# Maximizing Battery Life and Lifespan

#### Update to the latest software.

Apple software updates often include advanced energy-saving technologies, so always make sure your device is using the latest version of iOS, OS X, or watchOS.

#### Avoid extreme ambient temperatures.

Your device is designed to perform well in a wide range of ambient temperatures, with 62° to 72° F (16° to 22° C) as the ideal comfort zone. It’s especially important to avoid exposing your device to ambient temperatures higher than 95° F (35° C), which can permanently damage battery capacity. That is, your battery won’t power your device as long on a given charge. Charging the device in high ambient temperatures can damage it further. Even storing a battery in a hot environment can damage it irreversibly. When using your device in a very cold environment, you may notice a decrease in battery life, but this condition is temporary. Once the battery’s temperature returns to its normal operating range, its performance will return to normal as well.

iPhone, iPad, iPod, and Apple Watch work best at 32° to 95° F (0° to 35° C) ambient temperatures. Storage temperature: -4° to 113° F (-20° to 45° C).

MacBook works best at 50° to 95° F (10° to 35° C) ambient temperatures. Storage temperature: -4° to 113° F (-20° to 45° C).

#### Remove certain cases during charging.

Charging your device when it’s inside certain styles of cases may generate excess heat, which can affect battery capacity. If you notice that your device gets hot when you charge it, take it out of its case first. For Apple Watch Edition models, make sure the cover of the magnetic charging case is off.

#### Store it half-charged when you store it long term.

If you want to store your device long term, two key factors will affect the overall health of your battery: the environmental temperature and the percentage of charge on the battery when it’s powered down for storage. Therefore, we recommend the following:

* Do not fully charge or fully discharge your device’s battery — charge it to around 50%. If you store a device when its battery is fully discharged, the battery could fall into a deep discharge state, which renders it incapable of holding a charge. Conversely, if you store it fully charged for an extended period of time, the battery may lose some capacity, leading to shorter battery life.
* Power down the device to avoid additional battery use.
* Place your device in a cool, moisture-free environment that’s less than 90° F (32° C).
* If you plan to store your device for longer than six months, charge it to 50% every six months.

Depending on how long you store your device, it may be in a low-battery state when you remove it from long-term storage. After it’s removed from storage, it may require 20 minutes of charging with the original adapter before you can use it.

### Tips for iPhone, iPad, and iPod touch latest software.

Always make sure your device is using the latest version of iOS.

If you are using iOS 5 or later, see if you need an update. Go to Settings > General > Software Update.

If an update is available, you can plug your device into a power source and update wirelessly or plug it into your computer and update with the latest version of iTunes.

#### Optimize your settings.

There are two simple ways you can preserve battery life — no matter how you use your device: adjust your screen brightness and use Wi-Fi.

Dim the screen or turn on Auto-Brightness to extend battery life.

* To dim, swipe up from the bottom of any screen to open Control Center and drag the Brightness slider to the left.
* Auto-Brightness adjusts your screen to lighting conditions automatically. To activate it, go to Settings > Display & Brightness and set Auto-Brightness to On.

#### Wifi versus cellular

When you use your device to access data, a Wi-Fi connection uses less power than a cellular network — so keep Wi-Fi on at all times. There are two ways to turn on Wi-Fi:

* Swipe up to open Control Center, tap the Wi-Fi icon, and log in to a Wi-Fi network.
* Go to Settings > Wi-Fi to access a Wi-Fi network.

#### Enable Low Power Mode.

Introduced with iOS 9, Low Power Mode is an easy way to extend the battery life of your iPhone when it starts to get low. Your iPhone lets you know when your battery level goes down to 20%, and again at 10%, and lets you turn on Low Power Mode with one tap. Or you can enable it by going to Settings > Battery. Low Power Mode reduces display brightness, optimizes device performance, and minimizes system animations. Apps including Mail will not download content in the background, and features like AirDrop, iCloud sync, and Continuity will be disabled. You can still use key functions like making and receiving phone calls, email, and messages, accessing the Internet, and more. And when your phone charges up again, Low Power Mode automatically switches off.

#### View Battery Usage information

iOS 9 is designed to be the most battery-efficient iOS ever. And it gives you more precise ways to manage your device’s battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.

Here are the messages you may see listed below the apps you’ve been using:

**Background Activity.** This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.

* To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and set the switch to Off.
* If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Mail, Contacts, Calendars > Fetch New Data.

**Location and Background Location.** This indicates that the app is using location services.

* You can optimize your battery life by turning off Location Services for the app. Turn off in Settings > Privacy > Location Services.
* In Location Services, you can see each app listed with its permission setting. Apps that recently used location services have an indicator next to the on/off switch.

**Home & Lock Screen.** This indicates that the Home screen or Lock screen was displayed on your device. For example, the display was awakened by pressing the Home button or by a notification.

* If an app frequently wakes your display with notifications, you can turn off push notifications for the app in Settings > Notifications. Tap App and set Allow Notifications to Off.

**No Cell Coverage and Low Signal.** This indicates that either you are in a poor cell coverage area and your iOS device is searching for a better signal or that you’ve used your device in low-signal conditions, which has affected your battery life.

* You can optimize your battery life by turning on Airplane mode. Swipe up to open Control Center and tap the Airplane mode icon. Note that you cannot make or receive calls while in Airplane mode.

#### Plug in and power on your computer to charge your device.

Make sure your computer is plugged in and powered on when you’re using it to charge your iOS device via USB. If your device is connected to a computer that’s turned off or is in sleep or standby mode, your device’s battery may drain. Note that iPhone 3G and iPhone 3GS cannot be charged with a FireWire power adapter or FireWire-based car charger.