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Chapter 17

Seven to Go: Windows 7 Mobility Features

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Seven to Go: Windows 7 Mobility Features



In This Chapter

Managing the Windows 7 user interface settings for optimal performance and battery life

Discovering new power management features

Creating and using your own power plans

Utilizing the Windows Mobility Center

Exploring new features aimed at presentations

Accessing files and folders while disconnected from the network

Using Windows SideShow

Improving performance with ReadyBoost

Windows 7 and netbooks



Windows 7 is the best version of Windows yet for users on the go. Whether you use a notebook computer, netbook, Tablet PC, or Ultra-Mobile PC, you won't get a better mobile experience than what's available in Microsoft's latest desktop operating system. This time around, Microsoft has fortified Windows 7 with an evolved version of the user interface, power management, and presentation capabilities that debuted in Windows Vista along with dramatically improved performance and a suite of mobile-oriented applications and utilities that tie it all together. You'll learn about each of these features in this chapter.

Windows 7 on the Road

Over the years, Microsoft has steadily improved Windows to better take advantage of the unique hardware features and capabilities offered by portable computers such as notebooks, laptops, Tablet PCs (including a smaller new generation of tablet devices called *Ultra-Mobile Personal Computers*, or *UMPCs*), and, in Windows 7, a new class of low-cost portable PCs called *netbooks*. For the most part, using Windows 7 on a notebook computer or other portable PC is just like using it on a desktop PC. That is, a notebook computer can do anything a desktop PC can, and Windows 7 doesn't have a limited feature set when you're using a portable PC. In fact, if anything, Windows 7 offers more functionality on portable PCs than it does on desktop computers. That's because certain features really only come to life when they're used on a portable PC.

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That said, some PC makers may opt to saddle their netbook computers with the low-end Windows 7 Starter Edition in order to save money. If that's the case with the machine you've purchased, then you actually have a version of Windows 7 that is, in many ways, less capable than more mainstream versions. Check out Chapter 2 for information about using a feature called Windows Anytime Upgrade to upgrade this Windows 7 product edition to a more capable version.

You may want to approach Windows 7 a bit differently when using a notebook computer. Certain operating system features, such as the user interface or power management plan you select, can affect both performance and battery life when you're not connected to power. Windows 7 also includes special presentation, security, and networking features that are often specific to portable computers, or at least work somewhat differently when you're using a portable PC. Windows 7 also includes certain software applications, such as Mobility Center, that are available only on portable computers.

tip

This chapter uses terms such as *portable PC*, *portable computer*, *notebook*, *laptop*, and even, occasionally, *Tablet PC* to describe mobile computers running Windows 7. For the most part, these terms are interchangeable in the context of this chapter unless specifically stated otherwise. This is also true of netbook PCs, though we discuss them separately because their unique form factors and capabilities warrant a separate examination.

Working with the Windows 7 User Interface

One of the most obvious niceties of Windows 7 is the Windows Aero user interface, which is discussed in Chapter 4. Windows Aero offers several unique features compared to the other UI options available in Windows 7, including translucency, various special effects, and even access to certain Windows features (such as the Windows Flip 3D application-switching utility and Aero Peek). Conversely, Windows Aero is more hardware intensive than other display modes and can thus drain battery life more quickly than the other user interface options. Your decision whether to use Windows Aero—shown in Figure 17-1—depends on how you feel about battery life, performance, and usability.



Figure 17-1: Windows Aero is gorgeous-looking but can drain a notebook's battery more quickly than other Windows 7 user interface options.

Before getting to that, however, you should also be aware that many portable computers—especially those made before 2008—simply don't include enough graphical processing power to even run Windows Aero. If this is the case, you will typically see the Windows 7 Basic user interface instead. (On some versions of Windows 7, there's also an option called Windows Standard that offers an enticing middle ground between the beauty of Windows Aero and the power management thriftiness and performance of Windows Classic, the low-end user interface that is designed to resemble the user interface from Windows 2000.)

Depending on your hardware, your choice might already be made: if you install Windows 7 on a portable PC and the user interface is set as Windows 7 Basic and not Windows Aero, then you may be out of luck: your system is most likely not capable of displaying Windows 7's highest-end user interface.

Secret

It *is* possible that your mobile computer can handle Windows Aero even if Windows 7 Basic appears by default. There is a chance that Windows 7 simply didn't install the latest driver for your display hardware. Before sinking into despair, consult the documentation for your notebook, find out exactly which display hardware it uses, and then visit Windows Update via the Start menu to obtain the latest driver and see if that makes a difference. Alternately, visit the hardware maker's Web site; sometimes the vendor offers drivers directly to consumers as well.

Secret

If you're not the kind of person who reads documentation, Windows 7 offers a few utilities that can help you determine which display hardware your system is utilizing. The first is called System Information (type **System Information** in Start Menu Search). Under the System Summary list on the left, choose Components ⇄ Display. You can also try the DirectX Diagnostic Tool (**dxdiag** in Start Menu Search): you'll see information about your display device on the Display tab of this application, shown in Figure 17-2.

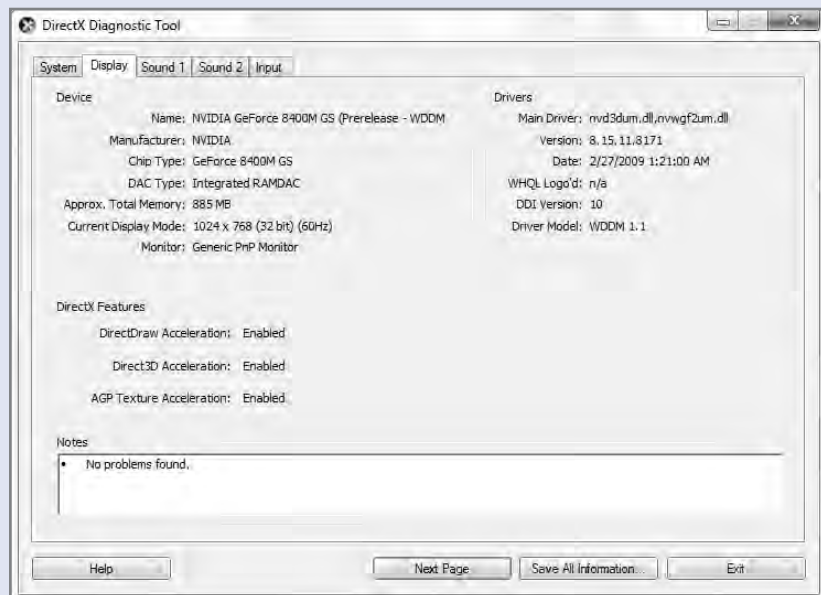


Figure 17-2: You can find out about your display hardware using the DirectX Diagnostic Tool, a hidden Windows feature.

tip

In order to run Windows Aero, you need a DirectX 9–compatible video card with 64MB or more of discrete graphics RAM, depending on the resolution of your display (64MB is adequate for a 1024 × 768 display, but you need 128MB or more for higher resolutions). Newer integrated graphics chips—the types that share RAM with the system and are more common on notebooks—are now capable of displaying Aero.

Assuming your machine is powerful enough to display Windows Aero, you might still want to opt for the Windows 7 Basic user interface because of its thriftier power management. However, Windows Aero is more stable and reliable than other user interfaces because of the way it interacts with the underlying system and required signed drivers from hardware makers. Like all trade-offs, the decision is not an easy one. Our advice is to test how your particular system behaves on battery power while using both user interfaces. If the battery life difference between the two is negligible, go with Windows Aero.

To change the user interface, right-click the desktop and choose Personalize from the resulting pop-up menu. This displays the Personalization control panel. In the top section, you can choose between various themes, including Aero Themes, which utilize the Windows Aero UI. As shown in Figure 17-3, the Personalization control panel lets you choose between these Aero Themes and other less impressive themes, such as Windows 7 Basic, Windows Classic, and some high-contrast themes aimed at those with vision handicaps.

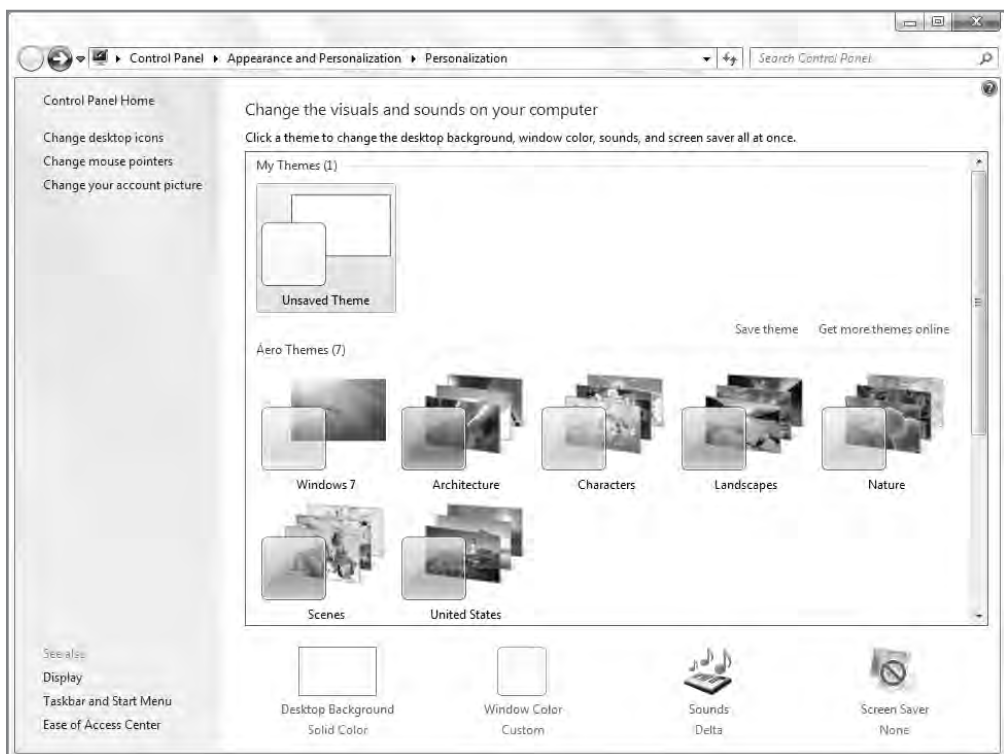


Figure 17-3: Personalization lets you choose between various UI themes.

While using Windows Aero, you can make one change that affects the performance and battery life of Windows 7 while retaining the other features that make Windows Aero worthwhile: you can turn off Windows translucency by clicking Window Color in the bottom of the Personalization control panel and then unchecking the Enable Transparency option that appears in Window Color and Appearance, as shown in Figure 17-4. Translucency is a fun feature, but it doesn't really aid productivity and it's a bit taxing on the battery, so this is an obvious candidate for change.

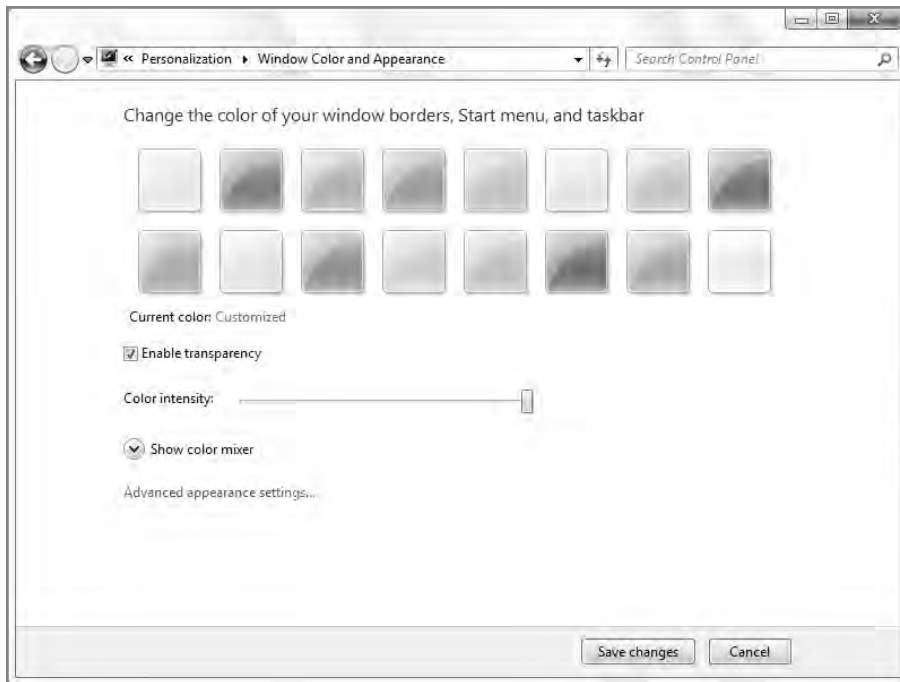


Figure 17-4: From Windows Color and Appearance you can disable transparency.

Alternatively, you could use Windows 7 Basic instead of Aero. To do so, click the Windows 7 Basic theme in Basic and High Contrast Themes.

Secret

Back during Windows Vista's development, Microsoft promised that the OS would seamlessly move between Windows Aero, while attached to power, and Windows Vista Basic, while the machine was untethered and running on battery. This feature, sadly, was never added to the final version of Windows Vista, forcing users to manually switch between user interface modes—and it's missing in Windows 7 as well. But there is one related improvement: now, when you move between Windows Aero and Windows 7 Basic, the transition is much speedier. In Windows Vista, the system would often freeze up for several long seconds, making you wait while it transitioned between themes.




Power Management

Although even desktop-based computers running Windows 7 support various power management features, this functionality is much more relevant on portable computers, which is why we're discussing it in this chapter. Windows 7's power management functionality can be accessed throughout the user interface in various ways, but the easiest way to understand power management in Windows 7 is to realize that it comprises three basic areas: a system notification battery meter icon, a Power Options control panel, and a simplified set of power management plans. This section examines each of these features.

Battery Meter

Mobile computing users are quite familiar with the battery meter that has resided in the tray notification area since Windows 95. This handy icon has been updated yet again in Windows 7 and can appear in various states, each of which changes the look of the icon. The state you see depends on whether the machine is connected to a power source, and how well the battery is charged. Table 17-1 summarizes the various icon types you can expect to see.

Table 17-1: Windows 7 Battery Meter States

<i>Icon</i>	<i>State</i>	<i>What It Means</i>
	Charged, plugged in	The battery is completely charged and the system is plugged into a wall outlet.
	Charging, plugged in	The battery is charging while the system is plugged into a wall outlet. (This icon is animated.)
	On battery power	The battery is discharging because the system is operating on battery power.

Secret

Although the battery meter now offers far more functionality than before, you may find it a bit bewildering. That's because the Windows 7 battery meter offers a completely different experience depending on how you decide to interact with it. Here are the various actions you can perform with the battery meter:

- **Mouse-over:** If you move the mouse cursor over the battery meter, it will display the pop-up window shown in Figure 17-5. This pop-up window summarizes the state of the battery, but unlike Vista, it no longer includes information about the currently used power plan.

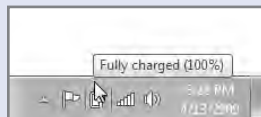


Figure 17-5: This pop-up provides you with an at-a-glance look at the state of your battery's charge, but it no longer provides info about your power management plan.

continues

continued

- **Single-click:** If you click the battery meter icon once, you'll see the larger and interactive pop-up window shown in Figure 17-6. This pop-up window provides more information than the mouse-over pop-up, and it enables you to select from one of two preset power plans (Vista offered three), which are discussed in the next section. You can also access other power management–related OS features from this window. (Note that the plans shown in the figure are a subset of Microsoft's defaults: PC makers often replace at least one of these power plans with their own custom plan, so what you see here may vary.)

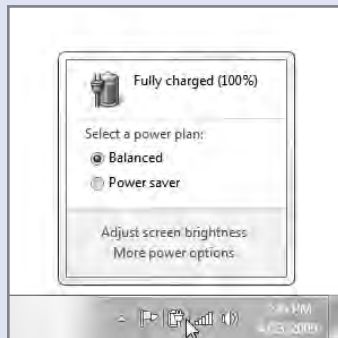


Figure 17-6: This pop-up offers a wealth of power management functionality in a relatively small space.

- **Right-click:** If you right-click the battery meter, you'll see the pop-up menu shown in Figure 17-7. From this menu, you can adjust the screen brightness, access Power Options (discussed later in this chapter), access Windows Mobility Center (also discussed later in this chapter), or click an option titled “Turn system icons on or off” (It was called “Show System Icons” in Windows Vista), which brings up the new System Icons control panel, from which you can determine which system icons appear by default in the tray.

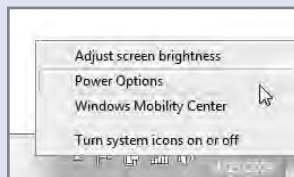


Figure 17-7: This pop-up menu offers a way to access the Windows 7 mobile and power management features.

If you're running a desktop PC, the Power tray notification icon is unavailable, so there's no obvious way to enable it; but that doesn't mean you can't change the power management settings on a desktop PC. To access Windows 7's Power Options on a desktop PC, just open the Start menu and type **power options** in Start Menu Search. Alternately, you can access the new System Icons control panel directly by typing system icons in Start Menu Search.

note

Curiously, if you double-click the battery meter, nothing happens.

Power Plans

Microsoft has further simplified the power plans in Windows 7, compared even to the work that began with Windows Vista. These power plans are used to manage your PC's use of its power resources, both while attached to wall power and while running on battery. Three preconfigured power plans are included in a stock installation of Windows 7, though only two of them are available from the Power icon in the tray for some reason. But you can choose any of them, modify each to suit your needs, and even create your own power plans.

tip

Confusingly, your PC maker might make its own machine-specific power plans as well, so if you purchased a notebook with Windows 7 preinstalled, you might see additional plans listed. You can edit any plans, however (including those made by Microsoft or your PC maker), and create your own plans. You can also delete plans added by your PC maker, though this isn't necessarily a great idea, as the PC maker probably knows more about the power management characteristics of their hardware than you do.

The three built-in power plans are Balanced (the default on all stock Windows 7 systems), Power Saver, and High Performance. By default, only Balanced and Power saver are available from the Power icon in the system tray, but each is discussed in the following sections.

Balanced

This default plan balances power management between power consumption and performance. It does this based on how you're using the computer at the time. If you begin playing a game or accessing Windows 7's multimedia features, the system automatically ratchets up the processor speed and other hardware features to ensure that you don't experience any slowdowns. Similarly, if you're just browsing the Web or reading text documents, Windows 7 will slow the processor down as much as possible, conserving battery power.

Secret

The Windows 7 power management plans are far more aggressive than they were in Windows Vista. The reasoning here is simple: better power management equates to better battery life. But you may be surprised to discover how quickly the screen on your notebook dims, especially when you're running on battery power. Windows 7 is serious about saving the juice.

Secret

By default, with the Balanced power plan, your system's microprocessor will be running at about 65 percent of its maximum performance. Based on need, Balanced enables the processor to use as little as 5 percent of its maximum performance and as much as 100 percent. This is true when the system is either running on battery power or plugged in, so don't assume that using Balanced in some way prevents your computer from working at its full potential. If you need the processing power, you'll get it.

While plugged into a power source, the Balanced power plan dims the display after 5 minutes of inactivity and turns it off after 10 minutes of inactivity. However, the computer won't normally go to sleep.

On battery power, it's even more aggressive: 2 minutes to dim the display and 5 minutes to turn it off. The PC goes to sleep after 15 minutes of inactivity.

In our experience, the default Balanced plan is the optimal power plan to use for portable machines of all kinds. Heck, it's even the right plan for desktop machines. This time, Microsoft got it right.

Power Saver

This plan sacrifices performance for better battery life. It should be used only by those with light computing requirements or those who are trying to maximize uptime while on the road. We often switch to Power Saver mode when we're on a flight and need to maximize battery life in order to get some writing done or watch a DVD movie. (Hey, you gotta relax sometimes, too.) However, because Power Saver adversely affects system performance, you won't want to use this mode while performing complex tasks like playing a game or editing video.

Secret

By default, with the Power Saver power plan, your system's microprocessor will be running at about 40 percent of its maximum performance. Based on need, Power Saver allows the processor to use as little as 5 percent of its maximum performance; and, as with Balanced, it can actually reach up to 100 percent (whereas in Vista, it topped out at 50 percent.) But unlike Balanced, Power Saver truly is a compromise: in the interests of maximizing battery life, Power Saver forces the processor to work with the lowest possible performance required to get the job done. This is a problem because the system will sometimes struggle to keep up, depending on how much you're doing.

Here's how Power Saver affects your power management settings. Windows 7 aggressively decreases the processor speed and display brightness at all times. On power, Windows 7 dims the display after 2 minutes and turns off the display after 5, and then puts the computer to sleep after just 15 minutes. On battery power, the display dims after 1 minute of inactivity and is turned off after 2 minutes of inactivity, and the computer goes to sleep after just 10 minutes of inactivity.

Secret

Power Saver is also the only power plan to use what Microsoft calls an *adaptive display*. That is, if you've configured your system to use the Windows Aero user interface and you switch to battery power while using the Power Saver plan, Windows automatically switches the display to Windows Standard, removing translucency and other Aero effects. Once you plug in the system again, the Aero effects return automatically. Power Saver does this because certain Aero effects are unduly taxing on the system from a power management perspective.

High Performance

The High Performance plan provides the highest level of performance by maximizing the system's processor speed at the expense of battery life. This plan is aimed at those who spend most of their time playing modern video games or working in graphic-intensive applications. While this used to be the default power plan for all desktop PCs in Windows Vista, that's no longer the case in Windows 7. In fact, High Performance isn't even available as an option from the pop-up menu you see when you click the Power icon in the system tray. To enable this plan, you need to visit the Power Options control panel, which is discussed in the next section.

Secret

Yes, you guessed it: Under the High Performance plan, Windows 7 provides 100 percent of your CPU's processing power, all the time.

Under the High Performance plan, Windows 7 will dim the display after 10 minutes of inactivity when on wall power and turn it off after 15 minutes of inactivity, but never put the PC to sleep. On battery power, you're looking at 5 minutes until the display dims, and 10 minutes until the display is turned off. But again, the computer is never put to sleep.

Secret

Desktop PCs utilize power plans as well, and though you may believe that High Performance has some advantages over Balanced, it may not be the best option, especially if you're concerned about the environment and saving energy. Instead, we recommend leaving even desktop PCs set to Balanced. Windows will be more aggressive about putting the system to sleep and your PC will use less power (and thus draw less energy) in normal use. And, of course, if you need the full power of the processor—for example, when playing a game or using a graphics application—Balanced will provide it. This plan truly is the best of both worlds.

Scanning through the power plans, it's likely that you'll find a plan that at least somewhat matches your expectations, but you don't have to accept Microsoft's default settings. You can easily modify any of the existing plans, and even create your own power plans. You'll look at those possibilities in the next section.

Power Options Control Panel

Windows 7's power options are, go figure, configured via the Power Options control panel, which is available in Control Panel ⇨ Hardware and Sound ⇨ Power Options on any kind of PC. (For some reason, there were different ways to access this control panel in Windows Vista, depending on whether you were using a portable PC or a desktop PC.) As always, Start Menu Search is your friend: just type **power options** into Start Menu Search to get there quickly, regardless of what kind of PC you have.) Shown in Figure 17-8, this control panel initially presents a selection of two of the three power plans mentioned previously. (Again, you may see different options if your PC maker decided to configure its own custom plan.)

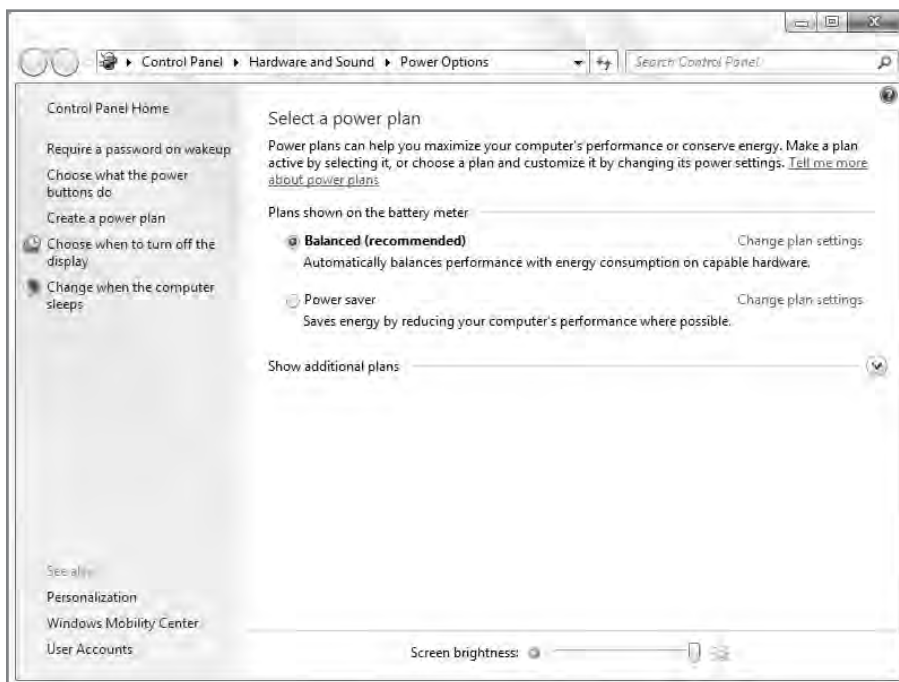


Figure 17-8: Power Options is your central management console for the Windows 7 power management features.

There's a lot more going on here, however, and some things have changed since Windows Vista. On the left side of the window are a number of power management–related tasks. If you're using a mobile computer of any kind, navigate through each of these options to ensure that your system is configured exactly the way you want it. These options are interesting to desktop PC users as well. You can also quickly access the screen brightness settings directly from this window, a new addition in Windows 7.

Requiring a Password on Wakeup

The first option, "Require a password on wakeup," varies a bit according to your system's capabilities and there's a lot more going on here beyond the password option hinted at in the link. On a typical desktop PC, this power plan settings page resembles what is shown in Figure 17-9.



Figure 17-9: Desktop PCs don't have many power management options related to hardware features.

But when you view this page on a typical notebook computer, you'll see the options shown in Figure 17-10. These options are directly related to the additional hardware buttons and features included with mobile computers.



Figure 17-10: Notebook computers and other mobile PCs offer power management options related to the lid and other hardware features.

Here, you can modify how Windows 7 reacts when you press the PC's power button; press the sleep button; or, on portable computers configured with a lid-based display, when you close the lid. Each of these options has different settings for when the system is operating on battery power versus plugged in.

Complementing the "Require a password on wakeup" option described previously, this dialog also includes a single wakeup-related option that determines whether you need to log on again each time the system wakes up after being in the sleep state. By default, Windows 7 does require you to log on again to unlock the computer as a security measure. We strongly advise leaving this feature enabled, especially if you're a mobile computer user who often accesses the PC on the road.

Secret

If you do decide to change the "Require a password on wakeup option," you may very well discover that the options "Require a password (recommended)" and "Don't require a password" are grayed out and thus unavailable for editing. No problem: to change this option, click the link titled "Change settings that are currently unavailable." You'll see a small Windows shield icon next to it, indicating that this choice will trigger a security-oriented User Account Control (UAC) prompt. But, go figure, no UAC prompt actually pops up, unlike with Windows Vista. See? Windows 7 really is less annoying.

Returning to the Power Options display, the following additional options are available on the left side of the window.

Choose What the Power Buttons Do

Humorously, this option triggers the same display described previously. The top half of the dialog relates to this option.

Choose What Closing the Lid Does

This option, which is available only on portable computers with a lid, also brings you to the same dialog described previously. Why three different options all land on the same display is a question best saved for the UI wizards at Microsoft. (And, on a related note, how was this silliness carried over from Windows Vista to Windows 7 with nary a change?)

Create a Power Plan

When you click this option, you're brought to the Create a Power Plan page, a short wizard you can use to create your own power plan:

1. First, choose the preset power plan—Balanced, Power Saver, or High Performance—that you would like to base your plan on (see Figure 17-11). Give the plan a name (ideally, something more inventive than *My Custom Plan 1*, the default) and click the Next button.
2. In this step of the wizard, shown in Figure 17-12, specify when the system will dim the display, turn off the display, and put the system to sleep, on both battery power and when plugged in. (Desktop PC users will see only a single option for each, as these PCs are always plugged in. You may not see a "Dim the display" option on desktop PCs either.)

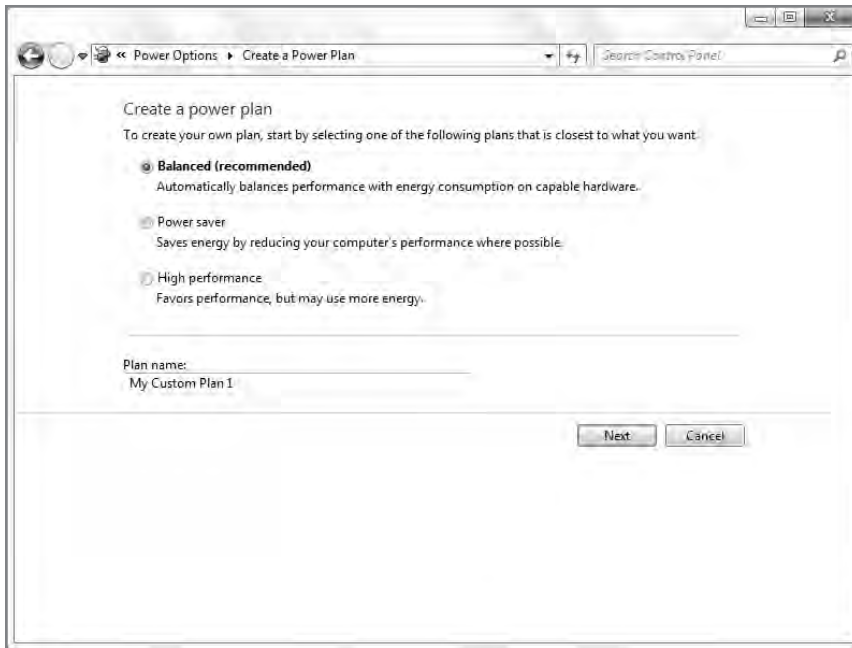


Figure 17-11: New power plans are modeled after one of the existing plans.

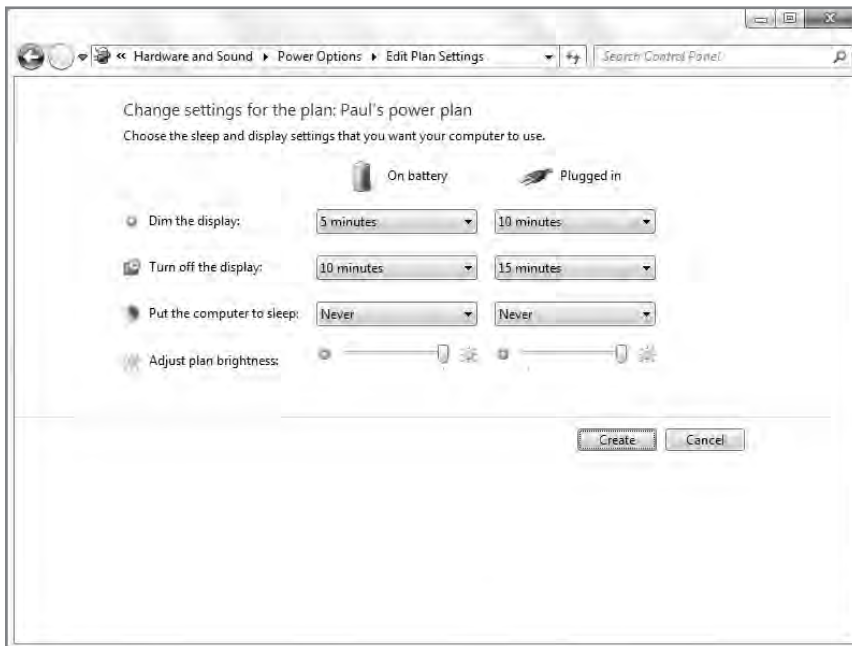


Figure 17-12: Here, you configure what happens when.

3. Click the Create button to create your plan, which will be added to the list of available plans, as shown in Figure 17-13. Annoyingly, it replaces one plan in the so-called Preferred plans list, though that plan is still available in the less impressive-sounding Additional plans section.

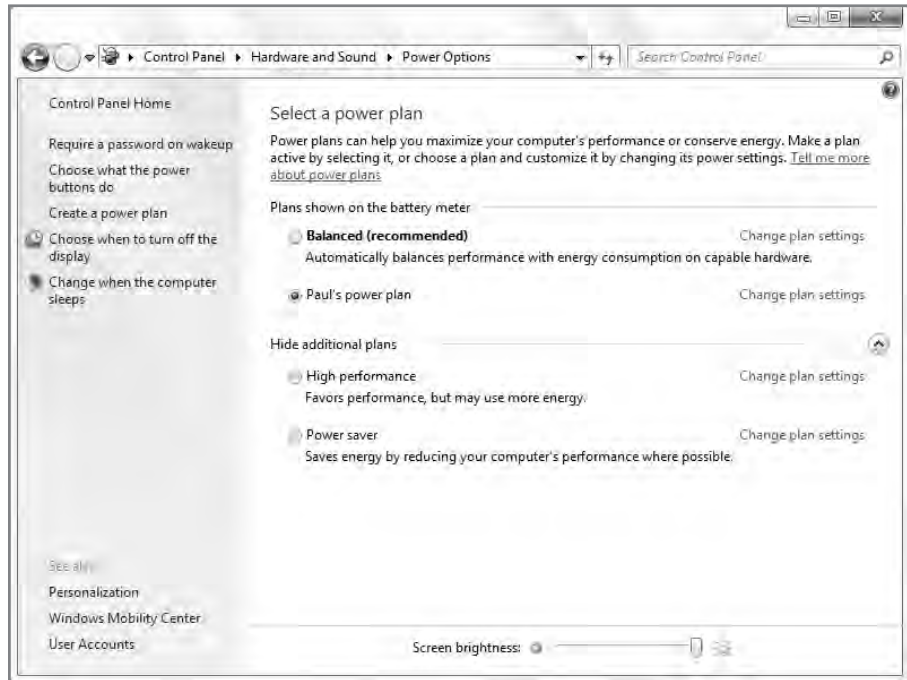


Figure 17-13: Custom power plans replace the plan on which your plan was based, but the old default plan is still available.

This is all well and good, but the short wizard you just used doesn't really provide access to all of the power management options you can configure; and isn't that the point of this exercise—to create a custom power plan that exactly matches your needs and desires?

To modify your custom plan (or an existing preset plan for that matter), click the Change plan settings link next to the plan name in question. This brings you to a dialog that resembles the second phase of the wizard just described, but with one difference: there's now a Change advanced power settings link. Click that link to modify other settings. Doing so opens the Power Options Advanced settings dialog, shown in Figure 17-14.

The Power Options Advanced settings window is, by nature, confusing. The window itself is not resizable, so it provides only a postage-stamp-size view of the many power management features you can customize. More problematic, you have to expand nodes in a tree control—arguably the worst PC user interface element of all time—to find all the options. Nonetheless, it's worth the trouble if you're serious about modifying a power plan.



Figure 17-14: Use this rather complicated dialog to handcraft your power plan using every single power management option available to Windows 7.

Here are the power management options available via this dialog:

- ♦ **Balanced/Power saver/High performance:** This setting, which is named after the power plan you're changing, lets you configure whether the system requires a password when it wakes from sleep. (Portable PCs divide this option into two sub-options: one for when the system is plugged in and one for when it's attached to a power source.) The default option is Yes for both, and you should leave them alone unless you're interested in playing Russian Roulette with private data stored on your PC.
- ♦ **Hard disk:** Use this option to configure the hard disk to wind down after a period of time to preserve power. (As with many settings, portable PCs have separate options for battery and plugged in.) On battery, you want this time to be reasonably low, maybe five minutes, but you should also configure a desktop PC or power-attached portable PC to wind down the hard drive after a short period as well, if only to conserve power consumption.
- ♦ **Desktop background settings:** This setting determines what should happen when you're using a desktop theme with multiple images (in a slide show). There are two settings, one for battery power, and one for plugged in, and two possibilities for both: Available, which leaves background image changing on, and Paused, which prevents the background from changing to save battery power.
- ♦ **Wireless Adapter Settings:** This option may seem fairly esoteric, but it can affect the performance of your wireless card (a common feature in portable PCs) and the PC. This feature is of interest only to portable PC users. By default, under most power management plans, the wireless adapter is set to run with maximum

performance. The only exception is the Power Saver plan, on battery power: in this mode, the wireless adapter is configured to run under maximum power-saving mode, which conserves power by lowering the effectiveness of the wireless radio. You can configure this option as follows: Maximum Performance, Low Power Saving, Medium Power Saving, and Maximum Power Saving. Frankly, this might be too fine-grained for most people, and we've had little success determining what effects each state really has on power management and performance overall. Given this, our recommendation is to leave this setting at its default, based on which power plan you based your own plan on.

- ◆ **Sleep:** This section supports four options: Sleep after, Allow hybrid sleep, Hibernate after, and, new to Windows 7, Allow wake timers. The first and third are straightforward, but the second and fourth options might be confusing.

Newer PCs support a new type of Sleep mode called Hybrid Sleep, which enables the machine to appear to turn off and on almost immediately, like a consumer electronics device. If you have a PC manufactured after mid-2006, it might support this feature, so experiment with enabling Hybrid Sleep, especially since it likely won't be enabled by default. If it works well, use this instead of Hibernation, as Hybrid Sleep is essentially a replacement for that older form of power management. Otherwise, you might want to enable Hibernation, which was a major power management feature in Windows XP. Hibernation is faster than turning on and off the PC, but much slower than Sleep or Hybrid Sleep. Although the PC is turned off, it preserves the state of the system so you can get up and running with your applications more quickly.

Allowing the user to configure wake timers is new to Windows 7. Wake timers are used by applications and the OS to wake an idle PC to perform certain tasks that would be impossible if the system were in Sleep mode. By default, wake timers are disabled.

- ◆ **USB settings:** Your PC can optionally turn off selected USB devices when it enters certain power management states. This can improve battery life, as USB devices, like mice, storage devices, cameras, and other devices, draw power from the PC. However, it also prevents you from using these attached devices. Suspended USB devices will wake up again once the system is plugged in to a power source.
- ◆ **Power buttons and lid:** What you see here varies according to the hardware capabilities of your PC, but you can usually draw the distinction neatly between desktop PCs and portable PCs. Desktop PCs typically see two options: Power button action and Sleep button action, whereas portable PCs have an additional option: Lid close action. Power button action determines what happens when you press the hardware On/Off switch on the PC (this can be configured separately for battery power and plugged in). Options include Do nothing, Sleep, Hibernate, and Shut Down. Lid close action behaves similarly, but refers to what happens when the lid of a portable computer is shut: you can choose between the same four options. If your PC has a dedicated Sleep button (as do many portable machines), the Sleep button action provides the same configurability, but for that particular button.
- ◆ **PCI Express:** This option should typically not be changed. On a desktop PC, it should be set to Off so that hardware expansion cards attached via the PCI Express bus are always available. On portable PCs, it is set to Maximum Power Savings or Moderate Power Savings, depending on the power plan and whether the system is running on battery power.

Secret

Windows Vista supported a fourth option here, called Start menu power button. In Windows 7, this option is not related to power management—which makes sense—and is instead available from the Start menu tab of the Taskbar and Start Menu Properties window, shown in Figure 17-15. (You can access this UI by right-clicking the Start button and choosing Properties.)

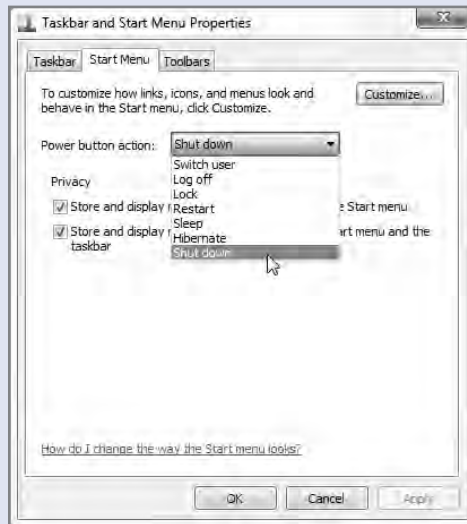


Figure 17-15: The Start menu power button is fully configurable; you just need to know where to look.

- ♦ **Processor power management:** This setting has some of the biggest impact on performance and battery life and should be carefully chosen. Here, you can fine-tune how much processor power is used under certain states. Earlier in this chapter, we described how the default power plans affect processor performance, and you should use that as a guideline. Note, however, that you will likely be disappointed with the system's performance while doing multimedia tasks if 100 percent of the processor's performance isn't available. Note that whereas Windows Vista supported the Minimum processor state and Maximum processor state options, Windows 7 adds a third, new option: System cooling policy. This option is designed for PCs with active cooling systems only and should not be modified unless you know what you're doing.
- ♦ **Display:** Here, you can specify how quickly Windows 7 dims and turns off the display, which is pretty straightforward, and configure the display brightness in both normal and dimmed modes.
- ♦ **Multimedia settings:** One of the nicest features of Windows 7 is that it makes it very easy to share media such as music, videos, and photos from PC to PC and even across the Internet. However, when you're running on battery power, media sharing can be overly resource intensive and thus exacerbate energy consumption, so you may want to curtail media sharing on battery power. Available options include

Allow the computer to sleep, Prevent idling to sleep, and Allow the computer to enter Away mode. The first two are self-explanatory, and portable computers should always be allowed to enter Sleep mode while on battery power. The final option, however, might be confusing. Away mode is a modern power management option (related to media sharing and the Windows Media Center feature) that enables background media tasks, such as Media Center recording of TV shows and media sharing, to occur in the background even while the system otherwise appears to be asleep. This mode thus provides most of the power management benefits of Sleep while still allowing media sharing to occur.

A decorative graphic consisting of three overlapping diamond shapes in shades of blue and purple, with the word "Secret" written in white text on the top diamond.

Secret

Away mode first debuted in Windows XP Media Center Edition 2005 Update Rollup 2 (UR2), the last major Media Center update before Vista shipped, but it was enhanced in Windows Vista and 7. The important thing to remember is that Away mode cannot be invoked unless this power management setting is explicitly changed to "Allow the computer to enter Away Mode." In Windows 7, Away mode is used by Windows Media Center Extenders connecting to the PC (see Chapter 15) and media sharing (see Chapter 11).

- ◆ **Battery:** This option, available only on portable PCs, determines how the system battery is configured to warn you or perform certain actions at specific times, such as when the battery is low or critically low. Options include Critical battery action (what happens when the battery life falls to a "critical" level), Low battery level (at what percentage of full the battery is considered "low"), Critical battery level (at what percentage of full the battery is considered "critical"), Low battery notification (whether the system informs you of the transition into this state), Low battery action (what happens when the battery life falls to a "low" level), and, new to Windows 7, Reserve battery level (an additional warning level between "low" and "critical," kind of like the red area on your car's gas gauge right before true Empty).
- ◆ **Third-party power management settings:** Many hardware makers have created their own advanced power management settings, which can be exposed to the user via this control panel and configured accordingly. For example, display card maker ATI has an ATI Graphics Power Settings option that helps you configure how ATI Mobility Radeon graphics products impact overall power consumption.

Choose When to Turn Off the Display

This option triggers the same dialog previously described (Edit Plan Settings).

Change When the Computer Sleeps

This option also triggers the same dialog described previously in the "Requiring a Password on Wakeup" section.

A decorative graphic consisting of three overlapping diamond shapes in shades of blue and purple, with the word "Secret" written in white text on the top diamond.

Secret

In Windows Vista, you could delete custom power plans in a straightforward manner. Oddly, this capability was removed from the Power Options control panel UI in Windows 7.

Windows Mobility Center

If you've ever owned a mobile PC, you've probably marveled (and not in a good way) at the cruddy utility applications that PC makers seem compelled to ship with their hardware. Microsoft feels your pain. In Windows 7, the software giant continued the work it started in Windows Vista toward creating a centralized management console called Windows Mobility Center for all of this functionality, and it has preloaded this dashboard with all of the utilities a mobile user could want. Best of all, PC makers are free to extend Mobility Center with their own machine-specific mobile utilities. We can't guarantee these products are any good, but at least they're easily located in this new centralized management console.

Shown in Figure 17-16, Windows Mobility Center is available only on mobile computers. You won't see it on desktop PCs.



Figure 17-16: Windows Mobility Center looks nothing like most other Windows 7 applications.

Secret

The secret keyboard shortcut WinKey+X also starts Mobility Center.

Secret

In Windows Vista, you could cause a limited version of Windows Mobility Center to appear on desktop PCs using a registry hack. That hack no longer works in Windows 7, but if we discover a way to implement such a hack, we will write about it on the book's Web site at www.winsupersite.com/book.

You start Mobility Center by finding it in the Start menu or by typing **mobility** into Start Menu Search, which is quite a bit faster.

Curiously, Windows Mobility Center does not really visually resemble any of the other applications that Microsoft bundled with Windows 7. It presents a set of mobile-related options that are arrayed in square tiles across an unadorned window that cannot be resized or formatted in any way. These options, which vary according to the capabilities of your PC, can include Brightness, Volume, Battery Status, Wireless Network, External Display, Sync Center, and Presentation Settings.

Basically, each of these tiles launches a setting that mobile PC users need fairly often, as shown in Figure 17-17. Click the icon in the Volume tile, for example, and the Sound control panel appears. Alternately, you can set or mute the system volume from directly within Mobility Center.

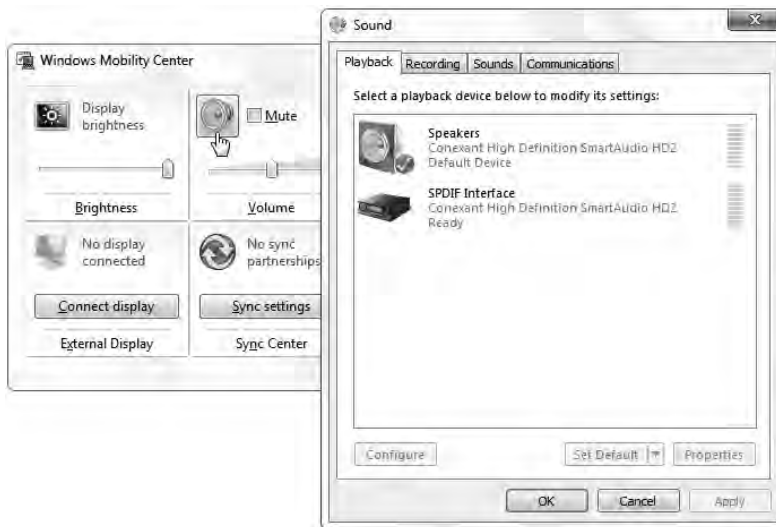


Figure 17-17: Windows Mobility Center is really just a front end to other Windows 7 functionality.

Secret

With one exception, all of the options available in Mobility Center are available elsewhere in the Windows 7 user interface. That one exception is Presentation Settings, covered in the next section.

tip

Remember that you might see additional tiles here that were installed by your PC maker.

Presentations A-Go-Go

Although not a particularly glamorous lifestyle, many mobile users cart their notebooks around the globe, set them up in an unfamiliar location, and attempt to give a presentation using Microsoft PowerPoint or a similar presentation package. Notebooks are perfect companions for such users because of their portability; but until recent versions of Windows, they weren't particularly accommodating if the presentation was conducted on battery power—thanks to various power management settings, the presentation could disappear as the display was shut down or the machine went to sleep. Windows 7 includes three major features related to giving presentations, one of which solves the problem just mentioned.

Presentation Settings

An obscure but useful feature, Presentation Settings enables you to temporarily disable your normal power management settings, ensuring that your system stays awake, with no screen dimming, no hard drive disabling, no screen saver activation, and no system notifications to interrupt you. In other words, with just a few clicks of the mouse, you can set up your mobile PC to behave exactly the way you want it to while giving a presentation.

To enable Presentation Settings, run Mobility Center as described in the previous section and click the projector icon in the Presentation Settings tile. The Presentation Settings dialog is shown in Figure 17-18.

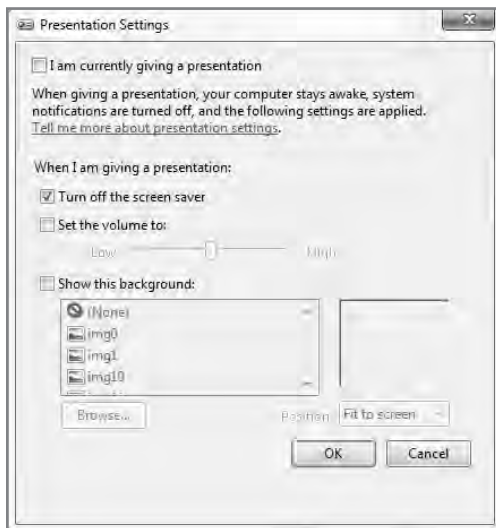


Figure 17-18: Presentation Settings is a boon to anyone who has had to struggle with Windows getting in the way of a presentation.

Select the “I am currently giving a presentation” option to enable Presentation Settings. Optionally, you can turn off the screen saver (the default), turn off the system volume, and temporarily change the desktop background. Presentation Settings also provides a handy way to configure connected displays, including network projectors.

tip

You can also enable Presentations with a single click by clicking the Turn On button in the Presentation Settings tile in Windows Mobility Center. Regardless of how you enable this feature, the Presentation Settings tile will change to read Presenting and the projector icon will change to an On state.

Using a Network Projector

If you're going to show a presentation via a modern network-based projector, Windows 7 includes a Connect to a Network Projector utility that automatically configures firewall settings and searches for nearby projectors. To run this utility, find Connect to a Network Project in Start menu ⇨ All Programs ⇨ Accessories. You can search for a projector automatically or enter the projector's IP address.

Secret

Presentation and External Display Options

New to Windows 7 is a secret feature called Presentation and External Display Options that presents yet another new type of window from which you can quickly determine which displays to use. This control panel is nice for anyone with dual displays, but it really comes into its own when you need to give a presentation.

What's so secretive about Presentation and External Display Options? For starters, there's no way to access this feature from the Windows 7 UI. Instead, you have to use the keyboard shortcut WinKey+P to enable it. When you do, you'll see the window shown in Figure 17-19.

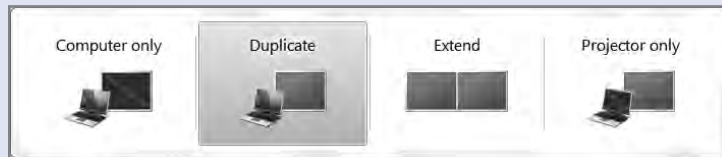


Figure 17-19: Presentation and External Display Options is a secret new feature in Windows 7.

Presentation and External Display Options lets you configure the screen(s) attached to your PC like so:

- **Computer Only:** In this case, only the first display attached to the PC is used and any external display or projector is disabled.
- **Duplicate:** Here, the display in the PC is mirrored to the projector.
- **Extend:** With this setting, the projector is used like a second display and the Windows desktop is extended between the primary display and the projector.
- **Projector Only:** With this setting, the PC's internal display is disabled and the PC desktop is outputted to the projector.

Other Mobile Features

In addition to the major new mobility-related features mentioned previously, Windows 7 ships with a host of other technologies that benefit mobile workers. This section highlights some of these features and explains how you can take advantage of them.

Offline Files and Folders

In Windows XP, Microsoft introduced a feature called Offline Files and Folders that enables mobile users to mark network-based files and folders so that they will be cached (stored) locally, using space on the mobile computer's hard drive. When the mobile PC is connected to the network, the local and remote versions of the files and folders are synchronized so that they are always current. When users work away from the network—which can be a corporate network based on Active Directory or just a simple wireless home network—they can access these remote resources even when in a disconnected state, just as if they were connected.

Offline Files and Folders is a wonderful idea, and it's been made even better in Windows 7. It works almost exactly like it does in Windows Vista, as you'll see here, using Delta Sync technology, first developed by Microsoft's Windows Server team, to speed synchronization. Delta Sync works on the subfile level: if a user changes part of a document, for example, only the changed parts of the document need to be synced to the server. Previously, the entire document would need to be synchronized. This bit of software wizardry is far more efficient than bulk file copies, although we can't really understand how it works under the hood.

To set up Offline Files and Folders for the first time, use the Network Explorer to navigate to a location on your network that contains files or folders you'd like to cache locally. Then, right-click the items you'd like to cache and choose Always available offline. When you do so, the Always Available Offline dialog is displayed (shown in Figure 17-20) and you can synchronize the content to your hard drive.

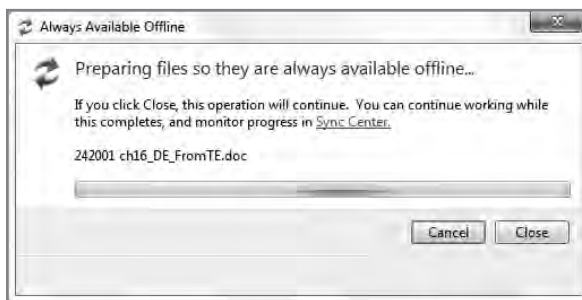


Figure 17-20: You can configure network-based data to be available even when you're not connected to the network.

When the synchronization is complete, you'll see a small sync icon overlay appear on top of the lower-left corner of the folder or file you just synced. This icon overlay indicates that the item is available offline.

tip

To remove this association, right-click again and uncheck **Always Available Offline**.

In Windows XP, Offline Files and Folders were managed via the Folder Options window. In Windows Vista and Windows 7, you manage these relationships in the Sync Center, which is shown in Figure 17-21. The Sync Center is used to manage relationships between Windows and portable devices (such as PDAs and smartphones), as well as offline files and folders. It does not, however, manage relationships with network-based media devices, such as other PCs, Xbox 360s, and Media Center Extenders. No, we don't know why.

Regardless of how many network-based files and folders you make available offline, you will see only one item, Offline Files, in the main Sync Center display. If you double-click this item, you can dive into the partnership detail and see separate items for each network share that contains shared files and folders. You can also click the Sync button to manually synchronize with the server, or click Schedule to view and manage the sync schedule. The schedule is managed via a simple wizard-based application that enables you to schedule synchronization at specific times or in response to certain events, such as when you log on or lock Windows, or when your computer is idle.

If you take your system on the road and modify network-based files and folders, they will be synchronized with the server when you return. Should there be any conflicts—such as what can occur when a file is edited both on the server and in your local cache—you are given the opportunity to rectify the conflict in a variety of ways, most of which are nondestructive.

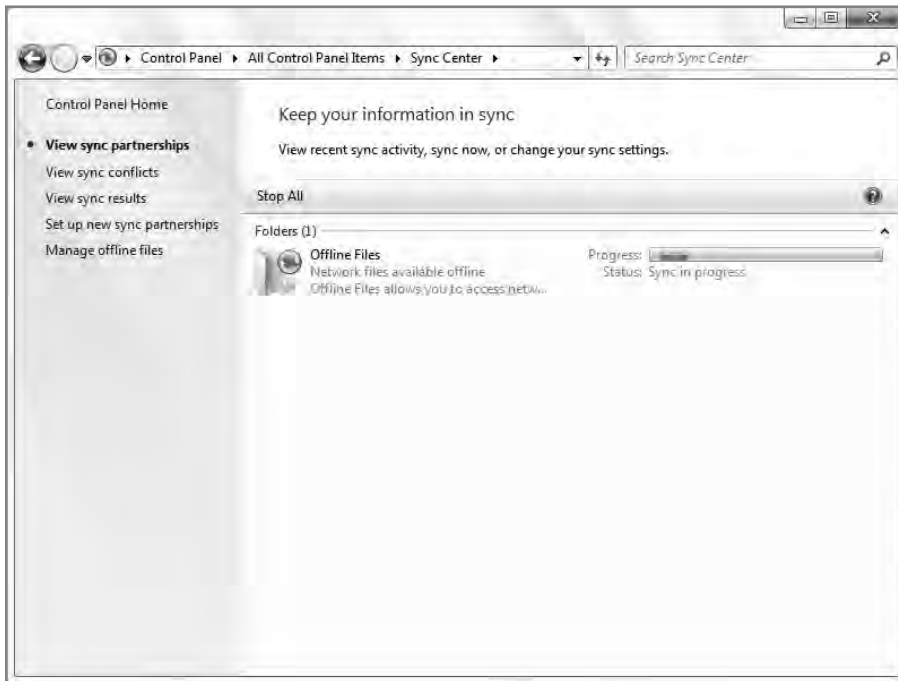


Figure 17-21: Sync Center is an almost one-stop shop for Windows 7's relationships with other devices and network-based files and folders.

Windows SideShow

A new generation of Tablet PCs and notebook computers—and, Microsoft says, even other devices such as TV sets and remote controls—includes a new kind of auxiliary display that enables you to access certain information on the computer even when it's asleep. These auxiliary displays are initially most interesting on mobile computers, and they are available in color and black-and-white versions.

Here's how they work: auxiliary displays access a feature in Windows 7 called SideShow to display small gadgets, similar to Windows Gadgets (see Chapter 4), that provide limited access to various applications and services in Windows. You'll see a Windows Media Player gadget that enables you to play music in your Windows Media Player media library, and an e-mail gadget that helps you read e-mail. All of these gadgets work when the laptop's lid is closed, they require very little power, and they come on instantly. Although Microsoft ships a number of gadgets of its own, you can expect third parties to come up with their own gadgets as well, especially those companies that make and sell SideShow-equipped devices.

The bad news about Windows SideShow is that you need very specific hardware to access this feature. You can't add on an auxiliary display, at least not elegantly, to a mobile PC. Therefore, you need to get a brand-new mobile device with an integrated auxiliary display in order to experience it for yourself. At the time of this writing, years after the feature first shipped in Windows Vista, auxiliary displays are still very rare.

Improved Support for Tablet PC Hardware

If you're using a Tablet PC computer (a notebook computer that typically comes in one of two form factors: a convertible laptop or a true slate-type tablet) or a notebook computer with Tablet PC-like hardware (such as a touch screen, digitizer screen with stylus, or a compatible external writing pad), Windows 7 includes a wide range of functionality related to handwriting recognition, pen-based input, and the like. We discuss these features in the next chapter, which is devoted entirely to Tablet PCs and other computers that have Tablet-like hardware, such as Ultra-Mobile PCs (UMPCs) and the like.

Secret

SyncToy is another other mobility-related Microsoft tool that you may be interested in. According to Microsoft, this fascinating little application helps you quickly and easily copy, move, rename, and delete files between folders and computers. And while that's a very generic description, the beauty of this tool is that it enables you to synchronize the contents of a folder on one computer with the contents of a folder on another computer, so it's a great synchronization tool for people who usually use a desktop PC at home or the office but have to frequently travel with a portable PC as well. You can find out more at www.microsoft.com/downloads/. Just search for **SyncToy**.

Secret

Windows Vista included a peer-to-peer (P2P) collaborative application called Windows Meeting Space that has since been discontinued in Windows 7. Apparently, hardly anyone knew it existed, and those that did know about it had no idea what it was for.

Using Windows 7 with a Netbook

When Microsoft shipped Windows Vista in late 2006, it ushered in an era of next-generation computing that brought with it heady new hardware requirements, rendering certain older PCs immediately obsolete. Microsoft's rationale for this decision was a good one: by taking half-steps in the past, it had held back Windows from a technical perspective in order to include the widest possible audience. With Vista, Microsoft was making a break with the past, and users were expected to upgrade to newer, more powerful PCs in order to take advantage of the new features.

One might debate this strategy indefinitely, but what no one saw coming, not even Microsoft, was the rise of a new class of computers called *netbooks*. (A typical example is shown in Figure 17-22.)



Figure 17-22: Netbooks, like this Lenovo IdeaPad, provide a truly mobile experience in a tiny form factor.

These tiny computers look like miniature versions of regular laptops, with the same clamshell form factor and small screens, keyboards, and trackpads. But there's just one problem with netbooks, from Microsoft's perspective: they're too underpowered to run Windows Vista. And because Windows Vista is relatively expensive compared to the price of a typical netbook—\$300 to \$400—PC makers originally opted to bypass Windows entirely and install a nearly free version of Linux on the machines instead.

Cue panic in Redmond. Microsoft reacted to the netbook phenomenon by extending the life cycle of Windows XP, Vista's predecessor. It also lowered the price of XP, dramatically, for PC makers that opted to use that system. This pricing tactic worked: in early 2008, over 80 percent of netbooks shipped with some version of Linux instead of Windows. But a year later, Windows was included with 96 percent of all netbooks sold in the U.S. and over 90 percent worldwide.

Success, right? Well, not yet. Microsoft still needed to address the fact that customers were purchasing a relatively ancient version of its flagship OS and skipping Windows Vista, so it architected Windows 7, Vista's successor, so that it would run well on the low-end hardware used by netbooks and a growing generation of low-performance PCs. The

result is stunning: Windows 7 runs just as well on netbooks as it does on other mobile computers. But because these netbooks are relatively restrictive compared to full-size and full-featured laptops, we want to address a few of the issues you might run into if you go the netbook route with Windows 7.

- ◆ **Platform limitations.** Through much of 2009, most netbooks ran on the same basic hardware platform, and featured a dual-core 1.6 GHz Intel Atom processor, 1GB of RAM, a low-end hard drive of some kind, and an 8- to 10-inch wide-screen display. While these systems will be augmented over time with new models based on faster Atom chips (including multi-core and 64-bit versions) or chips from rival companies like NVIDIA, the overall netbook experience won't change: these devices offer cramped quarters and low-end performance compared to other PCs. For that reason, most people currently use netbooks as secondary PCs, but as the lines blur between netbooks and low-end laptops, that may no longer be the case going forward.

Most of today's netbooks feature a resolution of 1024 × 600, which is sort of an odd-ball resolution that can prove problematic with certain applications and windows. Even the Windows Anytime Upgrade window, shown in Figure 17-23, doesn't quite fit, causing the buttons of the bottom of the window to be hidden.

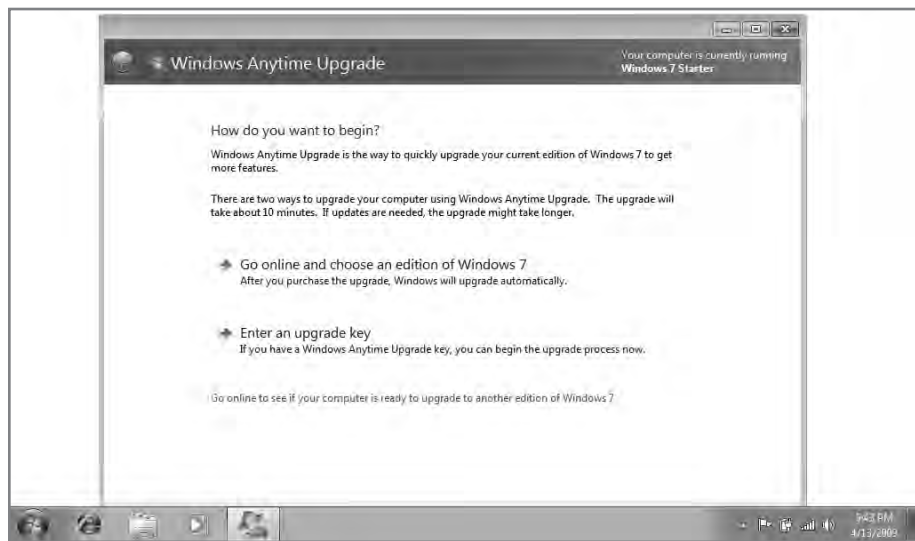


Figure 17-23: Constrained netbook screens will make it hard to use certain applications and windows.

- ◆ **Windows 7 limitations.** If you tried to save money by getting your netbook with Windows 7 Starter, you may regret it: this low-end version of Windows doesn't support the Aero glass user interface and can only run three applications at a time. See Chapter 1 for our buying advice. But you can also do things like reduce the size of the taskbar and change the desktop and Explorer icons to smaller versions in order to take advantage of the screen real estate you do have. See Chapter 6 for our personalization advice.

While Windows 7 does run just fine on netbooks, you won't be able to play 3D games, edit video, or perform other high-end tasks effectively (or at all) on these systems. Be sure you know what you're getting into.

- ♦ **Go solid state.** If you can, get a netbook with a solid-state disk (SSD) instead of a traditional hard disk. These drives are more expensive but they perform much better and are more battery friendly.

However you do it, we think you'll be quite satisfied with the Windows 7 experience on a netbook computer. And of course as these low-end devices get more powerful over time, the experience is going to get even better. If you're in the market for a netbook, skip Windows XP and go straight to Windows 7. You won't regret it.

Summary

There's no doubt about it: Windows 7 is the most capable and feature-packed operating system yet created for mobile computers. Thanks to features such as Windows Mobility Center, Presentation Settings, network projector support, Presentation and External Display Options, and integrated power management; Windows 7 will keep any mobile computer humming along nicely with a wide range of new and improved functionality. And if you're lucky enough to be using a low-cost netbook or an innovative Tablet PC or Ultra-Mobile PC (UMPC), your mobility options are even more impressive. You'll take a look at Windows 7's unique support for these tablet-based PC types in the next chapter.

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