

## Reducing Ping for Improved Online Performance

"Ping," named after the sound a sonar burst makes when it seeks out objects in the water, is Internet slang for sending a packet of data from a source to a destination. This can be used to determine if the source is there and receiving data, but is also commonly used to test data transfer speeds. The latter is especially common with online gaming, file sharing, and video streaming services.

The higher your ping, the more time is taken for data to get from the source to you. So, if you're playing an online game, you may experience "lag" -- choppiness and delays that put you at a disadvantage because the necessary information is not reaching your computer fast enough. With video streaming, this can result in your video pausing or slowing down. As such, the lower your ping rate, the better performance you will experience.

The software you are running may let you know what your ping rate is, but reduced performance is also a clear indication you're not running at peak efficiency.

So, how can you reduce your ping to enjoy the best performance possible? There are several things to look at. We'll present the standard options in order of those most likely to help you to those least likely to do so.

### Option A) Restart all Hardware

When it comes to hardware (physical equipment, such as your computer), in many instances the longer it is on, the slower it gets. In simple terms, data that is no longer needed can begin to clog up your hardware's memory. With old data taking up memory, there is less available memory to process new data. This slows things down, so you need to flush out the memory periodically. The easiest way to do this is often to restart the hardware.

**Step 1:** Identify the hardware being used for your online activities. This could include your computer or gaming console (e.g., Xbox or Playstation), your cable modem, and/or a wireless router.

**Step 2:** Turn off each device. Wait 10 seconds. Turn them back on.

**Step 3:** If you are still experiencing slow connectivity, move on to another option.

### Option B) Location, Location, Location

You may not think so, but both your location and that of the data source matters. The greater the distance between both, the worse the ping rate. If your game or streaming service gives you the option to select different servers (data sources), select the one nearest you. Choosing one farther away may present you with different options, but expect the ping to be worse.

Location is also important if you are using a wireless connection. The closer your wireless computer, tablet, gaming console, etc. is to the wireless router broadcasting the Internet signal, and the fewer walls and other obstacles in the way, the better the ping rate shall be.

Being nearby with a clear line of sight between your wireless hardware and the broadcasting router is best. Placing your wireless router up high on a wall shelf or something similar so its signal will clear furniture and the like is often ideal.

## Option C) Turn Off Unnecessary Software

High ping is often caused by running too much simultaneous software that is trying to access the Internet through the same connection or is using up your system's memory.

Think of it like too many people trying to walk through the same door at the same time.

If you don't absolutely need that software running while performing whatever task you need an efficient ping for, it's just slowing you down.

### Software that often increases ping rates include:

- **Antivirus:** Antivirus software, especially automatic aspects such as Internet scans and auto-update features, not only use up your computer's resources, but often that of your Internet access. You should only turn this off to improve your ping rate if you absolutely trust what you will be accessing not to send you any data that may carry a virus, malware, etc. Do not, for example, turn off your antivirus to improve video streaming if you are streaming the video from an untrusted source, or if you are automatically downloading email at the same time.
- **Email:** Email software that is set to automatically scan and download new email uses your Internet connection. The problem worsens if you receive any email with attachments.
- **File Sharing:** Any software that is meant to share files typically maintains a constant connection to the Internet to keep an eye open for updates even if you aren't actively uploading or downloading files at the moment. This includes software like Dropbox.
- **Firewalls:** ensure whatever game or data streaming service you are experiencing lag for is listed amongst your exclusions (meaning the programs it permits access to and from your system.) How to do this varies by firewall software. Typically, you need to open your firewall software (from your program menu or the "Firewall" of Windows' Control Panel.)
  1. For Windows' Firewall, click on the Windows icon to the left of your menu bar.
  2. Select "Control Panel."
  3. Select "Firewall."
  4. You can choose to turn the firewall off entirely with the "Turn Windows Firewall on or off" option, or you can add an exception, meaning the firewall software will ignore the specified program.
  5. To do so, select "Allow a program or feature through Windows Firewall" or "Allow an app or feature through Windows Firewall," depending upon the version your system runs.
  6. Look through the list of programs for the one you want to add an exception for. If it is not there, click "Change Settings." If it is there, ensure the checkboxes beside its name and under "Private" and "Public" are all checked.
  7. If the program is not listed, click "Allow another program."
  8. If the program is listed, highlight it with a click and then click "Add." If the program is not listed, click "Browse." Navigate through your computer's folders until you find where it is located (often somewhere in "C:\Program Files.") Select its .exe file and then click "Open." Next, select "Add."
  9. This program is now an exception for your firewall, meaning the firewall will not impede its operation. Repeat steps 6 to 8 if you wish to add more exceptions.

10. Click "Ok" when you are finished adding exceptions.

- **Voice Over Protocol (VOIP):** These are programs that allow your computer to access phone lines via the Internet. Even if you are not currently talking via this software, it may run background operations that use your Internet connection, or you could receive an incoming call.
- **Online Storefronts:** Services such as the iStore function of iTunes run in the background even if you are not currently accessing them. They push through updates and advertisements, scan your purchases to ensure they are current, and so on.
- **Web Browser:** Even when you are not actively using them, web browsers such as Internet Explorer, Firefox, and Chrome continue to make use of the Internet connection to keep updated and the like. If you have a website open that updates advertisements, this too will worsen your ping.
- **Other Communications Programs (e.g., Skype, chat services):** Even if not in use, most such software maintains open Internet access while idling. It does so to perform functions like letting you know when people come online (or to let them know when you are), eating up resources and increasing ping.
- **Resource Intensive Software:** Even if something isn't accessing the Internet, it can cause a slow ping on your end rather than as the data travels online. This is because this software is using valuable processor resources and memory. Programs such as Photoshop, other games, and even Word can slow things down enough to notice.

**Step 1:** Close down the software. Typically, there is an "exit" or "quit" function, depending on the software used. If in doubt, look for the "x" in the window's upper right corner to quit the software, or try Alt + F4.

Ensure the software is not simply closed or minimized while still running in the background. You can do this by looking at the icons of running software in your menu bar (by default, the bottom right in Windows.) If you identify unnecessary background software you can close without causing problems, you need to turn it off.

**Step 2:** Right click on the background software icon. A menu of options should pop-up, potentially including "disable," "quit," or "exit." If selecting any of these gives you the option to only turn it off for a period of time, choose a duration longer than you expect to be playing games or streaming data. Alternatively, choose the option that allows you to turn it off until you restart your hardware again.

**Step 3:** Forcing a program to turn off may be necessary if you cannot otherwise figure out how to shut it down. Advanced users may use Control + Alt + Delete and then select "Task Manager" to close additional programs, especially if they will not turn off using the standard means.

**Important:** Do *NOT* do this unless you are very familiar with Task Manager and know what the listed programs do. Undertaking the following without knowing what you are doing can have catastrophic results.

1. Hit the Control, ALT, and Delete keys simultaneously.
2. Select the "Process" tab
3. Right click on any process (such as software) you want to shut down.
4. Select "End Task." This turns off the software immediately rather than going through the usual shutdown process for it. Depending upon the software, this can have detrimental repercussions the next time the software is used.

## Option D: Reduce Users/Devices

As with running too much software that is using your Internet connection at the same time, multiple devices and users sharing a connection can result in a slower ping. Turn off all unnecessary smartphones, computers, gaming consoles, etc. that are trying to use the same Internet connection (via wireless or otherwise.) This means your Internet connection's ability to transfer data is not split between multiple devices at an elevated ping for each.

## **Option E: Reduce Quality**

Sometimes toning back on the presented quality of what you are doing will help because you are not trying to access as much data. For example, if you are playing a video game online, reducing the graphics quality or screen resolution may help. By doing so, the images being displayed are not as detailed and thus not as large, speaking in terms of the amount of data being sent.

Similarly, if the option is available, reducing the bitrate on streaming music or the resolution on streaming may result in an improved ping.

## **Option F: Keep it Clean**

Dirty hardware can lead to overheating, and overheating hardware can cause speed problems. Ensure your hardware is located in a well-ventilated area or use a fan to blow away excess heat if you are desperate. As hardware gets hotter, it may begin to work harder to get the job done, which can slow it down.

When cleaning your hardware, start by vacuuming or brushing off any fan ports that are meant to expel heat from within the machine. If need be, use cotton swabs to get between the fan cage's bars to get rid of any tenacious dirt and dust.

Do not put water or any other liquid on a cloth or cotton swab while cleaning your computer or other electrical hardware.

You should also consider opening your system and cleaning the inside (but don't void any warranties by doing so!)

To do so:

1. Unplug the hardware from the power and all other components. Move it to a static-free location (e.g., a countertop or workbench where you are standing a wood, concrete, or ceramic floor.) Ideally, use a grounding clip to prevent you from conducting static electricity into your hardware, which could damage it.
2. Remove the screws keeping the case in place. A computer is usually intended to be open, so you may find hand screws along the back that allow you access to one side, or the case may come off as a single piece.
3. Use a can of compressed air to blow away most of the dirt from the hardware, including all fans. In a pinch, you can blow the dust away, but this is not as effective and risks you inhaling the dirt and getting spit on the hardware's sensitive surfaces. Again, if the dirt is stubborn, use a dry cloth or cotton swab to gently dab and flick away dirt. Do not drag the cloth across any surfaces.
4. Heat sinks (small fans and corrugated blocks of metal meant to help bleed away heat) on your processor can be difficult. I suggest only using compressed air and cotton swabs to clean them.

## **Option G: Get Help from Software**

There are various software options available that may be able to help you squeeze every last bit of Internet speed out of your system and Internet connection. They are too numerous to list here, and each works differently so you will need to find one that suits your purposes and install it according to the provided instructions. Such software is not typically necessary for a typical Internet user, though, which is why it is the second-to-last option.

## **Option H: Admit Defeat and Get a Better Connection or Hardware**

Sometimes you simply cannot get around the fact that your Internet connection is slow. Not because of anything you are doing, but simply because you do not have a fast Internet connection. If you find this is the case -- nothing else you are doing seems to improve your ping -- then contact your Internet provider and ask them about improved options. You may even need to go to a new provider if they don't offer anything better.

Similarly, there may be nothing wrong with your connection, but you may need to get new hardware. A new Internet router may be called for if yours is out of date. Wireless technology especially is frequently changing and improving, finding ways to provide a stronger, more reliable and faster means of broadcasting your Internet signal.

If in doubt, look at the model number on the back of your Internet modem or wireless router and see how many newer models have since been released. Compare the newer hardware options with what you own to determine if some upgrading may improve your ping.

Upgrading is the absolute last resort, however. Try all other options for improving your ping before you begin shopping around for anything new.