possible, but as yet there's no indication of this.

As far as reception goes, we didn't experience any problems in our full-strength aerial test. However, there was some

break-up evident when we gave the STB2 a runthrough in our low-strength test, and several channels weren't detected at all – definitely something to bear

in mind if you're in an area where Freeview reception is rated as quite weak.

If you already have a decent set of speakers, though, you can

put the STB2's stereo audio output to good use. It's an analogue audio output and will therefore hook up to most stereo systems without a problem, which will be useful when

you're listening to digital radio broadcasts, as it means you won't have to leave your TV switched on. A **serial port** is also provided and lets you update the STB2's **firmware** via your PC should a new version become available.

Alba's STB2 sits towards the lower end of the price range,

but the lack of a seven-day EPG is a killer blow.

If you can find it cheap online or aren't fussed about extended programme guides it's worth considering but, as you'll discover by reading the other reviews here, there are certainly better models available for your money.

The lack of a seven-day electronic programme guide is a killer blow

AT A GLANCE

- Now-and-next TV guide for onscreen programme information
- Serial port allows firmware upgrade at a later date
- Timer function for unattended recordings
- Phono audio outputs allow connection to a stereo
- 2 SCART sockets for easy connection to existing equipment



Bush DFTA1 £55

It's worth pointing out that although the physical designs differ, both the Bush DFTA1 and Goodmans GDB3 (reviewed opposite) are similar to the Alba STB2 receiver.

Since all three brands are closely linked to the same company, the similarities aren't actually all that surprising. However, there are some important features that set them apart.

The interface used on the Bush DFTA1 is very similar to the Alba's, but it's not quite as colourful, which makes it easier on the eye. Setting it up and doing the initial Freeview channel search

took very little time and, as with all but one receiver featured here, a **SCART** cable is included as standard.

While the Alba could only muster a simple now-and-next listing for its programme guide, this Bush model is able to

provide a full seven-day EPG for all available channels. Navigation through the EPG is both intuitive and lag-free, while full descriptions are provided for each listed programme, which is an excellent feature.

It's a small point, but we have to question Bush's decision on the design of the remote control – it's a real brick and definitely won't be winning any style awards. On the flip-side, it's the oversized nature of the remote that makes it much easier to use than some

of the smaller models seen here.

After using the DFTA1 for some time, we were left feeling that it really doesn't make much of an effort to stand out from the crowd. All the usual goodies are present, including a timer function and dual-SCART sockets, but you don't

get any other notable or unique features. As a result, the £55 asking price seems a little steep. But, if you can find it available second-hand or in a sale, the DFTA1 is easy to use and can deliver good reception, even with reasonably low-strength Freeview signals.

It doesn't make an effort to stand out from the crowd

AT A GLANCE

- Intuitive seven-day EPG makes it easy to find programmes
- SCART cable included to get you up and running straight away
- Timer function for unattended recordings
- 2 SCART sockets for easy connection to your existing setup
- Oversized remote much easier to use than some models



Goodmans **GDB3 £45**



As expected, the GDB3 from Goodmans has a similar interface to the Bush and Alba – in fact, it's almost identical to the Bush receiver.

The design of the case is fairly simple, and you won't find any quick-access buttons, which makes the remote essential at all times. It's far thinner than the Bush remote and the spacing between the buttons is minimal, although they are sensibly placed.

We didn't experience any problems during the set-up process, and had the whole thing up and running within five minutes. The seven-day EPG works well and is easy to navigate, while the lag between channel changes is usually under a second. We also found the menu system to be particularly responsive on the GDB3, with no annoying delays when switching between menu screens.

The GDB3 excels in its ability to handle poor-quality signals

One area in which the GDB3 excels is in its ability to handle poor-quality Freeview signals. In our low-strength aerial test it beat the competition hands-down, managing to display the majority of Freeview channels with either little or no interference.

Excellent stuff.

This is definitely something to bear in mind if you live in a weak-reception area, or are planning to use an indoor aerial (take a look at our Checking Coverage box on page 65 for more information on the ins



and out of Freeview reception).

Anyone interested in high-quality audio will be pleased to hear that the GDB3 includes a digital audio-out socket – a real surprise for a Freeview box that's priced under £50.

Thanks to its combination of an intuitive interface, seven-day EPG, excellent reception handling and low price, we

think that the Goodmans GDB3 really does represent great value for money.

True, you don't get the luxury of an **RF modulator** (so you'll need a TV with a spare SCART socket), but it's the perfect choice for anyone who wants to enjoy the channels available on basic Freeview without splashing out a fortune.

AT A GLANCE

- Seven-day EPG makes it easier to find programmes
- Timer function for unattended recording options
- Digital audio-out for linking to a suitable amplifier or TV
- 2 SCART sockets make it easy to link to existing setups
- SCART cable included to get you started straight away

Humax **F2-Fox T £65**

The F2-Fox T doesn't look quite as sleek as some of the other models on test, but it does have a couple of useful buttons on the front that allow you to change channels and turn the unit on and off without using the remote.

The onscreen menu is clearly laid out and easy to navigate, while the remote is similarly intuitive, though bulky. However, the seven-day EPG proved a little problematic. Actually selecting a different day is tricky enough, due to a number of unnecessary button presses, but the main issue is the delay in updating the programme information once you progress more than two days into the future. If a smooth electronic TV guide is important to you, we really would suggest that you look elsewhere.

One important feature on the F2-Fox T is the RF modulator,

The F2-Fox T also impressed us with its range of connection options

which allows it to broadcast the Freeview signal via a standard aerial lead to your TV.

If your TV has no SCART socket, a Freeview box with an RF modulator is essential. To ensure it won't interfere with other pre-tuned terrestrial analogue channels, you are able to decide what channel the signal is broadcast on.

The F2-Fox T also impressed us with its range of connection options. Along with its two



SCART sockets, you get a **composite video** output and both analogue and digital audio outputs are provided.

The F2-Fox T is one of the more expensive Freeview boxes on the market, and the slow seven-day Electronic Programme Guide is a disap-

pointment. Otherwise this is a good effort from Humax.

Thanks to the RF modulator, the unit will appeal to viewers without a SCART television, and the extra audio and video output options will suit anyone who has suitable surround-sound speakers.

AT A GLANCE

- Slow but useful seven-day Electronic Programme Guide
- Composite video output and stereo phonos for audio
- RF Modulator provides compatibility with older TVs
- Digital audio output for linking to a suitable amplifier or TV
- 2 SCART sockets and SCART cable included for easy setup

Panasonic TU-CTH100 £250

The Panasonic TU-CTH100 is the first of two **PVRs** (personal video recorders) in this group test. As well as being able to provide you with digital Freeview broadcasts, it can also record programmes directly to an internal hard disk. Using the EPG, you can schedule recordings in the future, or hit the record button at any time for instant recording. Better still, this technology allows you to pause and even rewind live TV – perfect if the phone rings during a film. Around 40 hours of video can be recorded, though this does depend on the quality of transmission that a channel uses, which can vary a fair amount.

The TU-CTH100 has another little trick up its sleeve: it houses not one, but two digital TV tuners, so you can watch one channel and record another, or record two channels and watch a saved programme.

it reminded us of a VHS video recorder from the 90s

The physical design of the TU-CTH100 isn't what we'd call modern. In fact, thanks to the green LCD display and chunky buttons, it reminded us of a VHS video recorder from the 90s. Despite the hardware's retro styling the interface feels good

and is relatively intuitive, though the colour scheme is a little garish.

It took us a while to master the controls on the remote and get used to Panasonic's way of thinking – for example, the

recordings list is bizarrely labelled 'Direct Navigator'.

The TU-CTH100 is only able to display one channel at a time in the EPG. It's not a killer flaw, but makes it impossible to quickly see what each channel is showing. On the plus side, the picture-in-picture mode

allows you to display two channels at the same time – great if you want to keep an eye on the football scores while your other half watches the soaps.

It has a couple of minor niggles and it doesn't come cheap, but this is a feature-rich Freeview PVR from Panasonic.



AT A GLANCE

- Twin tuners let you record one channel while watching another
- Seven-day EPG for easy viewing of programme schedules
- PVR function lets you record to built-in 80Gb hard drive
- Digital and analogue audio outputs
- 2 SCART sockets for easy connection to existing equipment

Philips DTR320 £59

Our first impressions of the Philips were encouraging. It's one of the more stylish-looking boxes, and relatively small. The remote is also well-designed and comfortable to hold. However, the menu system is far less impressive. Despite using it for some time, we never felt comfortable with the design of these screens.

The EPG is equally confusing, and this problem is compounded by unnecessary multiple-button presses for simple functions, such as returning to the main EPG view after selecting the guide for a day other than the current one.

To the DTR320's credit, there's very little lag between channel hops – around one-second is the worst we experienced. The haziness of the menu system is carried over to the pop-up display you see each time a new channel is selected. Useful information

We expected a lot more from a big name such as Philips

such as how long the programme has left to run is clearly displayed, but you also get a variety of odd-looking icons that flash up, very few of which are instantly recognisable.

The awkward interface is countered somewhat by the supplied manual. Freeview boxes often come with brief, poorly-written user guides, but Philips' documentation is thorough and covers both setup and usage in detail.

Thanks to a device known as a Pulse Killer Chip, the DTR320

is also less susceptible to breaks in reception caused by interference from typical household events such as lights being switched on and gas boilers igniting.

The DTR320 has some good features, but the interface does leave a lot to be desired. Like

any menu system it will, no doubt, become easier with extended use, but the fact is that we expected a lot more from a big name such as Philips. This receiver is not exactly expensive, but there are certainly cheaper and better alternatives available.



AT A GLANCE

- Pulse Killer Chip to prevent electrical interference from household items
- Seven-day EPG for browsing programme schedules
- Timer function for unattended recording option
- Digital and analogue audio outputs
- 2 SCART sockets for easy connection, plus SCART cable included

Freeview Channels

Unlike analogue terrestrial broadcasts, which only carry five channels (or just four in certain areas of the UK), Freeview offers more than 30 digital channels and is growing all the time.

If you're into your comedy, BBC Three will no doubt appeal. *Little Britain*, which has now made its way onto BBC One, was first aired on BBC Three and soon became a massive hit. You'll also find off-the-wall comedies such as *The Mighty Boosh* and *The Smoking Room*.

E4, a Channel 4 spin-off, has recently made its way onto Freeview and is always on hand to serve up a solid dosing of *Friends*, *Lost* and *Desperate Housewives*. You'll also find E4+1 on Freeview. This has exactly the same programme schedule but runs one hour behind the standard E4 channel – the idea being if you miss the start of a programme you can still watch it on E4+1.

News channels are in abundance, offering up-to-the-minute reports 24 hours a day. BBC News 24, ITV News and Sky News are the three most popular, with other channels such as BBC Parliament and Sky Sports News providing more specialist information.

Music-lovers have TMF and The Hits on hand with the latest music videos round the clock, while Bid TV and Price-drop TV offer home shopping with a difference. And, especially for the children, the CBeebies and CBBC channels – both from the BBC – will keep young minds active.



▲ CBBC, E4 and BBC News 24 are just three of the channels you can access with Freeview

Along with the range of TV channels available on Freeview, there are also plenty of radio stations to be found. Although they're digital broadcasts, this service shouldn't be confused with DAB (digital audio broadcast) radio, which carries a far larger selection of stations. However, with BBC Radio stations, Virgin, Kiss and Jazz FM, to name just a few, you won't be short of options.

Current Freeview channel lineup:

BBC One	ITV3	Men & Motors	TMF	Sky News	QVC
BBC Two	Channel 4	E4	UKTV Bright Ideas	Sky Sports News	Bid TV
BBC Three	Five	E4+1	UKTV History	Sky Travel	Price-drop TV
BBC Four	FTN	CBeebies	BBC News 24	Community Channel	Teacher's TV
ITV1	ABC1	CBBC	ITV News	Teletext	PLUS digital radio channels
ITV2	Yoo Play	The Hits	BBC Parliament	Ideal World	

Sagem IDT58 £30

Next up in our group test is the ITD58 from Sagem. If you're after an affordable Freeview receiver, this one will instantly grab your attention thanks to its ultra-low price of just £29.99.

As you'd expect, some sacrifices have been made to hit such a low price point. First and foremost is the lack of a seven-day EPG – you're just left with the now-and-next style of EPG as seen with the Alba STB2. What's more, sometimes the programme synopsis text can be incomplete.

The second issue is that it's woefully bad at dealing with weak Freeview signals. In our test using a low-strength signal, it failed to deliver a picture of any description – all the other models managed to at least receive a small selection of channels. That said, if you live in a strong Freeview reception

area, it's not something that should concern you.

You don't get any additional audio outputs on the ITD58, indeed there are only four sockets on the back of the unit. These consist of an aerial-in, power, RF loop-through, and a single

SCART socket. The ITD58 is the only model to house just one SCART socket.

If your TV only has one free SCART input and you want to use a video recorder, you might want to consider opting for a

Freeview box with two SCART sockets. This allows you to pass the SCART from your video recorder through the Freeview box and then on to the TV. The result is that you only need one SCART input on the TV for both Freeview and your video recorder.

In a further effort to keep

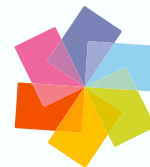
down the price of the ITD58, Sagem has elected not to include a SCART cable in the package. Of course, if you have a spare cable lying around this isn't an issue.

Despite some drawbacks, it's the low price that will ultimately ensure that the IDT58 sells well.

It's woefully bad at dealing with weak Freeview signals

AT A GLANCE

- Cheap and easy way to get started with digital TV
- Now-and-next EPG is limited but useful, and easy to operate
- Timer function for unattended recording option
- Only one SCART socket and no cable included
- Performance can be poor in weak Freeview areas



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Sagem PVR6680T Photo **£199**

The PVR6680T Photo is the second Freeview box in this group test to offer PVR features and, like the Panasonic TU-CTH100, it comes with an 80Gb hard disk. The receiver is reasonably small, which is surprising for a PVR, and the **LED** screen can't display nearly as much information as the Panasonic – all you get is the current channel number.

The menu system is clearly laid out and easy to navigate, as is the EPG. The fact that only one channel's listings can be displayed at one time makes it hard to find out what's on each channel, but it's a minor irritation. Twin tuners are provided, allowing you to record two programmes at the same time, or watch one station while recording another.

Sagem has taken the interesting step of including a multi-format card reader,

which accepts all major digi-cam **memory card** formats and displays the photos on your TV.

A USB socket is also available, and allows you to view photos stored on a USB key

A **USB** socket is also available, and allows you to view photos stored on a USB key.

The recording function worked well, as did the scheduler. There was no noticeable degradation in quality with the recordings – similar to Panasonic's PVR.

Both analogue and digital audio outputs are provided, but there's no composite video

output. It was also disappointing that Sagem couldn't squeeze an RF modulator into the box – something we expect with a Freeview PVR.

Priced at just under £200, Sagem's PVR6680T Photo is one of the cheaper Freeview PVRs on the market, and is

relatively easy to use. The card reader is an interesting feature, but quite how much you'd use it is another matter. We also felt the seven-day EPG could have been better designed.

All in all though, the PVR 6680T Photo is a decent effort from Sagem.



AT A GLANCE

- Twin tuner lets you watch one channel while recording another
- Seven-day EPG for browsing TV schedules
- PVR function for recording programmes to built-in 80Gb hard drive
- Multi-format card reader for displaying photos on your television
- Digital and analogue audio outputs

Push the red button

One of the advantages digital broadcasts have over their analogue counterparts is that extra services can be included on each channel. The data for these is broadcast along with the programmes, and almost every set-top Freeview box (certainly all of the models featured in this group test) is capable of accessing this extra information. All you have to do is push the red button on your remote control.

BBCi is the BBC's flagship digital service and is available on all BBC digital Freeview channels. Using BBCi you'll be able to access the latest news, sports and entertainment news along with travel information and much more.

It's not just the BBC that makes use of the digital services made possible by Freeview. Both Channel 4 and ITV provide a decent selection of 'red button' services – the content of which varies depending on the programme that's being aired.

It's important to understand that the digital services available on Freeview aren't as vast or interactive as those found on Sky Digital. The reason for this is that Sky broadcasts its programmes using a satellite network. This network is able to carry far more data than Freeview, which is broadcast over the air via



▲ Interactive services such as BBCi can bring a whole new dimension to your TV viewing experience

UHF signals. For example, while BBCi on satellite lets you view six screens on its multi-channel news service, the Freeview version only houses two news screens. Furthermore, since Freeview is only a one-way service, you won't be able to use the Red Button to vote during shows such as *Big Brother*. Sky Digital boxes achieve two-way communication by plugging directly into a telephone socket in your house.

Despite the restricted nature of Red Button services on Freeview compared with Sky Digital, it's still an improvement on the old text-based services like Teletext on analogue channels.

Best on test

There's no doubt that the ultra-cheap Sagem ITD58 will tempt anyone looking for a cheap Freeview receiver, and if you live in an area with good coverage it provides a great way to dip your toe into the world of digital TV.

However, we feel it's well worth spending the extra few pounds and opting for the Goodmans GDB3 with its seven-day EPG, excellent reception handling and two SCART sockets. It's these features, combined with the low pricetag, that make the GDB3 from Goodmans worthy

of our Buy It! award.

It's difficult to differentiate between these receivers in terms of picture quality. We tested each model on a widescreen CRT and LCD TV, and all of them sported the same clear display. In reality, the quality of your TV and the type of connection you use will have the most effect on image quality.

If you're after a PVR-style Freeview box, the Sagem PVR6680T Photo is a good bet.



It's not perfect, but it's one of the cheaper PVRs around and performed well.

Finally, it's worth mentioning that due to large-scale production of these receivers, faulty models aren't uncommon, and a quick forum search

on the internet will produce customer complaints for just about every box. Although none of the models we tested suffered intermittent faults such as freezes, you should immediately return your model should such problems arise.

Freeview Receivers compared

MANUFACTURER	ALBA	BUSH	GOODMANS	HUMAX	PANASONIC
MODEL NAME	STB2	DFTA1	GDB3	F2-Fox T	TU-CTH100
PRICE	£49.99	£54.99	£44.99	£65	£249.99
TELEPHONE	0870 873 0078	0870 873 0079	0870 873 0080	020 8547 4240	08705 357 357
WEB	www.albapl.com	www.albapl.com	www.goodmansdigital.co.uk	www.humaxdigital.com	www.panasonic.co.uk
SPECIFICATIONS					
TUNER (SINGLE/TWIN)	Single	Single	Single	Single	Twin
EPG	Now and next	7day	7day	7day	7day
DIGITAL TELETEXT	Yes	Yes	Yes	Yes	Yes
PVR HARD DISK SIZE	n/a	n/a	n/a	n/a	80Gb
TIMER	Yes	Yes	Yes	Yes	Yes
TOP-UP TV COMPATIBLE	No	No	No	No	No
CONNECTIONS					
RF MODULATOR	No	No	No	Yes	Yes
SCART / S-VIDEO / COMPOSITE OUTPUT	2/0/0	2/0/0	2/0/0	2/0/1	2/1/1
SCART LEAD INCLUDED	Yes	Yes	Yes	Yes	Yes
SERIAL PORT	Yes	Yes	Yes	Yes	No
AUDIO OUTPUT ANALOGUE/DIGITAL	Yes/No	No/No	No/Yes	Yes/Yes	Yes/Yes
RATINGS					
DESIGN	★★★	★★★★	★★★★	★★★★	★★★
FEATURES	★★	★★★	★★★	★★★★★	★★★★★
EASE OF USE	★★★	★★★★	★★★★	★★★	★★★
RECEPTION ABILITY	★★★	★★★★	★★★★★	★★★	★★★
VALUE FOR MONEY	★★★	★★	★★★★★	★★★★	★★★
PROS	Analogue audio output	Works well	Excellent reception; cheap	RF modulator; range of outputs	RF modulator; PVR
CONS	Only now-and-next EPG	Overpriced	No advanced features	EPG issues	Single-channel view on EPG
VERDICT	Cheap, but the lack of a seven-day EPG is a real blow.	The DFTA1 is a good box, but overpriced for what it is.	The GDB3 is easy to use and offers good performance.	EPG is disappointing, but it does include an RF modulator.	A decent, if expensive, Freeview PVR with a good range of features.
OVERALL	★★★	★★★	★★★★★	★★★★	★★★

Checking coverage

Before you rush out and buy a Freeview box, you need to make sure you're in an area that can receive it. At present, over 73 per cent of the UK can receive digital transmissions, and this is increasing all the time.

The quickest and easiest way to find out if you can get Freeview is to head to www.freeview.co.uk and click on the Can I Receive Freeview? link. Here, you'll be asked to enter your postcode and the web site will then check it against a database.

Although this service is useful as a guide, however, it's not 100 per cent accurate. If you're not connected to the internet, you can check your local Freeview reception by calling 08708 80 99 80.

If you're in a strong Freeview reception area it may be possible to receive a decent signal even when using an indoor aerial, but most houses will require you to use a roof-top aerial. If you're in a weak reception area or have an old, rusted aerial, you might need an



◀ Before you go and buy a receiver, go on the web and make sure you can get Freeview

Industries web site at www.cai.org.uk for help with getting a new wideband aerial fitted.

As a final piece of advice, it's worth checking the returns policy of the store where you buy your Freeview receiver. If you discover you're not in a good Freeview area you might be able to get a complete refund.

aerial upgrade. Indeed, in some areas of the country Freeview is broadcast using a different frequency from standard analogue

broadcasts. If you're in one of these areas, you'll need what's called a wideband roof-top aerial installed. Visit the Confederation of Aerial

	PHILIPS	SAGEM	SAGEM
	DTR320	IDT58	PVR6680T Photo
	£59	£29.99	£199
	0906 1010 016	01784 898 158	01784 898 158
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	7day	Now and next	7day
	Yes	Yes	Yes
	n/a	n/a	80GB
	Yes	Yes	Yes
	No	No	No
	No	No	No
	2/0/0	1/0/0	2/0/0
	Yes	No	Yes
	Yes	No	No
	Yes/Yes	No/No	Yes/Yes
	★★★★	★★★★	★★★★
	★★★★	★★	★★★★
	★★	★★★	★★★
	★★★★	★★	★★★
	★★★	★★★★	★★★★
	Pulse Killer Chip works well	Extremely cheap	PVR; card reader
	Expensive; poor interface	Bad with low-strength reception; basic features	EPG could be better
	Poorly designed interface lets down the DTR320.	Cheapest box available, but it can't handle low-strength signals and lacks common features.	Cheap Freeview PVR, but the EPG is fiddly to use.
	★★★★	★★★	★★★★

Jargon buster

▶ **Bandwidth** A measure of the maximum amount of data that can be transferred over a connection at any one time. For example, if you connect to the internet using a modem, then the bandwidth is likely to be up to 56Kbps (or 56,000 bits of data per second).

▶ **Composite video** A type of video signal in which the red, green and blue signals are mixed together.

▶ **CRT** Cathode Ray Tube. The glass tube-based technology used to produce an image in TV sets and computer monitors.

▶ **Dolby digital** A standard for high-quality digital audio used for video stored in digital form at, especially on DVDs.

▶ **Dolby Pro Logic** A way of encoding audio information, developed by Dolby Labs.

▶ **EPG** Electronic Programme Guide Displays TV schedules onscreen, and lets you point and click on the ones you would like to record.

▶ **Firmware** Basic software permanently stored on a device that controls its basic operation.

▶ **Hard disk** A high-capacity disk drive fitted in PVRs and

used to store recorded TV programmes, rather than using videotape or DVD.

▶ **LED** Light Emitting Diode. A low-power electronic device that emits light when an electric current is passed through it.

▶ **Memory card** Small cards that can store computer data or documents.

▶ **PVR** Personal video recorders store recorded TV shows on hard disk, rather than tape or DVD.

▶ **SCART** A standardised 21-pin connector for two-way traffic of video and audio signals.

▶ **Phono** Common connector used to link video and audio devices to each other.

▶ **RF modulator** Passes through the analogue signal, but adds another channel containing the Freeview broadcasts. Essential if you have a non-SCART TV set.

▶ **UHF** Ultra-high-frequency; any radio frequency in the 300- to 3,000-MHz range.

▶ **USB** Universal Serial Bus. A standard that allows quick and easy connection of peripherals to your PC or audiovisual device.

For more on Jargon Buster visit:
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Workshops

Just like the Workshops section in *Computeractive*, the following pages feature a series of handy step-by-step guides to help you master the technology around your digital home

Jargon buster

- ▶ **802.11g** Standard used for wireless networking devices. Known as Wi-Fi.
- ▶ **Browser** Web browser – an application that lets you view pages on the internet.
- ▶ **Component video** A connection where brightness and colour information are carried separately for a better-quality picture.
- ▶ **Composite video** A type of video connection in which the red, green and blue signals are mixed together.
- ▶ **Dialogue box** A small window that pops up to display or request information.
- ▶ **Dial-up** A connection to the internet using a modem and phone line.
- ▶ **DirectX** Windows feature that ensures that all programs work with all the different types of hardware available.
- ▶ **Download** Process of transferring files onto your PC directly from the internet.
- ▶ **Driver** Software needed to allow Windows to communicate with a peripheral.
- ▶ **Ethernet** A type of computer network that allows a number of PCs to be linked together.
- ▶ **Firmware** Basic software permanently stored on a device (such as a graphics card) that controls its basic operation.
- ▶ **IP address** An identifying number of a computer attached to a network. A computer's IP address is similar to a phone number in function.
- ▶ **Kbps** Short for kilobits per second, a measure of data transfer or modem speed.
- ▶ **Lan** Local Area Network. Describes two or more computers connected, with the ability to share resources.
- ▶ **Lumen** A way of measuring brightness.
- ▶ **Modem** A device that lets two computers communicate over a telephone line.
- ▶ **Network** A way of connecting computers and printers so they can share data.
- ▶ **Plasma** A display where each pixel is illuminated by a tiny bit of plasma.
- ▶ **RGB** A high-quality form of component video that splits the signal into separate red, green, and blue channels.
- ▶ **Router** A device used to connect more than one computer together and/or to the internet.
- ▶ **SCART** A standardised 21-pin connector for two-way traffic of video and audio signals.
- ▶ **Server** A computer on a network (such as the net) that stores shared information.
- ▶ **Set-top box** A device that enables a TV set to receive digital TV broadcasts.
- ▶ **Sound card** An expansion card that lets a PC create sounds.
- ▶ **S-video** A high-quality video connection that carries brightness and colour information separately.
- ▶ **USB** Universal Serial Bus. A standard that allows easy connection of peripherals to your PC or audiovisual device.

For more on Jargon Buster visit:
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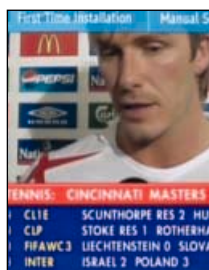


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Get gaming online p77

With a broadband link you can play multiplayer games online, or play games against your housemates via a home network. We show you how to do this with a PC and Xbox

Setting up a home-cinema projector

Forget going to your local multiplex. Set up your own home-cinema projector and you can get the cinema experience at home on your own sofa. Just don't forget to stock up on the popcorn!

For the ultimate home-cinema experience, forget paltry 42in plasma TVs and step up to the visual excitement only a projector can deliver. Projectors can easily create images of 100 inches or more, literally dwarfing large screen TVs. They're also relatively small and can be placed either on a tabletop or discreetly hung from the ceiling. Models costing less than most 37 or 42in TVs can also handle high-definition video, making

them some of the most flexible displays on the market.

Projectors aren't just for watching DVD movies, either. You can use them with your set-top boxes to enjoy sport and TV shows, or plug in a games console for a truly involving experience. Today's models are also a doddle to set up. Just place them on a suitable table, point them at a white wall, focus the image then sit back and enjoy. In this workshop we'll show you just how easy it is.

STEP 1

Projectors come in various shapes and sizes, with budget models starting at around £500. Most budget models are more suited to business presentations than home cinema, however, so we'd really recommend one costing between £1,000 and £1,500. This will get you a unit built specifically for entertainment with a true widescreen image, a bright picture and, at the higher end, support for high-definition video. For this workshop we've chosen Panasonic's PT-AE700, which supports high definition and can create a widescreen image measuring from 40 to 200in. It's available for around £1,000 from online dealers – see www.activehome.co.uk/activeprices to compare prices.



STEP 2

Unlike a TV, which can simply sit in the corner of your room, the placement of a projector requires a little more thought. First you'll need a suitable white area to project the image onto. White walls are a good starting point, although if

they're not perfectly flat or clean the image quality will be affected. Otherwise you can use something as simple as a large sheet of card right up to a fully motorised screen that lowers itself automatically from your ceiling. Some dealers may also offer a basic screen when you buy a projector. If you're serious about quality you should look into buying a dedicated screen, such as the one shown here from Da Lite (www.da-lite.com), which will give a cleaner and brighter image.



STEP 3

Next, point the projector at the screen or wall. The further away it is, the bigger the image will be. Most projectors also feature zoom lenses, but these are for basic adjustments only. If you have a specific image size in mind, you'll need to place the projector within a certain range. All projector manuals come with a guide or table to explain what image size is created at which distance. To create a 100in image with the Panasonic, it must be placed between 3.1 and 6.2m from the wall or screen.



STEP 4

At this point it helps to show an actual picture on the screen to aid positioning and allow for adjustments, which we'll describe later. For now though, you should start by connecting your DVD player. If both your projector and DVD player have **component** connectors, use these to get the best-quality picture. If one or both do not offer component connections, then the next best connection is **SCART** (with **RGB** enabled on the DVD player), followed by **S-video** and finally **composite**. Component connections (pictured) use three plugs, whereas S-video and composite use one.



STEP 5

It's possible to connect more than just your DVD player to a projector. By connecting a set-top box you'll be able to use it as a TV, which can be great for dramas and sport. There's also nothing stopping you from connecting a games console or a PC. Some projectors come with cables, but you may need to buy more to connect other devices or allow specific lengths. Since the projector could be located at some distance from your other equipment, it's worth paying extra for good-quality cables. Finally, if you've gone for a widescreen projector, make sure your DVD player and any other connected devices are set to 16:9 mode if they have one.



STEP 6

Now put a movie in your DVD player, switch on the projector and select the appropriate input to show the picture. You'll immediately see what needs to be corrected. First adjust the projector's position and zoom so the image is roughly the right size. Next, focus the image using the projector's lens – it helps to have someone standing next to the image to tell you when it's pin-sharp. Now correct any skewing in the image by either positioning the projector perfectly square to the wall or screen, or by using any optical or digital correction facilities. These allow you to enjoy a straight image even if the projector is low down and pointing up, or even located to the side.



STEP 7

The brightness of a projector is measured in **lumens**. Most models costing more than £1,000 should offer at least 1,000 lumens, which will be sufficient to create a picture in daylight hours. But for the best-quality results you'll ideally need a darkened room, so turn off your lights and close the doors and curtains. If you're refitting a room with home-cinema use in mind, consider fitting thicker curtains or blackout blinds. If the room is very dark, you may also be able to reduce the brightness of the projector, which will have the benefit of extending the bulb life. Many projectors have a mode specifically for this.

STEP 8

While today's home-cinema projectors can be popped on a table and be ready for action in seconds, for the ultimate in convenience you may want to consider hanging your projector from the ceiling using an optional bracket. Your projector will then be out of the way yet always set up and ready to use. Best of all, the cables can be fed into your ceiling, keeping them hidden from view and avoiding any tripping hazards. As for the projector itself, most are designed to be ceiling-mounted upside-down (as shown here with this Sony model) and have a setting to flip the picture around.



Watch out!

Projectors may be unbeatable for creating the biggest pictures, but they do have several issues worth knowing about. First, their bulbs have a finite lifespan, generally between 1,000 and 2,000 hours, and will eventually need to be replaced. This can cost several hundred pounds.

Second, these bulbs run very hot and require fans to keep them cool. Some budget projectors can be quite loud, so it's always worth checking them out in quiet environments, or going for better models with quieter fans. Third, while modern projectors are bright enough to produce a picture with some ambient light, they really need a darkened room to perform at their best.

For all these reasons, many projector owners also have a small TV for general or daytime viewing, and only use their big screen for special shows and movies watched under ideal conditions.

Combine your remote controls

Does it take half an hour to switch on your TV because you can't find the right remote? One universal model will make life easier

Most of us have at least three or four home entertainment devices, each of them with its own remote control ready to roll down the back of the sofa or be carried off into the garden by the dog.

Some of these remotes do offer limited control over other products by the same manufacturer, but the best way to escape multi-remote

hell is to buy a universal model and configure it to control everything in your system.

For this workshop we've used the One For All 6, which is available from stores such as Argos for £20. It's a simple job to do, and the procedure should be similar for all universal remote controls, although entering the set-up mode may vary slightly from model to model.



STEP 1

Before you start, make sure that the batteries in both the One For All 6 and the remote control you want to learn from are fresh. Next, move to a location where the remote signals will not be picked up by your television or other devices. The One For All 6 receives signals from the front, so position the two remotes so that they are pointing at each other at a distance of around 2-5cm. It may be more helpful to have the universal remote pointing away from you, as this will make it easier to program.

STEP 2

To teach the universal remote the commands for your television, put it into set-up mode by pressing and holding the MAGIC key at the top of the unit for around three seconds. The most recent device button used will flash once and then flash twice more. Press 9, 7 and then 5 on the keypad, and the device button will flash two more times. Now press the TV button to confirm that you want to input commands to control your television.



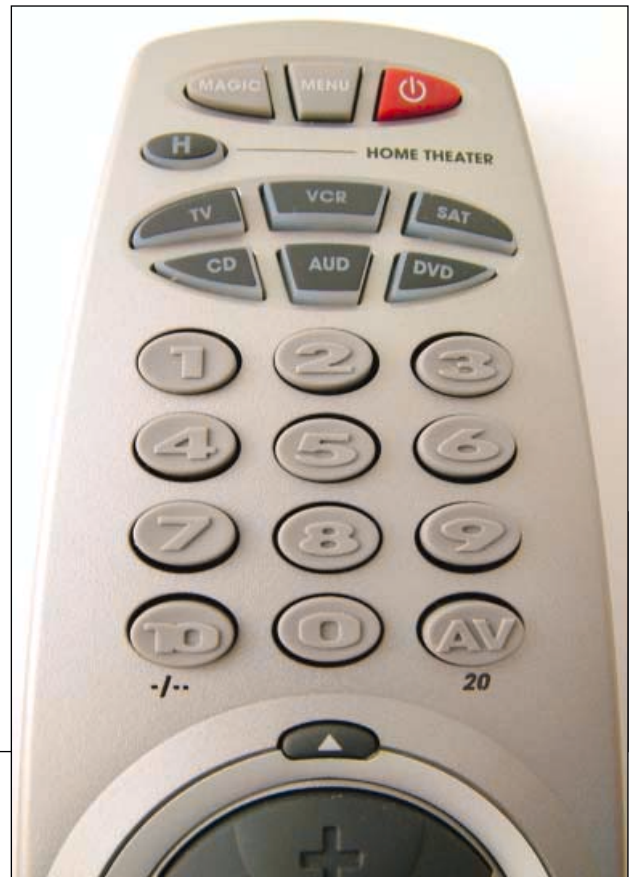
STEP 3

Press the button that you want to assign a function to. The device button (in this case TV) will start to flash rapidly. Now press and hold the button that you want to emulate on the original controller, making sure the remote is pointing at the One For All 6. If all goes well, the TV button will flash twice more to show that the key information has been received. Repeat this step for any more keys you want to transfer. When you're done, press and hold the MAGIC key until the device key flashes twice.



STEP 4

If you want to teach the One For All 6 commands for another device, such as your DVD player, simply repeat the above steps, substituting the TV button with the one corresponding to the device to be set up. If one of your other remote controls includes commands that do not have a corresponding button on the One For All 6, there are eight extra buttons underneath a flap at the bottom. These can be used just like any other button, and there is space next to each for a short description.



STEP 5

Now that you've taught the All For One 6 the key commands from your other remotes, you can use it instead of them simply by pressing the device key for the item you want to control and then the relevant command. That's it – you've escaped remote control hell!

Adding new Freeview channels

With new TV and radio stations appearing on Freeview, and more set for the future, it's important to make sure your channel list is up to date. We show you how

With receivers now available for well under £50 (see page 57), more and more channels are making their way from cable and satellite to **Freeview**. Over the past few months alone, E4, E4+1 and Men and Motors have all made the move to digital

terrestrial TV. However, unless you keep your channel list up to date, you could be missing out.

Here we'll show you how to search for new channels and add them to your receiver's list. We used the Goodmans GDB3, but the process should be reasonably similar for other receivers.



STEP 1

Although you would have been prompted to run an initial channel search when you first installed your Freeview receiver, to get new channels you'll need to run this search again. On most receivers, including the Goodmans GDB3, you need to do this from the Installation menu. This can be accessed by hitting the Menu button on the remote control. Here you'll find options to review the current channel list, adjust the configuration settings (such as widescreen options, and **firmware** updates), set timers for scheduling recordings and alter language settings. Using the arrow keys on the remote, highlight Installation and hit the Select button.

STEP 2

There are two main options on the Installation menu screen – Add New Channels and First Time installation. The First Time Installation is only necessary if you've moved to a new area and are therefore using a different Freeview transmitter. We want to Add New Channels. Clicking on this will bring up two further options – Automatic Search and Manual Search. The latter should only be used if you know the actual channel number for the new broadcast. Instead, click on the Automatic Search – it will take a little longer, but it is far easier to use.



STEP 3

When you're ready, click the Select button. You'll now be presented with a warning that your current channel lineup will be replaced if you continue with the search. Although this will take some time (around three minutes is normal), it will perform a complete search of the Freeview broadcast range. Highlight the Yes button and press the Select button again. During the search, the progress bar along the bottom of the screen will advise you how long is left. As new channels are found, you'll see their names displayed on screen. Once the search has finished, you'll have all available channels, including any new ones, ready for viewing.



Using voice control in Windows Media Player

Using Voice Command is easier and faster than operating Media Player manually. Give it a try...

Star Trek-style voice-controlled PCs may still be a long way off, but you can get a taste of the future with the Voice Command feature in Microsoft's Plus! SuperPack add-on.

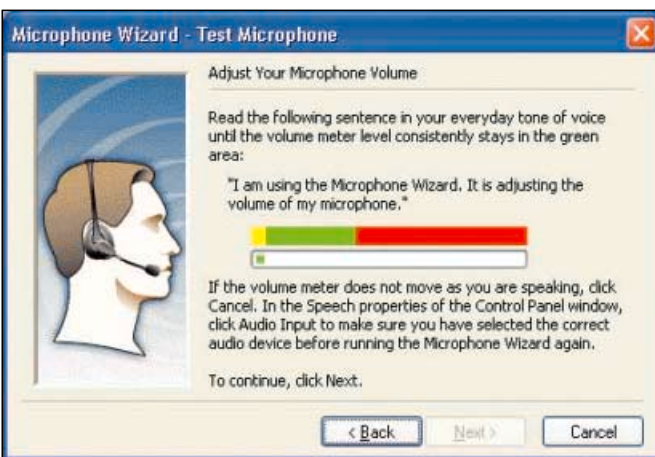
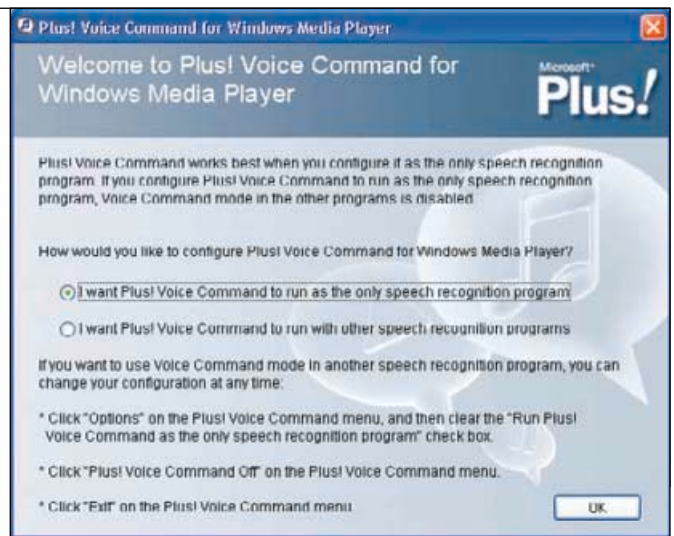
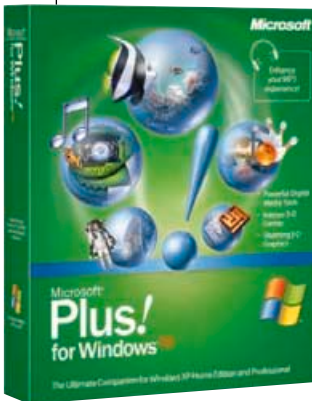
Voice Command lets you control Windows Media Player simply by talking to it. You might choose to listen to every track by a selected artist, or even

pause playback temporarily when you need to answer the phone, all without touching the keyboard. Voice Command even lets you control Media Player when it's operating in the background.

The program works with any microphone connected to your PC, but one designed for voice input is best.

STEP 1

Start Voice Command from the Digital Media section of the Microsoft Plus! menu. On the first screen you're asked to choose between running Voice Command as the only speech-recognition program or alongside other systems. For now, select the option of using it as the only speech-recognition program. Once you've got it up and running, it's possible to turn it on and off at will if the need arises. Click OK to confirm your choice, and then on the next screen click the Configure Microphone button.



STEP 2

Make sure the microphone is plugged into the appropriate **sound card** socket or **USB** port of your PC and then click Next. Repeat the test phrase several times until the level indicator stays in the green zone, and then click Next. If the level indicator fails to move at all, then the chances are your PC is not set up for microphone input. On the next screen, follow the instructions for adjusting the position of your microphone – it shouldn't be too close to your lips – then click Finish, followed by OK.

STEP 3

After a few seconds, Media Player will open and a new icon will appear in the Taskbar notification area, depicting a musical note in a speech bubble. This is where you can turn Voice Command on and off, get Help and set special options. When Voice Command is turned off, a red-and-white cross is superimposed on the icon. Media Player is now ready to accept your commands, but until you've become familiar with using speech control it's a good idea to activate the full-size Language Bar so you can see what's happening. To do so, click the minimised Language Bar icon and then click Show The Language Bar.



STEP 4

The Language Bar is usually stationed at the top of the screen, but you can drag it into any position you prefer. Both the Microphone and Voice Command buttons should already be selected. If not, click them now. The Dictation button is only appropriate if Microsoft Office is also installed. To test the system, use the usual mouse and keyboard techniques to select and play an album, then switch to the Now Playing view and turn off visualisations.

STEP 5

Say 'Media Player, show visualisation'. In the yellow text area of the Language Bar you should see the message Command Received, and the most recently used visualisation will be activated. If your command was misunderstood no visualisation will be played and you'll see the message What Was That? in the Language Bar. Simply repeat the command in your usual tone of voice until it's understood. Other commands to try are 'Media Player, pause;', 'Media Player, play;', and 'Media player, restart'. For help on the full range of commands, say 'Media Player, what can I say?'



STEP 6

Every command must begin with the call phrase 'Media Player', but if this becomes tedious you can change it by clicking the Voice Command icon in the notification area and selecting Options. In the Call Sign section, select Plus! or DJ to replace Media Player as the call sign, or enter your own call sign by typing a phrase such as 'Listen to me slave'.

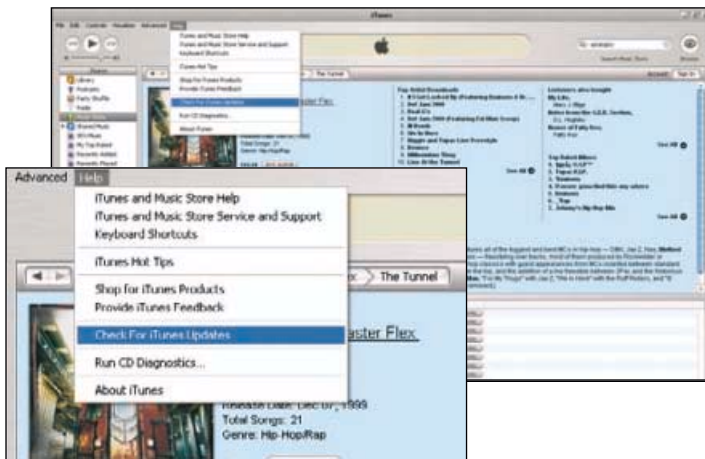


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Podcasting is the latest trend in radio-style shows. Find out how to download and listen to them

Produced both by enthusiastic individuals and traditional media companies, such as the BBC, Podcasts are subscription-based radio-style shows broadcast over the internet. You can listen to them on your computer or download them to a portable media player.

This 'save now, listen later' idea has become so popular that Podcasting is now supported by the Apple's free iTunes software. In this workshop we'll show you how to find shows, subscribe to them, and **download** 'episodes' to your iPod. You will need to be connected to the net first.



STEP 1

If you don't have a copy of iTunes installed, you'll need to download it from Apple's website by pointing your web browser to www.apple.com/itunes/download. If you already have iTunes, you need to check whether you have the latest version. To do this, start the program and click the Help menu followed by Check For iTunes Updates. If a newer version is available, follow the onscreen instructions to upgrade.



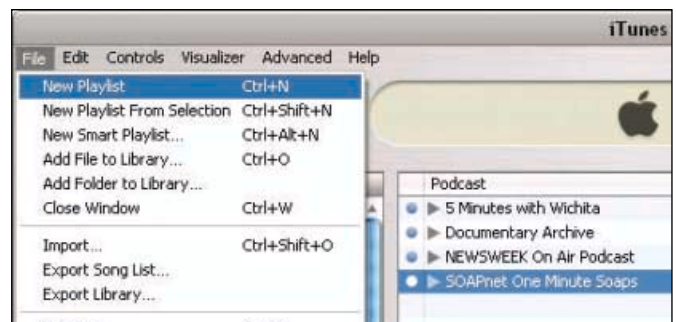
STEP 2

Once iTunes is up and running, click on Podcasts in the Source panel on the left side of the screen. Now click the Podcast Directory' link below the main iTunes window. This will take you to the Podcast section of Apple's online music store. From here you can search for specific programmes, browse by category, or select from a list of the top 20 Podcasts.



STEP 3

To listen to a Podcast you need to subscribe to it. To do this, just click on the name of the Podcast you want and then click the Subscribe button. This will download the latest episode and then set iTunes to watch for future broadcasts. You can also get past episodes, (listed in the lower half of the main window) by clicking the Get Episode button next to each one.



STEP 4

You can now listen to an episode on your PC simply by clicking on it in the main window and pressing play. You can also transfer episodes to your iPod, just as you would with songs. To do this, create a new Playlist by clicking File, followed by New Playlist. Give it an appropriate name, then drag and drop the Podcast from the main iTunes window onto the new Playlist. Now simply connect your iPod to your PC to synchronise it in the usual way.

Get gaming online

Blast aliens with your cousin in Canberra, or team up with a friend from Frankfurt. We show you how

Sitting next to your mate on the sofa and giving them an onscreen thrashing has been a mainstay in home entertainment since two-player games were invented. Now, thanks to the internet, you can take on (or team up with) a spotty Texan teenager and a gaming granny from Gateshead, while still sitting in your pyjamas in the comfort of your own home.

If you've got a **broadband** connection, multiplayer gaming can open up a whole new world of virtual stimulation. Thousands upon thousands

of worldwide gamers are continually online and, with everyone's location being irrelevant, you can set up private online games with friends or family wherever in the world they may be. The more serious gamers have formed their own 'clan' of players, ready to do battle with other online tribes.

With most PC games now sporting online play, and Microsoft supporting its Xbox console with the fantastic Xbox Live, we show you how to get connected.

Multiplayer gaming with Xbox Live



STEP 1

Providing you have a broadband internet connection, a **router** and an Xbox Live Starter Kit (£40), setting up Xbox Live is pretty straightforward. Plug a network cable into the **Ethernet** socket of the Xbox and insert the other end into an unused **LAN** port in the back of the router. If you prefer to be cable-free, a wireless adapter (such as the US Robotics **802.11g** Wireless Gaming Adapter and Ethernet Bridge – £60) can also be attached to the Xbox, but you'll need to install and configure the adapter on a PC first. You'll also need to be 18 or over, as a credit card is needed to register.



STEP 2

Before you can sign up to Xbox Live, the Xbox Dashboard needs to be updated. To do this, insert your Starter Kit disc and the Xbox will configure itself to use your broadband connection. Now remove the disc, restart the Xbox and the new version of the Dashboard will appear. Select 'Xbox Live' from the main menu and then choose 'New Account'. From here, it's a simple case of following the onscreen instructions to agree to a privacy statement, a billing region (what country your credit card resides in), and terms of use.



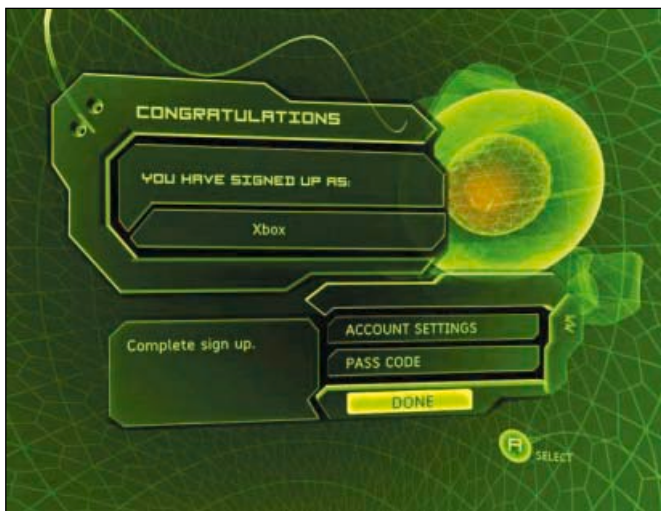
STEP 3

The fun starts when you reach the Xbox Live ID screen. This is where you can create a unique name, or 'Gamertag', for yourself for use when playing Xbox Live games. Click on 'Gamertag' and an onscreen keyboard will appear. Use the direction pad and green 'A' button on your controller to spell out a name, switching to Capitals, Symbols or Accents if you need to. Because Xbox Live has been going for more than a year, you may find your first choice of moniker has been taken, so try to choose something distinctive or a name that incorporates numbers or symbols. You'll also need to enter your date of birth, proving you are over 18.



STEP 4

The next Activation screen is where you'll need to enter your subscription code. Providing you have purchased an Xbox Live Starter kit with 12-months of free subscription, it's an effortless procedure. On the inside of the Xbox Live starter disc sleeve, you'll find a grey box. Scratch this off to reveal a 25-digit code. Enter this sequence of letters and numbers into the activation screen exactly how it appears on the disc sleeve. Now click done and your Xbox will jump online to confirm the code you've entered. If accepted, you're only a few minutes away from playing games online.



STEP 5

Next, continue through two screens (highlighting your purchase details and information about refunds) until you come to the Billing Info screen. Here you'll need to enter your credit card details and card's billing address using the same onscreen keyboard as before. If you purchased an Xbox Live Starter Kit with a year's free subscription, no money will be taken from your account for 12 months, and then you can choose to extend your subscription. When your personal details have been entered, continue through the remaining four screens until you reach the final Congratulations completion screen. Click Done and you'll be signed up for Xbox Live.

STEP 6

Once everything is complete, you can use the Xbox Live dashboard for managing a Friends list, chatting to other gamers using the Communicator headset and maintaining your Xbox Live account. If you want to play a game against any particular friend who also has Xbox Live, you'll need to know their Gamertag. Click the Friends tab and then choose to Add Friend. Enter their Xbox Live name, click Done, and they will be added to your friends list. This list can be

accessed in any game that supports Xbox Live, allowing you to quickly invite friends to join you. To ensure the game you're playing is compatible with Xbox Live, look for the Live Online Enabled logo, which can usually be found at the top of the games packaging.





STEP 7

The Xbox Communicator headset is used for chatting to people you're playing with. It has an in-built earpiece and microphone, allowing for two-way conversations. One Communicator is usually included with an Xbox Live Starter Kit. Plug the module into the top expansion slot of your controller and then insert the headset plug into the headset jack. The Communicator can be worn on either side of the head, depending on how you attach the earpiece to the headset. Volume is controlled by a dial on the side of the module, and muted by a button on top. A green light means your microphone is on and you can be heard. A red light means your voice isn't being transmitted.



STEP 9

Once your game of choice is loaded (we're using Unreal Tournament 2004 for this example), head to the Xbox Live section of the main menu and start, or join, a multiplayer game. Whoever creates the multiplayer game can choose options such as how long to play for, or how many kills before the game ends. Once in the game, you can identify other players by their Gamertag, which will appear above their heads. Of course, they can also see yours.

STEP 8

The Xbox Communicator only works with games that support Xbox Live and have online talk capability. To find out if your preferred game has this option, look for the Voice Logo on the back of a games' packaging. The voice command feature can generally be used during the initial startup of a compatible Xbox Live game and during the game itself.



Multiplayer online gaming with a PC

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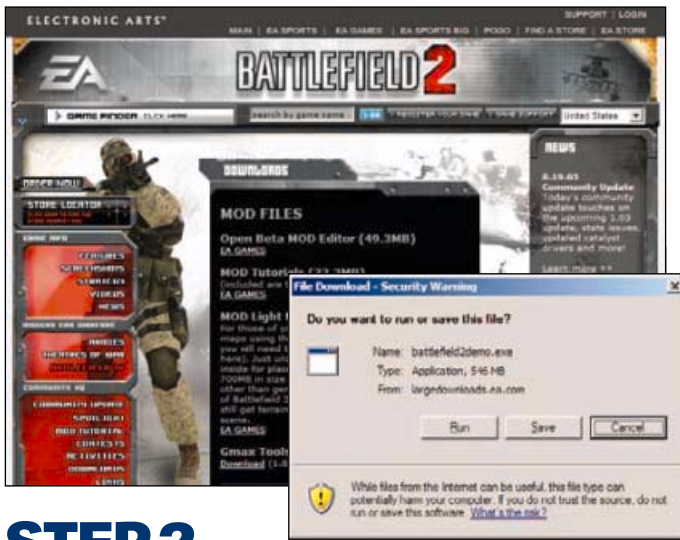
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STEP 1

Although a broadband connection isn't a necessity for online PC gaming, we wouldn't advise using a **dial-up modem**, simply because the connection is too slow. So, the first step is to choose one of the many services providers, such as BT or AOL, and sort yourself out with a speedy internet connection. However, if you've got a home **network** you could play multiplayer games against other housemates (if their computer is up to scratch).



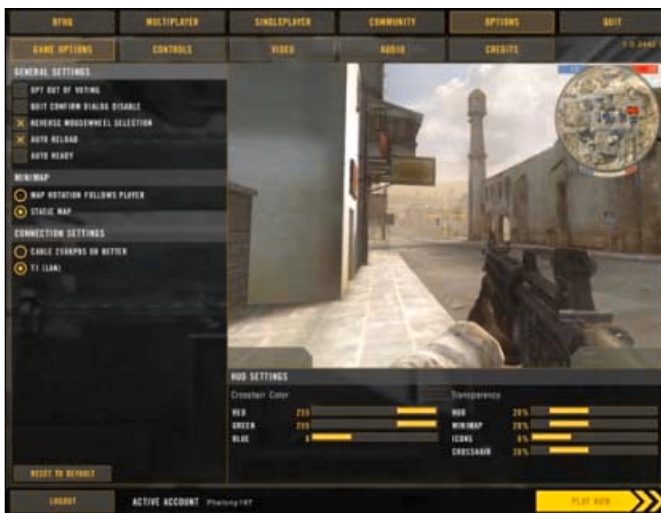
STEP 2

For the purpose of this workshop we will download a free demo version of Battlefield 2 – Gulf of Oman – an online multiplayer game that can be found on the Electronic Arts website at www.eagames.com/official/battlefield/battlefield2/us/downloads.jsp Scroll down the web page, click on the EA Games link for the Gulf of Oman Multiplayer Demo, and save the file to the desktop when prompted. The installation file is quite large (546Mb) and will take around three hours on a broadband connection. Once downloaded, double-click on the battlefield2demo.exe icon and follow the onscreen instructions to install the game.



STEP 3

During the set-up process you will have a chance to configure a microphone on your PC for in-game voice communication. You can also install the GameSpy Arcade Now program, which provides an easy way to join multiplayer games. It supports more than 550 games and demos, and has other options to match you up with players with similar gaming abilities. You may also have to install the latest **DirectX drivers**, which are included in the set-up process. These equip your computer with the latest graphics and audio software updates. Once you see the Installation Complete **dialogue box**, choose Create Desktop Shortcuts and then click Finish. You will then have to restart the PC when prompted.



STEP 4

Double-click on the Battlefield 2 Demo shortcut icon on the desktop. When the game has loaded, click on the Options menu tab and select your internet speed setting – for most cases this will be Cable 256Kbps or better. Then click the Multiplayer tab at the top of the screen. Here you can choose the type of multiplayer game you want to play. To compete against other players on a home network you need to click on the Join Local tab. If someone has already started a game then you should be able to see the game within the 'Local Servers' list. Double-click on the game and you'll be entered straight into it.



STEP 5

To start your own game on a home network for others to join, click Create Local. Here you can decide upon a name for your **server** (game) and customise specific attributes on how you want the game to play. Battlefield 2 is a wargame where you join other online or network-based allies to fight against either computer-controlled or real-life online foes. Choose the maps you want to use by using the Add Map button, and then click Start Server. You'll enter the game you've just created and other players can join by following Step 4.



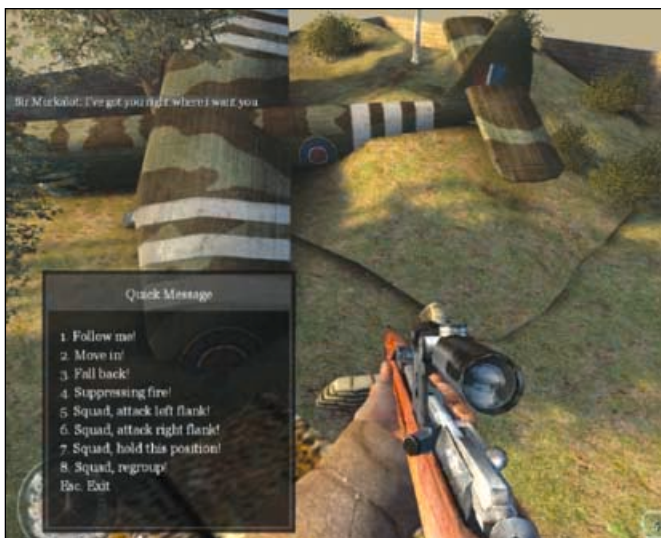
STEP 6

If you want to join an existing online game, where dozens of other players are already battling it out, click the Join Internet tab at the top of the main menu screen. You will have to create a personal multiplayer account by entering basic details such as an email, password and country of origin. When complete, a list of available servers (games) will be listed. Here you can join any game that takes your fancy, based on the map, number of players, game type and so on. Servers with a padlock mean they're private and you can only join with a password. This is good for playing private games with friends.



STEP 7

To choose a game that suits you best, you can also select various filters to strip down the mammoth list of available servers into various types. These include filtering games that aren't already full with the maximum amount of players; choosing games that are using the version of the game you've got installed, the size of the map and whether you need a password or not. This is the case with most multiplayer PC games. To join a game, just double-click on your choice and you will be connected. If you know the specific IP address of a game, you can manually select this too. Just click the Connect to IP tab and type in the IP address, port number and password (if needed).



STEP 8

Once in a game, you can talk to other players on your team via keyboard text messages or, if you've got a microphone, using speech. You can customise keys for launching a 'talk bar' to send messages to everyone on the game map or just your team. If you're using a microphone, you specify a key to hold down while talking. In Battlefield 2, your message will appear in the left-centre of the screen. Other games pay put your conversation at the top of the display.

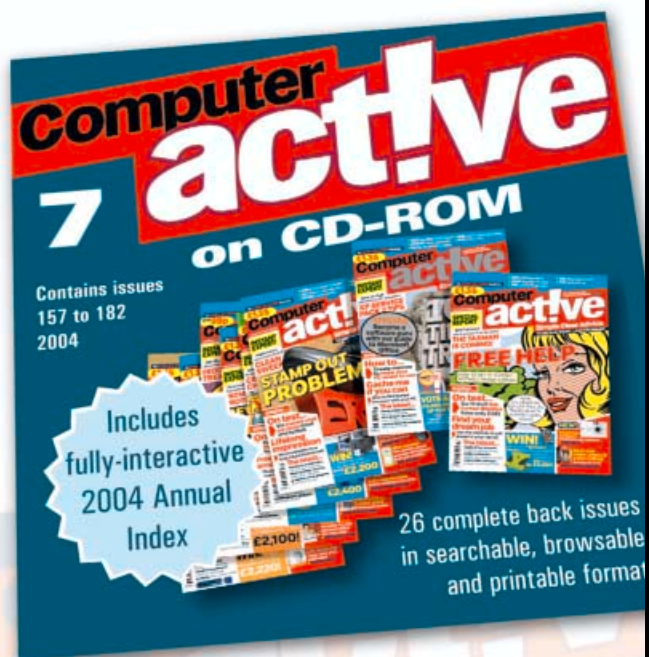


STEP 9

Other pieces of software can be used in conjunction with PC-based multiplayer games. Punkbuster (www.punkbuster.com) is a third-party application that is used to stop people cheating. Many hardcore gamers create their own modifications to give themselves an advantage in multiplayer showdowns. Punkbuster is integrated into many new games to prevent this from happening, and can be switched on or off. Most games that support Punkbuster will install it automatically. A list of supported games is available from the Punkbuster website.

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Competition

One lucky reader will win this amazing Denon Smart Life home-entertainment system

Active Home has teamed up with the folks at Denon to offer our readers the chance to enjoy the Smart Life. One lucky winner will run away with a fantastic Denon Smart Life S-301 integrated home-entertainment system, worth £1,250.

The flagship of its new advanced S Series, the S-301 has been designed to provide easy-to-use, high-quality audio and video. For starters, all of its features and functions can be accessed using the supplied remote control, the front panel controls or an intuitive onscreen interface. An easy onscreen 'Help Menu' takes you through every step of the simple set-up process.

The DVD player is compatible with all popular disc formats, including DVD movies, CDs, DVD-Audio titles and Super Audio CDs (SACD). It supports Dolby Digital and DTS audio, and, to maximise image quality with today's high-definition displays, the S-301's DVD player can upscale standard DVDs to HD resolution video.

The system comes with a 2.1-channel surround-sound system featuring Dolby Virtual Speaker technology. A practical alternative to multi-speaker systems, Dolby Virtual Speaker uses breakthrough digital audio processing techniques to deliver accurate and natural virtual surround sound. And with the addition of Dolby Pro Logic II decoding – included as standard – the process can enhance the playback of anything from stereo music CDs and MP3 files to 5.1-channel DVDs.

The Smart Life is also the first home-entertainment system to allow users to connect and control Apple's iPod. Simply plug your iPod into the special connector at the front, and you can navigate its contents on your TV with the Smart Life remote. Find the track or playlist you want, sit back and enjoy. Other types of MP3 player can be connected via a USB interface.

The S-301 also has just about all of the connections you'll ever need, including HDMI, component and composite video outputs, and coaxial and optical digital audio sockets.

For more on information on Denon's Smart Life series and other products visit www.denon.co.uk

DENON COMPETITION

How to enter

For your chance to win a Denon Smart Life S-301 home-entertainment system, simply answer the question below and return it to us before 9 December to: Denon Competition, Active Home magazine, PO Box 10218, Sutton Coldfield, B76 1ZB. Alternatively, you can enter online at www.activehome.co.uk/competition. Terms and conditions apply. Winners will be notified by email before 23 December 2005

Question

What type of virtual surround-sound technology is included in the S-301?

- a) Denon Virtual Speaker
- b) Dolby Virtual Speaker
- c) Digital Virtual Speaker

Name: _____

Address: _____

Postcode: _____

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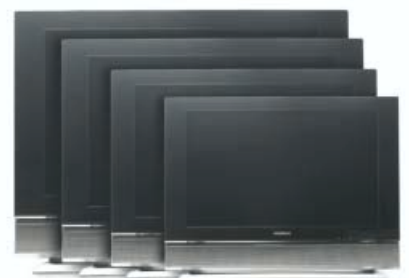
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Buyer's guide

Whenever you purchase a new home-entertainment appliance, you will usually be making quite a big outlay, and you need to make sure you don't come home with an expensive white elephant. But very often there are literally dozens of factors to consider – new technologies, different connections, future-proofing precautions and, of course, quality. Things can get complicated fairly quickly... and that's where *Active Home's* Buyer's Guide comes in. Over the next few pages, we'll show you exactly what to look out for, whatever it is you happen to be shopping for; be it a new TV set, video recorder, home-cinema system, hi-fi speakers or home-networking device.

So, before you head out to the shops, make sure you've read our expert buying advice to find out precisely what you should be looking out for and what to avoid.

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LCD, CRT, plasma and rear-projection television technologies explained

Projectors p86

Go for that home-theatre feel with either an LCD or a DLP projector and screen

DVD p88

How to make sure you choose exactly the right DVD player for your needs

Video recorders p90

We explain the various benefits of VHS, PVRs and DVD recorders

Sound systems p92

How to make sure your home-entertainment system makes all the right noises

Home networking p94

Connectivity is key – we show you how to share music and movies around your home

Portables p95

What to look out for when you want to take your music or movies wherever you go



Televisions

Planning on splashing out on a new goggle box? Follow our guide to choosing a screen that's really good to look at

The screen is without doubt the most important part of any home-entertainment system. It's used for viewing a vast array of material from movies and TV programmes, to games and digital photo slideshows. Watched for hours a day and expected to last at least a decade, it's the most crucial electronics purchase we're likely to make. But with new LCD and plasma screens vying against traditional tubes, not to mention talk of high-definition TV, which technology is best for you? This is where we reveal all.

Cathode Ray Tube (CRT)

The cathode ray tube or CRT is by far the oldest TV technology around. Employing large glass tubes, they're heavy, and often as deep as they are wide. In terms of screen size, the largest commonly available sets measure just 32in, which is relatively modest in an age of home cinemas. You're also unlikely to find a model that supports high-

definition TV, or has any kind of digital video inputs.

But it's not all bad news. As the most mature technology, CRT boasts the best-looking picture with the deepest blacks, great colour and smooth motion. Models are also relatively cheap, with decent 32in widescreen sets sporting digital tuners costing less than £1,000.

So if you're happy with a screen no larger than 32in, and have no need for a thin box or HDTV capabilities, CRT TVs can offer a great picture at an equally great price.

Plasma

Plasma is the technology most associated with hang-on-your-wall TVs. Available in sizes from 32in right up to 60in and beyond, while typically measuring around just four inches thick, they're physically very impressive. The best plasma sets support high-definition video, and also feature a wealth of both digital and analogue connectivity.

Plasma may therefore seem like the ultimate TV technology, but it's not without its faults. They may be thin, but their front glass panel is very heavy and can only be hung on strong walls. They can also consume lots of power, sometimes require cooling fans, and suffer the most from burn-in, where stationary logos left onscreen for long periods can be seen faintly all the time.

Buying a plasma set is also no guarantee of quality. Cheaper or older sets can have restricted connectivity and a picture that could be worse than a CRT. So while budget plasmas sound tempting, we would recommend spending between £1,800 and £2,800 on a new 42in set. This will get you an excellent picture with a wealth of connectivity, and at the higher-end, support for future HDTV. If you want a big screen, but can't afford a good plasma one, rear-projection sets represent better value.

Liquid Crystal Display (LCD)

Colour LCD displays are best-known as PC monitors and

notebook screens, but are now proving a popular option for TV sets. They can be thin and light enough to hang on any wall, and are available in a wide range of sizes from 15in to 50in and beyond. The best models feature a wealth of connectivity and support for high-definition TV and, unlike plasma, there are no concerns over screen burn-in – see plasma section, left.

LCD therefore sounds like the ideal technology for flat-screen TVs but, like its rivals, has several downsides. Contrast and tonal range on LCD screens is generally the poorest of all TVs, and some models also suffer from motion blur on fast-moving action. The viewing angle is also usually narrower than plasma and CRT screens.

LCD sounds like the ideal technology for flat-screen TVs, but has several downsides

LCD screens are maturing fast though, and picture quality is improving all the time – indeed, mass manufacturing should see LCD become cheaper than plasma in the long term. Today, it's ideal for a thin, flat, stylish TV up to 40in, but plasma is currently a better bet at larger sizes. You should be able to get a 27in set for around £900.

Rear-projection

Rear-projection sets generate their picture using tiny screens or mirrors, which are then projected onto a large screen using a bright bulb – they use LCD or DLP technologies (see projector section).

They're typically available at sizes of 40in to 60in and beyond and, while thicker than a plasma or LCD TV, can be much slimmer than a CRT. The best models sport a wide range of connectivity, support high-definition TV and, best of all, normally have an unbeatable picture for the price.

The only real downside to rear-projection sets are that they're deeper than Plasma or LCD and



▲ CRT technology may be old, but it offers a great picture





Digital vs analogue

Over the next five years, analogue TV broadcasts in the UK will be gradually switched off in favour of digital TV. Digital offers more channels and avoids snow and ghosting interference.

Digital tuners are built into IDTVs (Integrated Digital TVs), or are available in set-top boxes for older sets starting at £30. If you're buying a new TV, it's sensible to go for one with a digital tuner where possible.

- ◀ LCD TVs are great for hanging on the wall, as are plasma screens
- ▶ Rear-projection screens are not as slim as LCD or plasma screens but make up for that with bargain prices



can't be hung on a wall. That said, many Plasma and LCD owners lose the benefit of a super-slim set by putting their screen in a corner or on a stand. You will also have to replace the bulb, so always check prices and lifespans.

Rear-projection may not be the sexiest TV technology, but if you're after a big screen on a budget, they'll thrash cheaper plasma or LCDs. £2,000 could get you a 50in screen that looks great.

Connectivity

There are many different sockets on the back of a modern TV, and it's crucial to have the right ones for both the best quality and long-term flexibility.

Virtually every TV set has at least one SCART socket – these are large rectangular plugs which carry both audio and video. SCARTs can, however, deliver three different types of video quality. The most basic is called composite and is offered on every SCART as standard. Some SCARTs additionally offer S-video, which gives better picture quality.

Best of all are SCARTs that support RGB video. Since most set-top boxes, DVD players and even games consoles have RGB output

options, it's best to buy a TV with two or more SCARTs equipped with RGB capabilities. Composite and S-video connections are also available, each using a single round plug – most TVs offer one of each for connecting a camcorder.

An alternative high-quality connection is called component video, which uses three round plugs labelled Y, Cr and Cb. These offer similar quality to an RGB SCART and are commonly offered by DVD players. Better DVD players offer a progressive component option, but to enjoy this extra picture quality, you'll need a TV with a corresponding progressive component input – again using three round plugs, but labelled Y, Pr and Pb.

The latest TVs feature digital video inputs for very high-quality connections to new DVD players and future high-definition devices. There are two types called DVI and HDMI; they offer the same quality video, but HDMI also carries sound. In order to work with future high-definition DVD players and set-top boxes though, it's crucial to ensure that any TV with DVI or HDMI plugs also supports a copy-protection system called HDCP. Some older sets may not support HDCP.



▲ S-video offers better quality ▲ Most TVs have SCART sockets ▲ HDMI carries video and sound



▲ Composite is a basic connection ▲ Component video sockets ▲ The latest TVs have DVI

High definition

High-definition video is up to four times more detailed than current DVD or digital TV broadcasts, allowing you to see a more realistic picture than ever before. High-definition TV broadcasts will begin in the UK with Sky in 2006, while the successors to DVD will deliver high-definition movies on disc.

To see high-definition video, you'll need a screen with sufficient resolution and the right connectors. While early high-definition boxes may offer analogue outputs, most will demand a TV with a digital HDMI or DVI plug which also supports HDCP – see left. So if you're interested in watching high-definition in the future, make sure you buy an HD-ready TV with an HDCP-equipped digital connection.

Projectors

If you're looking for the nearest experience to being at the cinema without actually leaving the house, a projector is the choice for the big-screen fan – just bring your own popcorn



▲ LCD projectors can have poor contrast and black levels

Nothing beats a projector for the ultimate cinematic experience. You can connect a DVD player, set-top box or games console as you would with any TV set, but enjoy a picture which could measure up to 300in, all for an affordable price. Best of all, a projector can be relatively small and mounted discreetly on your ceiling.

The picture size is dependent on the projector's distance from the screen – the further away, the bigger it gets. So you'll need to measure up to see what can be achieved in your own home – most models should produce a 100in image from about 10ft away, though. For the best results, the room should be dark.

Most projectors are noisier than TVs due to the cooling fans for their lights, and the bulbs may only last about 2,000 hours, costing £200 to £400 to replace – always ask. But

what else can give you a 100in picture for £1,000 to £2,000?

We'd recommend models with true widescreen image chips to maximise the resolution of widescreen material. And if you want support for high-definition, buy a model that has HD resolution and either a DVI or HDMI plug equipped with HDCP.

There are two projector technologies – they both have pros and cons but ultimately the choice is down to personal taste.

LCD projectors

LCD projectors are closest to slide projectors in that a bulb shines through a coloured panel and into a lens. The coloured panel in this case is a transparent LCD panel. The colour is normally very good, but contrast and black levels can be poor, while the individual pixels on lower-resolution models may be visible as tiny squares.

Budget LCD projectors employ a single colour panel, while better models sport three for red, green and blue light. These so-called 'three-chip' projectors offer better quality and are recommended.

► DLP projectors have a better-quality picture but the rainbow effect is a strange quirk

DLP projectors

Digital Light Processing, or DLP projectors employ a panel covered with tiny mirrors. These reflect light onto the screen to make the picture. This system can produce far greater contrast and deeper blacks, and doesn't suffer from visible pixels or the tiny gaps between them.

DLP does have one big weakness. To generate a colour picture, a spinning wheel with coloured filters is placed in front of the chip.

As a result, a rainbow effect can sometimes be fleetingly seen on-screen, especially when you blink quickly. Some people see this more than others, so always view a DLP model before buying. Three-chip DLP projectors solve this problem, but they are prohibitively expensive.

We'd recommend models with true widescreen image chips to maximise resolution



Screen or wall?

Since screens are effectively a large white area, you could be forgiven for projecting straight onto a wall in your living room. While this will work, there are many benefits to using a dedicated projector screen.

First, unlike a typical wall, it will be perfectly flat and evenly coloured. Second, it will have reflective qualities designed for projection that will produce a brighter picture; some even have tiny perforations, allowing you to hide loudspeakers behind the screen. Finally, don't underestimate the importance of a black surround to a screen, as it frames the picture.

Projector screens can either be permanently fixed, or rolled up when not in use; some are even motorised. Prices vary considerably, from £200 to several thousand. Believe us though – even with budget screens, the picture will be much better than projecting onto a white wall.

DVD players

DVDs offers far better quality of picture, and are easier to store than their bulkier video predecessors. But what sort of player should you choose to get the best for your money?



Since its launch, DVD has revolutionised movie viewing at home. It delivers a far superior picture to VHS tape and even boasts the same digital surround sound systems as the top cinemas. Suffice it to say, a DVD player or recorder is an essential part of any home-entertainment system, but with prices starting at less than £50 in supermarkets, is there any point in spending more?

DVD players

Every DVD player, whether it costs £50 or £5,000, will play DVD video discs and audio CDs. Spending more will get you better overall quality and features. For example, budget players may not have RGB-enabled SCART plugs or component outputs, preventing you from enjoying the maximum picture quality (see Connectivity on page 85). You'll also need to

A DVD player or recorder is an essential part of a home-entertainment system

spend more to ensure that your DVD player has digital video connections. Pricier players will also support new the DVD-Audio and SACD music formats, although you'll need a good hi-fi system to actually hear their benefits.

Region coding

To control the distribution of movies around the world, Hollywood has imposed a regional coding system for DVD discs and players in each country. The world is split into six numbered regions, with the UK in Region 2 and the US in Region 1. A US Region 1 disc will not work in a UK Region 2 player and vice versa, so beware if you're shopping for movies on holiday.

Most DVD players can, however, be modified by specialist dealers to be Region-free for around £50, and therefore play movies bought anywhere in the world; some players are even sold region-free. These can be beneficial for UK enthusiasts who can buy DVD movies in the US long before they're on sale in the UK. Note that you will also need a TV that can display the American NTSC video standard, although this should include all recent sets.

DVD Audio/SACD

DVD Audio and SACD are new rival audio formats that deliver better-quality sound than conventional CDs. They won't work in normal CD players, but better DVD players often have the facility to play them. They can sound great, but do be aware that there are not many discs available, and you'll also need a very good hi-fi to hear the difference.

The coming of Blu-ray and HD-DVD

Blu-ray and HD-DVD are new rival formats that can deliver high-definition video on DVD-sized discs. Movies and the first few compatible players are expected by the end of 2005. These players should also play standard DVDs, but no one knows if one format will outlive the other or whether both will co-exist.

It's just like VHS versus Betamax all over again, so we'd advise waiting a while to see if one looks like winning. If you're interested in connecting either to a TV set though, it will need to be HD-ready and have either a DVI or HDMI plug with support for HDCP.



▲ Blu-ray is a high-definition format to rival DVD. Look out for players at the end of this year



SUPER AUDIO CD

▲ SACD is a new format which offers better-quality sound than a conventional CD...



▲ ...but like DVD Audio, another new format, there are not many discs available as yet

Connecting your DVD player

Modern DVD players feature a wealth of sockets on the back and, like TV sets, some offer better quality than others. For a full explanation see our connectivity section in the TV pages.

Most people will use a SCART cable to connect their DVD player to a TV as it conveniently carries both video and audio. If the SCART plugs on your DVD player and TV both support RGB video, make sure you select this option in a DVD set-up menu to ensure the best quality. Alternatively, if your player and TV have component video connections, these also deliver excellent quality. Best of all, if your player and TV have DVI or HDMI digital plugs, use these. See page 85 for an illustration of all these connections.

To enjoy full digital surround sound, you'll need to connect the digital audio output on your DVD player to your surround sound receiver/processor. There are two types: optical or electrical/coaxial. Optical is less prone to interference, but enthusiasts believe coaxial sounds a bit better.



Video recorders

Being able to record TV programmes offers so much flexibility. And these days there are lots of different ways to record from the telly, from VHS to PVR...you can even pause live TV!



Today it seems hard to remember a time when we couldn't record TV shows. After more than two decades of video tape though, we now have several alternatives for making recordings in the home. DVD recorders are the natural successor to tape, allowing you to record several hours onto a disc that can be removed and archived or shared.

Personal Video Recorders, or PVRs, dispense with tapes and discs altogether and record shows onto computer hard disks. These allow massive recording capacities and the facility to timeshift, where you can effectively pause live TV or start watching a show while it or another is still recording. Some PVRs also feature built-in DVD recorders for

archiving purposes, or twin tuners, which let you record two different channels at the same time.

One of the best features of modern video recorders is an Electronic Programming Guide, or EPG. These display the TV schedules on-screen and simply let you point and click at the ones you would like to record, eliminating the need to enter in times, dates and channels; most can also be set to automatically record an entire series.

VHS

VHS is the familiar videotape recording system first launched well over two decades ago. It's the cheapest video recording system available, with machines costing from as little as £50. Tapes can record around four hours in best quality and double that in longplay. You can, of course, remove tapes for archival and sharing purposes, but VHS is looking dated in terms of quality and features.

The quality even in best mode is noticeably below that of the original broadcast, and far worse in longplay. It can be hard and time-consuming to find specific points on a tape, and they can also wear out or break.

▲ The good news is that DVD recorder prices have dropped – you can pick one up for about £150

Suffice it to say, there's no support for EPGs. With DVD recorders plummeting in price, we find it hard to recommend buying a new VHS unless your budget is very tight.

We find it hard to recommend buying a new VHS unless your budget is very tight

DVD recorders

DVD recorders are the natural successor to VHS. They use special recordable DVD discs, most of which will work in standard DVD players – see the box, below left. Like DVD movies and CDs, you can instantly skip to different points on the disc, and they won't wear out either. Prices have fallen considerably, and budget models are now available for as little as £150. Like normal DVD players though, spending more will get better quality and features. A DVD recorder will also work as a normal DVD player.

Models with Freeview digital tuners should deliver an eight-day EPG for easy scheduling. Some models may also boast timeshifting, although this capability is best implemented on a hard disk-based PVR (see right).

Probably the worst aspect of a

Recordable DVD formats

There are no fewer than seven different types of blank DVD discs on sale. Three are rewritable and called DVD-RAM, DVD+RW and DVD-RW.

Then there are two types which can only be recorded on once, called DVD+R and DVD-R, and both of these are also now available in dual-layer versions offering double the space.

Most DVD recorders these days can use several different formats, so which is best? Generally speaking, the write-once discs are more compatible with older DVD players than the rewritable ones, and are cheaper too, but you can of course only record on them once. The new dual-layer discs offer almost double the space and are very compatible with players, but again can only be written on once and there are few machines that can record on them as yet. Of the rewritable formats, DVD-RAM is the least compatible with DVD players, but allows time-shifting capabilities on some recorders.



▲ VHS recorders have had their day, and unless your budget is really tight, we can't recommend them

Sky subscribers can use the Sky+ personal video recorder, which gives options for timeshift recording



DVD recorder is the capacity of a disc. In best-quality mode you may only squeeze on one or two hours of TV shows. Reducing the quality will increase the capacity, but surely one of the reasons for buying a DVD recorder is for DVD quality? If you want massive recording times without compromise in quality, a hard disk recorder is far superior, although you'll also need a DVD recorder or VHS if you'd like to archive or share your shows.

PVRs

Personal Video Recorders or PVRs represent the pinnacle of today's video recording technology. They employ computer hard disks for recording video which can store tens or even hundreds of hours, while the speed of the disk allows them to play one show while recording another.

PVRs are available with analogue or digital TV tuners. Those with analogue tuners offer different settings to trade quality against recording time, whereas those with digital normally record exactly what's broadcast – while this fixes the recording capacity, it does mean you get perfect quality. Models with twin tuners can record two different channels simultaneously.

Most PVRs with analogue tuners don't feature an Electronic Programme Guide, whereas all those with digital tuners do – and once you've used one you won't want to go back. If you have Sky, there's only one PVR available: the Sky+ with

twin tuners and either 20 or 80-hour recording capacities. NTL and Telewest are expected to have PVRs dedicated to their digital services by the end of 2005.

The big downside with PVRs is not being able to archive or share your recordings unless you have a DVD recorder or VHS to hand; indeed some PVRs come with built-in DVD recorders, which are a great option if you don't already own a DVD player. That said, if a PVR has sufficient capacity, you could store

Combi systems

Combi systems feature two different recording technologies in a single box for greater flexibility. There are machines that combine VHS and DVD recorders, or PVRs with DVD recording facilities. This might sound like a great option, but in many cases you may not use one of the technologies much or even at all. Think carefully about what you want before buying.

shows on there for ages and still have plenty of room for day-to-day recordings. PVRs start with capacities of 10 hours, but we would recommend 20 as a minimum.

Windows Media Center/ TV on your PC

It's possible for a PC to double up as a PVR and still be used as a normal computer. The benefit is having a whopping great hard disk, powerful EPG, and the facility to also play photo slideshows and your music collection.

The simplest option for existing PC owners is to fit a TV tuner card and software to control it, such as Showshifter from www.showshifter.com; you could buy a tuner, the software and the remote control for about £100.

Alternatively, you could buy a new PC designed specifically as a PVR. The most powerful are systems running a special version of Windows XP, called Media Center Edition 2005, or MCE for short. MCE PCs can have a two-week EPG, DVD archiving and the option of twin tuners. Most are quiet and designed to fit discretely into a living room, but at around £1,000, cost far more than a traditional PVR.



PCs running Media Centre Edition 2005 can be used as PVRs and may have two-week EPGs and DVD archiving

Sound systems

OK, so you've invested in a great screen, and the recording system that suits your needs – but there's no point having a fantastic-looking picture if the sound's not up to scratch...



Surround sound is one of the most exciting parts of a home cinema system, and today it's possible to use exactly the same digital soundtracks as leading cinemas. To enjoy the full experience, you'll need a processor box to decode the sound from your DVD player or set-top box, and five or more loudspeakers placed around your room.

Most surround-sound systems employ five main channels of sound, and so require five loudspeakers. Ideally you'll have one in each corner

of your room, and one above or below your screen, naturally called the centre speaker.

A sixth channel of sound is used to drive a special loudspeaker called a subwoofer. This is used to generate very deep bass and rumbling sounds – they're optional, but make a massive difference when watching action movies. Subwoofers may be relatively large boxes, but since it can be hard to identify where deep bass sound is coming from, the actual position of this speaker is not as important as the main five.

The surround-sound processor or AV receiver does the hard work of decoding an audio signal and working out what should go to each speaker. There are several different types of audio signals that can decode into surround sound. The simplest is analogue stereo, which can be turned into surround using Dolby Pro Logic or Pro Logic II decoding. Pro Logic will produce surround sound from any stereo signal, although it does the best job when the material was meant to be heard in surround – movies shown

on TV, for example, will work better than CD albums.

Delivering far better quality are the digital surround-sound formats.

These take the original surround-sound signals from the Hollywood studios and encode them into a single digital signal. This is decoded by your processor or AV receiver at home and fed to the relevant speakers. Since most movies use five main channels and one for the subwoofer, they're said to have 5.1 soundtracks.

There are different ways to encode a 5.1 soundtrack, though. The most common are Dolby Digital and DTS, the former delivered as standard on virtually every DVD movie, and even on some Sky TV broadcasts using Sky+. DTS uses less compression and sounds a little better; you'll find it as an optional soundtrack on some DVDs. Most processor and AV Receivers can decode both Dolby Digital or DTS soundtracks.

If five speakers aren't enough, how about seven around your room? So-called 7.1 systems use the same three speakers at the front, but swap the pair in your rear corners for two

The subwoofer is used to generate very deep bass and rumbling sounds

All-in-one home cinema systems

All-in-one home cinema systems include an AV receiver and all the speakers you need for surround sound; some of the receiver units even feature built-in DVD players. These clearly offer a very convenient way to buy and install a surround-sound system, but are normally targeted at the budget end of the market. As such, most will not offer the quality and flexibility of a separate AV receiver and speaker system.



at the side and a further two on your back wall. This can sound great in large rooms. Dolby's version of 7.1 is called Surround EX, and DTS's is called DTS-ES. Again, these can be found on some DVD movies, and you'll need a compatible processor or AV receiver to decode the extra channels; luckily these discs are also compatible with 5.1 systems.

AV receivers

AV receivers look like hi-fi amplifiers, but with one big difference; they'll take the audio signals from your DVD player, set-top box and other devices, decode them into surround sound, then power a number of loudspeakers placed around your room.

The price of AV receivers ranges massively from models costing less than £200, to monsters weighing in at more than £2,000. Spending more on an AV receiver will get you better-quality sound, support for more surround sound formats (with the possibility of upgrades in the future), greater device connectivity and switching, and most obviously, more powerful amplification. Some models also feature THX, which is a certification of quality from George Lucas's audio company.

We would recommend spending at least £500 on an AV receiver, and ensuring it has support for both Dolby Digital and DTS, along with identical power amplification for each channel for consistent sound; note subwoofers normally have built-in amplifiers.

If you want a 7.1 channel system, make sure that the AV receiver you purchase is also capable of decoding Surround EX and DTS-EX

▼ Five speakers and a subwoofer give you 5.1 surround sound



soundtracks, and has seven channels of amplification.

Speakers

Some companies claim to simulate surround sound with two speakers, but to experience it properly, you really have to install five or more boxes around your room. A subwoofer is optional, but makes a huge difference to action movies.

Obviously the more you spend on loudspeakers the better the sound quality, but crucially, try to ensure they're as similar as possible – so when the sound goes from left to right or back to front, it doesn't change tone. Ideally go for identical speakers and ensure that any that will be placed close to your TV (such as the centre speaker) are magnetically shielded so they don't interfere with the picture.

Hi-fi separates

Hi-fi enthusiasts, or audiophiles, enjoy better-quality sound by using separate components for each job, rather than all-in-one hi-fi systems. For starters, it lets you cherry-pick the best individual components – CD player, amplifier, MiniDisc player, digital tuner – to build the ultimate system that's tailored to your own needs, and which can be added to or upgraded as time goes by.

This logic can be applied to home cinema audio – that is, using a separate DVD player and AV receiver rather than an all-in-one home cinema system. True audiophiles tend to get a bit carried away here. Rather than use a single AV receiver, for example, a dedicated audiophile might go as far as buying a separate surround sound processor and power amplifier. This probably isn't necessary for most users, but a hi-fi or home-cinema system built on separates is going to give you more flexibility – and often better quality – than the all-in-one systems.



▲ If you want to spend the extra cash, buying separate components for your sound system will give you better quality as well as more flexibility

Connecting your sound system

To enjoy digital surround sound, you'll need a digital audio connection between your DVD player and the AV receiver or processor. There are two types: optical and electrical/coaxial, each using a single plug. The choice is ultimately made by which you have on your DVD player and receiver – if you have both, an electrical connection normally gives slightly better quality. If your set-top box, PVR or games console also has a digital audio output, connect it to your surround receiver for better-quality or digital surround sound. Connect any analogue devices such as set-top boxes without digital outputs using standard stereo cables. Finally, we'd recommend dumping the cables supplied with audio and video devices and upgrading to better-quality ones from specialist hi-fi stores. Spend £20 to £50 for each cable and you'll notice a big difference in sound and picture quality.



▲ Digital audio outputs on your devices will offer you a better sound quality

Connecting the digital home

A home network can do so much more than let you share a printer between computers. You can play music stored on your PC around your home, and view photos and movies on your TV

The truly modern home is fully connected to the internet, and by that we don't just mean one PC in the back bedroom. The number of devices that can make use of a net connection is growing by the day.

Beyond PCs, laptops and handheld portables, modern games consoles can get online to battle

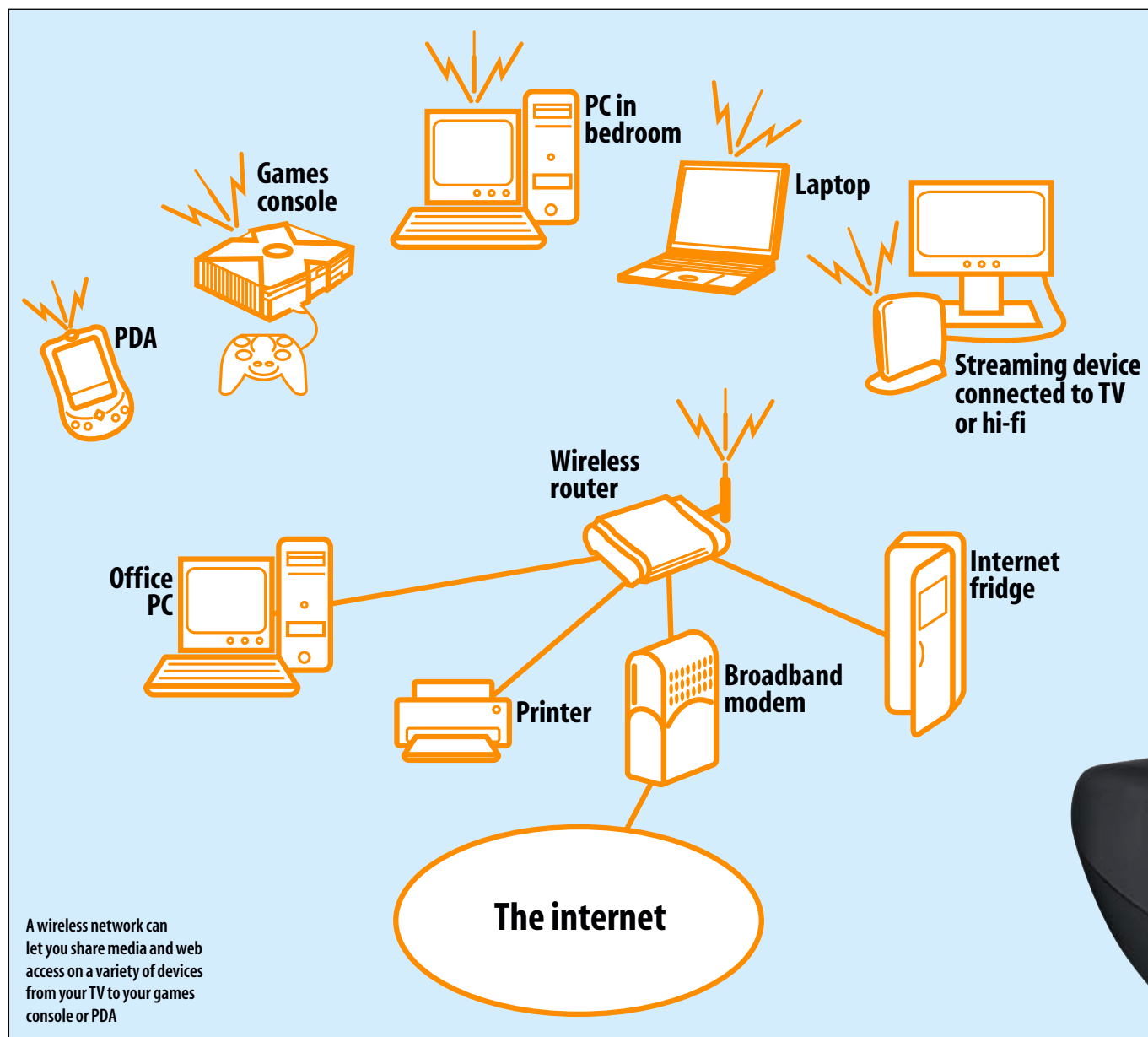
against players next door or on the other side of the planet. Media Center PCs and some set-top boxes use internet connections to download updated TV schedules.

A new breed of hi-fi system can play foreign radio stations over the internet, and in the near future we'll rent movies by downloading them.

There are even white goods such as fridges, ovens and washing machines, that can access recipes, online grocery stores, or even upgrade their capabilities.

Home networking

Luckily, there's no need to have a separate internet connection for





each device that wants it – it's possible for any number of devices to share the same internet connection by networking them together.

In a home network, a single box connects to the internet and automatically shares it between anything that wants access. This box could be a PC, or more commonly a small device called a router, which you'd leave switched on all the time. For this to work well, you'll also need a broadband internet connection, which is always on.

Each device that wants to access the internet should then be connected to the router. This can be done using a special network cable or, if the router supports it, a wireless link. If the device in question doesn't have built-in wireless capabilities, small wireless adapters can be fitted for less than £50 each.

Wireless broadband routers are at the heart of every connected home, yet can cost less than £100. They'll connect directly to the modems supplied with broadband cable TV or ADSL services, while other models even include built-in ADSL modems for the ultimate in single-box convenience.

Streaming

Home networking isn't just about giving internet access to anything that wants it – it's also about sharing data between nearby devices. The most exciting example of this is called streaming.

Streaming allows you to access music, videos and photos stored on your PC

▲ A wireless broadband router is the hub of a digital home – pick one up for about £100

using a device which is in a completely different room. The device is plugged into your TV and hi-fi and has a remote control, just like a DVD player. The difference is that it plays files stored on your PC using a home network, which again could be wired or wireless. It doesn't need to copy or store the files, as they're effectively played or streamed over the network connection as and when you need them.

Of course, you could just have a PC in your living room, but most are big, noisy and ugly. The benefit of streaming the files is that you can hide the PC in a back room and use a good-looking consumer device to play them in the comfort of your lounge. The clever bit is that you could have several such streaming devices throughout your home, all playing different (or even the same) files from your PC at the same time.

Today there's a growing range of devices that can stream media from a PC. They typically anything from £150 upwards and have different features. Some can play photos, videos and music, whereas others are only for audio. Some have built-in DVD players, and others are designed specifically to work with Windows XP Media Center PCs.

If you're connecting these devices wirelessly though, be aware that you may only be able to watch high-quality video on no more than two devices at once. Cabled network connections allow more devices to stream video smoothly.

▲ A streaming device lets you listen to music or watch videos from your PC on your telly

▶ Portable video players can be handy when you go away, as they can connect to a hotel room TV

On the move

Thanks to the latest portable devices, it's possible to enjoy music, movies and photos wherever you may be. While portable CD and DVD players have been around for ages, the current revolution in portable entertainment are devices that take files from your PC and play them on the move. Some are designed for audio alone, whereas others feature colour screens and can also play photos and videos.

Some use your PC for downloading material or as a means to get CDs and DVDs into a more portable-friendly format, while others are designed as companions to media PCs and allow you to take existing music, photo and video collections or TV recordings on the move.

There are many different formats for storing music and video files, and most portables are only compatible with certain ones. All will come with software that lets you convert files into the right format, but if you wish to use an existing collection without lengthy conversion, you should buy a device which supports the required formats.

Portable music players

The most common audio file format on PCs is MP3, and virtually every portable audio device is compatible. Microsoft's Media Player software can produce MP3 files, but most versions produce the company's own WMA format unless told otherwise. While WMA can match MP3 quality using less space, there are far fewer devices that can play them without conversion.

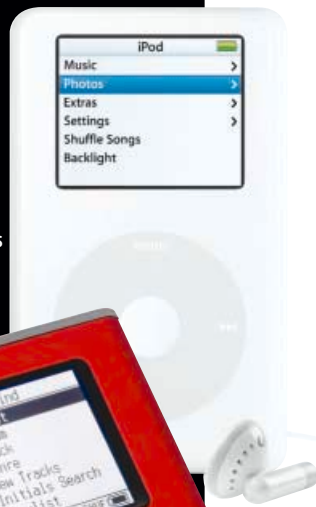
Portable music players can use either flash memory or a tiny hard disk to store the files. Hard disk units have much greater capacities, with the biggest storing up to 15,000 songs. In contrast, players with Flash memory may only typically store 500 to 1,000 tracks, but have longer battery life, greater shock-resistance, and can be physically smaller.

▶ Music players store songs on a hard disk or flash memory

Portable video players

A file format known as DivX is fast becoming the MP3 of the video world, and most portable video players will let you watch DivX movies.

If you want to watch the TV recordings made by a Microsoft Media Center though, you'll need a special device that runs Microsoft's Portable Media Center (PMC) software; this won't play DivX files without conversion. Due to the large storage requirements of even highly-compressed video files, virtually all portable video players employ hard disks. Add a 3-4in screen and you could be looking at a battery life of five to 10 hours when viewing video. Portable video players can also be used for playing music and showing photo slideshows. Some can be connected to TV sets, which can be great when you're in a hotel room, and others can even record video.



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