

IP ADDRESSES

Randomly generating IP Addresses

<https://www.ipvoid.com/random-ip>

<https://www.pcmag.com/how-to/how-to-set-up-a-static-ip-address>


<https://www.iplookuptools.com/random-ip-generator>

A. Changing your Public IP address

1. Find your device's current IP address. In order to know whether or not your IP address change is ultimately successful, you need to know your device's current IP address.
2. **Turn off your device.** This should be the computer, phone, or tablet whose IP address you would like to alter.
3. **Unplug your modem and router from the Internet and power sources.** This will essentially reset your Wi-Fi.
 - If your modem and router are comprised in the same unit, simply unplug the entire unit.
4. **Wait for five minutes.** This should be enough time for your Internet Service Provider (ISP) to provide your network with a new public IP address.
5. **Plug the modem back in.** It will begin lighting up. You'll want each light on the face of the modem to be on or flashing before you continue.
6. **Reattach the router.** After a couple of moments, the router's light will begin flashing, then turn constant.
7. **Turn on your device.** It should reconnect to the Internet once it finishes rebooting, though you may need to manually select a network and connect to it.
8. **Open an internet browser.** You'll use the Internet browser of your choosing to view your new IP address.
9. **Type "What is my IP address" into the browser.** If the IP address listed here is different than the one you saw earlier, you have successfully changed your device's IP address.
 - If you don't see a different IP address, you may need to keep your router off for a longer period of time. Try turning it off for an entire night and then re-enabling it in the morning.

B. Changing private IP address in Windows

1. Open the Start menu

- You can click Windows logo in the bottom-left corner of the screen or press the  Win key.
 - If you're using Windows 8, hover your mouse in the top-right corner of the screen and then click the magnifying glass icon.

2. Type "Command Prompt" into Start. Doing so will bring up a list of search results in the Start window.

3. Right-click the Command Prompt icon



. It resembles a black box. Right-clicking it invokes a drop-down menu.

4. Click **Run as administrator**. This is near the bottom of the drop-down menu.

5. Click **Yes** when prompted. Doing so will confirm that you wish to open Command Prompt

6. Type in **ipconfig** and press **↵ Enter**. This command displays your current IP information.

7. **Look at your current IP address.** It's to the right of the "IPv4" value; the number here corresponds to your specific device on a local network.

8. Type in **ipconfig /release** and press **↵ Enter**. Doing so releases your IP address.

9. Type in **ipconfig /renew** and press **↵ Enter**. This command assigns a new IP address to your device.

10. **Look at your new IP address.** It will be to the right of the "IPv4" value. If the number here is different than it was before releasing and renewing your IP address, your device's local IP address has successfully been changed.

- This process will only work if your computer is on an Ethernet connection with other devices. Trying to change your public IP address with this method won't work.

More information: <https://www.wikihow.com/Acquire-a-New-IP-Address>

<https://www.pcmag.com/how-to/how-to-set-up-a-static-ip-address>: **How to Set Up a Static IP Address**

CCTV WORKING PRINCIPLES

An analog surveillance system will work once you synchronize your DVD recorder to a standard **analog camera**. The video recorder will then receive the video from the camera, process it using its neural engine, and save it in the system in a compressed form.

These **security camera systems** let you transfer your footage over the internet on cloud-based systems for viewing later.

To sum up, the digital video recorder is solely responsible for compressing, converting, streaming, and storing all the video in this case. One can also re-program the built-in functions in their **cameras** such as motion detection, schedules, and notifications using the recorder menu.

In an **IP camera** configuration, the camera can also record, convert, process, and stream the video over the internet.

This video can be streamed directly on a personal computer or a mobile-based API without the intervention of a DVR device.

Day/night vision CCTVs

These cameras have wide apertures so that they can operate easily even in poor lighting conditions. They can record clear footage round the clock and have extra sensitive image chips to help them with this.

Infrared CCTV cameras

These **wireless security cameras** are designed to operate in pitch black conditions and use infrared technology which allows for more light to get inside the lenses giving you clear footage in the dark.

Network/IP CCTV cameras

These cameras compress the bandwidth of the recorded footage and stream it in real-time across the internet. The footage is stored on a network video recorder/ cloud storage system so that it is accessible from anywhere in the world.

Systems with recording capabilities-A DVR is added to this system along with an optical drive that stores and allocates all the footage to different folders.

How to Turn an Old Android Smartphone into a CCTV Camera

Step 1: [Get a security camera app running on your old phone\(s\)](#)

Most apps offer many of the same features, such as local streaming, cloud streaming, recording and storing footage locally or remotely, and motion detection and alerts.

One of the best options for setting up your phone as a security camera is [Alfred](#). It's cross-platform, so it doesn't matter if your old phone was an Android phone or iPhone. And the same goes for your new phone.

Alfred is free to use and gives you a remote view of your live feed, motion detection with alerts, free cloud storage, a two-way audio feed and use of both the front and rear cameras. To unlock additional features, like higher-resolution viewing and recording, zoom capabilities, ad removal and 30-day cloud storage, you can upgrade to Alfred Premium.

- Download Alfred ([Android](#), [iOS](#)) on both your old and new phones or any tablets you want to use.
- On the new phone, swipe through the introduction and tap **Start**. Select **Viewer** and tap **Next**.
- Once you get to the sign-in page, click **Sign in with Google** (a Google account is required) and sign in with your Google account credentials.
- On the old phone, repeat the same steps, but instead of selecting **Viewer**, select **Camera**. And make sure to sign in to the same Google account.

Once both phones are signed in to Alfred, you're pretty much done with the setup. Alfred has simplified the camera options to only include a few settings. On [iOS](#), you can only enable motion detection, choose between the front and rear cameras and enable or disable audio. If you're using an Android device, you have those options and you can also enable continuous focus, have Alfred automatically reopen if the phone reboots, set a resolution and enable a passcode lock.

From your new phone, you can change a few more settings, such as turning notifications on or off, setting a camera or viewer name, adding other people to your **Trust Circle** (granting other people access to your video feeds), removing a camera, checking how many times a camera has disconnected, setting motion detection sensitivity and enabling a low-light filter on cameras.

Step 2: Choose a spot to position your camera

If you have multiple old phones lying around, you can set up multiple cameras for fairly robust video coverage

Step 3: Mount and power your new security camera(s)

To broaden the field of view, consider buying a wide-angle lens for your phone, something that can be purchased for between \$5 and \$20 online.

SENSORS

optical sensor detects the interruption of a beam of light, often invisible infrared light. For example, to count boxes on a conveyor belt, an emitter, typically an infrared LED shines a focused beam of light across the belt. When the beam is reflected by an object passing by on the belt, the detector sees the returned light and closes a circuit and this sends a pulse to the counter module, updating the count of items going by.

The operating principle is to transmit and receive light in an optical sensor. The object to be detected reflects or blocks the light beam sent by an emitting diode. The deflection or reflection of the light beam is evaluated depending on the type of device.

This makes it possible to find the item independently of the material it is made of, wood, metal, plastic, or other. The special device also allows for the detection of a transparent object or different colors or contrasting variations.

Retro-Reflective Sensors- In this system, both the transmitter and the receiver are in the same house. The ray of light emitted through a reflector is directed back to the receiver. Disruption of the light beam initiates the switching operation. It doesn't matter where the disruption occurs.

The [PIR](#) is a motion sensor that you might have seen when you enter a restroom or an office space, usually having a white cover. They are small, low power, easy to use, and inexpensive. The way it senses movement is by sensing the change in temperature between the background and a warm body.

PIRs have a pyroelectric sensor that detects levels of infrared radiation – everything emits some low-level radiation, but a human body emits a good amount of heat. The PIR has two slots made of a special material that is sensitive to infrared. When the sensor senses a differential change between the two slots, this causes a pulse, which is what it detects as “movement”.