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PROJECT

TURN A WINDOWS 7 PC into a set-top box

Adding a TV tuner to your Windows 7 PC can transform it into your family's primary source of entertainment, especially in combination with an Xbox. **Adam Turner** shows you how

If you're looking for the one entertainment box to rule them all, look no further than a Windows 7 media centre.

Want to watch and record HDTV? How about pause and rewind live broadcasts, record several shows at once and schedule recordings from afar? On top of all that, let's throw in playing Blu-ray discs, hiring movies online and streaming a wealth of video from the web.

Be warned though, if you're looking for an idiot-proof, set 'n' forget Personal Video Recorder then a TiVo might be a safer option. But if you want the challenge, the rewards of setting up your own media centre PC are satisfying. So, where to start? Windows 7's Media Centre Editions (MCE) have an MPEG-2 video decoder built-in, so they play DVD movies out of the box. If you drop in a TV tuner they'll also let you watch analogue and digital

TV. If you're prepared to get your hands dirty, you can also configure MCE to work with a satellite TV tuner.

Your media centre's picture quality depends on a number of factors, such as how much grunt you've got under the bonnet, the speed of your hard drives, your TV tuner, your graphics card, the driver versions you're running and the MPEG-2 decoder you're using. These become more important if you're working with HD channels and trying to record more than one channel at a time.

Choosing a tuner card

Of course it wouldn't be much of a media centre without a TV tuner. Stick to an internal TV tuner card if possible, as they tend to feature stronger tuners than USB tuners. A stronger tuner reduces the chance of reception problems. Speaking of which, use as few splitters and boosters as possible between your aerial on the roof and your media centre. Avoid

using the piddly aerial supplied with the tuner card, especially if you live in a reception blackspot. Interference issues could come from other gear in your lounge room, so use quad-shielded RG6 coax aerial cable and try to keep your computer away from Wi-Fi gear and your broadband modem.

Your choice of tuner card will be dictated by your choice of computer case and motherboard. Your motherboard will most likely feature PCIe slots rather than the old PCI slots. Check the dimensions of your case to see if you need a low-profile card – something you need to consider when choosing your other components such as your graphics card and CPU heat sink. Make sure you plan out every component of your media centre, and ensure they fit nicely together, before you buy anything.

Don't worry too much about the remote control bundled with your tuner card, you'd be better off ditching it for a universal remote (*see breakout*).

Digital or analogue?

Unless you've got a thing for community TV, forget about analogue broadcasts – they'll be gone in three years. You want two DVB-T digital tuners, preferably HD.

▼ **Window 7's built-in media centre features offer a one-stop entertainment shop for digital TV and streaming Web videos.**



Windows 7 can utilise more than one tuner device at a time, so you could get away with two single-tuner cards or even several multi-tuner cards. A single aerial input supporting both tuners is handy, as are analogue video inputs if you want to capture video from external sources such as a VCR.

Preparing Windows

Do yourself a favour – invest in disk imaging software such as Acronis True Image or Norton Ghost. They're like a time machine for your PC, taking a snapshot of an entire partition and saving it as a compressed file so you can easily roll back. This gives you the freedom to experiment with impunity and start afresh. It also lets you quickly fix bugs rather than spend days troubleshooting niggling issues.

Using disk imaging software means partitioning your hard drive. This way you can easily restore the OS without losing any content such as TV recordings stored on a separate partition. You might even opt for two hard drives – a small one for the OS and a big, fast one (7200RPM or higher) for your recordings.

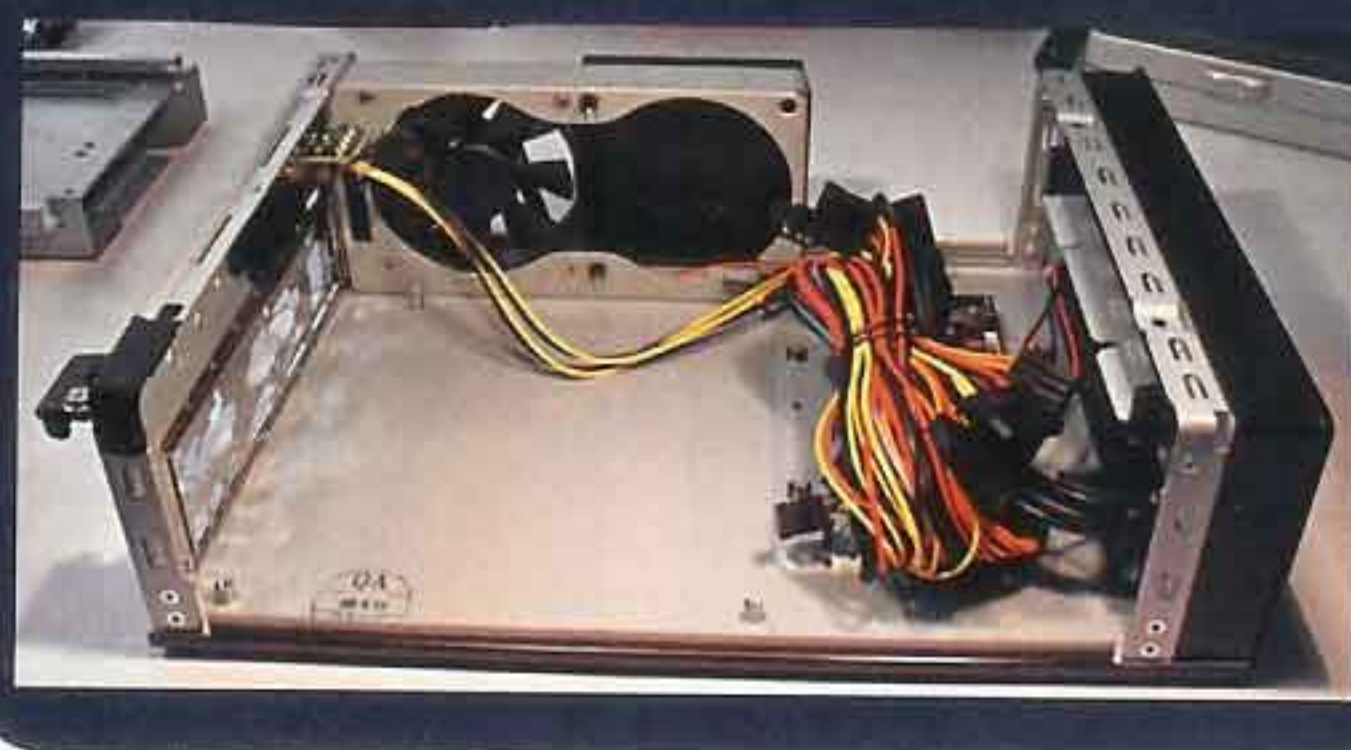
Overheating issues

Remember adding more drives adds more heat – the natural enemy of the media centre. An overheating tuner card can result in all kinds of intermittent bugs, which can look like reception issues, so try to put it in the PCIe slot furthest from your graphics card and other components.

A workaround to reduce heat might be to use an external drive to store your recordings, but opt for eSATA rather than USB if your computer

Step by step - planning your build

Your system's case: Your choice of media centre case will dictate the rest of your components. If you've got your heart set on a tiny microATX media centre case, a fully-featured ATX motherboard, a tall fanless CPU heatsink and a chunky full-sized graphics and tuner cards, be assured disappointment lies in your future.



supports it – so you've got fast read and write speeds. If you've got an old motherboard with eSATA ports, make sure Windows 7 drivers are available (yes, I'm looking at you, Asus).

System stability

Before you delve into fine-tuning your media centre, it's time for a little lounge room-friendly Windows optimisation. Set Windows to automatically log you in on startup and check the power settings to make sure you're using all the grunt under the bonnet. Configure the power button to cause the PC to standby rather than shutdown and disable the need for a password when it wakes. Also disable all system sounds, including the startup sound.

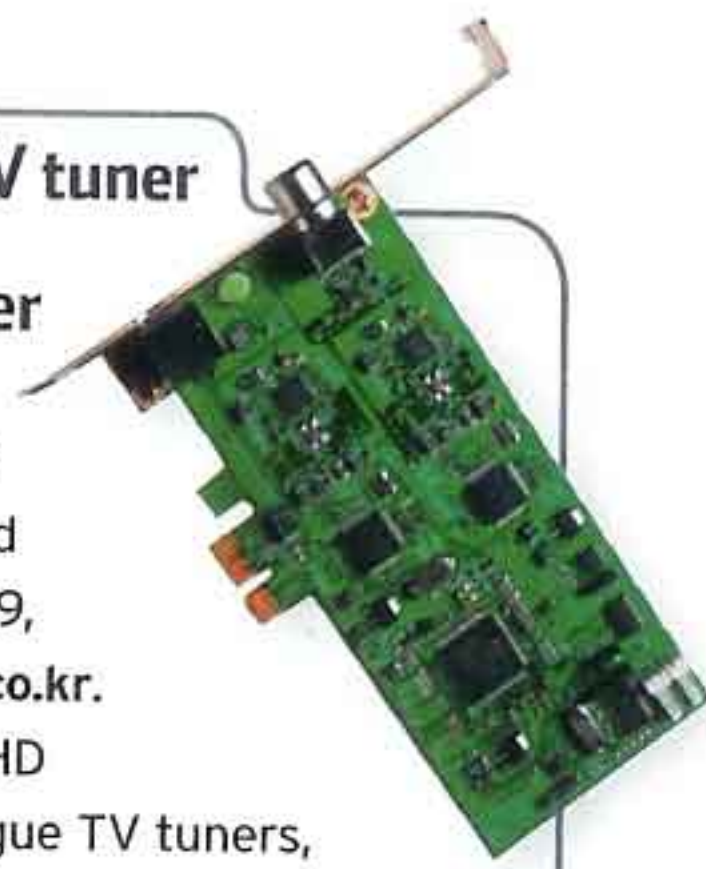
To help with system stability, take a look at the MCE Standby Tool (<http://slicksolutions.eu/mst.shtml>) and use it to schedule a daily reboot. The application offers options for settings such as sleep states, which could be handy when troubleshooting. ▶

Know your TV tuner

The PCIe tuner

Example: DViCO FusionHDTV Dual Digital HDTV Card PCI Express, \$229, www.fusionhdtv.co.kr.

With two hybrid HD DVB-T and analogue TV tuners, the Dual Express lets you record one analogue and one digital channel or two digital channels simultaneously. It is also low-profile, so you can slot it into slimline media centre cases.



The USB tuner

Example: Kworld USB Dual DVB-T TV Stick (DVB-T 399U) \$67 www.kworld-global.com

This USB tuner features two high-def DVB-T digital TV tuners, so you can record two programs at once. A USB tuner offers portability, plus it's also handy if your media centre PC is overheating or running short of card slots.



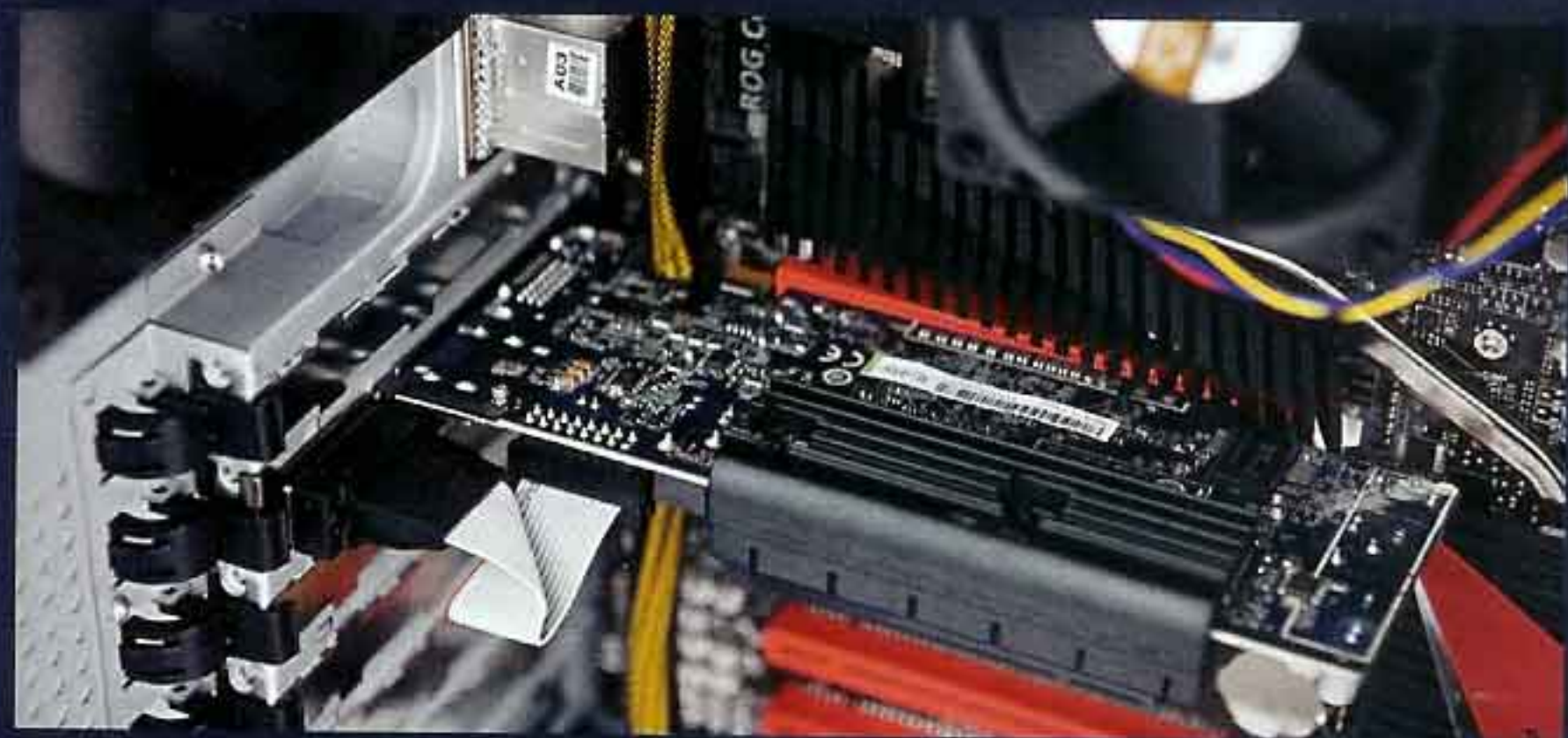
The network tuner

Example: Elgato EyeTV Netstream DTT Network Dual Tuner \$399, www.elgato.com

The EyeTV Netstream connects to your aerial and your home network, streaming high-def digital television to your Macs and PCs around the house. It basically turns any computer into a television and two computers around the house can use it simultaneously.



Step by step - installation tips



Place the TV tuner card away from your graphics card: If you've opted for a slimline media centre case rather than a chunky desktop case, heat can be a major problem. The first component likely to suffer is your tuner card, resulting in choppy recordings which can look like reception issues or hard drive problems. You'll probably opt for a fanless graphics card to keep your media centre quiet, which means it will sport a big heat sink. Place the TV tuner card as far away from the graphics card as possible and try to keep it well ventilated.



Think about airflow: Heat is the natural enemy of the media centre, as it results in noise and system instability. Use ties to keep cables in check, allowing air to flow around the case. This is especially important if you're using fanless heatsinks on your processor and graphics card. Opt for large, slow case fans with variable speed settings rather than small, fast noisy fans. Consider using small 2.5-inch notebook hard drives, at least for the operating system, to improve airflow.

Configuring MCE

When you fire up the MCE interface for the first time run the Custom set-up wizard. It will configure your tuner cards and scan for channels, but don't panic when you're told TV program guide listings are not available for your country – we'll fix that later.

After you've configured the tuners, optimise the look of the display. First set your monitor and cable type, then adjust the display controls. Here you can set the aspect ratio correctly along with brightness, contrast and colour balance. Don't panic if this sounds confusing, the menus talk you

Configuring graphics

MPEG-2 hardware acceleration is a must if you want to watch HDTV on a big screen. This is why Macs don't make great HD PVRs, because Apple prevents third-party apps such as Elgato's EyeTV from using the graphics card for MPEG-2 hardware decoding.

Upgrading the drivers on your graphics card can also alter your image quality, so don't be afraid to experiment with different driver versions and different settings. Your graphics card drivers should let you set your screen resolution as well as brightness, control and gamma settings – which you

'don't be afraid to experiment with different graphics driver versions and settings.'

through it and such calibration makes a significant difference to the picture quality. Finally set up your speakers and then your media libraries, pointing MCE to your DivX and other video files on a local or network drive.

Now from the MCE main menu go down to Tasks and choose Settings. Under General you can set MCE to start automatically with Windows and always stay on top. Go into Visual and Sound Effects to kill off the annoying ping as you navigate the menus. Enable Optimisation to force the MCE interface to restart once a day to improve stability. Back at the Settings menu, choose TV, Recorder and then Recorder Storage to point MCE to your data partition.

might want to tweak to get the best results when using the MCE screen calibration tools.

You'll also find different MPEG-2 codecs offer different results depending on your choice of graphics card. If you want to experiment with MPEG-2 codecs other than the one supplied by Microsoft – such as those from NVIDIA or PowerDVD – the Media Centre Decoder utility makes it easy to switch between codecs.

Configuring the EPG

MCE has a great onscreen Guide which lets you see what's on and easily schedule recordings, but don't rely on the hotch potch Electronic Program Guide data embedded in the broadcast

Choosing a remote

The ability to control multiple devices is handy, but what you really want is the ability to write macros to execute multiple commands with one button press. If you're on a budget, Sunwave makes a good range of entry-level remotes which touchscreen displays, automatically reconfiguring the onscreen buttons depending on which device you're controlling. You can also program basic macros.

Logitech's Harmony remotes go a step further by providing desktop software for easily designing advanced macros called Activities, such as "Watch TV" or "Play a DVD". Now with a single button press you can switch on the TV, set it to the right channel, boot up the media centre, launch the MCE interface and even fire up your surround sound.



▲ A good remote makes operating your media centre painless, but choose wisely

signal. You'll get better results by downloading one from the web. IceTV offers a 14-day EPG (\$99 per year from icetv.com.au) which offers a lot of bonus features such as the ability to schedule recordings via a browser or smartphone.

Both IceTV and MCE's built in PVR features have the ability to create a true Season Pass, checking the guide for your favourite show each week rather than blindly recording the same time slot. They can also create Wishlists, looking for shows according to keyword or actor. The IceTV website will guide you through installing the IceTV EPG on your media centre.

The Media Centre Toolkit



Xbox 360 gamepad

Microsoft sells dedicated Media Center remote controls for the Xbox 360 that offer a host of advanced media playback controls, but don't be fooled into spending extra if you don't need to. The standard Xbox 360 controller is perfectly adequate for controlling the Media Center features on the console, and can be used with your PC (note that the wireless Xbox 360 controller needs a special dongle for the PC). www.xbox.com/en-au/

Blu-ray player

One slight disappointment is that native support for Blu-ray movies is conspicuously absent from Windows Media Centre. If HD movies are high on your list of priorities, you'll have to budget for either ArcSoft's TotalMedia Theater 3 Platinum or CyberLink's PowerDVD 9 software. While both may cost extra, they integrate seamlessly into Media Centre's menu, allowing you to pop a Blu-ray movie in the drive and watch it right away. www.cyberlink.com



Logitech diNovo Mini

This palm-sized Bluetooth wireless keyboard and clickpad is designed to work both with a PC and a PlayStation 3. It comes with a tiny USB Bluetooth dongle for connecting to your computer and features backlit keys along with a dedicated Windows Media Centre button. www.logitech.com

WALKTHROUGH: ADDING TV TO YOUR PC AND XBOX 360



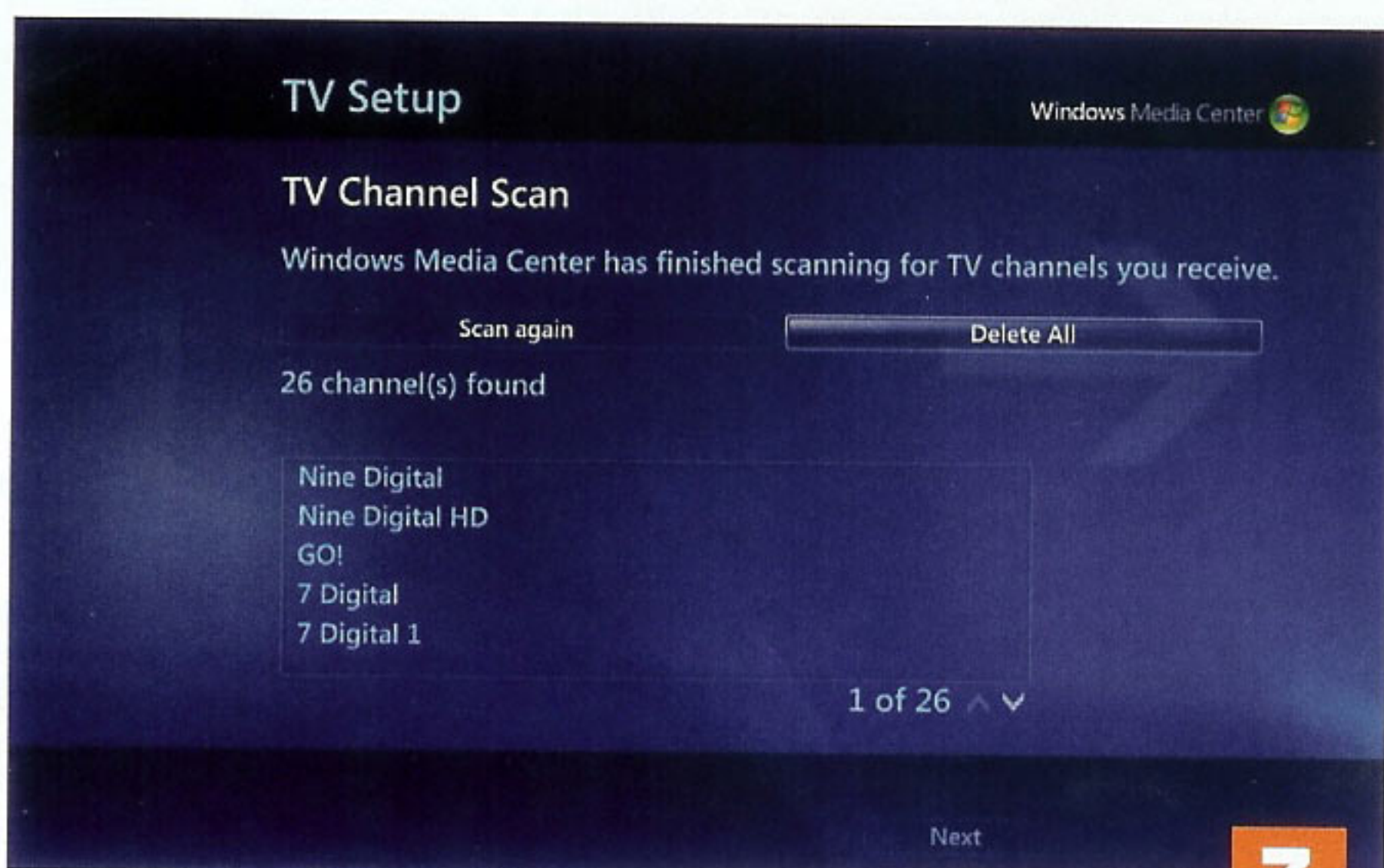
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▲ When installing drivers, be sure to follow the instructions carefully; you normally install the drivers, then the TV tuner. Don't worry if there aren't any Windows 7-specific drivers, as Vista-certified drivers should work fine. Once installed, fire up Media Center and go to Tasks | Settings | TV | Set up TV signal.



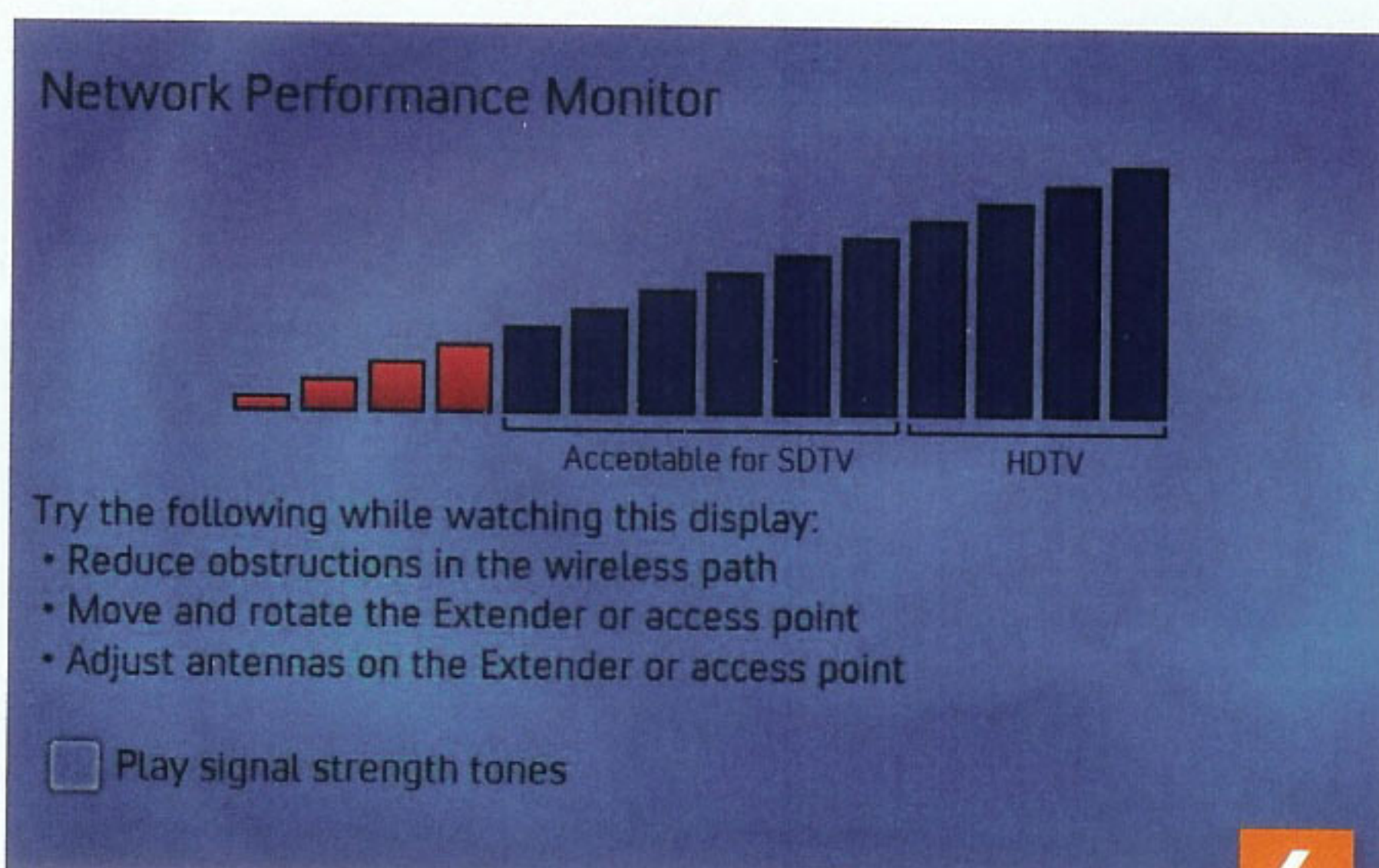
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▲ Once you've started the setup process, Media Center leads you through a simple wizard-style interface. It will ask for your postcode but then fail to find EPG data for your area. Don't worry, you can still pull the EPG from the broadcast signal or download it from IceTV. Next, Media Center will start scanning for channels.



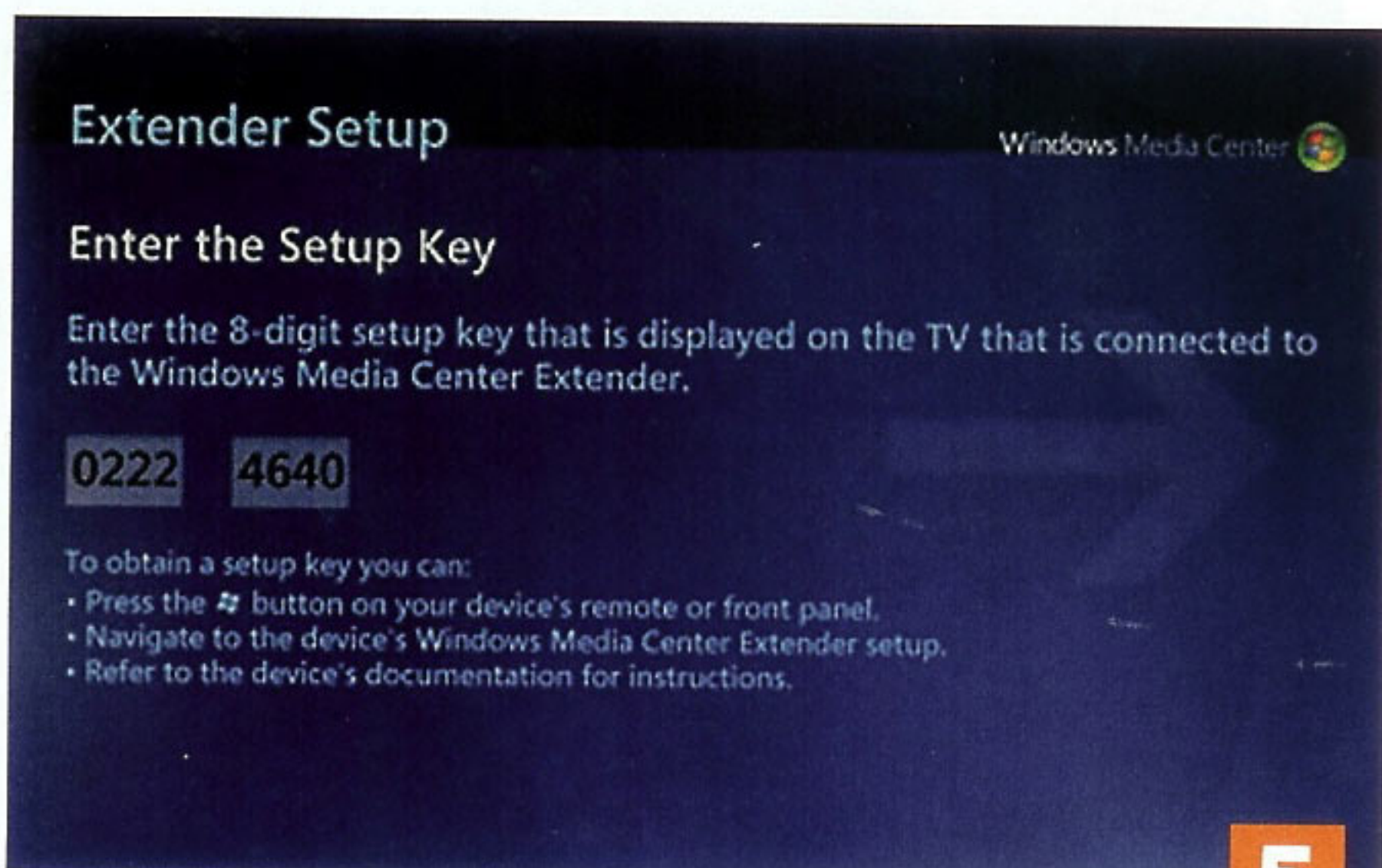
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▲ If you're scanning for digital channels in a metro area using a HD tuner, Media Center should pick up around 26 services. If you're struggling with a weak signal, try using RG6 coax aerial cable and removing any unnecessary splitters. Also move Wi-Fi and networking gear further away from your computer. Failing this, realigning your aerial or adding a signal booster could solve the problem.



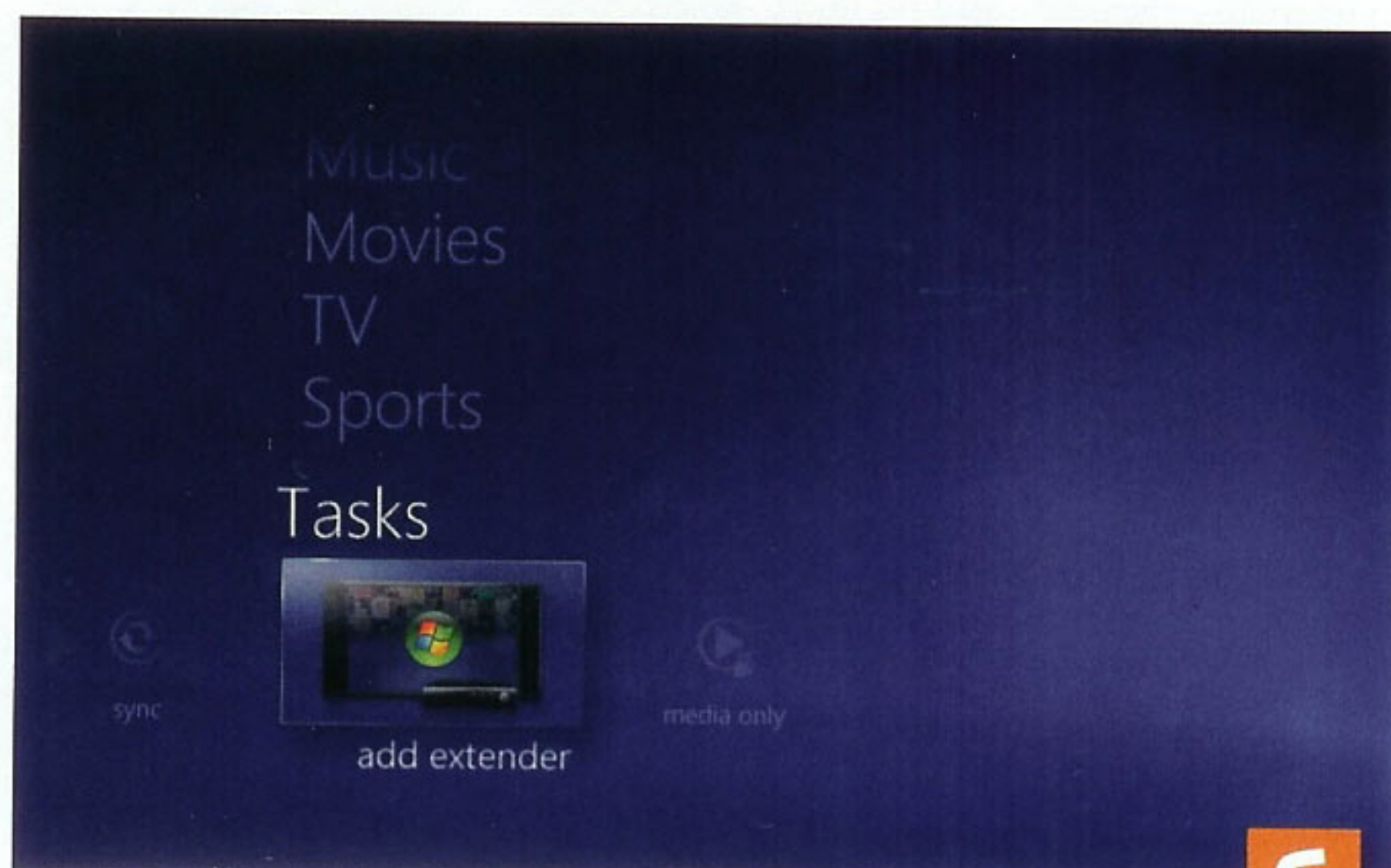
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▲ To add an Xbox 360, make sure both it and the PC are connected to your router, either via a wired or wireless connection. If you have an Xbox Live account, you should see a pop-up message saying "logged in to Xbox Live". If connecting wirelessly, get as strong a signal as you can.



5

▲ On your Xbox 360, go to the My Xbox menu and scroll to the right until you reach the Media Center option. Click Create a New Connection and write down the eight-digit code shown onscreen. Now click Continue. Ignore the Xbox's message telling you to visit www.xbox.com/setup.



6

▲ Back on your PC, open the Media Center facility, select Tasks and Add Extender. Enter the eight-digit code and the PC should connect to the Xbox; this will show the same Windows Media Center screen as your PC. You can expect sluggish performance at first as it scours your PC for media, but it will soon settle down.