

Tips on Resolving Random Disconnections

Why does my modem randomly disconnect without any known cause?

Random modem disconnections can be an extremely frustrating experience for you as the user and for your ISP's technical support staff. It is often difficult to diagnose the reason or reasons your modem is disconnecting because, unfortunately, there are many reasons that modems disconnect randomly.

Determining the reason your modem is disconnecting will require some investigative work, and this document is designed to help us begin that investigation.

Idle timer: Check with your ISP if they have any Idle timeouts and how long they are. If you are working on a word document on your PC whilst connected to the internet which does not cause any data to be transmitted, AND you exceed your ISP's idle timeout, you may be disconnected. Check with your ISP on this. You should also check with your ISP on their session limit. Most unlimited plans come with a 4 or 5 hour session limit. A "HARD" session limit means that you WILL be disconnected after the session limit is reached regardless of if there are spare ports on the ISP's network. A "SOFT" session limit *may* allow you to stay connected for longer than the minimum session time if the ISP is not experiencing a high amount of concurrent callers.

Multiple Simultaneous Log Ins: If you are disconnected a moment or two after you log in, the problem may be multiple simultaneous logins to your account. Most ISP's will not allow you to connect to their network more than once.

You could also be disconnected if you log in while your username is active in another computer, i.e., you log in at home while your account is still active at work. Simultaneous logins are not allowed by some ISP's acceptable use policy.

Defective Cables/Loose Connections: One of the most commonly overlooked reasons that modems disconnect is due to defective cables and loose connections. If you have an external modem, replace any old or cracked cable, and make sure the pins in the adapter connecting the modem to the computer are not bent. Also make sure the cable between the modem and the computer is TIGHT. If you use an internal modem, make sure that the modem card is seated firmly in your computer.

Next, examine your telephone cable between the wall jack and the modem, or better still try replacing it. If portions of the telephone cable between the modem and your wall jack have been stapled to the wall, examine the cable carefully to make sure the cable has not been damaged. Also do not use jack splitters or multipliers (any kind of device that allows you to plug multiple phones into one jack).

Call Waiting: Call Waiting sends a signal to your phone that can cause interruptions in data communications. A simple way to alleviate this problem is to disable Call Waiting if it exists on your phone line. Please refer to your telephone provider for the commands on how to do this.

Weather Conditions: Infrequent disconnects may reflect a temporary change in your connection due to changes in weather conditions. Weather conditions can cause temporary changes in line conditions usually within the first hours of a rainfall. Besides the obvious physical damage due to fallen trees, etc., studies have shown that excessive rain can cause increased line noise (discussed below).

Line Noise: Another common cause of disconnects is line noise. Line noise can be created inside your home by appliances connected to your telephone line or appliances within close proximity to your telephone line.

To determine if something in your home is causing line noise, try unplugging EVERYTHING connected to your phone lines: caller ID boxes, extension telephones, cordless telephones, answering machines, other modems, fax machines, or any other appliance connected to your phone line. The modem should be the ONLY thing connected to your phone line during this test. If the problem goes away, one or more of those appliances connected to your phone line is probably causing you to disconnect. You can try reconnecting the appliances one by one to isolate the one causing the problem.

Line noise may also be introduced into your phone line by nearby electrical appliances or radio transmitters. Telephone lines are very sensitive to inductance or voltage produced by nearby electric appliances/lines or radio transmitters. To protect your modem from inductance, do not route the phone line within three inches of any electrical cord, extension cord, computer cable, printer cable, monitor cable, or any electrical appliance or power supply. Especially avoid laser printers, cordless telephones and uninterruptible power supplies (UPS's). If necessary, tape the phone line more than three inches away from the items listed above or any other electric appliance within close proximity to your telephone line.

If the line noise is not being induced inside your home, it may be induced in the cable somewhere between your house and your local telephone exchange central office. Your line may have one or more of conditions the telephone company calls 'bridge,' 'ground loop,' 'cross talk,' or 'bad loading coil.' Any of these conditions will cause random noise and unpredictable disconnects.

For noisy lines, try increasing a setting that tells the modem how long to wait (in tenths of a second) before hanging up when it loses carrier detect. According to modem manufacturers, "This guard time allows the modem to distinguish between a line hit, or other disturbance that momentarily breaks the connection, from a true disconnect by the remote modem."

For example: S10=100 setting will make your modem wait 10 seconds to make sure the other modem is really gone before hanging up. To change this setting, go to the following:

Start > Settings > Control Panel > Modems > Connection > Advanced Connection Settings > Extra Settings. Type S10=100 in the Extra Settings box.

If this seems to help, call your phone company and request that the line be checked for noise at the network demarcation block at your house. Do not let them just check the line from the central office end. Ask to meet the repairman at your house and get him to report the results of his tests to you.

Connection Speed: Surprisingly, the most common cause for modems to disconnect randomly is connecting at TOO FAST a speed. You may be surprised to learn that your connection speed varies during the course of your being connected to your ISP. While the speed at the time of your connection may have been 44,200, this speed varies while you are connected due to line noise and errors. When your modem detects noise on the line, it attempts to reset itself to its optimum connection speed through a process known as 'retrains.' When the modem is unable to reset itself, your modem may disconnect. As previously stated, the disconnects related to connection speed are the most difficult to diagnose, and require some technical expertise. If you continue to experience disconnections after eliminating the causes listed above, we encourage you to contact our technical support staff. The Technical Support staff will utilize the following technical information to address your problem. This information is provided as technical reference.

Disconnects Related to Connection Speed: Since many telephone lines will not support even a 28.8K connection, any time you get a higher speed connection you may experience disconnections. The local loop between your ISP's servers and the telephone company's central office should be the highest quality ISDN PRI lines available. Because of this, your modem may be fooled into connecting at a speed that the local loop from your home to the telephone company's central office will not support. This problem is worsened the farther you are away in

cable feet from your telephone company's central office. Speed re-negotiation is sometimes the most problematic code in modems, and you cannot rely upon it to hold a connection. In many cases, speed re-negotiation will fail, and you will be disconnected. Try dropping your connect speed by forcing a lower speed. If lower speed connection stops the disconnect problem, then line noise may be the problem.

Another common cause of disconnects is modem incompatibilities, again typically related to re-trains. Get the latest firmware revision for your modem. Don't assume because you bought your modem recently it has current firmware. Many brands have upgrades as well; these are well worth it.

Some modems have been known to have a 'spiraling death' syndrome, where they are unable to 'train up' to higher speeds when conditions improve. These speed negotiations may be transparent to the user of the modem. At best, the user may simply notice that speeds become slower and slower as time goes by. Frequent disconnects after similar periods of time (i.e. every five minutes or so) can be symptoms of this problem. Contact your modem manufacturer to obtain the latest version of software (or 'firmware' in most cases) for your modem. Many manufacturers ship these upgrades for free.

You get a 56k connection, BUT - it seems slow. Possible causes: your connection is poor and are experiencing a high error rate, speedshifts, modem retrains, and possibly disconnections. Follow the 56k connection troubleshooting below. Also, check your throughput! If you get an "unreliable" 56k connection - frequent disconnects, poor throughput, errors, retrains, etc: You should check to see if there's a firmware/driver update for your modem.

You can use Hyperterminal to see modem diagnostics for your connection. Hyperterminal comes with Windows 9X and is usually located under:

Programs > Accessories > Communications.

You will need to know which com port your modem is using so check this under:

Settings > Control Panel >

Modems. Select the Modem you are using and then select Properties. When connecting to Hyperterminal choose Connect Direct to com:n where 'n' is your modem's com port number. Do not connect to the modem but to the port the modem is on.

You want the program to access your modem. Give the modem the AT command and make sure you see the 'OK' come back. Now, give it the command to dial the service you are using: ATDT90116500. Wait for the connect message. What rate do you get? If you get a login prompt, go ahead and log in. If you don't get a login prompt, type some characters. In both cases, wait at least 30 seconds, then put the modem in command mode. (+++). When you get the OK message, display your connection data. (On x2-type modems, use the AT I6 which will display information on the current data rates and error information; on Lucent Flex modems, the command is AT I11; on Rockwell modems, it is AT &V1) You can go back on-line (ATO), and repeat this several times (unless the server hangs up on you). Then hang up, and again examine your modem's connection data.

DEPENDING UPON THE RESULTS YOU GET, you may want to DISABLE 56k on the modem - and force it to connect at a v.34+ rate. With some of the problems described above, you will find that you actually achieve a better throughput with a 28.8 rate than a 56k rate.

You might also try disabling v.42 error correction (forcing MNP instead) - some combinations of modems and telephone facilities fail to operate reliably with v.42, but will operate with MNP. If you get a mix of "good" high-rate and "bad" low-rate connections, you may want to automatically Limit Your Connect Rates. In addition, some users find that their modem wants to connect at too high a rate - resulting in low throughput due to excessive errors. In this case, you can set a lower maximum speed for connection.

Before doing anything else, see if turning down your FIFO buffers solves the problem. This can be accomplished by going into:

Control Panel and then Modems. Select your Modem and choose Properties. Select Connection > Port Settings.

Turn both buffers all the way down. Turning down the FIFO buffers often clears up connection problems.

Change the initialization string. The string AT&F&C1&D2 will work for most modems. If this causes errors, try simply AT&F.

For modems that support x2 and V.90:

For Sportster**

x2 on, V.90 off S32=66

x2 on, V.90 off S32=34

x2 off, V.90 on S32=98

Both off Both on* S32=2

For Courier

x2 on, V.90 off , S58=32

x2 on, V.90, off S58=1

x2 off, V.90 on S58=33

Both off Both on* S58=0

** Using AT&F1 in the init string automatically enables both protocols.*

***Non-U.S. Robotics modems that use x2 generally use the same commands as the Sportster*

How can I enable or disable K56flex and/or V.90?

The command depends on whether you have a Rockwell-based or Lucent-based modem. See below for the instructions appropriate for your modem. Rockwell chipset modems: For Rockwell-based K56flex modems that do not also support V.90, add +MS=11,1 to the end of your modem init string.

For K56flex modems that have been upgraded to V.90, or that support V.90 and K56flex simultaneously, use the following commands at the end of your modem init string.

For most Rockwell chips (except on PCI card modems):

V.90 preferred (K56flex will still work)*: +MS=12,1

V.90 only, K56flex and V.34 disabled*: +MS=12,1,34667,56000

K56flex preferred (V.90 will still work)* : +MS=56,1

K56flex only, V.90 and V.34 disabled*: +MS=56,1,34000,56000

Disable V.90 and K56flex, use V.34 (28.8/33.6): +MS=11,1

For Rockwell HCF chips (used on PCI card models):

V.90 preferred (K56flex will still work): +MS=V90

K56flex preferred (V.90 will still work): +MS=K56FLEX

Disable V.90 and K56flex, use V.34 (28.8/33.6): +MS=V34

For Lucent chipset modems:

For Lucent-based K56flex modems that do not also support V.90, add S38=0 to the end of your modem init string. For Lucent-based modems that do support V.90, use one of the following strings.

For Apollo (LT Win Modem) and Mars (LT PCI Win Modem) chipsets:

Enable V.90: -V90=1

Disable V.90: -V90=0

Enable K56flex: S38=1

Disable K56flex: S38=0

For Venus chipsets (mostly used in external modems):

K56flex only (V.90 disabled): S109=0
K56flex or V.90*: S109=1
V.90 only (K56Flex disabled): S109=2
Disable K56flex and V.90 (use V.34): S38=0

Lower the Graphics Acceleration. Go to:

Start> Settings-> Control Panel
-> System -> Performance -> Graphics.

Lower the Acceleration by one notch. This has the effect of stabilizing the entire system, and may keep the modem online.

Software Conflict: If another program tries to use the modem without checking to see if it's already in use, you may be disconnected. Check other software for settings related to modems. Turn off error control.

In Dial Up Networking Properties, go to

Configure -> Connection -> Advanced, and take the check mark out of error control. TCP/IP does its own form of error control, and analog data correction is therefore unnecessary. Do not remove this option unless they are having trouble and none of the above works.

Hardware Conflict: Hardware conflicts also cause modems to disconnect. Frequently we have seen internal modem cards configured in conflict with another COM port which will seem to work OK for a few minutes of the connection and then just 'freeze up.' Check to see that the motherboard com2 port does not conflict with the modem. See the modem documentation for instructions on detecting and correcting IRQ conflicts. In addition, we should note that, although rare, the modem may be set up to automatically disconnect after a certain period of inactivity.

Turn off LCP Extentions/Software Compression/Multi Link Negotiation: In later versions of Windows such as Windows XP and 2000, protocols which are not needed and often incompatible with the terminal server you're dialing into can cause disconnection issues. To disable these features:

Right click your dialup networking connectoid with your right mouse button then select Properties. From here select the Networking Tab -->Settings and UNTICK all boxes that appear. See if this improves your dialup connection.