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Windows XP Media Center Edition: Exposed

by [Anand Lal Shimpi](#) on January 8, 2003 2:55 AM EST

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For the past 15 years Homer, Marge, Maggie, Lisa and Bart all piled into their living room, hopped on the brown couch and let their faces be illuminated by the glow of their television screen. For millions of people, The Simpsons became a weekly ritual; much like the opening credits, they funneled into their rooms, jumped on a piece of cozy furniture and stared mindlessly into the lives of 5 fictionally yellow characters. But what happened when you had to work late one night, or you forgot about the extra long Halloween special? Before you could search for these shows online, before TiVo and before ReplayTV – a VHS cassette and a VCR was all you needed.

The power to record the TV shows you want to watch has been around for quite some time; the VCR brought the technology to the mainstream, but it lacked some refinement and features that would truly make it suitable for recording TV shows you'd miss. The main problem with the VCR was that it was not an intelligent device; it couldn't detect conflicts, it couldn't tell you if you were going to record a rerun or if this week's episode of the Simpsons would start 10 minutes later than usual. Not being able to get your regular dose of the Simpsons isn't a life or death situation but it would be nice.

Whenever AMD or Intel release a new CPU, everyone asks the question what we need faster processors for? The most common response for that is "to enable future applications" and a couple of years ago, there was enough processing power in a cheap enough form to finally give the VCR a brain – the idea of a set-top Personal Video Recorder (PVR) was born.

The idea was simple; what if your VCR could intelligently record the shows that you want to watch. You don't want to watch whatever is on Fox at 8PM on Sundays, you want to watch The Simpsons, regardless of when they are on. In order to add intelligence to an otherwise dumb piece of electronics all you need is a dedicated processor and a good software interface. But as is the case with most things this "simple", the process of making an intelligent VCR is much easier said than done.

A Series of Simple Attempts

It became very clear early on that a home PC was not the ideal machine for a PVR, the main limitation being an easy to use interface to harness a PC-PVR's power.

Out of all of the hardware manufacturers, ATI came the closest to truly offering a solution that could transform your PC into a full-fledged PVR that you could rely on to capture those priceless Simpsons memories. Compared to 3dfx, Matrox and NVIDIA, ATI had considerably more experience in video capture functionality built into their consumer cards. Both 3dfx and NVIDIA were late comers to the game, 3dfx with their Voodoo3 3500TV and NVIDIA with their Personal Cinema, both being released in the past few years. Matrox had much experience with professional video editing and eventually brought some of that expertise to the home with their Marvel line of graphics cards, but ATI had been bridging the gap between home PCs and TVs for quite some time.

Dating back to their PC2TV line of cards that boasted fairly impressive (for their time) TV output quality, ATI has been focusing on developing the hardware and software to make this dream of an intelligent VCR come true. ATI's latest All-in-Wonder line comes extremely close; closer than any previous attempt, but ATI is still bound by the tragic flaw of a PC based PVR – the Windows interface.

Companies like SONICblue and TiVo were not bound by this tragic flaw; instead they attempted to introduce the PVR concept to the market like the VCR. TiVo introduced their self-named TiVo PVR and SONICblue is



of the intelligent features we just mentioned including a very easy to use interface, but they were bound by the small amount of dedicated resources these set-top boxes had.

Today's PCs on the other hand are infinitely more powerful than current set-top boxes, and in theory could duplicate any of their functionality. The hardware is here today, all we need is someone to step forward and provide an easy to use interface and bring it to the masses. For that we turn to a company that is quite possibly the single most influential in the computing industry, Microsoft.

Microsoft has stepped forth and provided an enabling platform for transforming the PC into a PVR; they call this platform Windows XP Media Center Edition. As the name implies, Windows XP Media Center Edition is designed to turn your PC into no less than a "media center." A device you can use to watch TV, record the shows you want, store your videos, and create a picture album and more. It is Media Center Edition that will supposedly turn your PC into an "uber PVR"; finding out whether or not Microsoft has accomplished that is the focus of this review.

Introducing Media Center Edition

Much like Tablet PC Edition, Media Center Edition (MCE) is largely based on the Windows XP Professional kernel. In fact, if you strip away the Media Center part of the equation you will be left with a fully functional copy of Windows XP Professional. What Media Center adds to the OS is primarily support for the Media Center application, which appears as nothing more than a regular program in your Start Menu.



There's much more to MCE than the Media Center application however; for starters, MCE uses a nonstandard codec for compressing all of the shows it records. Fundamentally, all programming is recorded in an MPEG-2 format with an ASF wrapper; Microsoft's ASF (Advanced Systems Format) works perfectly in this case as it can act as nothing more than a container for media encoded in a different format, more specially MPEG-2 encoded audio and video.

The ASF wrapper effectively prevents two things from happening with the shows that MCE records; first of all, you can playback anything recorded in MCE but the playback system must be able to read this unique ASF wrapped file format. Currently, the only application that supports playback of MCE recorded files is Windows Media Player 9.

The ASF wrapper also currently prevents transcoding into other media formats, such as DivX. We'd expect this to change eventually but currently you're stuck with the "bloated" MPEG-2 encoded video. One of the benefits of a PC based PVR, as we mentioned before, is the ability to transcode and store your recorded shows in whatever format you desire – especially in DivX/MPEG-4 formats, something no other PVR can currently do.

Playback of MCE recorded files on the MCE machine itself doesn't require Windows Media Player 9, rather just the MCE application and a specific MPEG-2 codec. For whatever reason, version 3.0 of Intervideo's WinDVD has the appropriate MPEG-2 codec necessary for MCE. What's even more confusing is that WinDVD 4.0 will not work, as MCE will complain about not being able to find the appropriate playback codec. And no, installing WinDVD 3.0 on another computer won't let you playback MCE recorded files, you need to actually have MCE installed for that to work.

That pretty much sums it up for the software side of MCE; not to discount the amazing amount of work that has gone into MCE, as we'll be getting to the incredible interface shortly, but as you can see there's not much



How a PVR Works

Despite the fact that you can buy a set-top PVR for well under \$400, the process of simply "pausing live TV" is quite complicated and very hardware intensive. So before we delve into Microsoft's hardware requirements for MCE let's go through how a PVR works.

Let's say you get all of your TV channels through a standard coaxial cable; the process is very similar with satellite dishes and cable boxes but for simplicity sake we'll just assume we're talking about a regular cable feed.

The cable feed is plugged into a coaxial input on the PVR that is controlled by a TV tuner chip; on a PC this would be found on a TV tuner card. After selecting the channel to watch, the TV tuner then hands the signal off to the PVR's MPEG-2 encode engine. The MPEG-2 encode can be done via a dedicated processor or in software and handled entirely by the host CPU in a PC based PVR. As the stream is recorded it is buffered and written to the PVR's hard drive, which means that as long as the PVR is on it is always writing streams of data to the hard drive.

If you're doing more than just recording a show, as in you are actually watching it while it is being recorded, then as the data is being written to the hard drive it is also being read and fed into a MPEG-2 decode engine. Since a good amount of the MPEG-2 decode pipeline is already done on today's GPUs, the process is usually not very CPU intensive and is split between the host CPU and the graphics hardware – at least in a PC; a set-top PVR may have a chip dedicated to MPEG-2 decode.

After the MPEG-2 stream is decoded from the hard drive it is then sent off to a TV encoder before it exits the PVR through a S-Video or other video output cable to your TV. On a PC based PVR the MPEG-2 stream could even bypass the TV encoder and be sent directly to an application for display on a monitor.

With this in mind, realize that when you're "pausing live TV" the process doesn't actually stop. The TV encoder may only be displaying a single frame from the hard drive, but the rest of the PVR process must continue so that when you hit pause again you haven't lost any data. The hard drive is always being hit, the memory is constantly being read from and the CPU is forever encoding – you can already begin to see that something as simple as a digital VCR would take some serious hardware to implement properly.

A PC based PVR would require a very fast CPU, high bandwidth (and low latency) memory subsystem and very fast I/O. Slowdowns would be unacceptable; if the hardware isn't able to keep up with the demands of the entire recording/playback process then you end up with recordings that stutter, have garbled audio or worse.

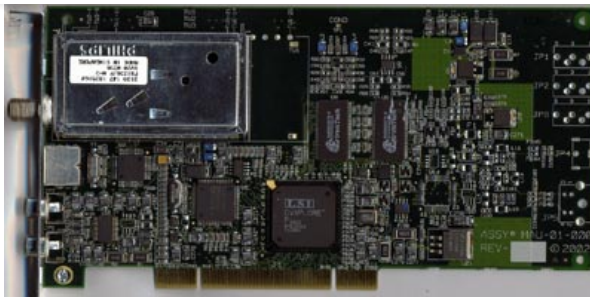
Then we have the problem of maintaining stability; while today's PC hardware has matured considerably even compared to what was around just a couple of years ago, stability is a very serious concern. With such great stress being placed on most of the major subsystems in a PC (CPU, memory, I/O), a single failure in any one of them could interrupt your viewing or recording. Who wants to explain to a room of people why they need to "reboot the TV" because it crashed? Drivers become more important than ever as managing the interaction of all of this hardware must be done flawlessly, not to mention that the OS must be robust as well.

We can say with reasonable confidence that with a Windows XP Professional base, the OS side of things is taken care of. But what about the hardware itself? What about drivers?

Microsoft's solution to the problem is actually twofold...

MCE's Hardware Requirements

First, Microsoft limited hardware support for MCE; Media Center will only work with TV tuner cards that handle MPEG-2 encode entirely in hardware, no offloading to the host CPU will be allowed. The idea behind this requirement is that hardware MPEG-2 will reduce CPU utilization and thus be able to guarantee no-stutter viewing more readily than software based MPEG-2 encoders.



[Click to Enlarge](#)

The downside to this requirement is that the vast majority of TV tuner cards available will not work; this includes the TV tuner that's a part of ATI's All-in-Wonder Radeon 9700. Currently there are only two cards supported by MCE – the Hauppauge WinTV PVR and the Emuzed Maui PCI PVR (pictured above). We'll talk about how effective (or ineffective) this requirement is later on in the performance section of this review, but right now we're just trying to explain the requirements set forth by Microsoft.

As you can probably guess, this single hardware requirement has come under significant fire from both ATI and NVIDIA. From what we've heard, ATI is trying desperately to get Microsoft to lift this requirement so that their All-in-Wonder tuners may be used with MCE. As far as other hardware requirements go, the specification also calls for an IR remote among other things but the hardware MPEG-2 encode is by far the most unique.

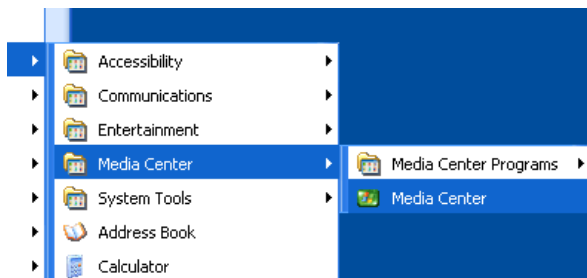
The second part of Microsoft's attempt to guarantee that MCE would work flawlessly as a PVR involves limiting who can make Media Center PCs. At the time of publication there are only six manufacturers that are producing Media Center PCs: ABS, Alienware, CyberPower, Gateway, HP and Northgate.

As you can guess, you can't go out and buy Windows XP Media Center Edition; Microsoft's reasoning behind this is that they don't want a handful of "low-cost" or flawed implementations out on the market giving MCE a bad name. If Microsoft is to be taken seriously in the PVR market, MCE must be very competitive with both set-top and currently available PC solutions; poorly made Media Center PCs could seriously tarnish the brand and would work against Microsoft's success.

Testing MCE

In order to evaluate MCE we went out and purchased the first Media Center PC that was available – the HP Media Center PC 873n. We will get to actually looking at this PC in a bit, but first we want to take you through a tour of setting up and using Media Center.

Firing up a Media Center PC for the first time leaves you with nothing more than a brand new PC with Windows XP Professional installed. Obviously since the PC is running MCE, there is one new button under the Accessories menu but other than that the turn-on phase is nothing special.



Clicking on the Media Center link will launch the MCE interface, which is where we'll start our tour.

A Remote Controlled PC

Although all Media Center PCs ship with a keyboard and mouse, the preferred method of controlling the Media Center interface is via remote; after all, who wants to flip channels with a keyboard?





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Microsoft left the OEMs up to design and implement their own remote controls, so they will vary from one Media Center PC to the next. For this test we used HP's remote (above), which is a little over 8" long and about 2" wide. The buttons have good tactile feel and the remote itself feels just like any home theater remote, albeit a bit skinnier than most (see it compared to a standard Toshiba TV remote below).



[Click to Enlarge](#)

The remote communicates with its receiver using an infrared signal, which does require line of sight between the remote and the receiver itself. The HP remote in particular is relatively good at not being too directional, although it's not as flexible as ATI's Remote Wonder that uses radio frequency to communicate.

The receiver itself carries a USB 1.0 interface, which is all that is necessary considering the limited amount of data that is sent between the receiver and the system itself. The remote essentially sends keystroke combinations to the receiver over IR which are then sent directly to the system, definitely not enough to saturate the 11Mbps USB 1.0 interface at all.



The HP IR Receiver

The receiver has two 1/8" outputs for IR blasters; which are necessary if you're using a set-top cable box. The IR blaster works just like any other, the remote sends its signals to the receiver which then retransmits the channel switching to the cable box. Because of the additional step, switching channels with a cable box/IR blaster takes longer than usual but that's to be expected.



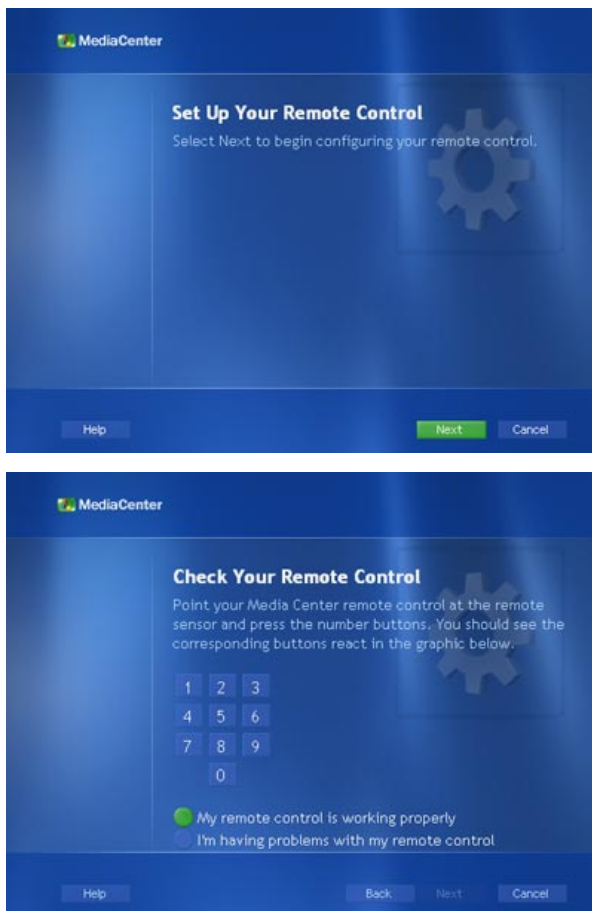
IR Blaster

It is worth noting that there is no serial connection on the HP receiver for a direct connection to a cable box. Some PVRs offer a serial link to a cable box in order to avoid using an IR blaster, which makes switching channels much quicker. Not having a serial link in this case would be a huge drawback for cable box users, although it is something that is potentially fixable. We haven't seen any designs that support a serial link to an external cable box but there's nothing stopping a manufacturer from doing so.

The software side of the remote is fairly simple; a single driver is all that's necessary to get the receiver up and running, then a quick setup through MCE will ensure the remote is working properly. The remote is functional outside of MCE but it cannot be used as a mouse replacement like ATI's Remote Wonder; the directional pad can't be used to move your pointer around.

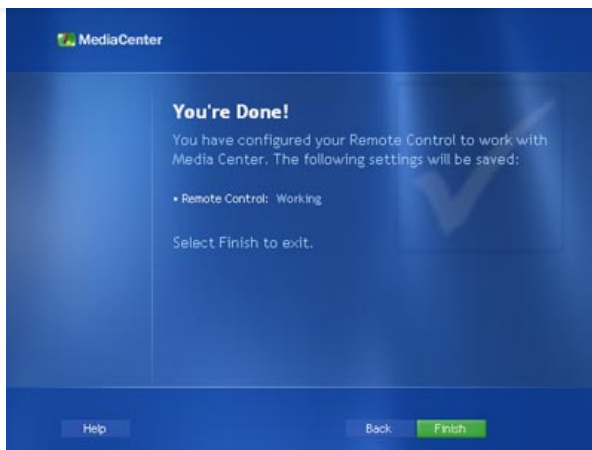
Setting up the Media Center Remote

Microsoft has made the setup and configuration process of MCE extremely simple; everything is done through wizards that are traversed linearly and can all be done using nothing more than your Media Center remote. Even configuring the remote control can be done using the remote (assuming that the drivers were installed properly):



The diagnostic procedure is fairly simple; the corresponding numbers light up on the TV screen as you hit

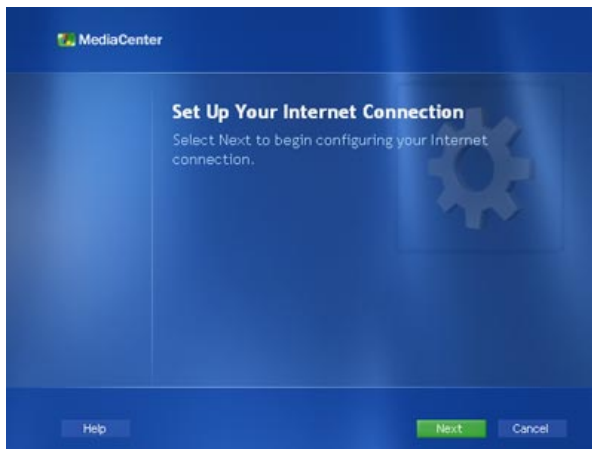




Done.

Setting up your Internet Connection

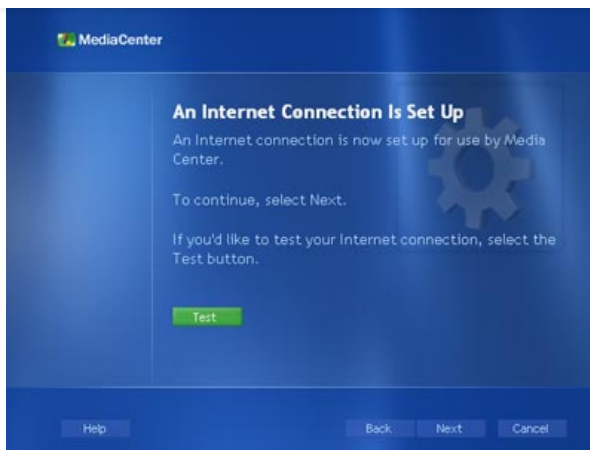
The next thing you'll want to setup is your Internet connection; MCE uses your Internet connection primarily for downloading updates to its Program Guide, essentially a digital TV guide listing of everything there is to watch for the next two weeks.



The configuration process for your Internet connection is pretty straight forward:



You choose your type of Internet connection and then you're pretty much done after a small test if you'd like:



Setting up the TV

The most involved part of the entire MCE setup is the TV setup; on the hardware side all you need to do is hook up your cable to the coaxial input on the TV tuner card.



The software configuration takes a bit longer but for being the most involving part of the entire MCE setup, it's not bad at all.



The first step requires you to choose your TV signal; for us the cable option was what we needed, but satellite and antenna are also made available. Be warned that if you do have digital cable or satellite with support for HD signals you will not be able to record shows in high definition, they will simply be captured as conventional 480i signals. It will be a while before HD encoding is brought down to the consumer level and definitely not in any of the current generation Media Center PCs.



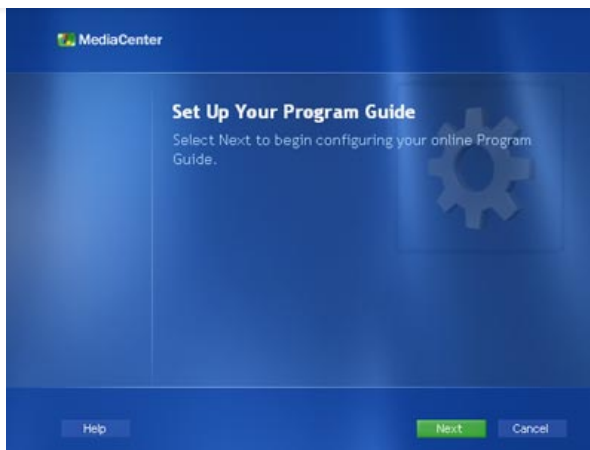
If you have a cable box this screen will lead you into configuring the IR blaster; we had a direct cable line so the set-top box option was unnecessary.



Setting up the Program Guide

Next we'll be taking you through the setup process for the TV program guide:

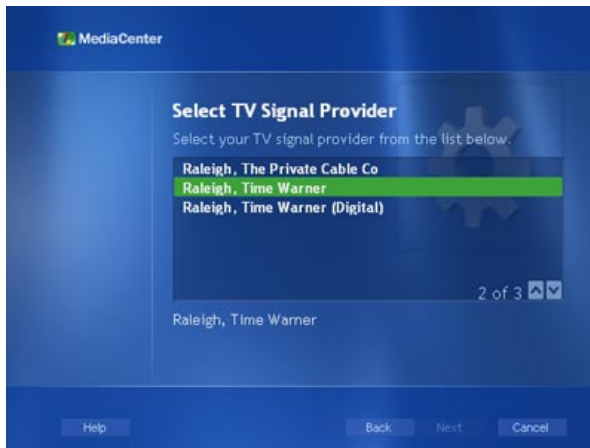
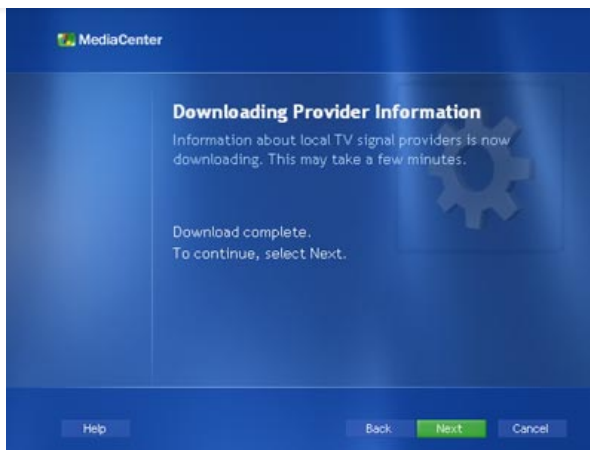




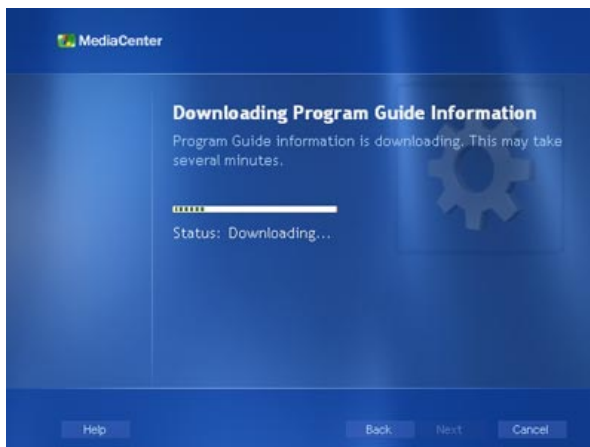
Before you can proceed in the program guide setup you have to scroll through the 44 pages of the Terms of Service and select agree. Once again, this is done fairly quickly using the remote just by holding the down-arrow and then hitting ok.



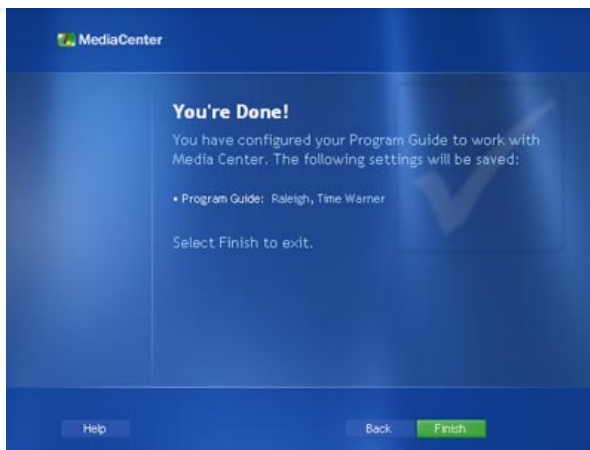
Much like other PVRs, MCE determines what program listing to feed you based initially upon your zip code (inputted via the remote control as usual) and then presents you with a list of cable providers in your area to choose from:



After you select the cable provider it's off to download the program guide information from the net. The guide will update itself automatically every couple of weeks or unless you manually force it.



After you've done all of this the program guide is setup, it's as simple as that.



All of the MCE setup we performed here and more can be configured through the settings screen once you're in MCE, but for now let's get into using the application itself.

Watching TV

The major attraction of Windows XP Media Center Edition is its PVR functionality, and thus the interface is well tuned for watching TV.

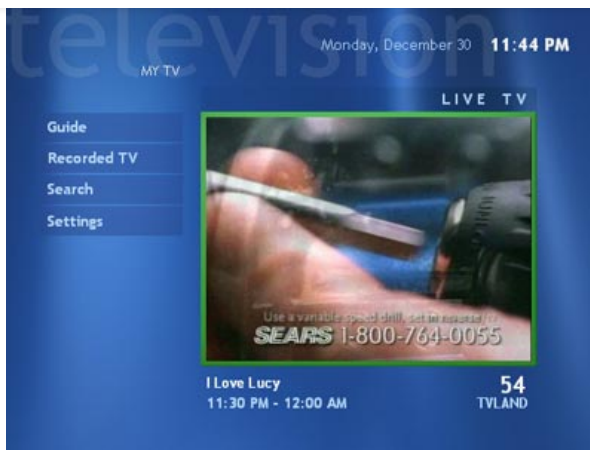


Hitting this button will launch Media Center

In order to launch the Media Center interface all you do is hit the green button on the remote; alternatively you could select Media Center from the Start Menu, but the remote control is the preferred way of launching the app.



Firing up the Media Center interface, the first option you're greeted with will start the TV interface. The window in the lower left hand corner does not always appear, it is where your TV/video playback will remain if you navigate away from the playback page. The small window is relatively useless, given the amount of space available on the screen we would have much rather had a larger window such as the one you see on the TV page below:



The initial TV startup will take several seconds as the engine is started and MCE begins buffering (~15 seconds on our HP test system), but after the initial startup you won't encounter that delay any longer. What's important to note is that MCE can switch channels faster than any set-top PVR, this is thanks to the incredible hardware power of a PC.

From this screen you can jump into the program guide, look through shows you've recorded, search for something to watch or configure the TV options. We'll start off by figuring out what to watch using the program guide.

Watching TV - Program Guide

The MCE Program Guide is a guide for TV content much like a TV Guide channel, Guide+ or the guide software on a TiVo or ReplayTV. The guide has show listings for every channel for the next two weeks and is updated online.



The guide can be launched either using the menu pictured on the previous page or through the guide button on the remote (above).



definitely unfortunate as stuttering isn't nearly this common with set-top PVRs. The problem here seems to be an issue with prioritizing threads, as the TV encode/decode threads should take absolute priority over any other threads contending for CPU time - especially those required to scroll through the program guide.

There's no way to skip from one day of guide listings to the next automatically, you simply have to keep on scrolling from left to right in order to increment the date. Since scrolling is so fast this isn't much of a problem, and the TV encoding doesn't usually stutter when scrolling through time rather than through channels. It would be nice to have a way of skipping through days at a time instead of scrolling through everything.

The first time the guide starts up, resource usage also pikes which will sometimes cause the TV encoding process to stutter as well. What you may find yourself doing is making sure you don't start up the guide while you're recording anything important as the stutters will be recorded to disk.

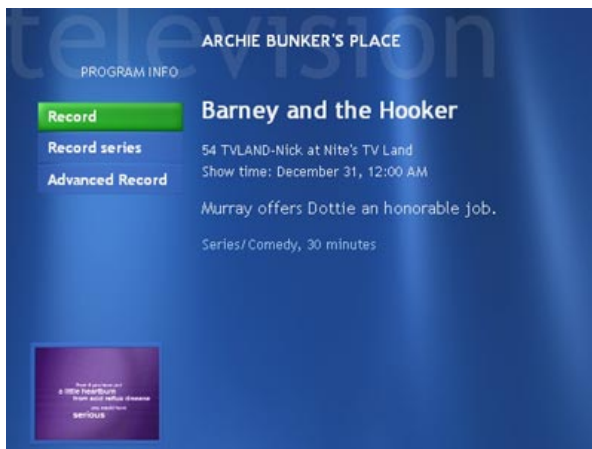
The guide itself is quite intuitive and left us with no usability complaints (other than the performance issue mentioned above, although we'll address that in the performance section later on), it can easily hold its own against any set-top PVR and looks better than anything we have seen.



Although the guide will automatically update itself, you can customize how often you want it to update or force an update yourself through the guide setup menu under TV settings. If the Media Center interface is closed and the guide goes out to automatically update itself then a small icon will appear in the systray indicating that the guide is being updated. Should any errors occur during the update, MCE will notify you through an icon in the systray as well.

Watching TV - Recording using the Guide

Recording a show is very easy and can be done manually or using the Program guide. In order to record using the Guide you find the show you want to record using the Guide then select it using the "OK" button on the remote; this will leave you at the screen below:



From here you can choose to record the single instance of that show or you can attempt to record every time

Selecting advanced record will bring up a number of options for the recording:



Here you can specify more details such as how long to keep the recording and what quality to record it at. The quality options are fair, good, better and best, with best being the highest quality possible. The benefit of using a lower quality setting is that you can record more shows on your drive (they take up less space as they use more lossy compression) but obviously you lose some image quality. The best option looks just as good as the original TV stream (which isn't saying much for Raleigh cable) and although you can tell there's a small drop in quality when recording using the better setting, it's nothing too major.

One useful feature is the ability to customize when you want the recording to start/stop; this is especially handy when a particular show doesn't come on at its scheduled time, because something before it ran long or because of a unique lineup on that channel for that day. There are other shows that almost never start on time, in which case the advanced controls help tremendously.

The program guide is also very powerful for searching for something to watch; you can browse TV shows according to categories:



Search according to show title:

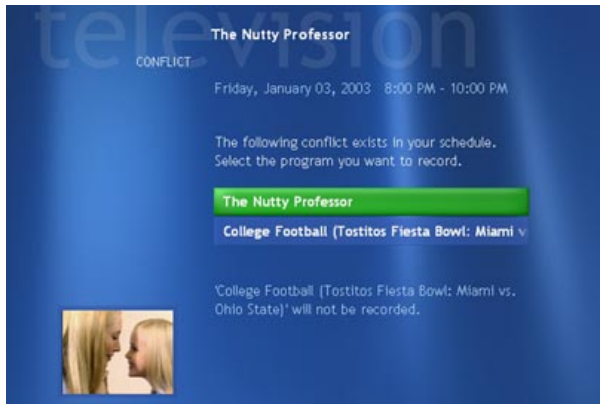


or you can even search by simple keyword:



With all of this talk about recording, what happens if you try and record two things at once? Remember that a Media Center PC will only use one TV tuner card and thus can only be "watching" one TV stream at a given time.

MCE will not let you schedule two recordings that conflict, if you try to you'll be greeted with this screen:



...and you'll be forced to choose between the two. If you can't bring yourself to pick the one you really want, the conflict will be denoted by an exclamation mark in the guide:



In this case, MCE will choose to record the first show that it was asked to record - College Football and the Nutty Professor will just be listed as a conflict.

Conflict resolution is a fairly important aspect of any PVR and the way MCE handles it is decent. Firstly, MCE

In the event that a show isn't recorded for a reason other than you deliberately making a conflict the show will appear in MCE's list of recording errors. The fact that MCE keeps a log of all errors is quite handy, just so you know what shows you've missed and for what reason.

Watching TV (continued)

As we explained in the "How a PVR Works" section, whenever you're watching TV through MCE you are recording what you're watching; this is how you can "pause" what you're watching and resume viewing later or rewind to catch something you've missed.

There are some limitations to what you can do that are imposed by MCE; by far the biggest issue is that if you've been watching something and at the end of your viewing decide that you want to save it, you can't. Unless you hit the record button or have told MCE to record the show before hand, you can't go back and save your buffer for viewing later. Even if you hit the record button halfway through watching a show you will only be able to save everything after the point when you hit the record button, you won't be able to retain what you've watched previously. This is a feature that shouldn't have been that difficult to implement, especially considering that ATI lets you do it using their multimedia center software bundled with their All-in-Wonder cards.

Another issue, albeit understandable, occurs when you're not recording a show and leave the TV in paused mode; in this case, MCE will automatically un-pause itself after 30 minutes, which can be a bit startling if you forget to mute your speakers. Also don't forget to close MCE before putting the system into standby, if you don't the system will wake itself up with the TV running loud and clear in order to check to see if it has anything to record. To be on the safe side you'll want to leave the Media Center application closed; don't worry, it will still record your shows and let you know it is doing so by putting a record icon in the systray. The beauty of this silent record mode is that you can use your Media Center PC for just about anything while it is recording a show in the background; be warned though, you don't want to do anything that's too intensive as it could cause your recording to stutter.

If for whatever reason you want to record a block of time, you can do so using the manual record feature of MCE:



The options are fairly self explanatory and are very similar to the advanced record options when recording using the program guide.

Microsoft was very careful not to cross any sensitive lines with MCE and thus did not include an auto commercial skip feature, which is something that is included in the latest ReplayTV PVRs. With MCE you can skip ahead 30 seconds at a time by hitting a button on the remote, but you cannot automatically skip all commercials. Hitting another button will rewind 7 seconds and the combination of the two buttons helps make flipping through commercials in your recorded shows quite easy.



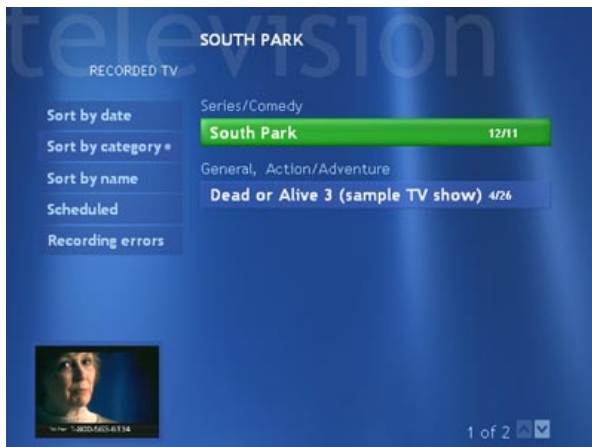
The replay and skip buttons are pictured above.



This overlay is what you'll see when pausing, fast forwarding or rewinding while watching anything in MCE; it goes into hiding after a short amount of inactivity.

Watching Recorded TV

If you use MCE enough you'll end up having a nice collection of recorded shows, which Microsoft was kind enough to organize for you:



After you're done watching something you've recorded, MCE will ask you if you want to keep the recording, delete it or what else you would like to do with it. By default MCE will place all recorded shows in the C:\Documents and Settings\All Users\Shared Documents\Recorded TV\ directory so you can share shows all over your network with ease.

As you can see from the menu on the left, this is also how you get to the recording errors screen that has a listing of all of the shows that weren't recorded and MCE's explanation for why they weren't.



default quality you'd like to use.

So how well does it work?

The TV aspect of MCE is obviously its biggest selling point and thus the question on everyone's mind is how well it functions as a PVR.

We've already established that MCE's interface does a terrific job of competing with the likes of TiVo and ReplayTV, not to mention completely dominating anything we've seen from ATI and NVIDIA, but how well does the entire package function?

Although MCE is by far the best first attempt at a PVR we've seen from any company, it isn't without its very noticeable flaws; the most serious of which happens to be this issue of performance. On a 2.53GHz Pentium 4, CPU utilization hovers around 30 - 40% while simply watching TV; note that this is with a hardware MPEG-2 encoder card and a very fast Pentium 4 CPU. We tried performing our own clean MCE install on the setup, updated all of the drivers and walked away with nothing better. There are clearly some issues with MCE as it shouldn't require such a high speed CPU to perform simple MPEG-2 decoding and writing to the disk. The CPU utilization drops to below 20% if MCE is closed and it's just recording in the background, which isn't too bad but still higher than you'd expect for a hardware MPEG-2 encoding engine that isn't relying on the host CPU.

The high CPU utilization only really becomes a problem when you're doing other things in the background that also eat up a ton of CPU time, such as quickly flipping through the program guide or starting the guide up for the first time. As we mentioned before, this is mainly an issue with allowing other threads to compete with the TV encoding/decoding threads for CPU time. We can understand that Microsoft wants to let people use MCE as both a media center OS and as a regular OS for work and play, but there's no excuse for stuttering caused within the Media Center interface itself.

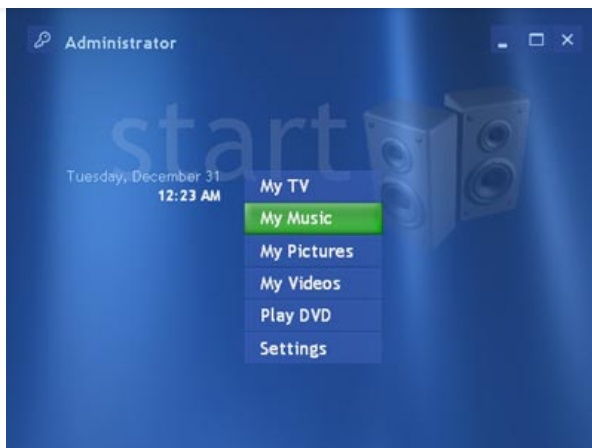
Then there's the issue of crashes; in its default configuration, the HP Media Center PC wasn't the most stable computer we've encountered. But after a clean install without much of the junk HP loads and with fully updated drivers, the system was much more reliable. Even with our reinstall, there have been cases where the Media Center application crashed, requiring a full system restart before functioning properly. Other times it just required us to close the Media Center application and reopen it before we were able to continue watching our TV. In the end the stability issues weren't too prevalent, but with a PVR any sort of crashes are unacceptable. It will be interesting to see if other hardware configurations would lead to more reliable Media Center PCs.

Other than the performance issues and occasional crash, MCE works quite well as a PVR, even eclipsing TiVo and ReplayTV in features, functionality and interface in some cases. Compared to other PC based PVR solutions, MCE's major advantage is its very polished user interface; whether it is ATI, NVIDIA or SnapStream, they can all perform the same basic functions as MCE but all lack the interface that will allow MCE to penetrate living rooms and truly make the PC seem like a set-top PVR. ATI comes the closest but without a truly immersive UI they cannot touch MCE in this respect, but from a functionality standpoint they can do just about everything MCE does already. The functionality of MCE isn't fundamentally new, it's just packaged in such a way that it can reach a much larger breadth of users.

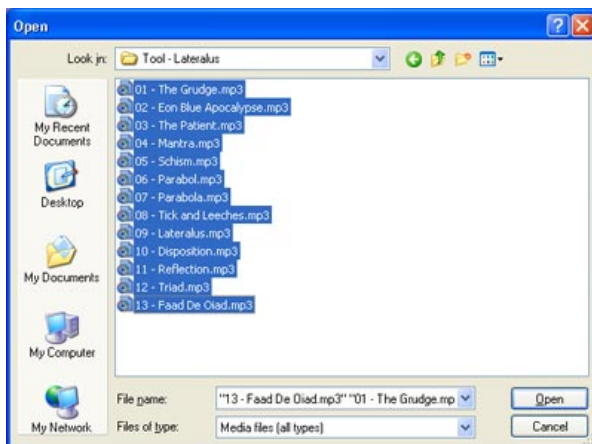
Because the performance issues are directly tied to multiple threads of execution contending for CPU time, MCE may end up being best suited for use on a Hyper-Threading enabled Pentium 4. It may not be a coincidence that the first full year of MCE's availability will be the same year that Hyper-Threading fully transitions to mainstream desktop processors...

It also plays music...

Microsoft didn't just name their OS Media Center Edition for nothing, they truly wanted it to turn your PC into a media center. Going along with that definition, it's no surprise that MCE also has a very capable music interface built into it.



By selecting My Music from the main menu you'll be taken to a listing of all of the songs and albums in your library. But how do you get things into your library you ask? Unfortunately this is the biggest limitation of MCE's music interface as you can't just point at a list of your MP3s and have MCE categorize them for you; instead, you must use Windows Media Player and add the music you want to your library.

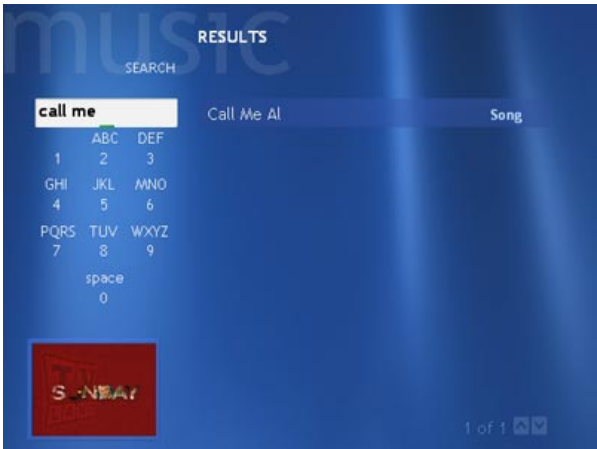


After you've selected the music you want to add to your library you then have to close and restart the Media Center application in order for it to see what you've added to your library. This is by far the most annoying part of letting MCE manage your music, but the ends do justify the means if you plan on hooking up your Media Center PC to your home theater system as you'll be able to have your entire music library available without

Once you have added your entire music library you can use MCE's extensive search capabilities to help you find what you're looking for. Searching by genre is one option, the genres are taken from the ID3 tags of your MP3s so you'll want to make sure that they are correct:

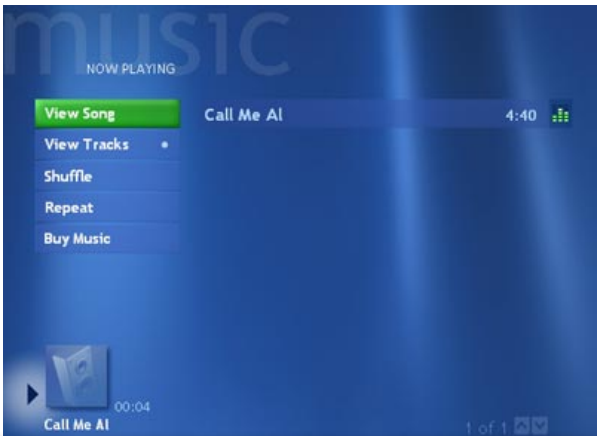


You can also use MCE's keyword search:

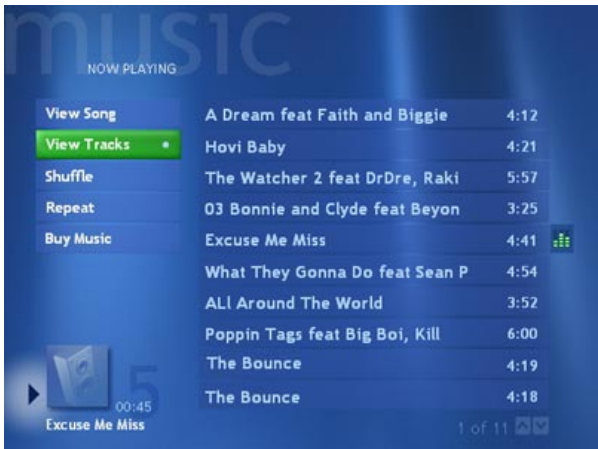


Searching for a Paul Simon song we happened to find what we were looking for very quickly. The MCE search works very quickly and runs the search in real time, so as you type MCE will narrow the list of search results.

Keyword input is also done from the remote, and quite effectively/efficiently we might add. It's just like typing in characters into a cellphone, you hit the same number key multiple times to cycle through the three or four letters each number represents.



continue to play, what you're listening to will appear in the lower left hand corner as you can see from the screenshot above.



Here we have an entire track listing, the song with the icon to the right of its play length is what is currently being played. You can pause, fast forward and rewind through the song you're playing using the same controls you would for watching TV; the same overlay is used.

Other than the annoying issue of having to use Windows Media Player to add music to your library, MCE does a fine job of managing your music for you and making it easy to get to.

All the pretty pictures

The final feature we have to touch on is the picture library; the picture library is pretty simple, it's just a place for you to view all of your pictures by either flipping through them or through an automated slide show. It's useful for showing a large group of people pictures from a trip.



Cataloging your pictures is luckily just as simple as putting them in the appropriate directory; each folder you make will appear as a separate folder of pictures.



Once within a folder you'll be able to browse through all of the pictures in that folder, either manually or by playing a slide show of them all.

You can also have MCE catalogue all of your videos for you:



If you install the DivX codec you can also playback all of your DivX encoded movies through this interface as well.

The HP Media Center PC 873n

Although this review focused mainly on MCE, we would like to provide a quick look at the HP Media Center PC that we used for our tests.



The HP Media Center PC 873n comes with a 2.53GHz Pentium 4 on an 845G motherboard made by FIC with 512MB of DDR266 SDRAM. You'll also find a SB Audigy and 56K modem on the inside of the PC, along with onboard Ethernet. This particular configuration came with a DVD writer and a regular CD drive as well. The power button has a blue LED behind it that glows quite brightly, which can be a problem in a very dark room if you don't want to attract a ton of attention to the PC.

HP also bundles the system with a universal memory reader accessible from the front of the PC: the reader

There's nothing too special about the design or assembly of the PC, other than the fact that it is very quiet thanks to a large heatsink on the CPU and a large, slow spinning fan.

The system comes with a GeForce4 MX by default, which unfortunately means that the best video output you can get is via a S-Video cable; no component out here, not without upgrading the system yourself to an All-in-Wonder Radeon 8500/9700.



In order to prevent users from connecting anything to the onboard VGA connector (powered by the 845G graphics), HP covered up the port as you can see above.



Interestingly enough, HP doesn't ship the 873n with any sort of wireless keyboard or mouse. They are fully expecting you to work with the remote for anything media related and deal with a wired PS/2 keyboard and mouse for everything else.



The keyboard does have some useful controls on it, too bad it has a very short cable.

Final Words

With Windows XP Media Center Edition, Microsoft has proven their ability to bring a truly consumer-friendly OS down to the living room, or in the case of the first MCE boxes - the dorm room or apartment. People have had computers in their living rooms for years, but with MCE the PC can be put alongside a receiver or a TV and finally be at home.

As a PVR, Media Center Edition functions just as well as any TiVo or ReplayTV box, and is already miles ahead of anything currently available for the PC. But if you're buying a Media Center PC to use as nothing more than a PVR, then you're unnecessarily making one very expensive investment. You can get PVR functionality and identical capabilities out of any set-top box, for a quarter of the price of a decent Media Center PC. In order for MCE to really be a competitor to the TiVo and ReplayTVs of the world, it will have to be made available in a much cheaper form - potentially as an Xbox2 add-on.

What MCE does do quite well is exactly what Microsoft is targeting it at currently; for the dorm room or apartment where space is tight, MCE can easily transform a PC that would otherwise be used for work and



There are a lot of improvements that must be made in order for MCE to really take off however; first and foremost, the performance issues we encountered are unacceptable. Unfortunately, it may take mainstream Hyper-Threading enabled Pentium 4s with an 800MHz FSB in order to mask the stuttering issues that occur during normal use of MCE as a PVR. As far as stability goes, we'd expect the limited number of hardware vendors to more thoroughly stress test and ensure their machines won't be crashing in a media center environment; like we've mentioned before, who wants to explain why their TV just blue screened?

In the end, Microsoft has done a splendid job with Windows XP Media Center Edition. It isn't perfect, and it definitely isn't for everyone but in going after the markets that it does tailor to, Microsoft has done well. Hopefully this will be the first of many steps in reaching this idea of digital convergence that Intel and Microsoft have been pushing for quite some time...