

This presentation includes QR codes

Each QR code provides a quick way to access a web page, a PDF document, a phone/tablet app you can install, an email you can send, or other valuable info.

By scanning the QR code seen on your screen, you can access the info immediately, without typing a lengthy URL, ***and without typos***. The longer the URL, the greater the advantage of QR code scanning over typing.

The camera app in Android 10/11/12 and iOS 11-15 can be configured to scan QR codes. The camera app will scan the QR code when it sees the QR code.

Get out your phone or tablet

Soon, you will have an opportunity to practice scanning a QR code.

But first ...

If you have no idea what version of the OS is used on your phone or tablet, I will show you how to find out

You will see how to make sure your phone or tablet Camera app is configured to scan QR codes.

Confirm your device OS version

Android: Settings → About phone/tablet → Software Information

Find the words “Android version”

The magic version number is **10**

Apple: Settings → Your name → Device name

Find the word “Version”

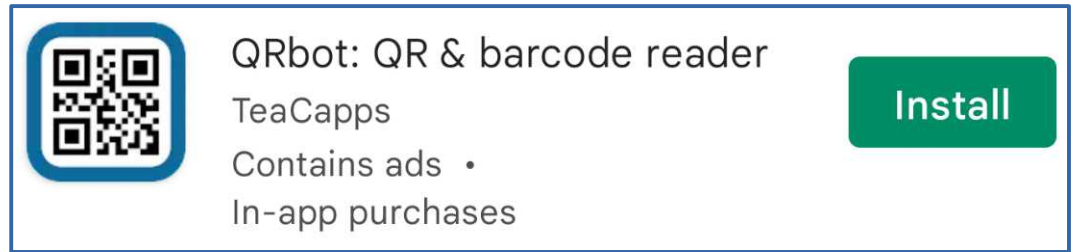
The magic version number is **11**

Using an earlier OS on your phone?

ANDROID: If your version number is less than 10, then open the Play Store on your phone/tablet.

In the search field at the top, type **QRbot**. Tap the Search button on the keyboard.

The search results show the **QRbot app**:



Tap the **Install** button. Start the QRbot app. Advance through the Intro screens.

Stop when you see this button:



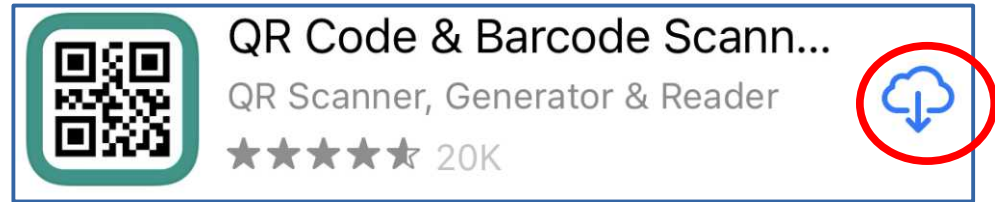
Using an earlier OS on your phone?

Apple: Open the App Store.

If the top of the screen does not display the Search field, then tap the Search icon in the lower right corner.

In the Search field, type **QRbot**.

Scroll through the search results to find this app:



Tap the **Install** button to install the app.

On your iPhone/iPad, the app name is **QRbot**. Run the app. Advance through the intro screens. Stop at the request for permission to use the camera.

Check Android 10/11/12 Camera app configuration

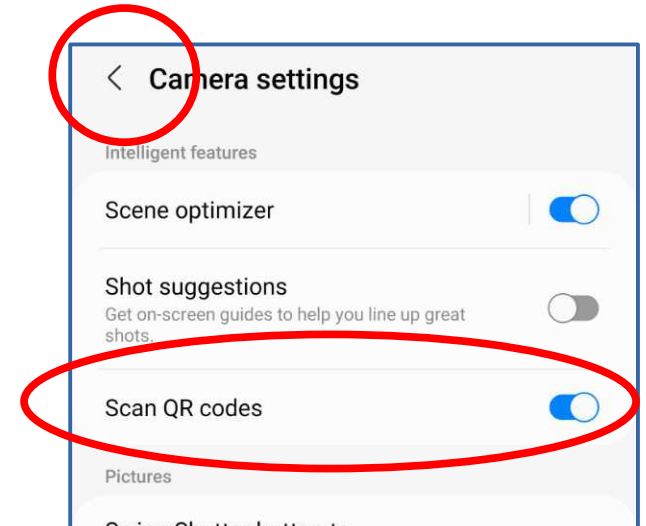
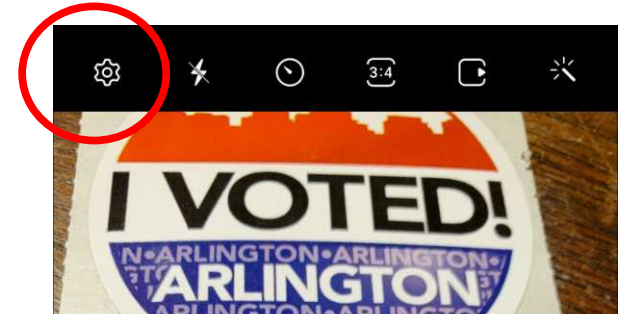
Open the **Camera app**.

Tap the **Gear button** in the left corner.

The Camera Settings screen opens.

On the Camera Settings screen,
make sure the **Scan QR code
switch is turned ON**.

Tap the upper left corner to return to
the Camera app main screen.



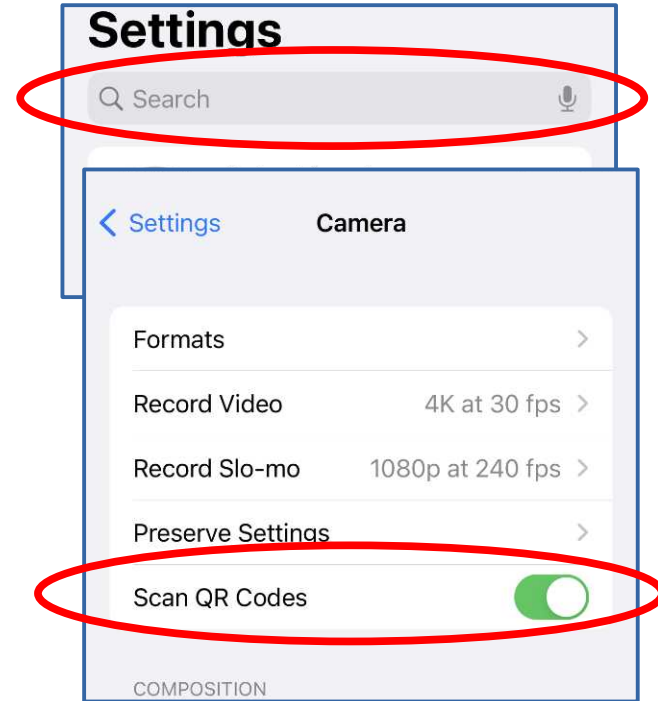
Check iOS 15 Camera app configuration

Open the **Settings app**. If the Search field is not visible, then scroll down and up the Settings app screen slightly.

In the Search field, type **Camera**.

In the search results, tap the **Camera app icon** (not the Privacy icon). The Camera app settings screen opens.

In the Camera app settings screen, make sure the **Scan QR codes switch is ON**.



Prepare to scan a QR code

Android 10/11/12 users: Camera app should be ready to take a photo.

Android QRbot users: tap the **Scan Using the Camera** button

Apple iOS 11-5 users: open the **Camera** app

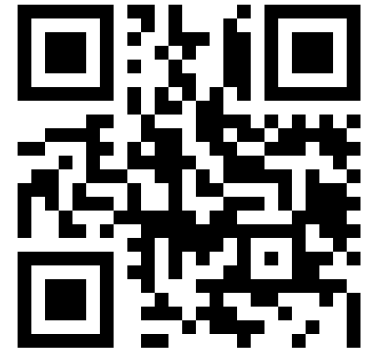
Apple QRbot users: tap OK to grant permission to access the camera.

Scan this QR code for practice

This QR code contains the URL of my user group, the Potomac Area Technology and Computer Society (PATACS):
www.patacs.org.

Point your camera at this QR code.

The app should recognize and scan the QR code.



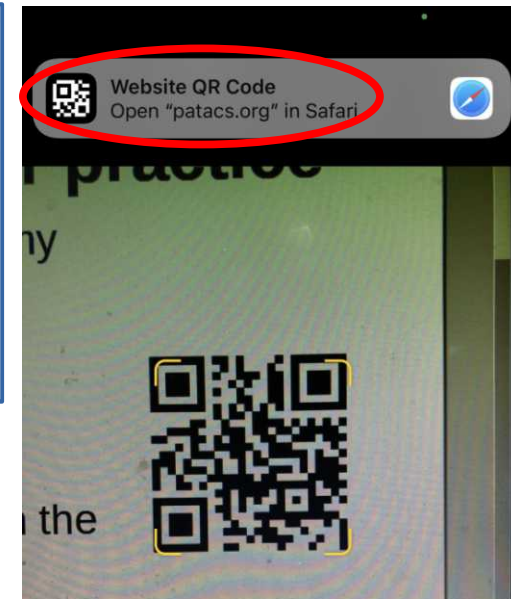
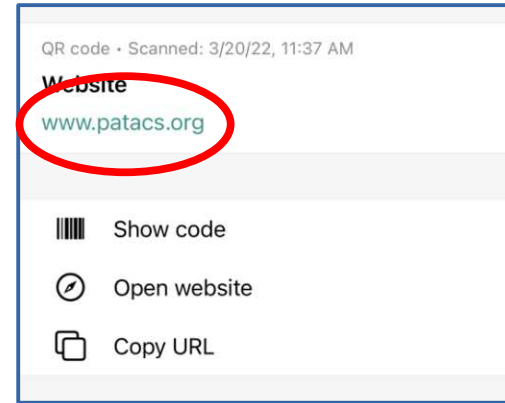
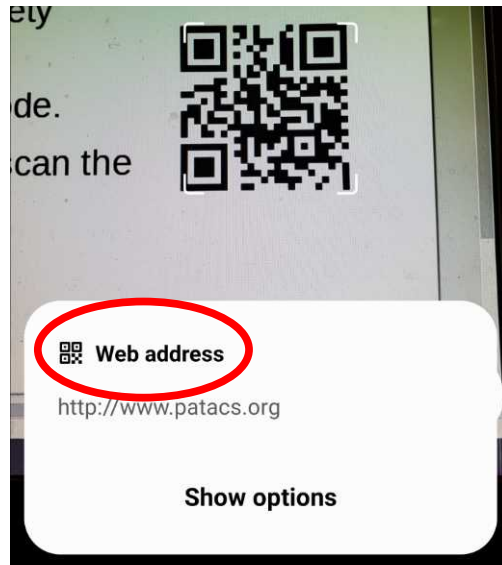
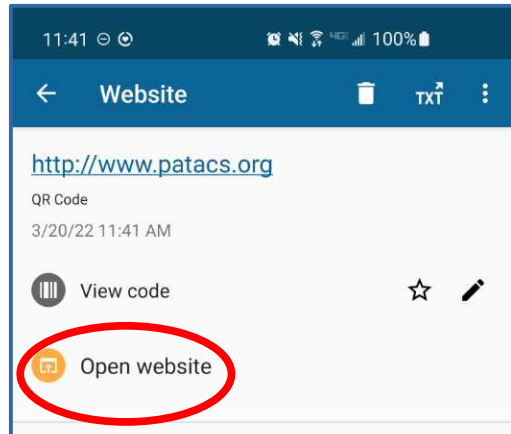
Next step: access the web page

Android
QRbot

Android
Camera

Apple
QRbot

Apple
Camera



Other QR code types

Aside from web page URLs, QR codes can contain:

A **vCard** (a Contacts record) which inserts the contact info as a new record in your Contacts app.

An **email** (addressee, subject line, and text body) which opens your email app so you can send the email.

A **WiFi login** (including WiFi name and password) which connects your device to that WiFi.

There are many other types also.

New Verizon Wireless (VZW) policy

- In early January 2022, VZW introduced a new policy tracking **all your uses of apps and web pages** on your VZW phones and tablets
- This policy is now **imposed by default** on your VZW phones and tablets.
- VZW claims the benefit for you is to more precisely customize offers (meaning ads) from VZW.
- There are ways to **OPT OUT** of the new VZW policy.
- Read this **Wired Magazine** article:
www.wired.com/story/verizon-user-privacy-settings/

Scan the QR code



Complete Robocall Defense

Presented by John Krout for
Naples Technology User Group
March 17, 2022



AGENDA

- Scale of the Robocall problem
- How robocalls impact YOU
- Goals of Robocall Defense
- Past methods to deter robocalls
- Why DoNotCall.gov and Blacklists do not work anymore
- Use your Contacts as a Whitelist via Do Not Disturb on your phone
- How to prevent robocall voicemails

SCALE OF THE ROBOCALL PROBLEM

ROBOCALLS ARE A PERVASIVE PROBLEM

- The estimated robocall volume in March 2019 was **5.2 billion**, also expressed as 5,200,000,000 or $5.2 * 10^9$.
- This was reported by the Washington Post in April 2019.
- March included 2.6 million seconds, so **the robocall rate per second** was about **2,000**.
- Compare that to “a sucker born every minute”.

ROBOCALLS SEEK YOUR MONEY

The FBI produces an annual **Internet Crime Complaint (IC3) Report**. CNN.com reported on 10/27/2019 that, according to the IC3 Report for calendar year **2018**:

- In 2018, **26,379 people** reported falling for **phishing**, meaning attempts to convince you (falsely) that the caller has a legit need for your SSN, DOB, account ID and password, et cetera.
- Those people lost nearly **\$50 million** to phishing, about \$1,900 on average per person.

ROBOCALLS SEEK YOUR MONEY

I downloaded the **FBI 2020** report from:

- https://www.ic3.gov/Media/PDF/AnnualReport/2020_IC3Report.pdf
- Phishing Incident count for 2020: **241,342**
vs 26,379 in 2018
- Total Phishing dollar volume of losses
for 2020: **\$54,241,075**, about **\$224** per person,
vs < \$50 million in 2018

Scan
the
QR
code



ROBOCALL IMPACTS ON YOU

Robocall Impacts on a phone user (meaning YOU)

- Robocalls ring your phone with Caller ID from a number that is usually either Unknown or unfamiliar to you.
- The displayed number may be in your own area code and exchange, falsely suggesting that a neighbor is calling.
- The displayed number could be your OWN PHONE NUMBER.
- Robocall voicemails may frequently clog your Voicemail inbox to its limit, so people you want to hear from cannot leave a voicemail for you.

HOW ROBOCALLERS TAKE YOUR MONEY

- Robocallers often demand an urgent reply.
- Robocallers falsely suggest they from the government or your bank, asking to “confirm” your SSN, DOB, and bank account number. They may refer to your SSN as your “Social”.
- They use the info you provide to take money from your bank account, IRS refund, and more.
- They open store credit accounts in your name to buy expensive goods, never pay, and ruin your credit score.

Goals of Robocall Defense

- Prevent robocalls from ringing your phone
- Prevent robocalls from leaving voicemail for you.
- Convince Robocall systems not to call your number again.
- You will know the jargon and can convince your family and friends that you are an expert.

**PAST METHODS
TO DETER
ROBOCALLS**

What is Telezapper?

Telezapper is a 1990s commercial product for landlines, intended to prevent robocallers from disrupting your day or evening.

For every incoming call, it played the famous **3 tones, know as Special Information Tones**, indicating that your line is disconnected.

Telezapper is still available, ***and still works.***



What is DoNotCall.gov?

This web site, created by the **US Federal Trade Commission (FTC)**, allows US consumers to identify themselves and their phone numbers.

If you choose to do that, then any **cold call**, from a business having no prior business relationship with the call recipient (you), subjects the cold caller to a fine of **\$11,000 *per call***.

The FTC relies on the call recipient (you) to obtain the caller's Caller ID or the return number stated by the caller on an answering machine, and provide that info to the FTC.

It worked for a few years.

What is a Blacklist?

- A Blacklist is a list of Caller IDs known to be used by robocall systems.
- For a while, this strategy worked to eliminate unwanted live calls.
- Services such as Verizon Wireless Call Filter, YouMail and NomoRobo block calls originating from blacklisted numbers.
- However, robocalls worked out a way to **evade the blacklist**.

**Why
DoNotCall.gov
and blacklists
do not work
anymore**

Robocallers now evade DoNotCall.gov and other US law enforcement

Three evasion methods:

- 1. Offshore locations**, outside of US legal jurisdiction
- 2. Spoofing**, which sends an incorrect Caller ID
- 3. Entering the phone network through Voice over IP**
(the Internet)

What is Spoofing?

Spoofing is a technique that robocallers use to remain anonymous and untraceable. So The FTC cannot find them.

The result is the phone number displayed by Caller ID is ***not the number from which the robocaller system calls.***

This capability is built into the telephone company switching system servers. It had a benign business purpose when introduced in the 1960s.

But it also has no security. Anyone with sufficient info, including you, can use that switching system server feature.

Some of the spoofed numbers are actual real phone number belonging to others.

Web sites enable *anyone* to spoof their own Caller ID



Spoofting might be an amusing prank, but I do not recommend using the sites

The spoofing Web sites require you to provide the real number you call from, and the number of the call recipient.

The known phone numbers collected by the site from its users can be **sold to robocallers**.

How Robocall systems evade Blacklists

- Robocall systems now change their spoofed Caller ID constantly.
- Blacklists cannot keep up.
- Sometimes, a robocall to say 1,000 numbers will literally use 1,000 different spoofed Caller IDs, a different one for each call.

Notice that Telezapper still works

- Telezapper cannot be attached to a smart phone.
- But its *technique* can be used on smart phones
- And it does still work on landlines

SMART PHONE DO NOT DISTURB CONFIGURATION

A **Whitelist** strategy to prevent
robocalls from ringing your smart phone

Summary of the configuration

- Your smart phone Settings app has a **Do Not Disturb On/Off Switch**, so you can turn off Do Not Disturb easily when you need to do so. A typical reason to do so is when you expect a call from a business or individual who is not in your Contacts.
- Your smart phone allows you to **set a Schedule** for Do Not Disturb. I set start 10:00 PM and end 9:59 PM, effectively 24/7.
- The **advantage of a schedule** is:
If you do turn off Do Not Disturb manually, using the switch, and forget to turn it on later, then your smart phone will turn on Do Not Disturb ***automatically at the next start time.***

Summary of the configuration

- This is a **Pure Whitelist** strategy. That means your phone will ring *only* for calls from numbers in your Contacts.
- Think of the entire range of possible callers as falling into three groups: **Contacts, Unwanted robocalls, and other calls.**
- A **Pure Blacklist** strategy excludes known robocall numbers, but allows unknown robocalls and other calls. ***No blacklist is complete.*** I used the Blacklist strategy for about six months via the Verizon Call Filter app. It blocked maybe 50% of the robocalls.

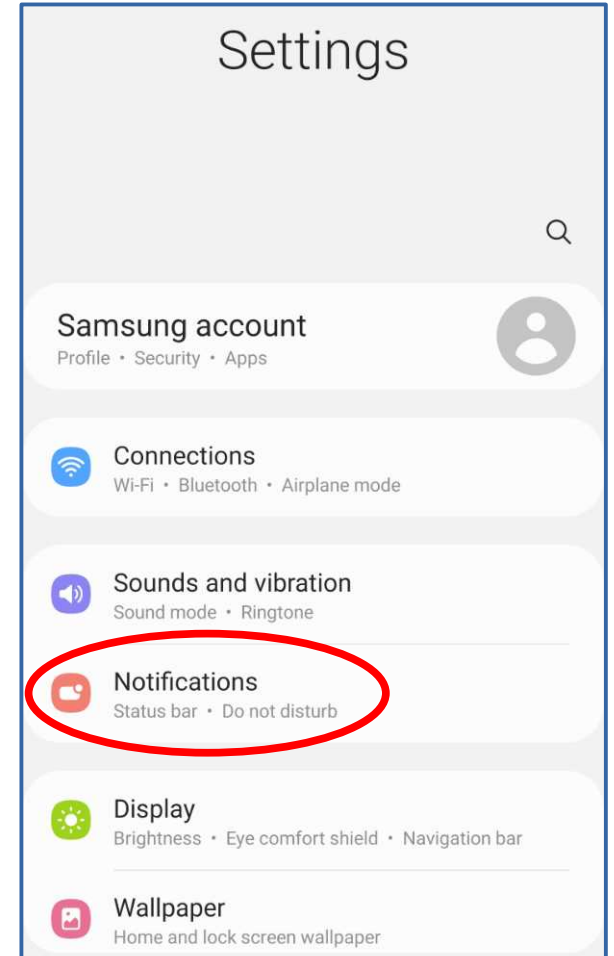
Limits of the Whitelist approach

- Some people find that a robocall system uses **their own number** as the Caller ID.
- This is an extreme and easily recognized example of spoofing.
- Since I have my own number in Contacts, such a spoof would ring my phone.
- I took a cat to the vet. Hours later, I realized the vet was ***not in Contacts*** and was going to call me. To permit that call to ring, I turned off **Do Not Disturb**.

Whitelist Configuration for Android phones

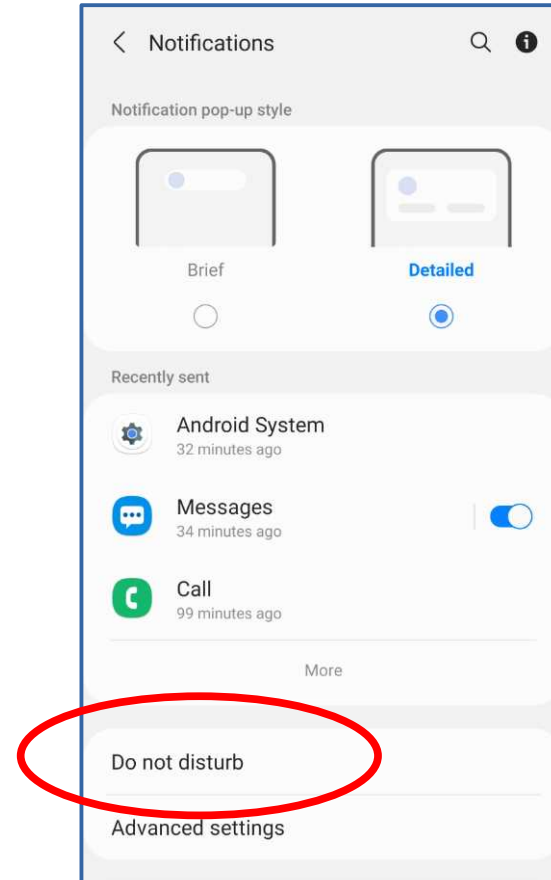
The Android 11/12 technique

- Open the Settings app
- Tap **Notifications**.
- The **Notifications screen** opens.



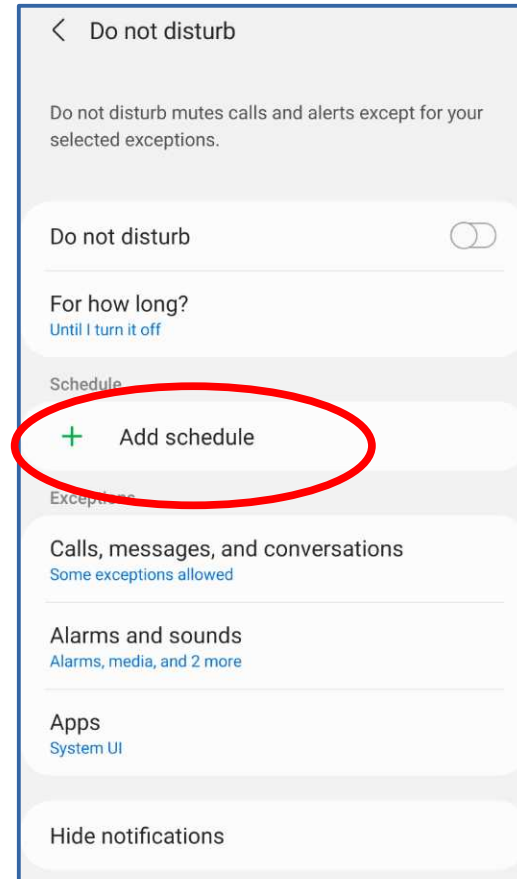
The Android 11/12 technique

- On the Notifications screen, scroll down to **Do Not Disturb**, and tap that item.
- The **Do Not Disturb** screen appears.



The Android 11/12 technique

- In the Do Not Disturb screen, tap the label **Add Schedule**.
- The **New Schedule** screen opens.



The Android 11/12 technique

In the **New Schedule screen**, you can type a Schedule Name, select days of the week, and specify a start and end time for each day.

Default start and end times are 10 PM to 7 AM. The default days of the week is the entire week.

< Schedule

Name

Every day

S M T W T F S

Start time
10:00 PM

End time
7:00 AM next day

Cancel Save

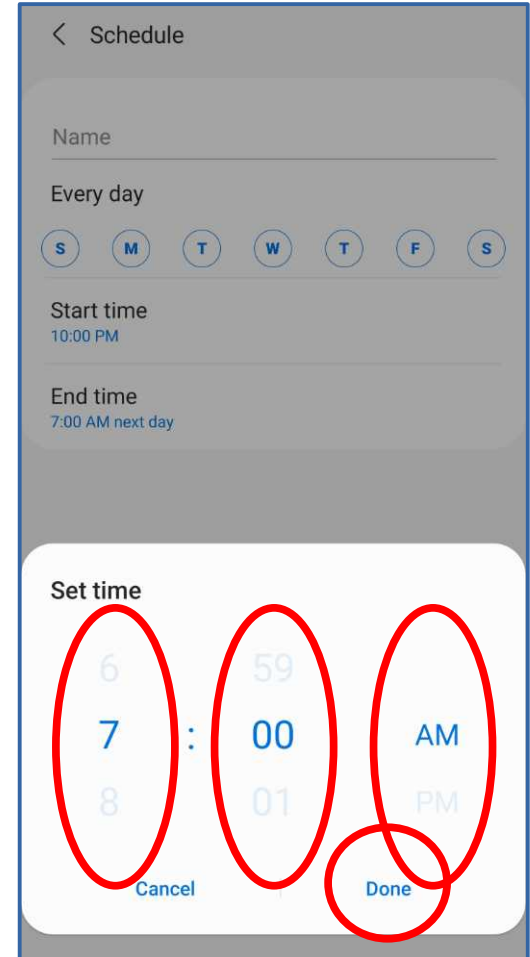
Our goal is to change the End time to 9:59 PM.

Start time
10:00 PM

End time
7:00 AM next day

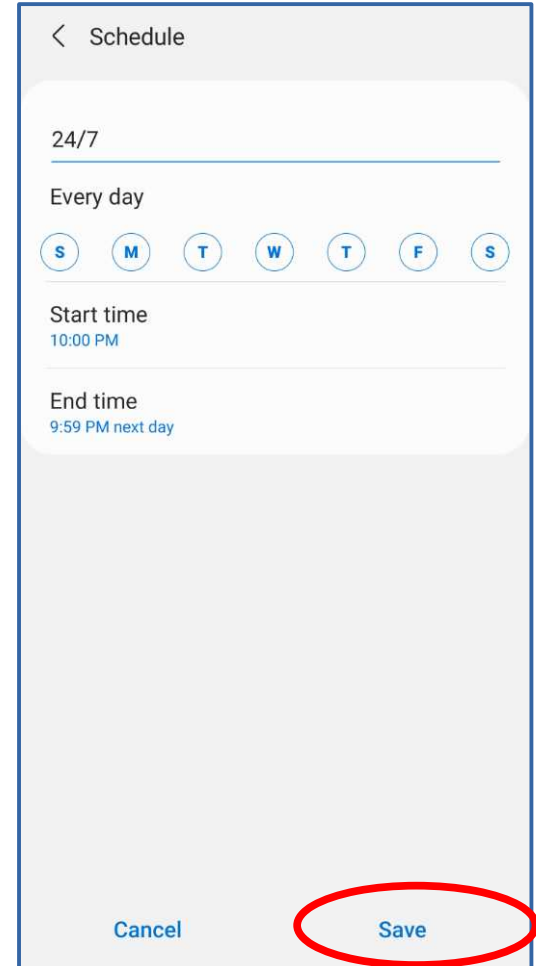
The Android 11/12 technique

- A **Set Time popup** appears.
- It breaks the End Time setting into 3 parts: **Hours**, **Minutes**, and **AM/PM**
- Each part can be scrolled up or down to adjust the End Time.
- Change to 9:59 PM:
Scroll 7 to 9, scroll 00 to 59, AM to PM
- Tap the **Done** button



The Android 11/12 technique

- The popup disappears, and the Schedule screen now includes the new **9:59 PM** End Time.
- If the End Time is not correct, then tap it to edit it again.
- Tap the **Name field** at the top, and type a Name for the Schedule, such as “24/7”
- The **Save button** in the lower right corner becomes active.
- Tap the **Save button**.

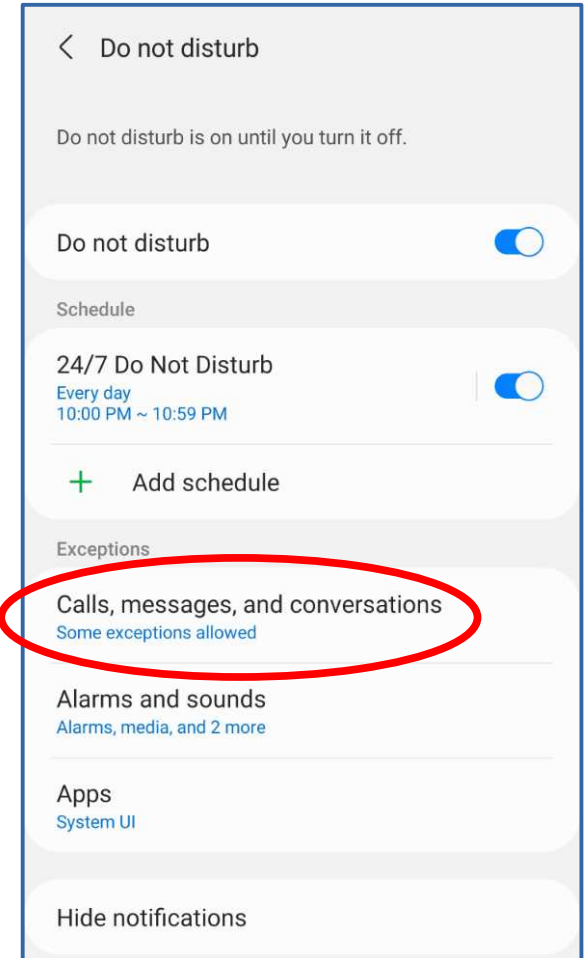


The Android 11/12 technique

After you Save your schedule, the **Do Not Disturb** screen looks like this. The area above **+ Add Schedule** shows the Schedule name and “Every Day 10:00 PM – 9:59 PM”

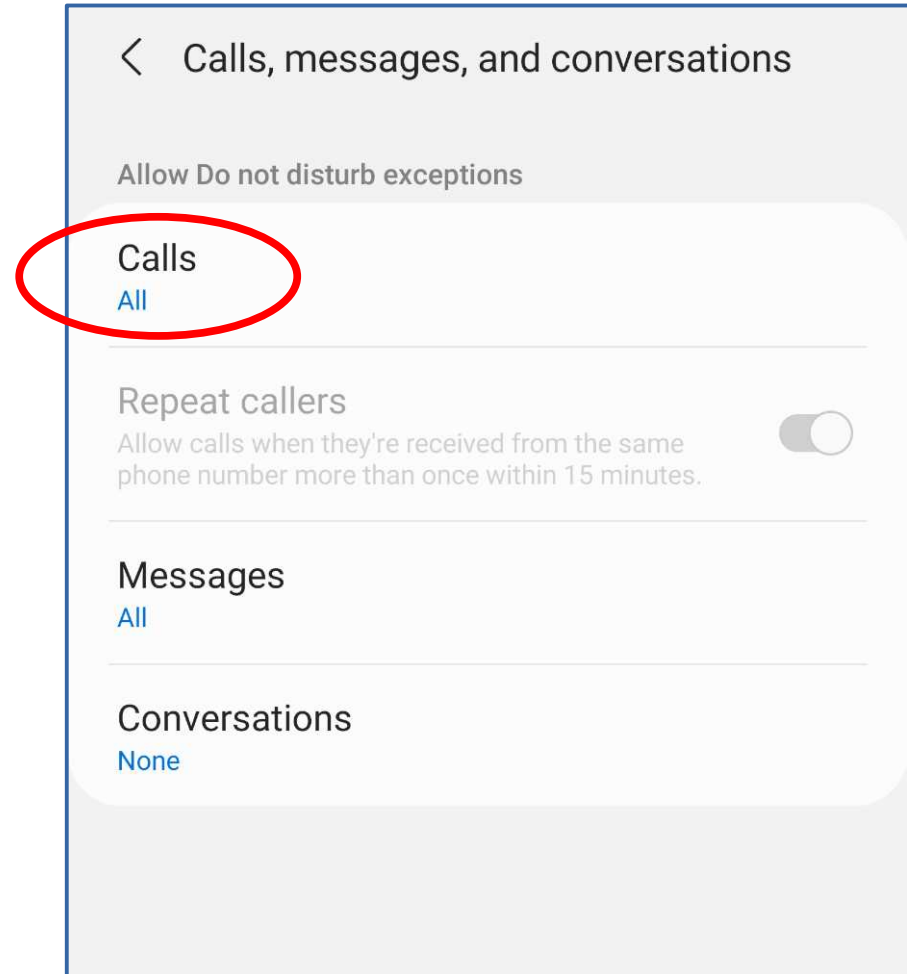
Tap the **Calls, Messages and Conversations** heading.

The **Calls, Messages and Conversations** screen appears.



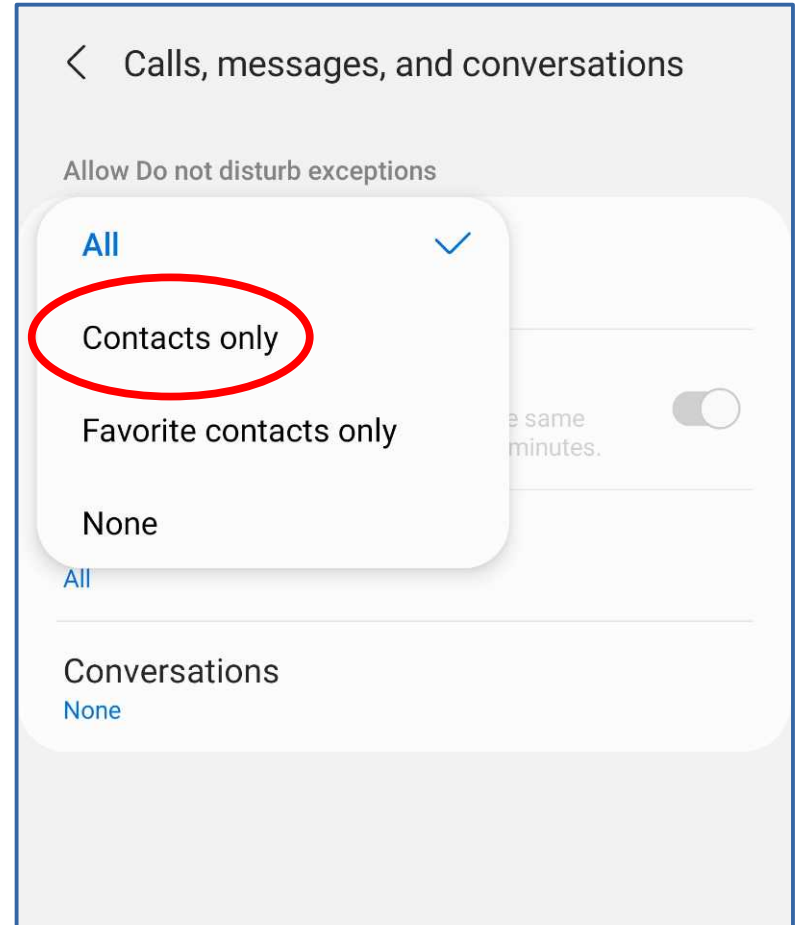
The Android 11/12 Technique

- In the Calls, Messages and Conversations screen, the default value is most likely ALL.
- We will change the value to **Contacts Only**.
- Tap the **Calls heading**.
- A popup appears.



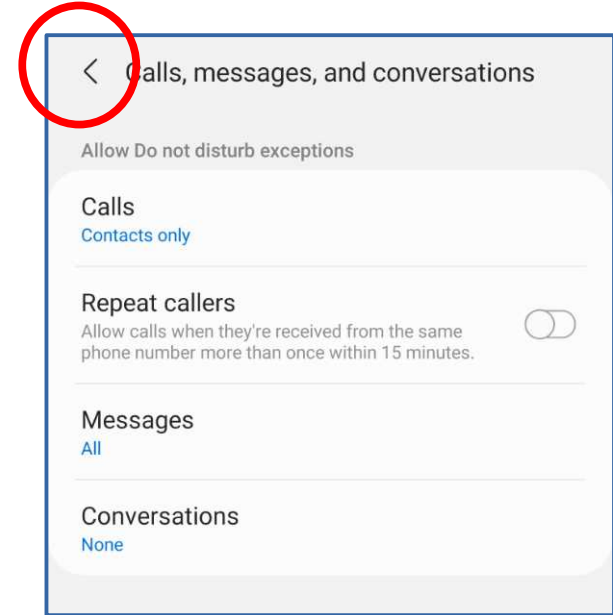
The Android 11/12 technique

- In the popup, tap the **Contacts only** selection.
- The popup disappears.



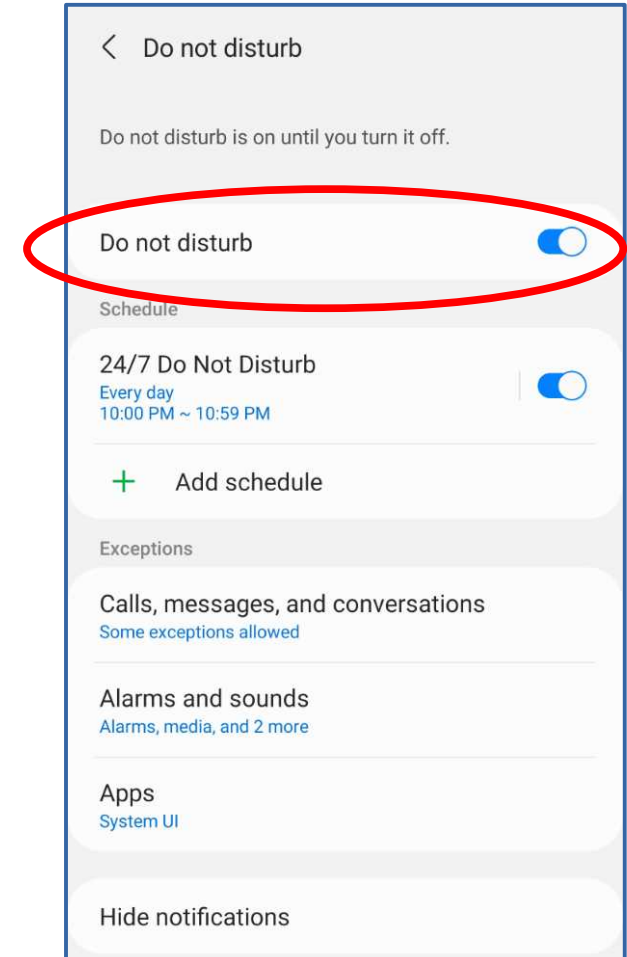
The Android 11 technique

- The **Calls, Messages and Conversations** screen now shows calls from **Contacts only** will ring your phone while Do Not Disturb is on.
- Tap the left arrow in the upper left corner to return to the **Do Not Disturb** screen.



The Android 11/12 technique

- In the Do Not Disturb screen, make sure the **Do Not Disturb switch** is turned **On**.



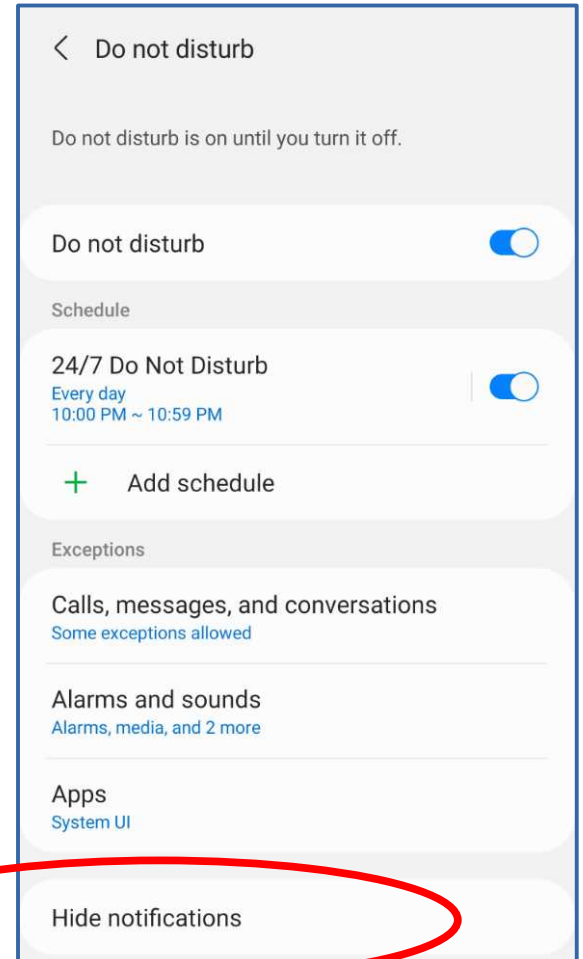
I thought that was enough, but ...

- While my son and I were shopping (separately) at a very large grocery store, my son called me.
- My phone screen was off and the phone was in my pocket. I heard the phone ring.
- I pulled out my phone.
- **The screen stayed dark!** I saw no buttons to tap to accept or ignore the call!

The Android 11/12 technique

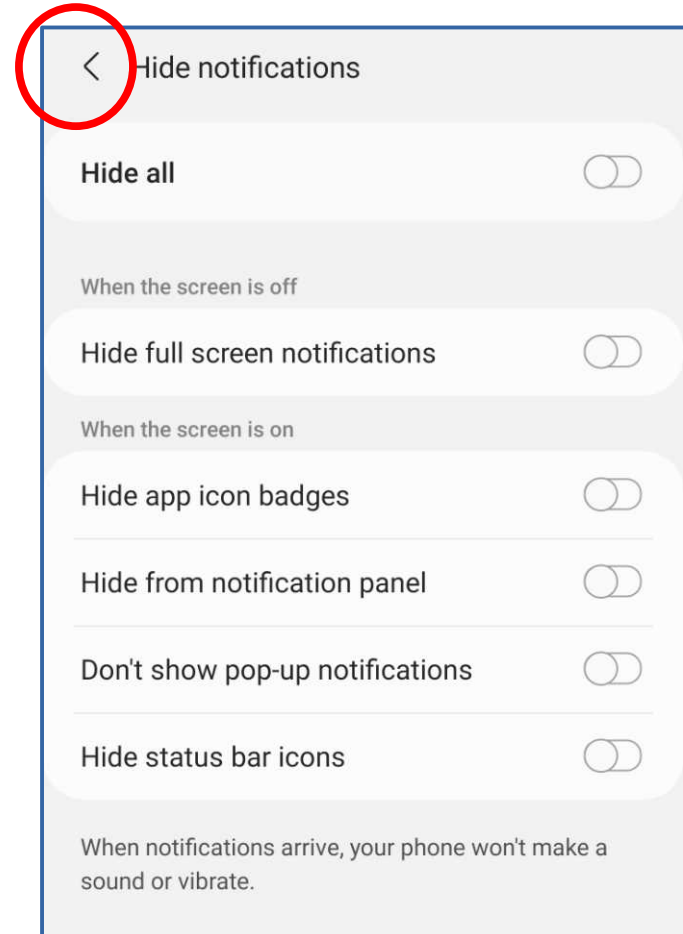
In the **Do Not Disturb**
screen, tap **Hide**
Notifications.

The **Hide Notifications**
screen appears.



The Android 11/12 technique

- In the Hide Notifications screen, **turn off every switch.**
- Tap the left-arrow in the upper left corner to return to the Do Not Disturb screen.



The Android 8 technique

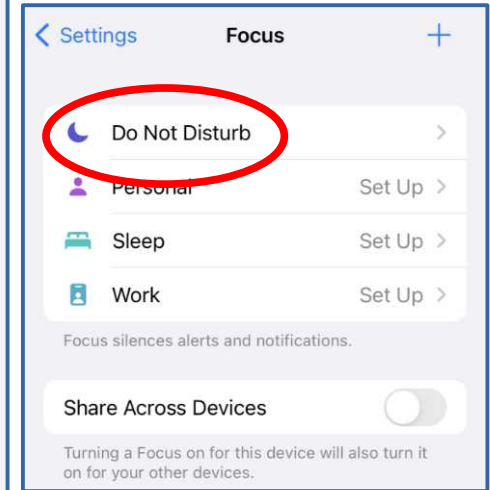
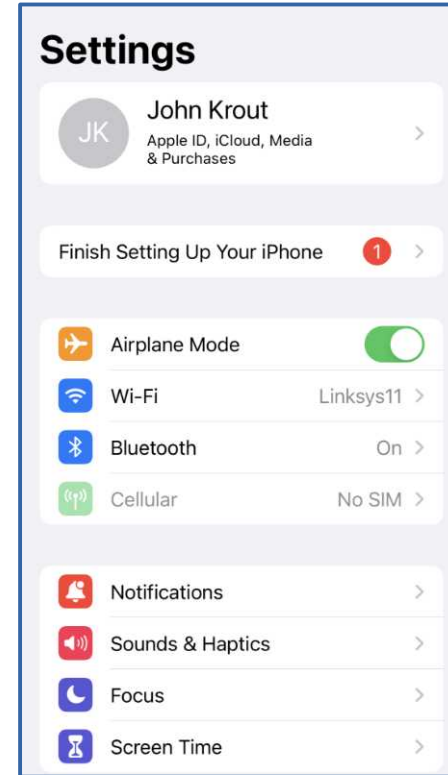
- Use this as the starting point, instead of Notifications:
Settings -> *Sound and Vibration* -> Do Not Disturb
- You can also find Do Not Disturb by using the Settings **Search capability**.

Whitelist Configuration for iPhones

The iOS 15 technique

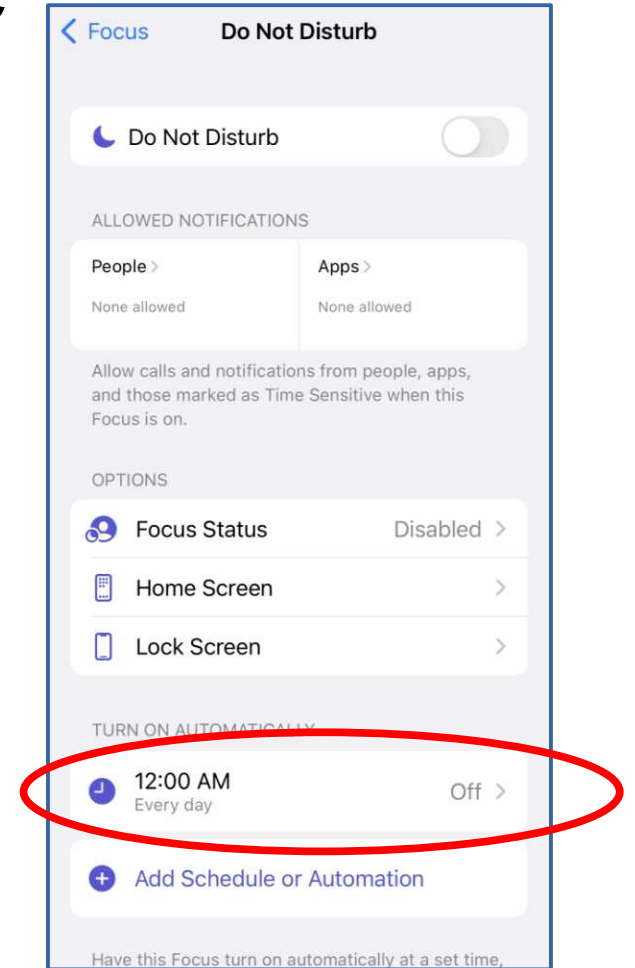
Settings → **Focus** →
Do Not Disturb

- Open the **Settings** app.
- On that screen, find and tap the **Focus** item.
- The **Focus** screen appears.
- Find and tap **Do Not Disturb**
- The **Do Not Disturb** screen appears.



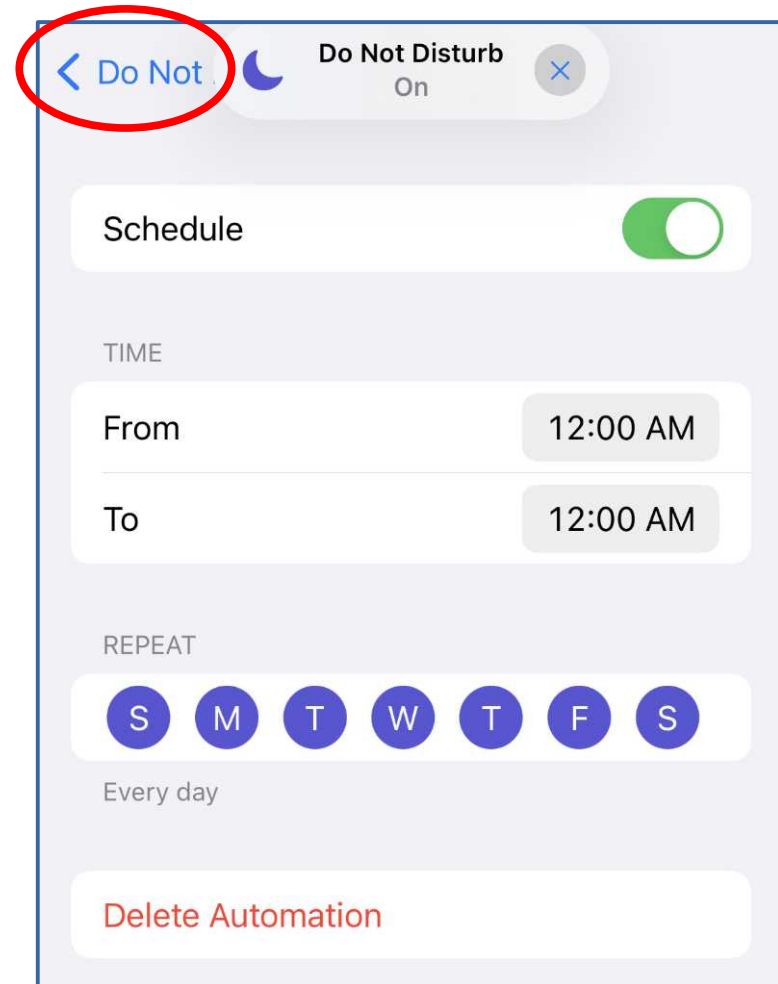
The iOS 15 technique

- A default schedule exists, starting at 12 AM (midnight). **Note the default schedule is turned off.**
- Tap the Default schedule.
- The **Schedule** screen opens.



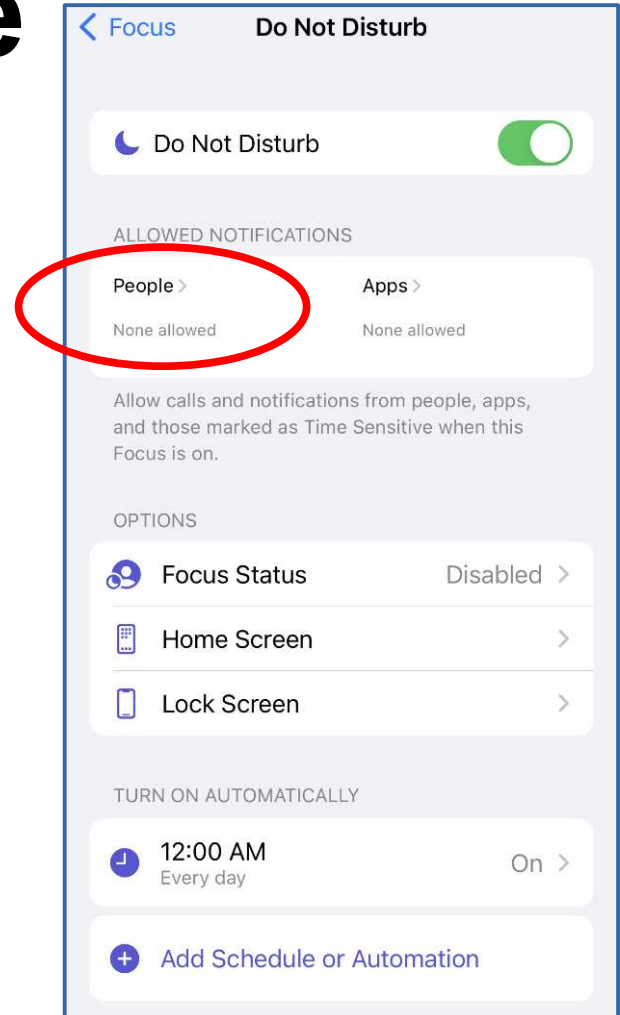
The iOS 15 technique

- You can see that the default schedule is 24/7.
- In the Schedule screen, **turn on the Schedule switch.**
- Tap the left-arrow in the upper left corner to return to the **Do Not Disturb** screen.



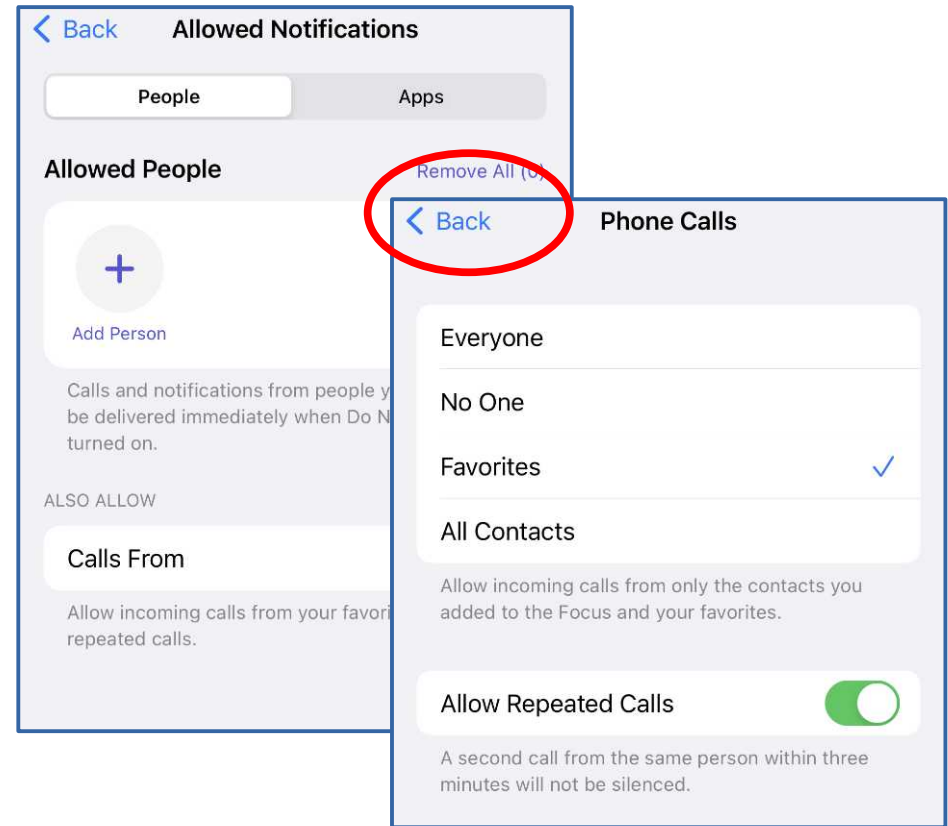
The iOS 15 technique

- The **Do Not Disturb** screen now shows that the schedule is **ON**.
- Under the heading **Allowed Notifications**, tap **People**.
- The **Allowed Notifications** screen appears.



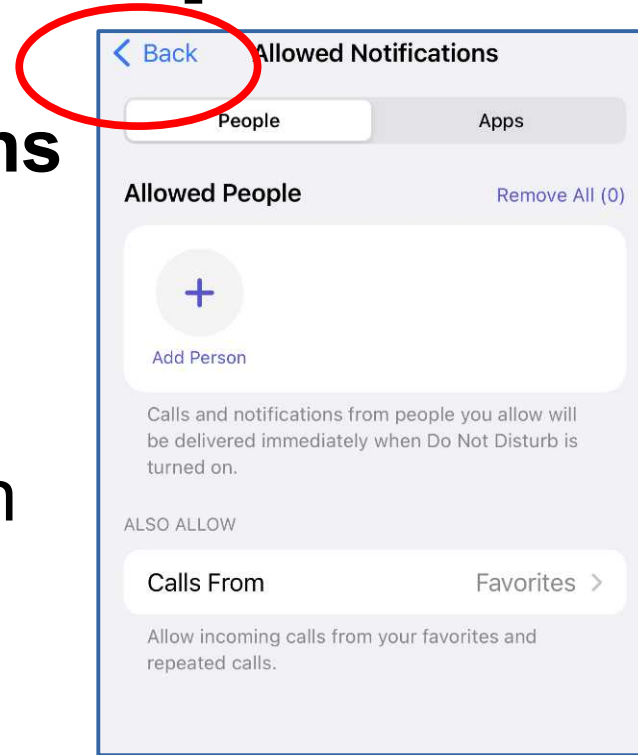
The iOS 15 technique

- In the **Allowed Notifications** screen, tap **Calls From**.
- The **Phone Calls** screen appears.
- In the Phone Calls screen, tap **All Contacts**.
- Turn the **Allow Repeated Calls** switch **OFF**.
- Tap the **Back** button in the upper left corner.



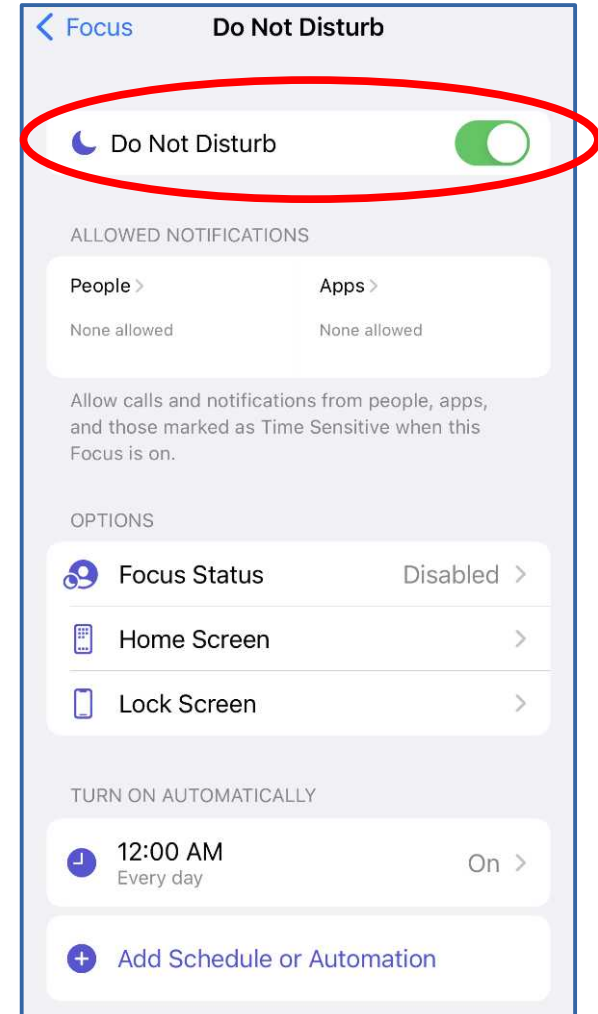
The iOS 15 technique

- In the **Allowed Notifications** screen, tap the **Back** button in the upper left corner.
- The **Do Not Disturb** screen reappears.



The iOS 15 technique

- In the **Do Not Disturb** screen, turn on the **Do Not Disturb** switch.
- You can turn off the Do Not Disturb switch anytime you expect an incoming call from anyone not in your Contacts list.
- After receiving that call, if you forget to turn Do Not Disturb on, then the schedule will do that for you automatically.



Keep your Contacts up to date

Here are some examples of numbers you might not yet have in your Contacts:

- If you have kids at home, include your kids' schools (especially the automated school closure calls)
- Your doctors
- Your lawyers
- Your veterinarian
- Your stock brokers
- Your bankers
- Publishers Clearinghouse

Robocall blocking apps

- **Nomorobo**, \$2 per month or \$20/year. Claims to update its blacklist of known robocallers every 15 minutes. Not much info is on its web site to describe how it does what it does.
- **YouMail**, free. Probably supported by ads. Redirects your incoming calls to their server.
 - Enforces its **Blacklist** and plays the **Special Information Tones** to blacklisted callers.
 - You must give your Contact to YouMail. Calls from your Contacts are redirected back to your phone.
 - All voicemails are saved on YouMail servers, and are transcribed and sent to you as text messages. Also, you can listen to those voicemails.

HOW TO PREVENT ROBOCALL VOICEMAILS

**Lie to robocallers!
Just like Telezapper.**

Understanding Robocall Systems

- Robocall systems do not leave voicemail on numbers found to be disconnected, i.e. when the systems hear SIT tones.
- Robocall systems delete disconnected numbers from their list of active numbers.
- That is why Telezapper works.
- ***We can take advantage of that behavior.***
- ***We can tell robocall systems that our number is disconnected, using SIT tones.***

Your voicemail greeting options

There are three general options for voicemail greetings:

- **1. Automatically state your phone number**, for instance:
"You have reached 703-555-1111. Please leave a message after the beep."
- **2. Play a recording of you pronouncing your name**, for instance:
"You have reached the phone of John Krout. Please leave a message after the beep."
- **3. *** Play a recording of whatever you want to say for your greeting *****

Transcript of my custom voicemail greeting

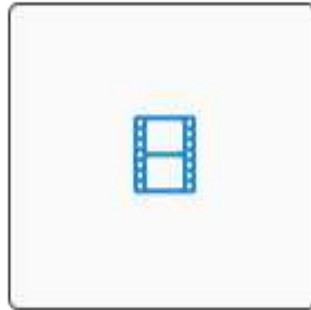
- Hi, this is John. No, my number is not disconnected. Those tones were just meant to convince robocallers not to call me again. You can leave a message after the beep. Thanks!

Transcript of my custom voicemail greeting

- Hi, this is John. No, my number is not disconnected. Those tones were just meant to convince robocallers not to call me again. You can leave a message after the beep. Thanks!
- On the next slide, you will hear my voicemail greeting.

Listen to my custom voicemail greeting

- Produced on a Windows 10 computer
- SIT tones downloaded from public sources
- Free **Audacity software** was used to record my voice, and add my voice recording to SIT tones



Impacts of the custom greeting

- Robocall systems *hang up without leaving a voicemail.*
- Robocall systems *remove my number* from their active number lists.
- Most of my friends listen to the entire voicemail and leave a message.
- Friends who call and do not leave a message are listed in **Recent Calls**, so I can call them.

Learn from My Experience

- In 2018, I was receiving roughly **25 robocall voicemails per week**. Robocall voicemails were filling up my voicemail box.
- In mid-2018, I started using the Verizon Wireless Call Filter blacklist app to block robocalls. It excluded many but not all. I was still receiving roughly **12 robocalls per week**.
- In July 2019, I installed **my custom voicemail greeting** with SIT at the beginning of my greeting. After 8 months of experience, my rate of incoming robocalls fell to **2 per week**.
- **After 8 months of experience, my rate of robocall voicemails fell to Zero per week.**

How to Make and Install a Custom Greeting

How to make a custom greeting

Break the entire greeting strategy into parts:

- Obtain the SIT tones recording
- Record your own voice greeting
- Prepare a **combined greeting** including the SIT tones and your voicemail greeting

Download my cleaned-up SIT tones WAV file

- Original audio file was posted on the web as a free download.
- Cleaned-up means I removed audio noise
- <https://bit.ly/3Bked11>

Scan the QR code



How to Record your voice greeting

- Write a script, or use mine.
- Android: Download a voice recording app for your phone.
- Set the app to record in Mono (not stereo) and highest quality.
- Record your voice using the app.
- Copy the recording file from your phone to your computer.
- If you download the SIT tone WAV file to your phone, then copy that to your computer also.

An Android voice recording app

The free app I use is:

Voice Recorder

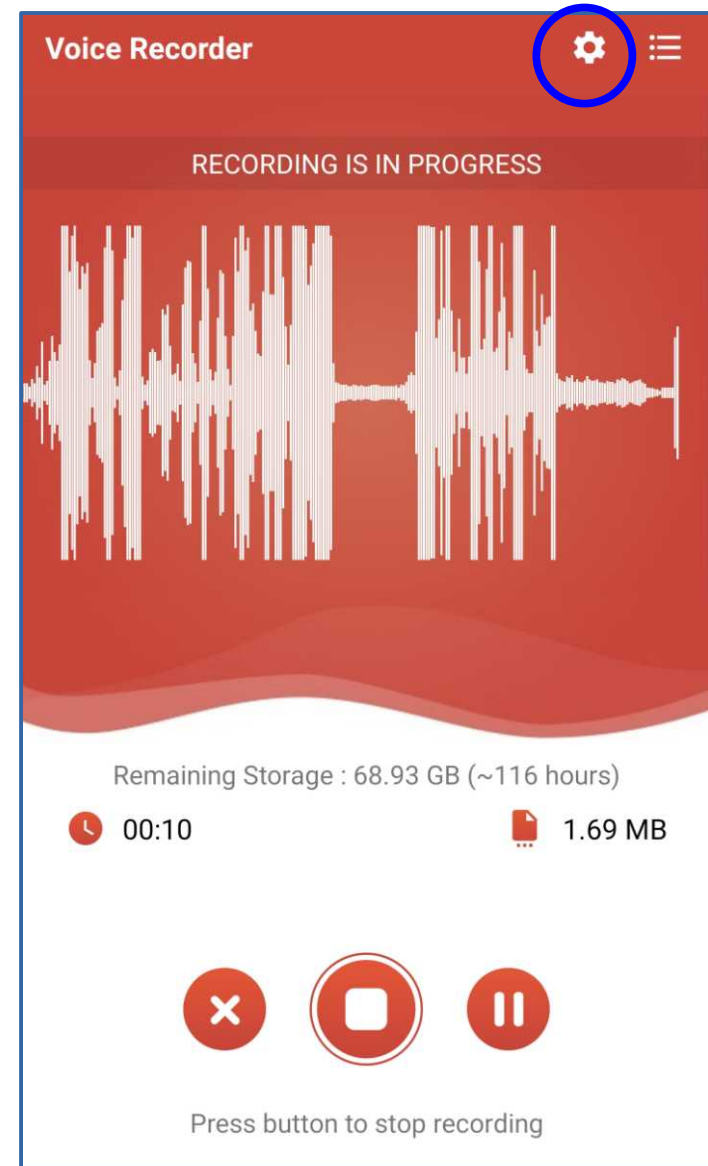
Published by

Raytechnoto Labs

This app stores its recording files in the Internal Storage →

QuickVoiceRecorder folder

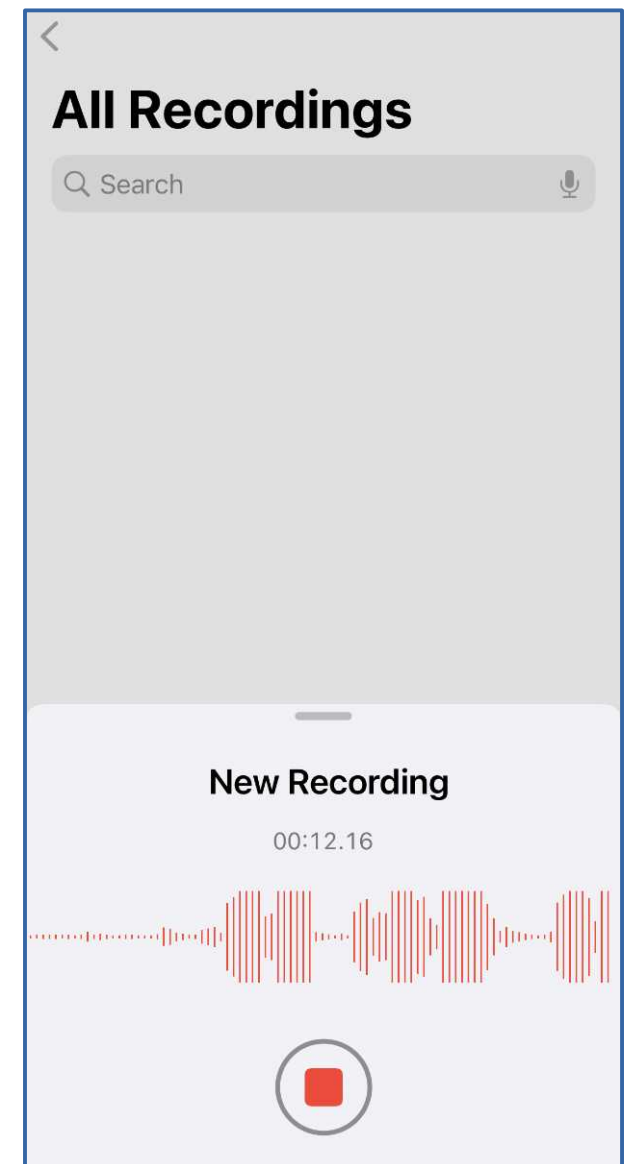
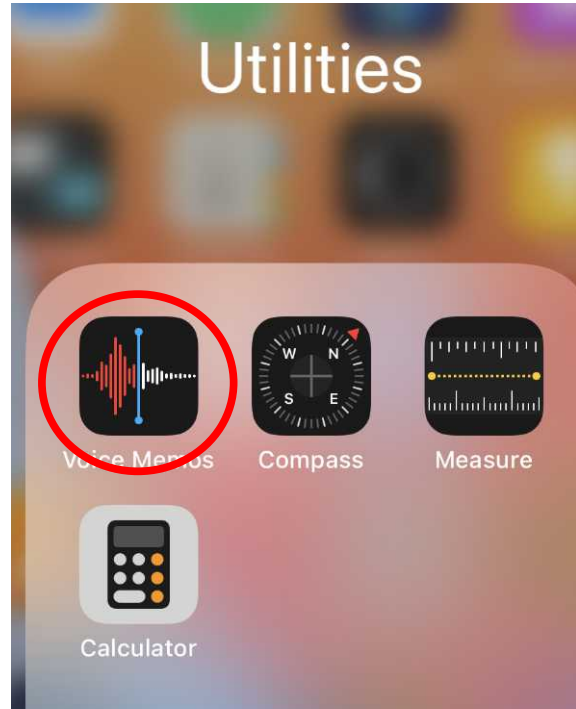
Tap the **Gear button** to switch between stereo and mono recording modes.



The iOS Voice Memos app

Found in the **Utilities** folder

Recording Files can be saved to iCloud Drive and accessed from there on your personal computer.



How to prepare a combined greeting

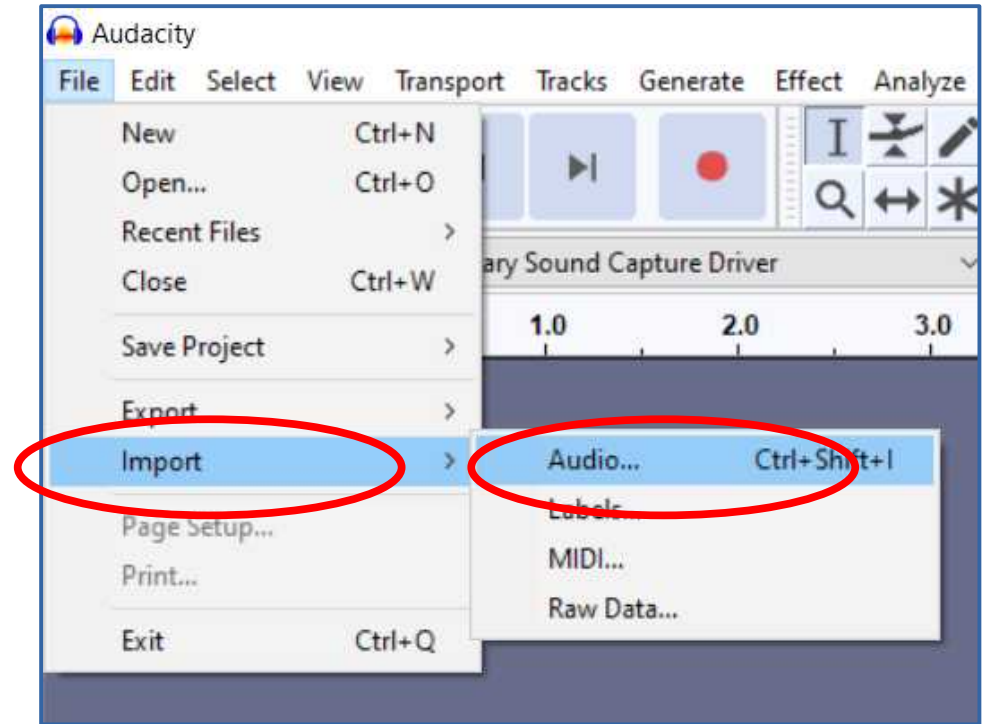
- Download and install the free **Audacity** audio editor application on your personal computer.
- Available for Windows, Mac and Linux.
- <https://www.audacityteam.org/>

About these Audacity steps

- These steps were done, and screen images captured, on Windows 10 Home 64-bit 20H2 and Audacity 3.0.2.
- The Audacity steps to combine the opened WAV files should be identical on Apple or Linux computers

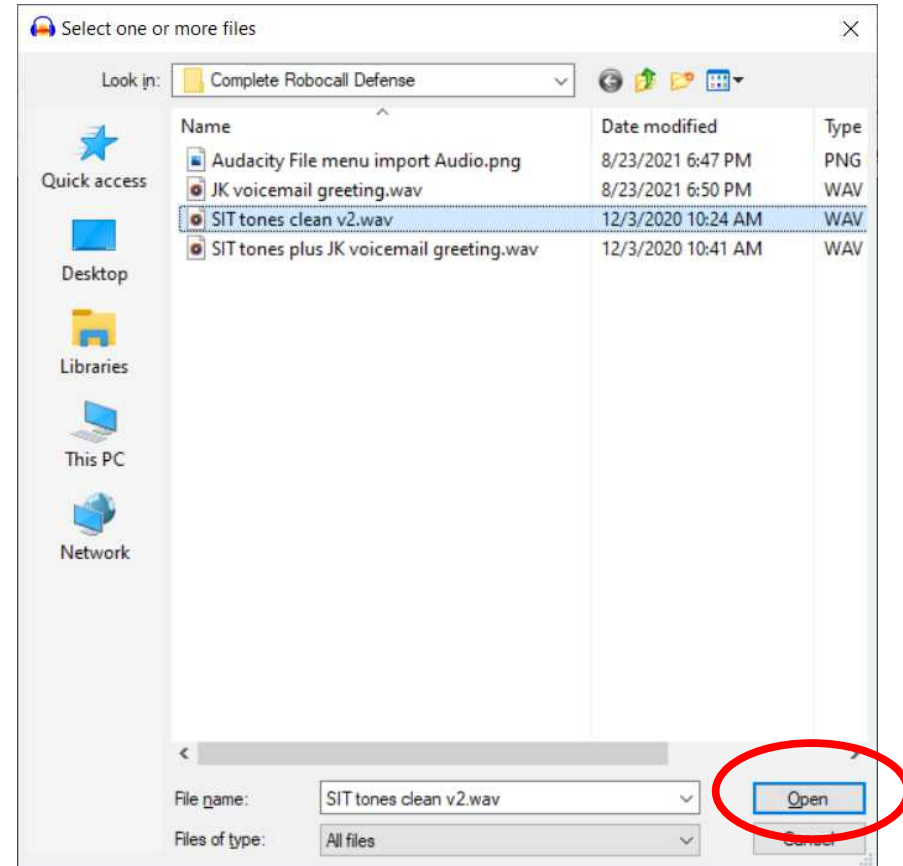
Audacity: How to open an audio file

- Pull down the Audacity **File** menu
- Select the **Import** choice
- A sub-menu appears
- In the sub-menu, select the **Audio** choice



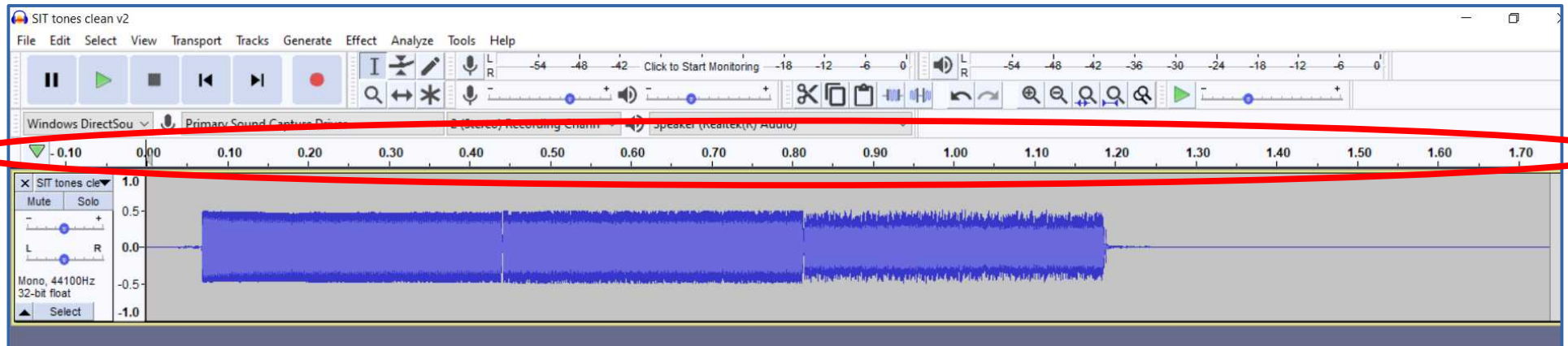
Audacity: How to open an audio file

- A standard Open File dialog box appears.
- Use the dialog box to find and select your SIT WAV file.
- Click the **OPEN** button.



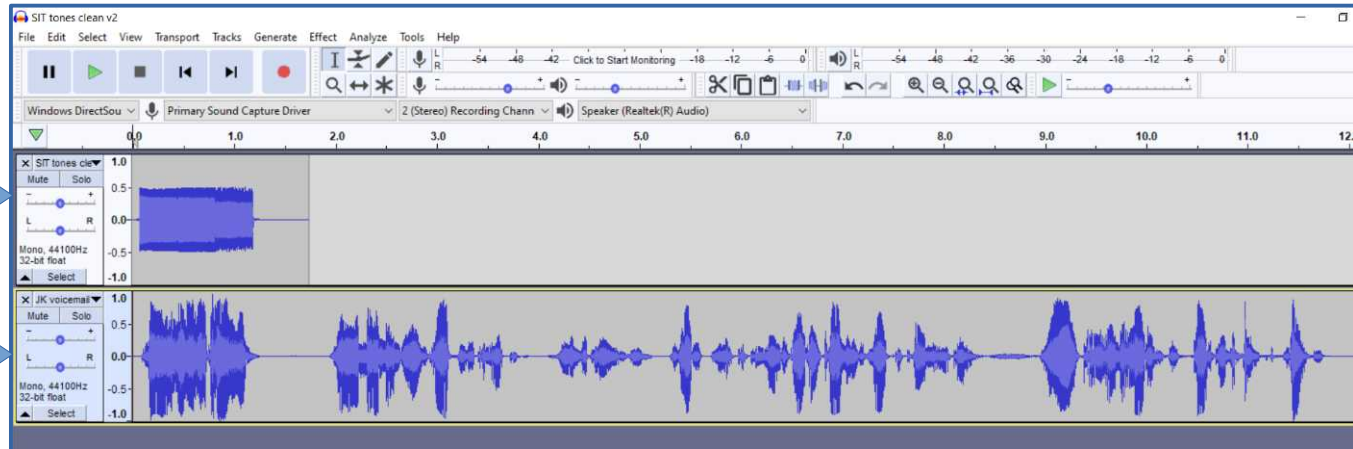
Audacity: How to open an audio file

- The SIT WAV file appears as a track in the Audacity window.
- In the track, the audio is displayed as an oscilloscope-like graph, with time moving from left to right.



Audacity: import your voice audio file

- The File menu method is identical: FILE→IMPORT→AUDIO
- Find and select your voice audio file using the Open File dialog box.
- The voice audio file appears in a **second track, below the first.**



SIT tones track

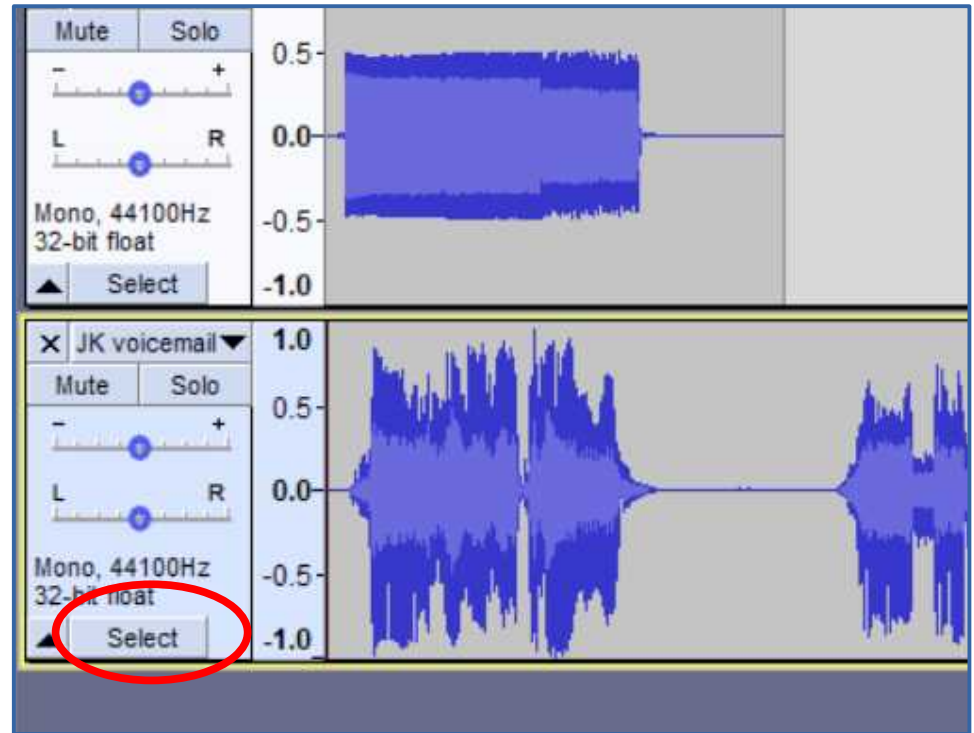
Voice track

Audacity is very much like a word processor application

- In a word processor, you can move around words, sentences and paragraphs.
- You can also delete text material that is no longer useful.
- You can select text material to be Cut or Copied, and place your cursor where you want to Paste text the Cut or Copied material.
- With Audacity, instead of text, you can manipulate audio in the same ways: CUT, COPY, PASTE.

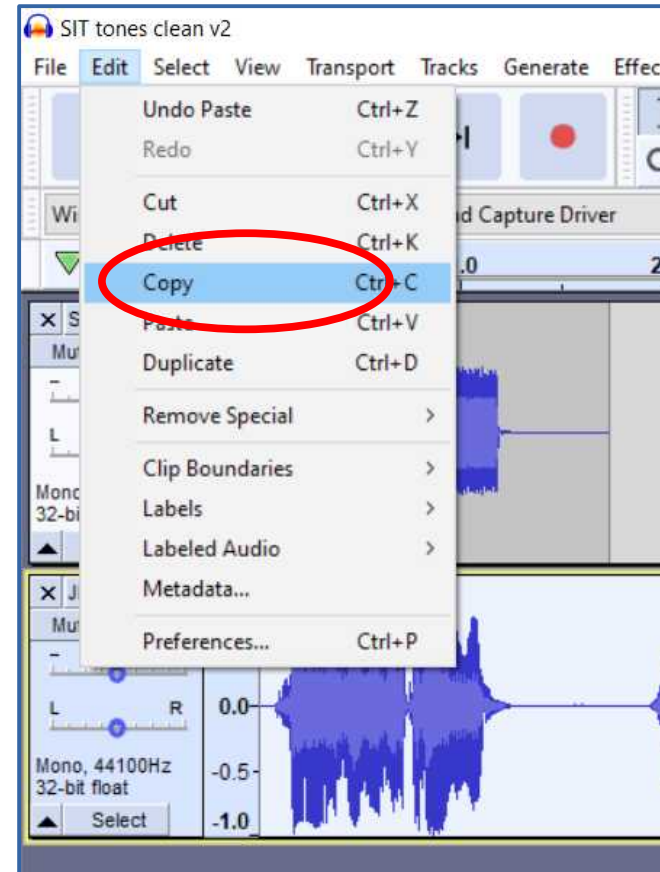
Audacity: Combine SIT and voice audio

- Select the entire voice track.
- There is a track button for that: **Select!**



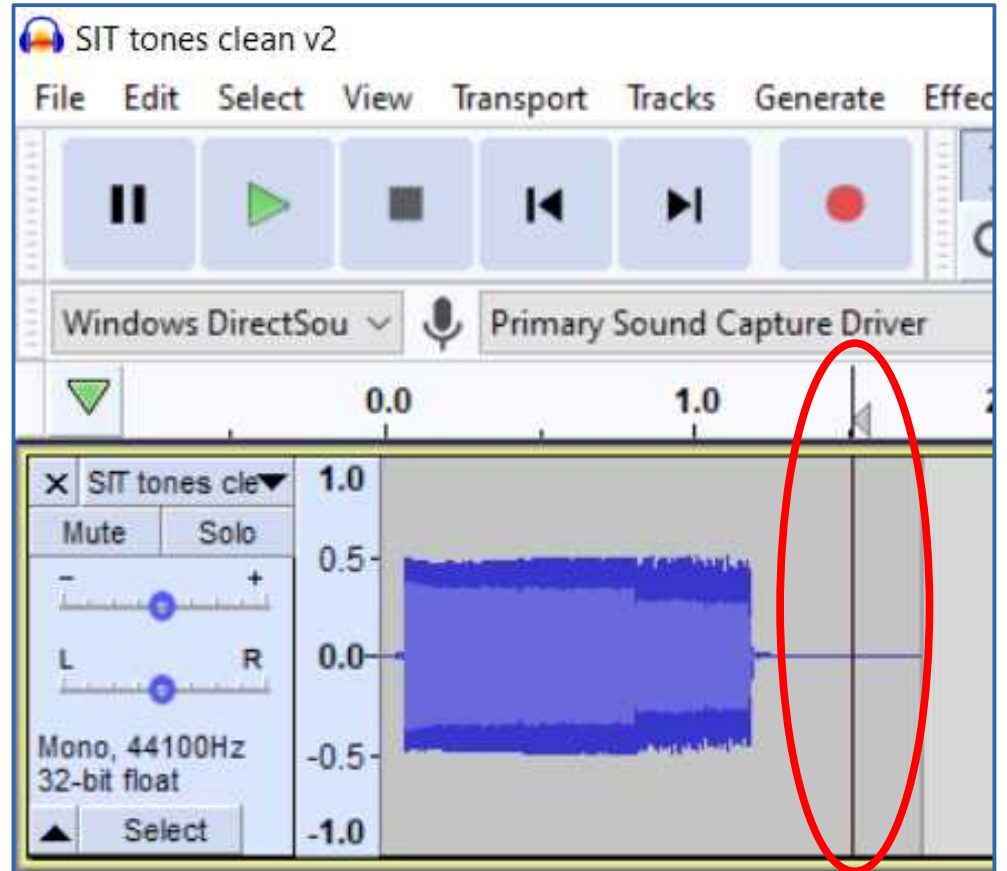
Audacity: Combine SIT and voice audio

- When the track is highlighted, pull down the **Edit** menu.
- Choose **Copy**.
- Alternatively, skip the menus and tap **Ctrl-C**.



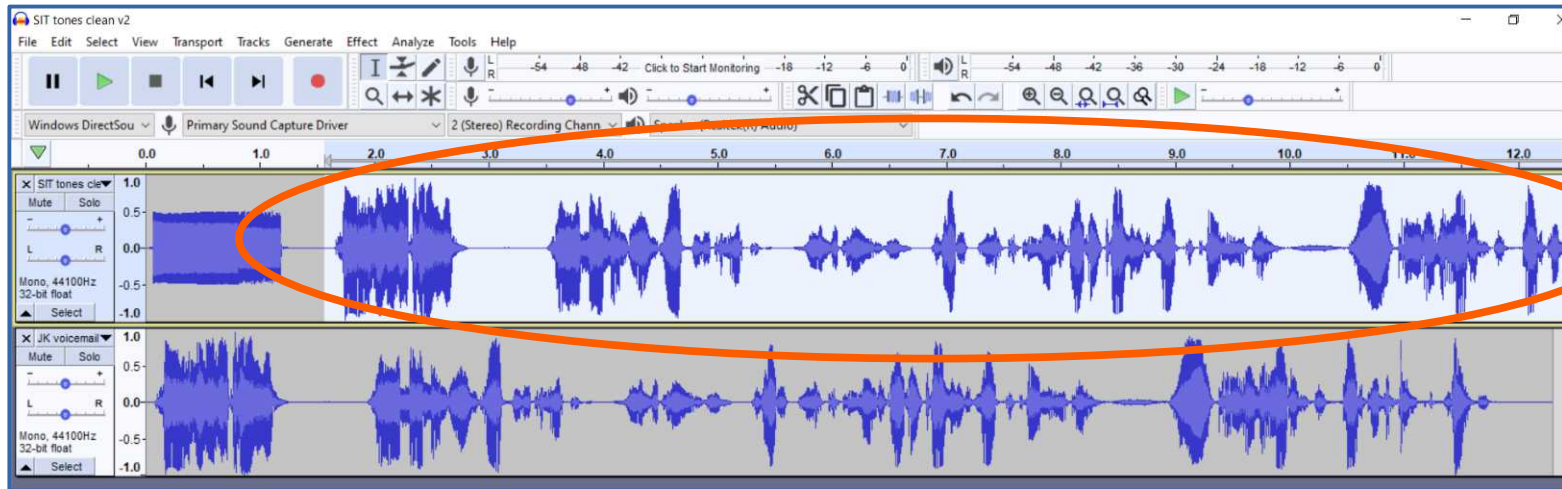
Audacity: Combine SIT and voice audio

- Notice the time scale across the top of the tracks.
- Click the SIT track about $\frac{1}{2}$ second after the audio ends in that track.
- A **vertical cursor** appears where you clicked.



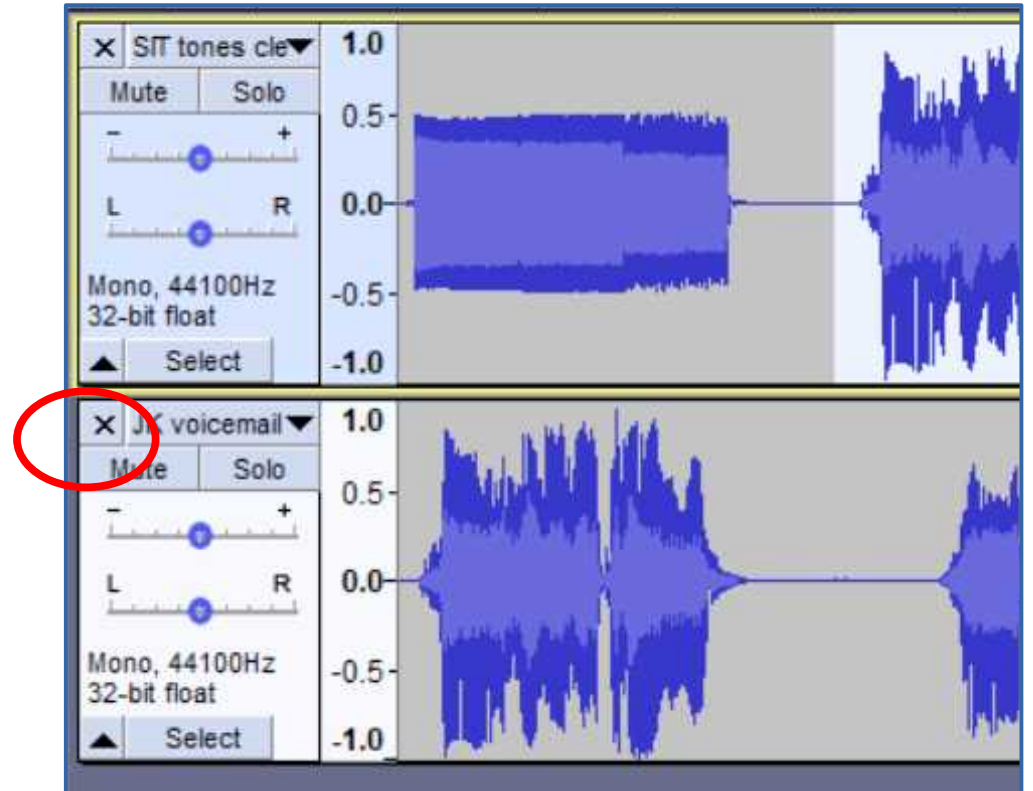
Audacity: Combine SIT and voice audio

- Pull down the Audacity Edit menu and choose Paste, or
- skip the menu and tap Ctrl-V.
- The voice track audio is pasted into the SIT WAV track, starting at the vertical cursor.



Audacity: close the second track

- We no longer need the second track.
- Tap the **X** in the upper left corner of the second track.



Audacity: Save the combined greeting

- Pull down the Audacity **File** menu and choose **Export**.
- In the sub-menu, choose **Export as WAV**.
- Use the standard dialog box to select a known folder and export the combined audio file to that folder.
- Note: **File** → **Save** *does not save an audio file*.

Installing the Combined Greeting

- Each greeting resides not on the phone but on servers of the carrier companies (e.g., AT&T, T-Mobile, Verizon Wireless)
- The carrier companies play the greeting even when the phone is turned off or away from a cell tower.
- The carrier companies ***do not permit uploading of an audio file*** to use as a voicemail greeting.
- We must “speak” our combined greeting while the phone is set to record our greeting onto the servers.

The phone steps to speak a custom greeting

- The method on the smart phone varies. Each carrier company its own method.
- Learn and practice the method for your carrier company ***before*** you try to record the combined greeting as a custom greeting.

Three ways to “speak” the combined greeting

All use a personal computer to play the combined greeting recording file, while the phone is set to record.

- **Lo-fi:** Hold the phone to a computer speaker, and play the combined greeting recording.
- **Cash Out of Pocket:** Connect the computer audio output socket to the phone’s headset socket using an **attenuator cable**.
- **WiFi:** Send the computer audio to the phone’s microphone over your LAN WiFi.

The WiFi method

- So far, I have found a workable method only for Android.
- It uses a personal computer application called
- SoundWire Server, and a corresponding
- phone app called SoundWireFree.
- Both are freebies.
- Your computer and phone must be on the same Local Area Network (LAN). Shut down VPN clients on your Android phone and your computer.
- The computer application captures computer audio and sending it to the phone app via LAN.



Install the SoundWireFree app

Scan this QR code which will open your Play Store app to the page for SoundWire Free.

You can download and install the app.

Note as of March 2022, the app icon has changed.



SoundWire Server computer application

- The application is available for free from:
- <https://georgielabs.net>

The Georgielabs.net home page

- It supports Windows XP and later versions, Linux, and Raspberry Pi, but not Mac.
- Click on the version for your personal computer OS.
- Download and install the application.



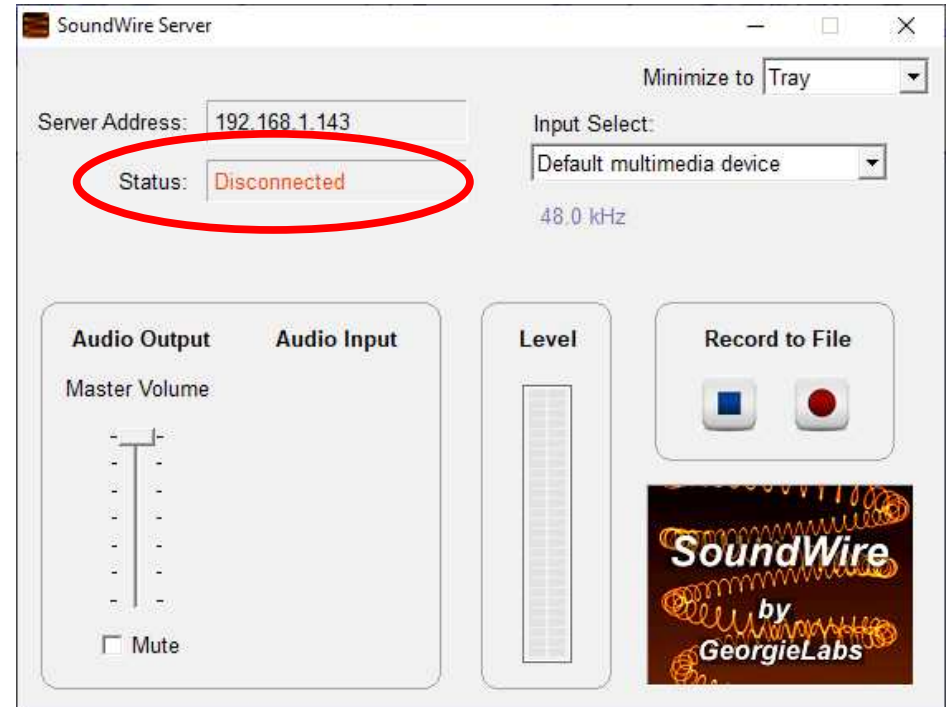
The screenshot shows the website's interface with the following content:

- Browser address bar: georgielabs.net
- Page title: Official Home of GeorgieLabs
- Section: SoundWire Audio Communication System
- Description: Turn your Android device into wireless headphones / wireless speaker. Stream any music or audio from your PC to your Android phone, tablet, or other PCs. SoundWire does audio mirroring (audio cast). You can use any music player on your PC or laptop like Spotify, YouTube, or iTunes and stream low-latency live sound over WiFi directly to your Android device. Also works over 3G/4G cell networks or WAN.
- Instructions:
 - First install the SoundWire Android app from [Google Play Store](#).
 - Then install the SoundWire Server on the Windows or Linux computer which is your source of music, web audio streaming, or other sounds. Click on the appropriate version below to download. After downloading run the installer. *You must answer yes ("Allow access") to the Windows Firewall prompt (select both private and public networks).* For the Linux versions right-click on the image and choose "Save Link As", then untar and see the README.txt file for instructions. **SoundWire Server download click below:**
- Download links:
 - Windows 7/8/10 version (2.5) [Icon: Windows logo]
 - Windows XP version (2.5) [Icon: Windows XP logo]
 - Linux 64-bit (3.0 Qt5) [Icon: Linux penguin]
 - Linux 32-bit (2.1.2) [Icon: Linux penguin]
 - Raspberry Pi (3.0 & 2.1.2) [Icon: Raspberry Pi logo]
- Alternate download site: [Win7/8/10](#) [WinXP](#) [Linux \(all\)](#)
- Footnote: If you have trouble with version 2.0 for 64-bit Linux and Qt5 then try the older version 2.1.2 for 64-bit Linux and Qt5.

Click on your OS

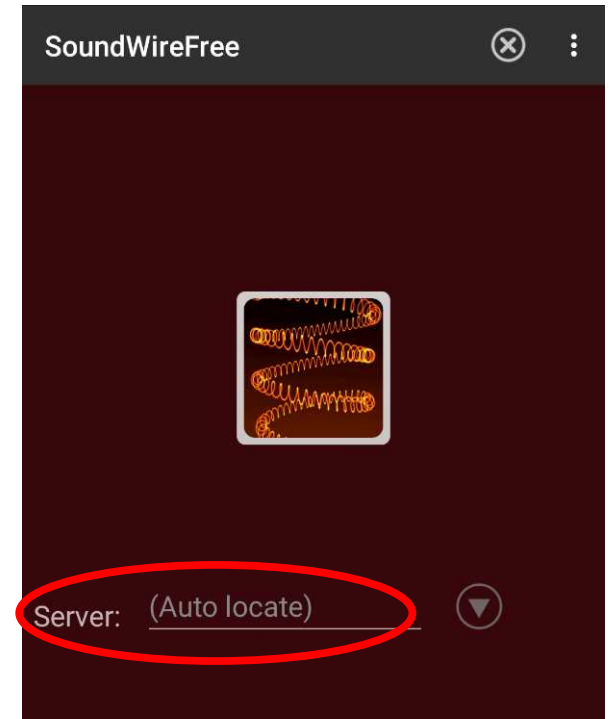
Run the SoundWire computer application

- The **Server IP address** is critical info that you may need to copy into the phone app.
- The initial status **Disconnected** is normal.



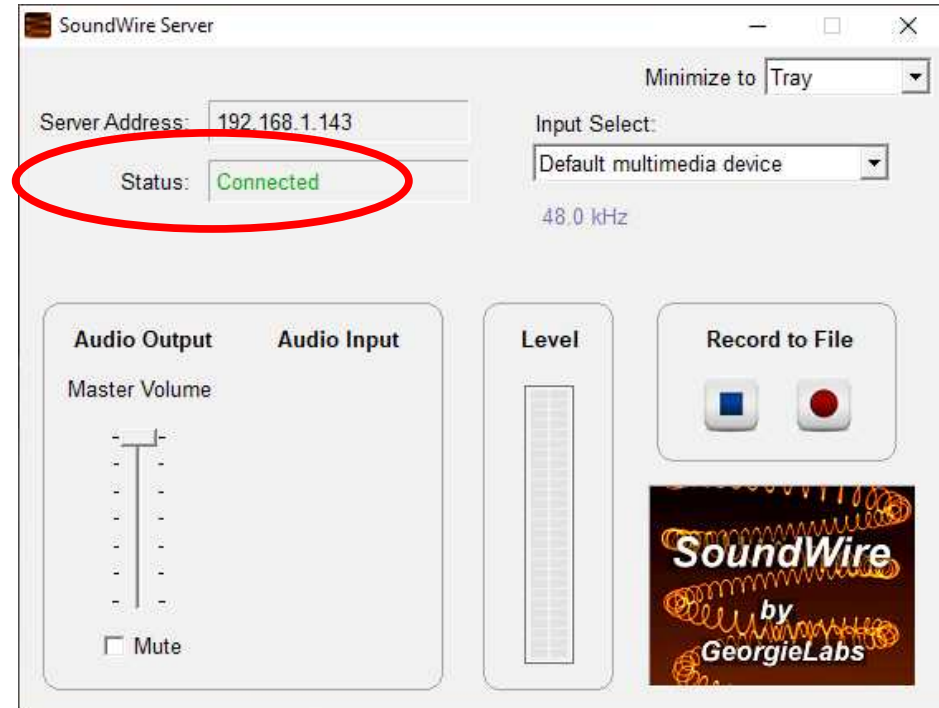
SoundWireFree app for Android

- This screen image was captured on a Samsung Galaxy S10 phone running Android 10.
- Tap and hold the **Big Button** in the app for about 1/3rd second.
- The app may automatically connect to the computer application.
- If not, then type the **Server IP address** into the **Server** field, and tap and hold the **Big Button** again.



When the app is connected

The word **Connected** replaces
Disconnected in the
SoundWire Server window.



Testing SoundWire audio transfer from PC to Android phone

- Any computer application that plays sound will do:
Audacity, VLC, iTunes, and so forth.
- Confirm that the sound played on the computer is also played on the phone, delayed about 1/4th second.
- Try recording the test audio using a recording app on the phone, preferably one that displays an oscilloscope-like graph of the audio. Voice Recorder does that.
- The graph provides a useful depiction of audio volume. Low audio volume produces a tiny graph. Increase volume level on the computer to produce a tall graph.

Improving the audio quality

- While using SoundWire, **microphone(s) on phone remain live**, and pick up not only incoming sound from LAN via SoundWire, but also ambient noise and computer speaker audio.
- **Disconnect or mute speakers** on your computer.
- **Block microphones on phone** with masking tape or electrical tape or bandage tape.
- Retry a test recording.

Cash Out of Pocket Details

- I bought my most recent attenuator cable from [MyCableMart.com](https://www.mycablemart.com) in August 2021. It is described as an adapter but it does attenuate.
- Part number **FE-ADT-385**, about \$15 including shipping.
- As of January 10, MyCableMart.com says this product is out of stock and back-ordered.



Scan this QR code to go to the product page



Amazon's attenuator cable

- This is the **Headset Buddy 20dB attenuator cable**. It has a socket instead of a plug for the computer audio output. **\$21.95**.
- Add an Amazon's Choice 6 ft stereo patch cable with 3.5mm stereo plug at each end. **\$7.49**



*Go to the
patch cable
page on
Amazon*



*Go to the
attenuator
cable page
on Amazon*



Comments about this method

- Recent models of iPhone lack a headset socket. Use the Lightning to headset adapter cable.
- Use the iPhone built-in **Voice Memos app** for making test recordings.
- When connected to the phone, the Attenuator + adapter disables the phone's speaker.
- I could not install a voicemail greeting using my iPhone X because it is retired.



Comments about this method

- I used this method with my Android phone before I found and tested the SoundWire app.
- The first two times I recorded the combined greeting using the phone with the attenuator cable, the audio level was too low for the Verizon Wireless server to recognize.
- The Verizon Wireless server failed over to the default greeting #1, announcing only the phone number.
- You can use the **computer's Volume control**, the computer **application's volume control**, and the phone's **Volume control** to adjust volume up or down.

Android apps mentioned in this presentation

- **SoundWireFree:**



Down this free app
from the Play Store



- **Voice Recorder:**



Down this free app
from the Play Store



THE END

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