

Instructions on how to improve battery life for laptops

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TipsMake.com - Every laptop user wants their laptop battery life to be longer, but few know how to do it. Although laptop manufacturers have had a lot of groundbreaking improvements over the past, it helps increase product performance (and thus increase battery life), but even the most modern machines not satisfied with the user. Another thing users can hardly recognize is that the system can be loaded with peripherals and *bloatware* that they never use but consume a lot of resources and reduce battery life.

In this article, we will look at ways to recover those resources and maximize battery life. Some steps require editing in the notebook's *UEFI* or *BIOS* , while other steps are simply editing the software.

Causes to reduce battery life

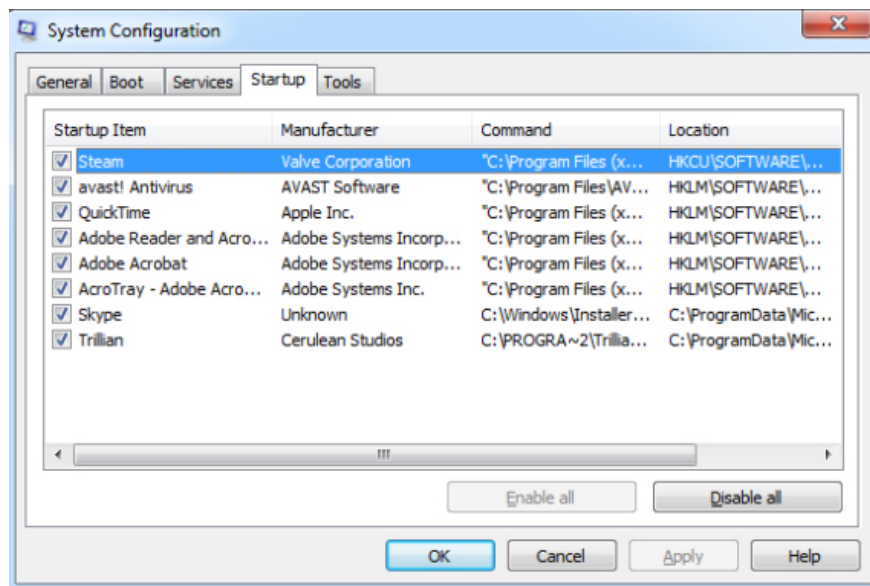
Before going into details, see why notebook batteries are fast. From the *CPU* to the *trackpad* , all components in the laptop consume electricity. Power consumption is different between components and also increases erratic reduction in response to environmental conditions such as temperature and system load. The more components or peripherals on a laptop and the more work you do with it, the faster the battery will run out. Every program, *driver* or *service* has loads, background operations are less or less reducing battery life. Therefore, limiting the number of peripheral devices and minimizing the load on the notebook will extend the battery life.

Keeping your laptop cool, reducing screen brightness and activating *Hibernate* for your system are simple ways to save battery life; But in this tutorial we will focus on editing hardware and software.

Editing hardware and software

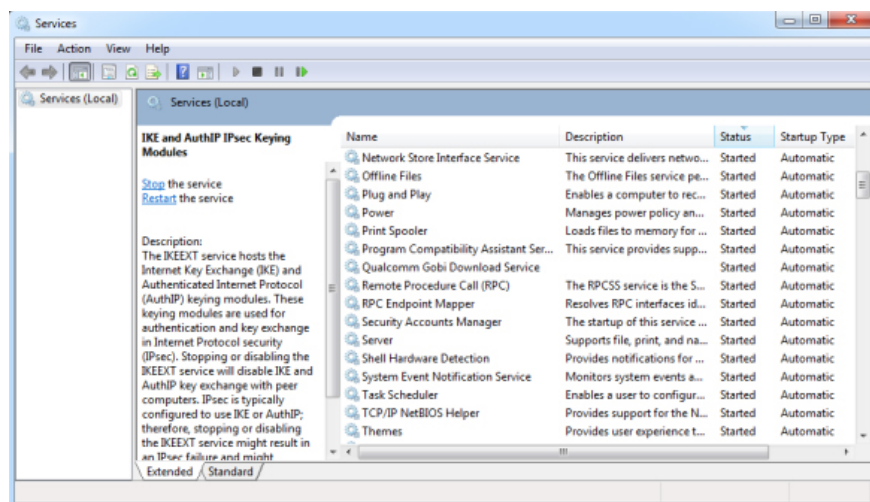
Users can change some hardware and software to extend laptop battery life. However, some changes may negatively affect laptop performance so be very careful.

For hardware, turn off or disconnect unused components and peripherals. For software, turn off or remove unnecessary *services* and applications (but consuming resources) will help minimize power consumption. In addition, regularly update the *driver* because sometimes updates allow you to optimize the system or remove any *process* , such as video encoding / decoding process in the processor. consume a lot of resources in the CPU.



Since every program or *service* loaded in Windows consumes system resources, you should turn off unused programs or *services*. Let's start by launching the **MSCONFIG** system configuration utility. Click **Start**, type **MSCONFIG** in *Search* and press **Enter**. On the results window, click the Startup tab to see all programs that start with Windows. Turn off unused programs right after starting the computer.

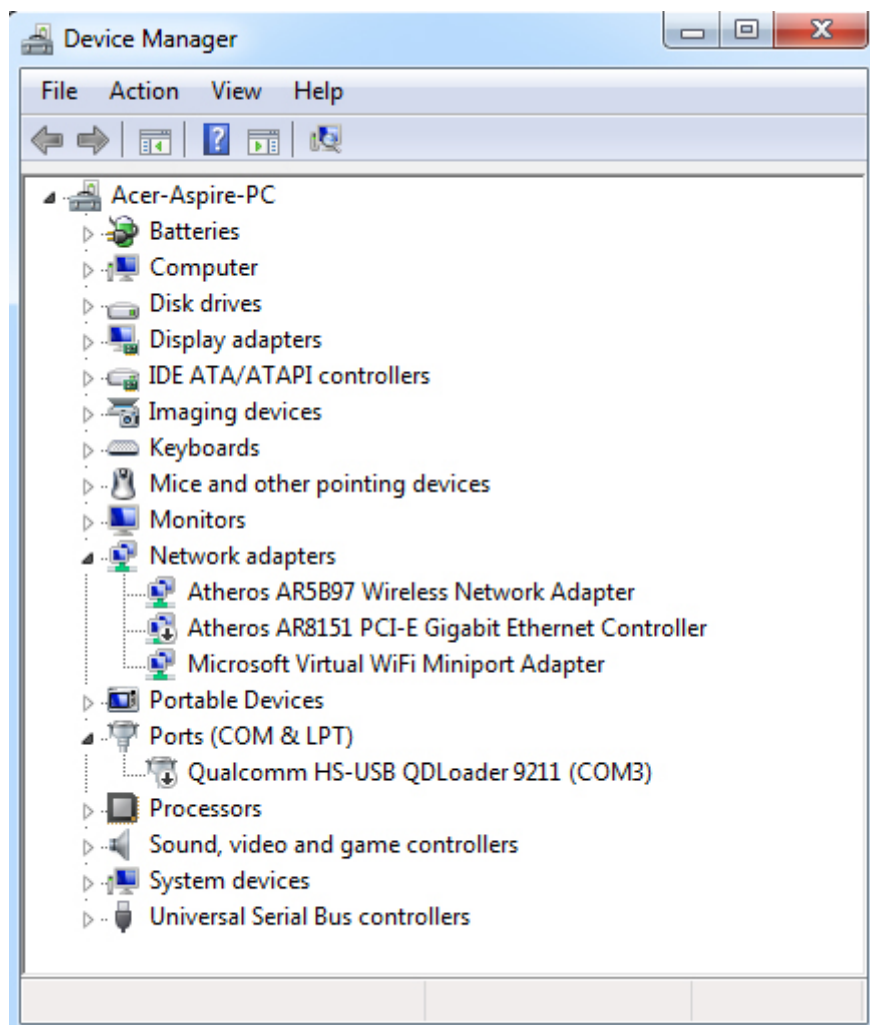
Leaving applications that frequently start with Windows can be handy, but if they are not so important, users should turn off their autostart and only start manually when needed.



There are also some Windows *services* that users can turn off to conserve resources. See the services that are starting automatically on your laptop by clicking **Start**, typing **SERVICES.MSC** in the *Search* section and pressing **Enter**. The service management utility will open, you will see a list of services installed on the system.

Most of the *services* listed in the management utility are important for operating system operation and you should not touch them. But if you look carefully, you can see that a few *services* can be turned off safely. Consider and learn about the *service* description (look on the Internet and research it carefully) before turning it off.

To turn off a *service* in the management utility, double-click it in the list and in the window that appears, change the *startup type* to *Manual* on the drop-down menu.



Turning off unused hardware or peripherals is another good way to conserve resources and maximize battery life. If a *Bluetooth* integrated notebook, a mobile modem or a plug-in ethernet port is never used, turning off the hardware will reduce power consumption and block their drivers each time Windows starts.

You can also turn off peripherals on your laptop via the system *BIOS* , *UEFI* or through *device manager* (*Device manager*) . The best method is to use the system *BIOS*, but many laptops do not provide the necessary options to do this. To see if the laptop has this function, turn it off and turn it on again. Before Windows starts loading, press the *BIOS* or *UEFI* access key (usually **DEL** or **F2**). Once in the *BIOS* , find the **Integrated Peripherals** menu (if available) and see if there are hardware you want to turn off in the list. If yes, select and turn it off.

If the system *BIOS* does not provide the necessary mechanisms to turn off unused hardware, we can turn them off via the *Windows device manager* (*Windows Device manager*). However, turning off the hardware in **Device Manager** does not have to power it off, but only the hardware *driver* that does not load with the *OS* . Although not the ideal method, blocking the *driver* loading process saves memory as well as prevents the hardware from starting.

To turn off hardware in **Device manager** , click **Start** , type *Device Manager* in the *Search* section, and press **Enter** . On the *Device Manager* window, find the appropriate hardware, right-click and select *Disable* from the menu.

Another fast and easy hardware change also saves significant energy by reducing notebook screen brightness. Reducing the screen brightness to the lowest level is still easy to read and comfortable for the eyes.

Testing and results

To evaluate battery life improvements, use *Futuremark* 's **PowerMark** utility before and after making modifications. We tested on an *Acer Aspire Core i3* laptop for three different configurations: unchanged, with maximum screen brightness and all software hardware enabled; The configuration changes with software modifications such as turning off the items and the startup service is unnecessary and ultimately changes in both software and hardware and the screen brightness drops to 75%.

After testing, we received very positive results. For the first configuration, the measured battery life is 3 hours 16 minutes. In the second configuration, the battery life is longer but not significant (3 hours 28 minutes). Unexpectedly only in the third configuration, when the battery life is longer than one hour compared to the first configuration (4 hours 19 minutes). Thus, turning off unused hardware and peripherals is the most effective way to save battery power.

	Unmodified laptop (100% screen brightness, all peripherals enabled)	Modified laptop (software tweaks alone)	Modified laptop (software and hardware tweaks, 75% screen brightness)
Battery life	3:16	3:28	4:19
Times are listed in hours:minutes.			

Besides extending battery life, reasonable changes to hardware and software also help to reduce boot time and release more resources on CPU and memory.

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