



Illustration by Georgina Watson and Benjamin Webb

Turn a Mac mini into an iTV

Apple has revealed details of iTV, a device that will stream video content from iTunes to a TV. By the time iTV launches next year users should be able to download music, TV shows, and movies from the iTunes Store and watch them on their Macs, iPods and televisions. However, iTV will not offer all the functionality of a media centre, lacking, for example, a sizable hard drive and TV-tuning capabilities. With a few add-ons the Mac mini can, fulfilling many of the functions of the iTV plus a few more. Here's how...

Is Apple's compact computer ready to rule your living room?
By Christopher Breen



The Mac mini supports an infrared remote control and includes Front Row, digital surround-sound audio output, four USB ports, and a dual-core processor. It still has some shortcomings – but when outfitted with the right peripherals, the mini performs admirably as the brains of your new home media centre.

When you purchase a Mac mini, you get a computer with basic software (including iLife '06), a power supply, and Apple's remote control – the rest is up to you. To use it as a computer, you'll just need a keyboard, mouse, and monitor. But to make it the centre of a media setup, you'll need extra hardware and a way to connect everything.

The AV connection

The first step to building a fully functional media centre is connecting your mini to your audio and video components.

Standard TV Most modern standard-definition TVs offer three types of video input – antenna or coaxial cable, composite, and

iTV promise

Apple's iTV will offer component and HDMI outputs rather than composite or S-Video, perfect for connectivity to HDTV sets. However, the 640 x 480 resolution of iTunes movies, while identical to standard TV, falls short of wide-screen DVD and is far below HD quality.



S-Video (see Cables and connectors, page 74, for the full variety of options). You can connect the mini to either of the latter two ports with Apple's DVI to Video Adapter (£15; www.apple.com/uk). This adaptor converts the mini's digital DVI signal for use with analogue composite video and S-Video cables (not included). If you have a spare S-Video port on your TV, use it – S-Video

offers the better picture quality of these video sources. When you boot the mini, it will recognise the adaptor and adjust the resolution to 800 x 600 pixels. The picture will be a bit squished and fuzzy, but clear enough so that you can see what you're doing as you pull down menus, open folders, and navigate through applications.

HDTV Because high-definition TVs have digital inputs and wide screens, they are ideal for watching content such as DVDs or HD movie trailers. But connecting the mini to an HDTV can be a bit of work in some cases, due

Media Xpress Griffin's XpressCable is required to connect the Mac mini to a stereo



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Cables and connectors

to the variety of HDTVs and inputs available, as well as the effort required to get the mini to fill the entire screen. Typically, you'll need either a standard DVI cable or a DVI-to-HDMI cable, but some older HDTVs don't have those ports. For more on connecting a mini to an HDTV, see the HDTV woes box on page 77.

Stereo The mini's audio output is actually two ports rolled into one. It lets you connect the mini to analogue stereo equipment or powered speakers, using a minijack-to-minijack cable or a minijack-to-RCA cable (also known as a Y-cable because of its shape). But the mini can also send out a digital 5.1-channel signal from the same port, using an optical (or Toslink) digital audio cable. Because of the port's size, however, you can't use a cable with a standard Toslink connector on both ends. Instead, you'll need a cable with a snap-on plug tip for the mini, such as Belkin's PureAV Digital Optical Audio Cable (£12.95; www.belkin.co.uk) or Griffin Technology's XpressCable (£14.95; www.ammicro.co.uk).

TV time

If you're planning on using the Mac mini as a Sky+ style digital video recorder (DVR), for both playing live TV and recording programs to watch later, you'll need to add some hardware capable of converting video to a format the Mac can understand, plus software that lets you control and watch it.

The goods Elgato (www.elgato.com) and Miglia (www.miglia.co.uk) sell compatible hardware that comes with Elgato's EyeTV 2 software for watching live TV, recording TV programs, and creating schedules for your recordings. The latest EyeTV 2.3 update features a Front Row-style interface and works with the Apple Remote. Each product connects to your video source and, in most cases, uses a built-in hardware encoder to convert the signal to MPEG-1 or MPEG-2, and passes it on to your mini via USB 2.0 for viewing or recording. In

Beam me in Miglia TVMini channels free over-the-air digital television to your Mac



our testing, these devices delivered a picture slightly inferior to that of a regular TV signal when zoomed to fill the screen. Some artifacts were evident, but the resulting picture was very watchable. (See our group test of TV tuners, page 67).

Digital divide

The software makes it easy to change channels when you're using any EyeTV-powered device with analogue cable TV, an antenna signal, or even free over-the-air digital signals with the £105 Miglia TVMini HD, which the Mac mini has the horsepower to run. You can change the channels either manually or by scheduling recordings via integration with the TV listings website tvtv (www.tvtv.co.uk).

However, these DVRs fall short in comparison to a dedicated system like Sky+ when it comes to digital cable or satellite TV decoder boxes. A standalone system includes an infrared blaster – a device that relays an infrared signal from the device to a cable or satellite receiver, using two LEDs – for changing channels on such boxes. Computer-based recorders don't have this feature. And the EyeTV software lacks Sky+ or TiVo features, such as smart scheduling and program recommendations based on your tastes. On the other hand, it can convert recorded video to an iPod-compatible portable format – a capability not currently available to Mac-using Sky+ enthusiasts.

To solve the channel-changing problem, you'll need a USB IR blaster and Vidcan Media Solutions' iEye Captain (£16.96; www.vidcan.com). The latter acts as an intermediary between EyeTV and the blaster's software – turning the schedules you've created in EyeTV into iCal

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HDTV woes

One of the big things the Mac mini has going for it is its video output. The pure digital video signal from its DVI port offers startling clarity that no analogue connection can match – especially when paired with an HDTV. With a standard DVI cable, you can connect the mini to an HDTV via a DVI port and achieve the best quality and resolution your TV has to offer.

Unfortunately, not that many HDTVs include DVI connections – you're more likely to come across a HDMI (High Definition Multimedia Interface) port when you look at the back of your massive TV. Luckily, HDMI and DVI are technologically similar, the only difference being that HDMI combines the DV signal with 5.1-channel audio into a single cable. Because of that, the connections are slightly different, but with an inexpensive DVI-to-HDMI cable, you can bridge the technology gap.

Many people just need an adaptor to reap all the benefits of a digital connection. Some find that the mini and their HDTV don't quite sync up when connected via a DVI-to-HDMI adaptor.

The most common problems occur when the HDTV's native resolution isn't one that Mac OS X offers. For instance, the mini may offer a resolution of 1,280 x 720 pixels (a common HDTV resolution, also known as 720P), while your LCD flat panel might have a native resolution of 1,366 x 768 pixels. The result is a strip of unused pixels around the edge of the display. Other users report just the opposite problem: the HDMI cable causes the picture to bleed past the visible edges of the monitor – this is called overscanning, and it becomes most apparent when you're using the HDTV to access OS X.

Some people have managed to get around these problems by adjusting the resolution manually with utilities such as Harald Schweder's DisplayConfigX 1.0.9 (free; www.3dexpress.de) and Stéphane Madrau's switchResX 3.7.4 (€14; www.madrau.com). With these tools, you can tweak the interface to accept any resolution, and even delve into details like refresh rates.



Of course, no fix is ever that easy. The resolution tweaks can cause your mini and your monitor to stop communicating altogether, so you end up with a blank screen. If you tweak your settings with DisplayConfigX or switchResX, it's best to have a second monitor on hand; you can use it to reset the supported resolutions and then connect the HDTV again.

We've seen a lengthy list of other problems related to DVI-to-HDMI adaptors, including completely blank screens. And connecting the mini to an older HDTV, one that has analogue component inputs as its highest-quality option, can be even more challenging because it's difficult to find the hardware to convert the signal correctly (and inexpensively). Even once you've located it, you may run into some of the same problems that you'd encounter with DVI-to-HDMI cables.

Michael Gowan

events via some clever AppleScripts, and then firing the blaster with the proper codes at the time of each scheduled event.

There are two Mac-compatible IR blasters: IRTans' IRTans USB (€99; www.irtans.de/en) and studioZee's USB Zeph-IR (\$65; www.thezephir.com). IRTans' iRed software is easier to configure and use, but the Zeph-IR ships with far more preconfigured profiles for remotes (and Zeph-IR's developer says that he'll create profiles on request). You can save some money by buying a bundle of iEye Captain and one of the blasters. With either product, you'll need to install the software, plug the blaster into a USB port, and either pick your remote from the blaster's library of devices (if available) or configure it yourself.

Once you've configured the IR blaster's software to emulate your remote, you create your schedules in EyeTV, using each schedule's Description field to tell iEye Captain what channel the program is on. iEye Captain takes care of the rest.

Flicks on discs

TV is important, but let's not forget that your Mac mini needs to play other types of video to function as a true media centre. If your Mac mini is the only video component connected to your TV, it also has to function as a DVD player. Of course, you can play DVDs on any new Mac,

and it works just the same connected to a TV as it would hooked up to a computer monitor. Your experience will vary depending on your type of TV and stereo and the cables you use to connect them to the mini.

The Apple Remote and Front Row software let you launch DVDs, navigate their menus, and use basic playback controls (but they don't provide slow-motion or frame-by-frame movie playback, which Apple's DVD Player software offers).

One fly in the ointment is that you can only control movie volume with the AV receiver's remote control – the Mac's overall volume controls (including those in Front Row) hold no sway over digital audio output. You can, however, control volume from within applications – using iTunes' or DVD Player's volume sliders, for example – but those options are not ideal.

Video from afar

Front Row has no problem seeing or playing any QuickTime-readable video files in your Movies folder. One particularly welcome feature of Front Row's latest version is its ability to play shared videos, as well as music and iPhoto slideshows. This is especially useful for the Mac mini, on two fronts. First, it makes turning

the mini into a media centre easier, since it can draw content from the rest of your network. Second, it allows you to set up the mini as a player, wirelessly connected to a media server with roomier hard drives – a good idea, since movie files can quickly fill up the mini's small hard drive (60GB or 80GB).

Wireless world Regrettably, this sharing feature doesn't work as well as it should. File size, the speed of your network connection and file encoding influence how successfully you can stream media from one Mac to another. In our tests we were able to stream iTunes music files reliably and easily over an AirPort Extreme connection – though it took Front Row on the mini a minute or so to see the other Mac and load its library. Streaming movies from that same Mac via Front Row proved impossible – Front Row gave up after a few minutes of churning away, claiming that the server had a problem.

Boosting the wireless signal by creating an extended wireless network with an AirPort Express base station (£89; www.apple.com/uk) helped. This provided a strong enough

Down stream Apple's AirPort Express can stream music, but video is out of the question, this is where iTV will come in



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“Full-length movies shared via Front Row work only with a fast connection, not over AirPort. And long movies – exceeding two hours, for example – must be encoded at lower bit rates”

Great white Shark
With the assistance of Griffin Technology's Radio Shark your mini can also tune into and record local AM and FM radio



signal for streaming music videos purchased from the iTunes Store. Alas, streaming longer video content often resulted in server errors or stuttering playback.

Wired up Running wire – 100 feet of Cat-6 Ethernet cable from one Mac to another – offered improvements. In this wired world, iTunes video content played within a shared Front Row environment. The aliased version of the full-length movie loaded via Front Row and also played immediately. But the shared version refused to load.

It turns out that Front Row movie sharing works best when the movies you intend to share have been encoded with streaming in mind. Even with streaming enabled, full-length movies shared via Front Row work only with a fast connection (a wired Gigabit Ethernet network), not over AirPort. And long movies – exceeding two hours, for example – must be encoded at lower bit rates.

The sweet sounds

Video may be the first thing people think of when they consider setting up a media centre, but another major aspect is music – be it in the form of iTunes, radio, or even internet radio.

Music to your ears As you'd expect, the Mac mini offers access to your entire iTunes music library via Front Row. For basic playback and for picking items from a long list of songs or artists, it performs pretty well (and it will let you play purchased music – something other media players can't do – as long as you've authorised the mini to play the files).

But controlling iTunes with Front Row isn't like using iTunes itself. Although Apple added

new shuffling choices to the latest Front Row update, the software still provides no way to use iTunes' browser or search field to find the music you want, and it can't access the iTunes Store either.

Catch an airwave With the assistance of Griffin Technology's Radio Shark (£49.95; www.ammicro.co.uk), your mini can also tune into and record local AM and FM radio. The Radio Shark plugs into a USB port, and you pick stations through its software, which also lets you record live programs and create schedules for recording upcoming programs. The Radio Shark's reception can be finicky, so it's worth moving it around in the hope of picking up a more reliable signal.

Net sounds Maybe streaming radio is your thing – this cool technology lets you listen to broadcasts far outside your geographical area via the internet. Check out RadioTime (www.radiotime.com), a free web-based service that offers more than 50,000 music, sports, and talk stations from around the world, channelling the stream through Apple's QuickTime Player, Microsoft's Windows Media Player, or RealNetworks' RealPlayer (depending on the stream's format). For \$39 a year, RadioTime will let you schedule and record programs as well.

Here's the bad news: the current (and final) version of Windows Media Player for Mac doesn't work with RadioTime's software – and a majority of streamed radio stations offer only the Windows Media format. Flip4Mac's free WMV component solves this problem (www.flip4mac.com). It lets QuickTime play Windows Media content and is now available in Universal binaries so it runs on PowerPC and Intel Macs.

Farewell to Front Row?

Do you find Front Row's capabilities a little too limited? If so, one alternative is equinux's \$30 home-media interface, MediaCentral 2.0 (www.equinux.com). Like Front Row, MediaCentral takes over your Mac's screen, displays large commands that you can easily see from across the room, and lets you control your Mac with an Apple Remote.

On the main screen you'll find entries for IP TV, TV, Movies, DVD, Games, Music, Radio, Pictures, and more. Most of these entries are linked to either streaming web content or media files stored in your Mac's media libraries – your iTunes and iPhoto libraries, for example – or files that you've placed in the My MediaCentral Folder.

IP TV provides links to video from Google Video, YouTube, and a variety of outfits that stream video over the web, including the BBC TV archives. The regular TV option lets you watch digital television, using certain DVB-T hardware devices like Elgato's EyeTV for DTT (£69.95; www.elgato.com).

Within Movies, you can select movies (original files or aliases stored elsewhere) from MediaCentral's My Movies folder, movies within your iTunes library, or movie trailers hosted by equinux. The DVD entry lets you play a DVD movie or a DVD ripped as a Video_TS folder stored in the My DVDs folder. The Music entry links to music files stored in the My Music folder, your iTunes library, or mounted

volumes that contain music files. And Pictures offers slideshows of images stored in MediaCentral's My Pictures folder or your iPhoto library, and from some web-based photo streams.

In addition to its increased support and flexibility, MediaCentral also lets you resize its window – helpful not only in that it lets you do other things with your Mac with something playing, but also because a lot of streaming video looks blocky at full-screen resolution anyway.

MediaCentral 2.0 does have several drawbacks, though. It lacks Front Row's ability to stream networked media over Bonjour. Playback stutters in some situations – for example, a movie that played perfectly well in iTunes hiccupped when played via MediaCentral; and the music in iPhoto slideshows occasionally paused from one slide

to another. It can't deal with multichannel audio, so if you're connected to a surround-sound audio system, you won't get surround sound when playing DVDs. Also, many people have reported problems with the stability of the demo version of MediaCentral.

Despite its flaws, MediaCentral 2.0 is a step in the right direction. Even though your Mac – with a collection of applications and websites – can perform all the functions that MediaCentral can, having it all in a single, attractive package is a real convenience.



Total control

The Mac mini includes the simple Apple Remote. But if you're looking for something that can do more, you do have other options.

Keyspan's £29 RF Remote for Front Row (www.unlimited.com) is designed specifically for Front Row but offers two advantages over Apple's own model: it adds Mute, Eject, and Sleep buttons; and it uses radio frequency (RF) technology instead of infrared, which means that it has a range of up to 60 feet and the ability to control playback through walls (or an AV cabinet).

If you're willing to venture outside Front Row, Griffon Technology's £26.95 AirClick USB (www.ammicro.co.uk) is a five-button, RF-based remote that comes preconfigured for many applications. And Keyspan's £39.95 infrared Express Remote, though bulkier, is also much more capable, thanks to its 17 buttons and software that allows you to configure them for any application.

Owners of certain Bluetooth-capable mobile phones and PDAs should check out Jonas Salling's \$24 Salling Clicker 3.0 (www.salling.com), which supports more

than 100 such devices.

This software lets you use that phone or PDA to control multimedia applications on your Mac via Bluetooth and pull up and control Front Row. You can directly control Apple's iTunes, iPhoto, DVD Player, Keynote, and QuickTime Player; VideoLAN's VLC; EyeTV; Slim Devices' SlimServer; and Microsoft PowerPoint. You can even direct the Mac's cursor and clicking functions. And because the device uses Bluetooth, you don't need to be in the line of sight of the mini's IR port. Anywhere within about 30 feet of the Mac is fine.

If you want to reduce overall clutter, look to a universal remote, such as those from Logitech. The Harmony remotes (from £169, www.logitech.com) let you replicate the controls of just about any remote control. To train the typical universal remote, you fire your collection of devices at it, hoping that it will learn the appropriate commands. You configure the Harmony models online – a far more effective approach. Just visit the Harmony website (www.logitech.com/harmony), choose the remotes you own from the exhaustive list of supported devices, and download a profile that matches your gaggle of gear. Plug a USB cable into your Harmony remote, and the Harmony software uploads that configuration into it.

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Helping hands

No Mac is a media centre if you have to control it with a wired keyboard and mouse. Cute and cuddly though the Apple remote may be, at times you'll want to navigate around the Mac in ways forbidden to the remote. For this, you need extra help.

Should you wish to remain in the Apple camp, you can achieve your goal with Apple's Wireless Keyboard (£39) and Wireless Mouse (£49). The range of these Bluetooth devices is good enough to control the Mac from across all but the largest living rooms, but you have to put up with swapping in new batteries from time to time. Keeping a couple of sets of rechargeable batteries on hand takes the sting out of these swaps.



The last word

So how well does the Mac mini work as the centrepiece to your digital lifestyle? If you don't need the assistance of an IR blaster to change channels – you access TV via an antenna or an unscrambled analogue cable connection – a DVR running the EyeTV 2 software is an adequate, if limited, substitute for a Sky+ DVR (and it comes without the latter's monthly service fees). And while it would be good to see Elgato provide its own IR blaster option for the millions of people who do get TV from a scrambled cable box or satellite receiver, it's comforting to know that you can cobble together the necessary parts and software – though doing so is a complicated job.

In the kind of complex configuration that

puts the Mac in the middle of an existing media centre, Apple's Remote and Front Row are barely passable options, providing the essentials but little more. Again, with the funds and the desire to do so, you can control the entire enterprise with an additional remote.

Where the mini needs fundamental improvement is as a client for a larger media server. If you traffic exclusively in music videos purchased from the iTunes Store, you'll get along fine sharing that media over a solid wireless network. To stream anything other than music wirelessly, you'll need to wait until Apple launches iTV, next year.

When you're dealing with full-length movies, you may need to store them somewhere other than on the mini's hard drive. You can share full-length movies via Front Row, given correct movie encoding and a fast network connection; however, some may find this option more trouble than it's worth.

The current state of the computer as a media centre bears comparison to the state of portable digital-music-player technology just before the release of the iPod. Today, as then, the pieces exist to create much of the experience you desire, yet they remain scattered. You can assemble a multimedia centre with a small computer at its core, but it takes time and money, and the result doesn't provide the convenience or quality of traditional AV gear. With iTV in the pipeline, we're putting our money on Apple as the company most likely to one day put those pieces together. **MW**

Mover and shaker

At times you'll want to navigate around the Mac in ways forbidden to the remote – the range of Apple's Bluetooth mouse and keyboard is good enough to control the Mac from across the living room

