I'm not a robot

@Mktreat Thank you for posting on HP Support Community. Don't worry as I'll be glad to help,I have a few troubleshooting steps we could try to fix the issue: As I understand, you are looking for a password to connect HP printer to the network. To better assist you - 1) Have you tried your router's password? 2) Can you please send us a picture of the screen asking you to enter the password? If the Wi-Fi password does not work, this could be the Wireless Direct password. Let's try these steps - Step 1 Try the default password - 12345678. If the default password does not work, please print a Network Configuration page and look for a Wi-Fi or a Wireless Direct password. Step 2 To print a Network Configuration page - From the printer control panel, press the Wireless button and the Information button together to print the network configuration page. Note - The Wi-Fi or Wireless direct will connect the devices that you are trying to print from to the printer's Wi-Fi instead of your home Wi-Fi and due to that you will have to keep switching from your home Wi-Fi to your printer's Wi-Fi. You can connect the printer to your home Wi-Fi by following these simple steps - 1.) Remove HP Smart App from your mobile device. 2.) Press the Wireless button and the Cancel button from the printer control panel at the same time, and then hold them for three seconds. 3.) Download and install HP Smart App on your mobile device from here: 4.) Open HP Smart App and follow the onscreen instructions on the screen to connect the printer to a wireless network. Let me know how that goes Hope this helps! Keep me posted for further assistance.Please click Accept as Solution if you feel my post solved your issue, it will help others find the solution. ECHO_LAKE I am an HP Employee Are there too many devices on your WiFi? In today's constantly online and connected world, decreased speeds due to the limits of WiFI connectivity are issues that many people and corporations face. As a result, some users might naturally wonder how many devices can connect to WiFi at once.Devices like our computer systems and devices allow us to remain connected to others over the web, and you don't want any delays and issues when looking to remain productive and efficient during your work. For those who decide to research how many devices can connect to WiFi, you'll be surprised that several aspects of WiFi connectivity rely upon factors usually missed or overlooked by homeowners and commercial users alike. For instance, connecting more than one PC desktop, phone, and laptop over the network can marginally slow down streams, affecting download and upload speeds and causing drops in connectivity. In some cases, you may even find yourself unable to connect additional devices to the network. However, it's not reasonable to expect a household or commercial environment only to be used by one individual, and most networks are designed for a very high capacity of users.Rango's HiFi Internet Plans are designed to maintain their speeds regardless of how many devices are connected at once. That being said, if you're experiencing issues with WiFi limits and connections, this article will give you an overview and cover what you need to know to fix the issue.How many devices can connect to a WiFi router?When you run into the issue of too many devices on WiFi, many people ask the question "how many devices can connect to a WiFi router in the first place? According to Statista data, the typical family within the US has approximately 10 mobile and computer devices. But as more merchandise comprises WiFi, from smart audio systems and protection cameras to washing machines or even electric-powered kettles, that variety will increase. Some routers can take care of more significantly than others, relying on the router. In theory, you can connect up to 254 devices to your home router, since this identifies the maximum physical capacity that the network infrastructure can support. In reality, however, the maximum number of connections is affected by several other factors that result in much fewer connections.Type of connectionMost routers either feature a connection through Ethernet cables, or WiFi signals, which come in 2.4 GHz and 5 GHz varieties. Although any connection type can provide a stable internet connection, note that hard-wired connections will always be faster and experience less lag and speed reduction than WiFi connections.Available bandwidthYour available bandwidth is the real limiting factor in determining how many devices can connect to WiFi. Think of your bandwidth as how much space your connection has to fit multiple separate streams of data down the line. The more devices you have connected, the more independent streams of data you have traveling along your connection, which takes more room. When your connection reaches its max capacity and more devices are connected, the entire network slows down due to too much traffic.Bandwidth is usually determined by the speed of your internet connection - the faster your speeds, the more bandwidth youll tend to get. While this means that you should always opt for the fastest plan you can afford, other factors can also affect your bandwidth, such as background internet connection and the type of router you use. Rango always offers the fastest HiFi internet plans with top speeds and more than enough bandwidth to accommodate several users.Ways to fix WiFi limits to number of connectionsHomeowners with WiFi connections may naturally factor their mobile phones, laptops, and PCs into the equation when considering how many devices theyre using at once. But in reality, your connection limit is influenced by all WiFi-enabled gadgets for domestic and business use air conditioning systems, video surveillance tools, and smart lights, to name a few.In many cases, simply disconnecting additional devices is not a feasible solution, so if it still seems like you have too many devices on your WiFi, then here are some potential fixes that may resolve your issues.Set up a second routerWhile routers and most modern hardware can technically serve multiple connections, there are additional factors such as home setup, the location of the router, and the broadcast range of the device in question, that can affect speeds and slow down or limit your connectivity when you have too many devices on your WiFi. If your ISP allows it, consider setting up a second router that will work with your main device to broadcast the signal to a broader range and also split the load of network connections between them. Plan internet usageYou can avoid issues with slowdowns and limited connectivity by determining when each device in your household is being used, and then coming up with a usage plan to ensure that the minimum number of devices is connected at the same time. For example, if your household isn't using their phones in evening hours, you can make sure to disconnect them temporarily to reduce the load on your network. You can also plan other, offline activities during hours when other members need to use the internet, such as for work or school.Upgrade your hardwareSome issues with limited connectivity due to too many devices on WiFi can be caused by the make and model of your router and modem hardware. If your device is outdated, defective, or simply worn out from years of use, it might simply not be able to function as effectively as it once did. Its a good idea to consider replacing your router if you see signs of issues after a few years of use.Call your internet service providerSometimes, a call to your ISP is needed for them to take a look at your internet configuration and adjust it, since the issue might be on the providers side instead of your home. Additionally, if youre finding consistent issues with your internet connectivity and device connections, it might be time to switch to a HiFi provider like Rango for higher quality service.Conclusion There might be several reasons for connection issues, depending on how many devices can connect to the WiFi in your setup. Rango can help you figure out the best configuration and plan for your needs to ensure maximum connectivity no matter how many devices youre using at once. If you are experiencing issues with Wi-Fi Direct not working, there are several steps you can take to troubleshoot and resolve the problem. Here are some tips to help you get Wi-Fi Direct working again:1. Check Wi-Fi Direct compatibility: Ensure that both the sending and receiving devices support Wi-Fi Direct. Not all devices are compatible with this feature, so double-check the user manuals or specifications of your devices to confirm compatibility.2. Restart your devices: Sometimes, a simple restart can fix minor connectivity issues. Turn off both the sending and receiving devices, wait for a few seconds, and then power them back on. This can refresh the connection and resolve any temporary glitches.READ More: How do I complain to Subway UK?3. Move closer to the Wi-Fi router: Wi-Fi Direct relies on a strong Wi-Fi signal. If you are too far away from the Wi-Fi router, the connection may be weak or unstable. Move closer to the router and try again.4. Check for interference: Wi-Fi Direct operates on the 2.4GHz frequency, which can be crowded with other wireless devices like Bluetooth devices, cordless telephones, and microwaves. These devices can cause interference and affect the Wi-Fi Direct connection. Keep your TV away from such devices to minimize interference.5. Disable other wireless connections: If you have multiple wireless connections enabled on your device, such as Bluetooth or mobile data, try disabling them temporarily. This can help ensure that Wi-Fi Direct gets priority and minimizes any potential conflicts.READ More: What should my GPU clock speed be?6. Update firmware and drivers: Make sure that your sending and receiving devices have the latest firmware or software updates installed. Outdated firmware or drivers can cause compatibility issues and hinder Wi-Fi Direct functionality. Check the manufacturers website for any available updates and install them accordingly.7. Reset network settings: If none of the above steps work, you can try resetting the network settings on your devices. This will clear any saved network configurations and restore the default settings. Keep in mind that resetting network settings will also remove any other saved Wi-Fi networks, so you will need to reconnect to them later.READ More: What files do I need to backup on my Mac?8. Contact manufacturer support: If you have tried all the troubleshooting steps and Wi-Fi Direct still isnt working, it may be necessary to reach out to the manufacturers support team for further assistance. They can provide specific guidance based on your devices make and model.Remember, Wi-Fi Direct is a convenient feature, but it may not be available or function properly on all devices. If you frequently encounter issues with Wi-Fi Direct, you may need to consider alternate methods for screen mirroring or file sharing, such as using a dedicated streaming device or connecting via a wired connection. It's frustrating when a Wi-Fi connection doesn't work, and a lot of things can go wrong. We'll walk you through a few common troubleshooting techniques that can help, starting with the methods you should try first. Double Check the Wi-Fi Password To connect to most Wi-Fi routers, you'll need a password. This password is set by the owner of the router or access point. If there's even a one-character typo in the password, you won't be able to connect. So make sure you have the right Wi-Fi password: Ask for it again, if necessary, to double check, or write it down twice on a piece of paper. Then re-enter it in the Setup or Configuration app of the connecting device and see if that helps. If not, move ahead to another step. Some businesses (such as hotels, restaurants, airlines, and more) provide an "open" Wi-Fi network that restricts access using a Wi-Fi login page or portal in a web browser. These login pages make you sign in with a special username and password provided by the business. If you've connected to a Wi-Fi access point in the settings or configuration app on your device but aren't seeing any internet access, try opening your browser on that device and visiting any website. If the business uses a login page, you'll usually be automatically redirected to the login page where you can enter the credentials properly. Hannah Stryker / How-To Geek If you're having trouble connecting to a Wi-Fi access point, another easy troubleshooting tip you can perform is to reboot or restart the device you're trying to connect with. Restarting a gadget solves many problems caused by temporary bugs because it forces the device to reload its software and settings from scratch. After restarting, try to connect via Wi-Fi again. If it works, you're ready to go. If it's still not working, move on to another suggestion below. We've already mentioned double-checking and re-entering the Wi-Fi password. As a next step, open the configuration app (Settings on iPhone, for example), and tap the name of the Wi-Fi network you're trying to connect to, then select an option to delete or "forget" the saved settings of the Wi-Fi network. How you do this varies by the device you're using. We have instructions about how to forget Wi-Fi networks on iPhone or iPad, Android, Mac, Windows 10, Windows 11, and Chromebook. After that, you can either scan for networks and attempt to connect again or enter the information for the Wi-Fi access point manually. This technique is particularly helpful if the router has changed its Wi-Fi settings but the device you're using to connect is still configured with older settings (such as an older password or different security settings). Hannah Stryker / How-To Geek If you're still having trouble connecting to your Wi-Fi routerand you have control over the router or access point itselfyou can try restarting it to see if that helps clear any temporary bugs or error states that might be making it malfunction. Similar to restarting the connecting device, restarting your router forces it to reload its settings from scratch, which can solve a variety of problems. Just be aware that restarting your router might disrupt other people using the network (perhaps streaming a TV show, doing a backup, gaming, video chatting, or otherwise), so make sure you give them a warning first. If you're connected to your Wi-Fi access point but you're still not getting internet access, the problem could be with the modem (cable, DSL, wireless, or otherwise) that is feeding the internet connection to your Wi-Fi router. First, check with your ISP to see if there is an internet outage in your area. If there isn't an outage, restart your modem (unplug it, wait 30 seconds, then plug back in), and make sure the Ethernet cable (if there is any) between your modem and your router isn't damaged or unplugged. Many older devices with Wi-Fi don't support modern Wi-Fi security connection standards. So unless you have your router set to a backward-compatible security mode, those older devices won't be able to connect. For example, the Nintendo DS (released in 2004) only supports WEP security and not newer standards like WPA or WPA2. Similarly, some older devices cannot access the newer frequency bands used by some routers, so make sure your router supports legacy bands such as 2.4 GHz if that is the case. Hannah Stryker / How-To Geek Most modern Wi-Fi routers support connections through at least two different frequency bands, with 2.4 GHz and 5 GHz being the most common. The latest routers even support 6 GHz bands. Some routers will automatically connect compatible devices to a higher-frequency band, but others require you to connect to a different SSID for each frequency. For troubleshooting, it's important to know that 5 GHz and 6 GHz connections offer higher speeds but less range than a 2.4 GHz connection. So if you're having trouble getting a reliable signal on your router's higher bands, try forcing a 2.4 GHz connection insteador move closer to the router. Wi-Fi is handy, but it isn't perfect. Wi-Fi's radio signal follows the inverse square law, which means the strength of the signal decreases exponentially (dropping off rapidly) as you increase the distance between yourself and the router. If you do have a signal strength problem, you can move closer to the router or consider installing a larger antenna, more powerful router, or a Wi-Fi repeater or range-extender at some point in your network. Also, you might consider investigating potential radio interference from devices such as microwaves or other gadgets that use similar frequencies (2.5 GHz or 5 GHz in particular). In those cases, you can either disable the interfering devices or route around them with a wired connection to a second Wi-Fi access point on the other side of the interfering device. If you suspect interference, you can try to set your Wi-Fi to use a different channel, which might avoid certain types of interferenceespecially with other nearby Wi-Fi networks (run by neighbors or businesses). At this point, it's a good idea to see if you can connect to the Wi-Fi network using a different device than the one you're having trouble with. If so, the problem is likely with the connecting device itself and not the router. It could also be a problem with the unique combination of your device and the router, which usually comes into play related to your Wi-Fi settings, as we'll address below. An expensive but blazing-fast Wi-Fi 6E card with MU-MIMO, OFDMA, Bluetooth 5.2, portable base, and gold-plated antenna connectors. Also, Wi-Fi adapters sometimes go bad or have buggy drivers. If your device supports plugging in other Wi-Fi adapters (such as internal PCe cards or USB adapters), then you can try to purchase a new Wi-Fi adapter and either replace the one currently in your device or disable the old one and activate the new one. If the new adapter works, then your original Wi-Fi adapter is malfunctioning. If the new adapter doesn't work, then you're looking at a larger problem that other troubleshooting suggestions in this list might help. If you're using a Windows or Linux PC with a Wi-Fi network adapter (whether built-in or otherwise), it's possible that updating the driver for the Wi-Fi adapter could solve your problem and allow you to connect to the Wi-Fi access point successfully. To update a driver in Windows, you'll need to find the latest driver for your adapter from the manufacturer's website and follow the instructions in our guides for Windows 10 or Windows 11. To update a hardware driver in Linux, you'll need to have more technical knowledge, but we've written about that as well. Once you've updated, restart your PC and attempt to connect again. If it works, then you're good to go. And finally, if nothing else works, your router might be simply bad. If so, you can contact the support staff of the manufacturer and ask for repair or replacement options. Or if the router is older and you're ready to upgrade anyway, it may be time to buy a completely new model. Here's a good all-around model that we've tested from Asus, for example: The Asus RT-AX88U Pro is an impressive Wi-Fi 6 router that delivers fantastic performance. It's also reasonably priced and can efficiently handle modern connectivity needs. If that router doesn't suit you, we've written a review guide to other high-quality routers that you can consider. Whichever one you choose, hopefully it will solve your connection issues. Good luck! WiFi Direct is a fantastic feature available on many Windows PCs that allows devices to connect directly to each other without needing a wireless access point. However, users may occasionally encounter issues when trying to use the WiFi Direct button. This article will guide you through common problems and their solutions, ensuring that you can get the most out of this convenient technology.WiFi Direct enables devices such as printers, laptops, and smartphones to communicate directly over a secure wireless connection. Unlike traditional Wi-Fi setups that require a router or access point, WiFi Direct creates its own network for faster and easier connections. This is especially useful for tasks like file transfers or printing directly from your PC to a compatible printer without an intermediary device.One of the most common issues users face is not being able to find or activate the WiFi Direct button on their Windows PCs. Often, this can be due to outdated drivers, incorrect settings, or hardware incompatibilities. If your device doesnt seem to recognize any nearby devices via WiFi Direct, its time for some troubleshooting. An essential step in resolving issues with the WiFi Direct button is ensuring your network drivers are up-to-date. Outdated drivers can cause connectivity problems and prevent your PC from recognizing available devices. To update your drivers: go to Device Manager > Network adapters > right-click on your wireless adapter > select Update driver. Following this step can often solve many connectivity issues.Sometimes, network settings might interfere with how well the WiFi Direct feature works on your PC. Navigate to Settings > Devices > Bluetooth & other devices and check if Allow Bluetooth devices to find this PC is enabled. Additionally, ensure that Airplane mode is turned off which may also disrupt wireless communications including those initiated by the WiFi Direct button.If problems persist despite updating drivers and checking settings, resetting your network configuration could be beneficial. Go to Settings > Network & Internet > Status > Network reset. This action will uninstall then reinstall all your network adapters while restoring default settings often resolving hidden conflicts that may be hindering proper operation of the WiFi Direct functionality.In conclusion, while encountering issues with the WiFi Direct button on Windows PCs can be frustrating, understanding how it works and following these troubleshooting steps should help resolve common problems effectively. Ensure you keep everything updated and check all necessary settings so you can enjoy seamless direct connections between compatible devices.This text was generated using a large language model, and select text has been reviewed and moderated for purposes such as readability. MORE FROM CONSUMERSEARCH.COM Hi @Matt47, Welcome to the HP Forums! I appreciate you taking the time to share your concern and thank you for using this forum, it is a great place to find answers. I reviewed your post and I understand that you are having issues setting up Wi-Fi direct. Id love to help! Wi-Fi Direct provides a direct wireless connection to your HP printer that allows you to print without joining a local network or connecting to the Internet. When you activate Wi-Fi Direct on your printer, you can securely print documents or photos from most Wi-Fi-capable computers and mobile devices. The technology is similar to Bluetooth, but uses Wi-Fi to work at greater distances and faster speeds. Please follow below steps to setup Wi-Fi direct on your Mac computer. Set up your printer using a Wi-Fi Direct connection with a computer running OS X. Turn on Wi-Fi Direct on the printer. For printers with a control panel, touch the Wi-Fi Direct icon to display the Wi-Fi Direct name and password. For printers without a control panel, press the Information button to print a report that includes the Wi-Fi Direct name and password. If the printer does not have an Information button, press and hold the Resume button for 2 seconds to print a report that includes the Wi-Fi Direct name and password. On the computer or laptop, click the wireless icon or , select DIRECT-xx-HP [your printer model name] from the list of available networks. NOTE: If the printer name does not display, you might be out of range of the Wi-Fi Direct signal. Move your computer and printer closer together. Enter the Wi-Fi Direct password. On the computer, click System Preferences, and then click Printers and Scanners. menu, DevicesIn the click below the list of devices to add a device. Click your printer name, and then follow the on-screen instructions to complete the connection and driver installation. Let me know how it works and you have a good day ahead. To simply say thanks, please click the "Thumbs Up" button to give me a Kudos to appreciate my efforts to help. If this helps, please mark this as Accepted Solution as it will help several others with the same issue to get it resolved without hassles. Take care now and have a splendid week ahead. Take care! Cheers! The_Fossette I am an HP Employee Skip to main content Reddit and its partners use cookies and similar technologies to provide you with a better experience. By accepting all cookies, you agree to our use of cookies to deliver and maintain our services and site, improve the quality of Reddit, personalize Reddit content and advertising, and measure the effectiveness of advertising. By rejecting non-essential cookies, Reddit may still use certain cookies to ensure the proper functionality of our platform. For more information, please see our Cookie Notice and our Privacy Policy. Wi-Fi issues in Windows 11 can usually be resolved by resetting your Wi-Fi. To do so, follow this path: Settings > Network & internet > Advanced Network Settings > Network Reset. Interference from nearby devices like microwave ovens and cordless phones can also cause Wi-Fi problems. Keep your router away from such devices to avoid interference. Restarting your router and PC, as well as updating your Wi-Fi adapter drivers, are effective troubleshooting methods to fix Wi-Fi connectivity issues. These days, everyone needs the internet, so Wi-Fi going down can be a source of panic. Never fear, however, as there are many tried and tested methods of getting back online! The most common issues with your Wi-Fi in Windows 11 also have common solutions. What to Do When Your Windows 11 Wi-Fi Isn't Working If you notice that your computer isn't connected to the interneteven when it should beit could be the result of a few problems. Sometimes, the internet in your area may just be down due to your internet service provider (ISP) experiencing outages. Other times, it can be an issue with your PC or router. While the former situation can't really be fixed on your end, the latter issues can be addressed directly. On top of that, there may be even more niche problems that are outside your control, which adds to the confusion of diagnosing and troubleshooting. A common concern that can pop up is interference. This is when there are devices nearby that are screwing around with your Wi-Fi signal. Some household electronics like microwave ovens work by using the same frequency range as certain Wi-Fi networks. Though, that's not the only object that can cause problems. There are Bluetooth devices and cordless phones that can hinder your Wi-Fi performance. Make sure your Wi-Fi router is as far away as possible from such devices to avoid this issue. A microwave oven can only be so smart. There could also be physical problems plaguing you. For example, one of your Wi-Fi router's cables may be damaged. Before you start running a series of diagnostics, check your router and its cables to make sure everything is in working condition. If you find a frayed cable or visible damage to your router, you may need to buy replacement partsor an entirely new router. Alternatively, you can pick up some mesh routers to eliminate Wi-Fi dead spots in your home. Once you've checked for the above-mentioned major malfunctions, it's time to take action. One of the best, if not the best, methods of sorting out Wi-Fi issues quickly and easily is to reset your Wi-Fi network settings. How to Reset Your Wi-Fi on Windows 11 Start by opening Settings. Then, click "Network & Internet" followed by "Advanced Network Settings" from the right-side menu. Once you've done that, click "Network Reset" on the right. At this point, click "Reset Now." Finally, click "Yes" to confirm your decision. After following the above steps, you can close the Settings window and restart your computer. When you turn it back on, you'll have to reconnect to your preferred network. Most of the time, this sorts out whatever minor issues you're having. There are tons of reasons why your Wi-Fi keeps disconnecting: physical router damage, power blips on the electrical grid, ISP outages, poor signal strength, and a slow internet plan. However, if the issue isn't a severe one, you can try one of three simple troubleshooting methods: Restart your router Reset your router to its default settings Restart your computer The exact way to restart your router, as well as the way to reset the former to its default settings, will vary depending on the make and model of your router. Most of the time, you can consult whatever documentation said router or computer came with. If you no longer have such documents (or if you don't feel like wading through the endless packages in your closet), you can always look up your router on its manufacturer's official website. Rebooting a Windows 11 PC is very straightforward, however. Restarting and resetting devices helps them "start fresh" when attempting to do anything. Sometimes, for one reason or another, PCs can get "confused" when there's a lot going on. For example, there be more laptops, desktop computers, tablets, and smartphones connected than the router is built to handle. Taking things from the top can sort out both known and unknown issues without you needing to do anything: the ideal solution! Another great trick is to update your Wi-Fi adapter drivers and Wi-Fi firmware drivers. Such drivers are software designed to help PCs locate and connect to Wi-Fi signalsamong a few other feats. To do so, open the Device Manager on your PC. Next, scroll down to where you see "Firmware" and "Network Adapters." Click them respectively to show what's nested in these categories. Then, click whatever you want to update. Afterward, hover over the black icon that has a green arrow next to it. This is the "Update Device Driver" button. Click it to update whatever you desire. With any luck, this will sort out the issue you're having. Before you call your network provider in utter outrage ("I was right in the middle of downloading the latest Minecraft update, goshdarnit!"), we recommend that you take a look at the available networks in your area. Despite your router likely being closer to your PC than those of your neighbors, sometimes it won't show up first in the list of nearby networks. Start your search by clicking the Wi-Fi symbol on the right of your taskbar. Then, click the blue box with the simple white arrow labeled "Manage Wi-Fi Connections." When you do, a list of the available networks appears. Give it a moment, as it takes time for all of them to load into this mini menu. It shouldn't take any longer than 10-15 seconds (at most). Now scroll through them and see if you can spot your desired signal. If your Wi-Fi router is set up correctlyand is in working orderyou'll find your network here. If you don't see it, try updating your drivers as we mentioned before. Doing so can help your computer find your network signal again. The reliable restart method goes a long way! It can be applied to more than Wi-Fi issues. Pretty much anything that can be turned on and off benefits from a restart once in a while. This includes increasing the performance of your smartphone and even troubleshooting problems with media streaming devices such as Google Chromecast. While it can feel like a drag to stop what you're doing to restart your laptop, what else are you going to do? Read a book? Oh, right, you kind of need the internet for that as well... Hello.I've always successfully connected my inkjet HP to my smartphone via WiFi direct.Problem: Currently it happens that this seems no more possible. The WiFi direct is active on the printer. As usually I activate the WiFi on my device, then I go into the WiFi direct submenu, and here my device finds the printer. So I touch the printer tag on my smartphone, and it appears the connection request on the printer display, to be confirmed within 60 seconds.Finally I touch OK on the printer, the connection process starts, but after several seconds it aborts, and the connection fails Transferring data between two devices is often a time consuming mess. Cables, unreliable Bluetooth connections, and significant patience are all part of our collective suffering. Fortunately, an alternative exists in the form of Wi-Fi Direct. Developed by the Wi-Fi Alliance, Wi-Fi Direct promises to deliver the speed of a traditional Wi-Fi network. Two devices are able to communicate directly, without the need of an internet connection. Of course, no new technology is without downsides. According to research presented at Black Hat Europe 2017, Wi-Fi Direct may be compromising our security. In doing so, it unwittingly grants hackers an easy way into our digital lives---all in the pursuit of convenience. How exactly does Wi-Fi direct make us vulnerable, and what can we do about it? What Is Wi-Fi Direct? Bluetooth has been around since 1994, and it was once considered the easiest, fastest solution for wireless file transfer. However, it wasn't the best: speeds were slow and reliability was poor. In the almost quarter of a century since, we've been propelled into the digital age, creating, consuming, and transferring files far larger than existed in 1994. The Wi-Fi Alliance thought they could help, and created Wi-Fi Direct---combining the ease of Bluetooth and the speed of Wi-Fi. Although we associate Wi-Fi with the internet, it is actually a way to create a local wireless network. It just so happens that most of the time the Wi-Fi Access Point (AP) is connected to the internet. Wi-Fi Direct is not constrained by an internet connection. Instead it allows two devices to set up a peer-to-peer (P2P) Wi-Fi network, without the need for a wireless router. Although it uses different technology, the reality is that Wi-Fi Direct is a lot like Bluetooth---except with speeds up to 250Mbps (ten times the speed offered by Bluetooth 4.0) and AES 256-bit encryption. Wi-Fi Direct is a fairly confusing name. In fact, it sounds strangely like a service used to easily connect to a Wi-Fi network. Although, that already exists as Wi-Fi Protected Setup (WPS). During development, Wi-Fi Direct had an alternative name (Wi-Fi P2P) which better summarizes the protocol. Instead of connecting to a central Access Point (AP), two devices are able to connect directly to each other. Andr\u00e9s Blanco"> Image Credit: Andrs Blanco The Discovery Procedure, which allows for the creation of the Wi-Fi Direct connection, consists of two device states: listen, and search. When in a listening state, the device waits to receive a probe request which it can answer, known as passive scanning. The search state, or active scanning, sends out requests, waiting for responses from devices in a listening state. To create the P2P network, both devices need to actively switch between both states. Once two devices have located each other, they enter negotiations as to which device will act as the P2P Group Owner (P2P GO). The P2P GO closely resembles the AP in a traditional network, allowing the other device to connect to it. Andr\u00e9s Blanco"> Image Credit: Andrs Blanco Printers, Smart TVs, and similar Internet of Things (IoT) devices are often designed to act by default P2P GOs. They emit beacon frames, so that other devices can find them, and determine if they are suitable to connect to. This means there is no need for the GO negotiation, with the end result that the Wi-Fi Direct and Wi-Fi connections seem functionally similar. In practice, none of these technologies works in isolation. Many devices that support Wi-Fi Direct are also connected to a standard Wi-Fi network at the same time. Your home printer, for example, may be able to accept photos directly from your smartphone via Wi-Fi Direct, but it is also probably connected to your home network. The ability for a device to connect to multiple networks concurrently is usually a positive one. It is also one of Wi-Fi Direct's greatest vulnerabilities. Black Hat Europe"> Image Credit: Black Hat Europe However, Wi-Fi Direct as a specification isn't to blame. Instead, it is the implementation and poor security practices of the many device manufacturers that put you at risk. This problem isn't unique to Wi-Fi Direct. Indeed, it is a common weakness in IoT devices. Among the many examples presented by Andrs Blanco at Black Hat Europe, were printers from HP and Samsung, and a media streaming device from Western Digital. Blanco used HP's OfficeJet Pro 8710 as a case study. The printer supports Wi-Fi Direct, and is also able to accept concurrent connections to standard Wi-Fi networks. The printer's security management includes; HTTPS, WPA2, 802.1x wireless authentication, PSK, and a firewall amongst other things. After reading the specification sheet, you might be left thinking you've invested in a bulletproof device. The printer is setup as a P2P GO, so that it broadcasts its existence and allows other devices to connect to it. The Wi-Fi Direct standard mandates that once a connection is requested, the devices then use the WPS connection protocol to establish the connection. The WPS pin is a numerical eight digit code, which is easily subjected to brute force attack. HP's implementation of the WPS protocol is to automatically allow Wi-Fi Direct connections, using the default WPS password of '12345678'. In effect, this allows anyone to establish a Wi-Fi connection to the printer, without any authentication or notification. The attacker then has full access to the printer---potentially including its print memory and history---as well as an entry point to the wider Wi-Fi network that the printer is connected to. Another example of poor implementation can be found in the Western Digital TV Live Media Player. The device supported Wi-Fi Direct as standard, and it was automatically enabled, allowing anyone within range to connect. The connected device then had full access to the remote control features, as well as the web server, and read/write access to the media server and all connected devices. All of these permissions were granted with no authentication or notification. Perhaps unsurprisingly, the WD TV Live was discontinued in 2016. Many manufacturers claim that the vulnerabilities around Wi-Fi Direct aren't a concern down to the protocol's distance limitations of around 100m. Standard Wi-Fi networks also have a range of around 100m and this does little to prevent attacks. The Wi-Fi Direct protocol has flaws. However, as is the case across the tech industry, the main flaws come from hardware manufacturers doing little to secure their devices. Eager to part you with your hard-earned cash, technological developments are rebranded as features, but with no time invested in securing them. As the vulnerabilities differ by device, the best you can do is be aware of the devices on your network. When setting up a device change the default settings, disable insecure features, and make your network secure. Until companies are forced to face the cost of their poor security standards, it's left to us as users to prevent the damage they cause.

Why my wifi direct is not working. Wifi direct not working windows 10. Wifi direct doesn't work. Why is wifi direct greyed out. Wifi direct does not connect.

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