
KnowledgeBuilder

56K Modem Category
Supra Max

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56K Modem Supra Max

When I am online how come my Modem on hold feature is not working?

- A) Make sure your caller id is enabled from your phone company
- B) Internet service provider has to support modem on hold feat (MOH)
- C) Internet service provider has to support a valid V 92 Access Number
- D) Make sure you are connected above 33k

Windows reports that there is NO DIAL TONE when trying to connect

- 1) Make sure one end of the phone cord is connected directly into a wall outlet and the other end plugs into the LINE connector on the modem.
 - Try connecting the to the Internet if you changed any connections after reading the above statement. If this does not resolve the problem proceed to step 2.
 - 2) Try connecting a telephone directly into the same wall outlet you are using for the modem by disconnecting the cord from the LINE connector on the modem and connecting it to your telephone set.
 - If you do not receive a dial tone on the telephone, try using a different telephone cable.
 - If another telephone cable does not resolve the problem you will need to contact your phone company for further troubleshooting.
 - If you are able to hear the dial toned through a telephone you should now proceed to step 3.
 - 3) Try connecting a telephone set into the PHONE connector on the modem. Make sure the phone cable you use for this step is a known working cable.
 - If you can hear a dial tone through the telephone set then the modem should be able to find a dial tone. Try connecting to the Internet after you confirm this step.
 - If the modem still does not have a dial tone then proceed to step 4.
 - 4) Do you have a call messaging service on your phone line?
 - If you have a call messaging service on your phone line your modem may not be able to detect a dial tone when there is new messages waiting for you. You need to tell the modem to pause before checking for the dial tone. The way to accomplish this is to place 1 or 2 commas just before the telephone number for your Internet connection.
 - Please contact your ISP for assistance if you are not sure how to make this change in your Internet setup.

The modem connects at low speeds (speeds of 33600 (33.6kbps) or lesser)

There may be a few reasons why your modem would not connect at full speed(56K). Most situations the modem is not the source of the problem.

With a good phone line you should be able to connect to your Internet provider at or around 49333 (49.3Kbps). If you have a average phone line expect to get connection speeds of around 45333. The worse quality of the phone line equals a lesser modem connection speed.

If you are connecting at 33600 or less, you should try testing the modem by connecting through a terminal program to other modem dial-up numbers in your area. Please use the following guidelines while performing the test.

- Make sure the modem is connected directly to a telephone wall outlet.
 - Try another telephone cable if you have been using the cable supplied with the modem.
 - Try the following test first with your regular number you use to connect with your ISP.
- As a second test try any alternate phone numbers in your area from your ISP by visiting the ISP's web site and looking up their list of access numbers.

As a third test try using another ISP for the test. We recommend using the larger nationwide ISP's such as Earthlink, Mfire, and MSN. Each of these ISP's has a list of published access numbers, any of

which you can use for this test.

- To perform a line test you must have a terminal emulator installed on your computer.
- Windows XP systems have Hyper Terminal built in and preinstalled into the operating system.
- Windows 95, 98, ME have Hyper Terminal built into the operating system. Hyper Terminal is an optional component in these operating systems and may not have been installed at the time your operating system was installed. You may need to click Start > Settings > Control Panel > Add / Remove Programs > Windows Setup > Communications to install Hyper Terminal. This step will require that you provide your Microsoft Windows CD disc.
- Mac OS systems do not feature a built in terminal emulator. Most of the Best Data CD's offer a program called Microphone Pro which can be optionally installed by inserting the installation CD into your CD-ROM drive and double clicking the Microphone Installer icon (may be located within a software folder on the installation CD).

IBM PC USERS (Macintosh users continue to the next section)

Windows 95/98/ME

- You will first need to know which com port the modem is using. You can find this out by going to Start > Settings > Control Panel > Modems and double clicking the modem # of your modem.

Windows 2000/XP

- You will first need to know which com port the modem is using. You can find this out by going to Start > Control Panel > Phone & Modem Options > Modem tab and double clicking the modem # of your modem.

Hyper Terminal Settings for Windows 95/98/ME/2000/XP

1. Open Hyper Terminal by clicking Start, Programs, Accessories, Hyper Terminal (Windows 98, ME, 2000, XP users will find this one level deeper inside of Communications.)
2. After you start Hyper Terminal you will see a new connection dialog box appear. Type TEST into the New Connection dialog box and click OK to continue.
3. Change the Connect Using option at the bottom to Direct To COMx (where COMx = the com port the modem is using). Click OK to continue.
4. Change the Bits Per Second option to read 115200 and click OK to continue.

Microphone Pro Settings for Mac OS

You should now be looking at a blank terminal window. You may not see the first command while it is being typed. Only type what is between the quotations in the following examples:

Type: "ATE1" and press the ENTER key.

Type: "ATW2" and press the ENTER key.

Type: "AT+MR=2" and press the ENTER key.

type: "ATDT18183370165" and press the ENTER key. (note: if you live in the 818 area code only type the phone number 3370165 without the 1818 prefix).

When the modem connects you should get an indication of what speed the modem connected at. Please make a note of this for point of reference. We have tested our modems on this line and found them to connect at rates of 48000 and 49333 from our facility. We have good to average quality telephone lines. If you experience a lower connect rate chances are it is because that is all that is capable of your telephone lines.

Modem not detected by Windows.

- 1) If you have a PCI modem you can try inserting the modem into a different PCI slot.
- 2) If you have a USB modem you can try inserting the USB cable into a different USB port.
- 3) If you have a PCMCIA modem you can try inserting the card into another PCMCIA socket.

No Dial Tone

- 1) Verify that the modem is connected directly into your wall phone outlet without using a splitter.
- 2) Try connecting a telephone to the TEL or PHONE connector on the back of the modem. If you do not hear a dial tone then you should try using a different phone cable and repeat this step.
- 3) If you have an answering service, such as the kind provided by most local phone companies, new messages waiting can sometimes cause the modem to not see a dial tone. Try placing 2 commas just before the phone number that you use to connect with your ISP. Contact your ISP if you are

uncertain where to place the commas.

Cannot establish a connecton

- 1) Make sure you are connecting the modem directly to the wall outlet and make sure the phone cable that you are using is not longer than 25 feet.
- 2) Try connecting to a different provider. You can try using a free service such as NetZero (www.netzero.com) to accomplish this.

Slow connection speeds

- 1) Check with your local phone company and make sure they are using a digital switch for the the phone number that your modem is physically connected to.
- 2) Check with your local phone company to verify how far away the local switch is from your location. High speed connections can usually only be obtained if you are no furthe than 3 miles from the switch at the head end of the phone company.
- 3) Try using a different phone cable.
- 4) Try using a different phone outlet at the wall.

Interrptions of data transfer

- 1) Make sure the phone cord coming from the modem is connected directly into a telephone wall outlet.
- 2) Make sure the phone cord coming from the modem is not nearby or wrapped around any other electronic devices, such as refrigerators, air conditioners, etc.
- 3) If you live next to an airport this can happen frequently, often times without a resolution. Try connecting at a slower speed to avoid this.
- 4) Contact your ISP to make sure they are not experiencing any technical difficulties.

Frequent disconnections from your ISP (INTERNET SERVICE PROVIDER)

- 1) Make sure the phone cord coming from the modem is connected directly into a telephone wall outlet
- 2) If you live next to an airport this can happen frequently, often times without a resolution. Try connecting at a slower speed to avoid this.
- 3) Contact your ISP to make sure they are not experiencing any technical difficulties.

PCMCIA phone cable is broken

The warrenty of the modem does not cover the PCMCIA phone cable. These items are sensitive and should be handled gently. If your cable is physically broken you can purchase a new cable through our online store. (<http://www.diamondmm.com/dmmstore.php>)

Why doesn't my 56k modem not connect at 56k?

The federal communications commission limits the amount of voltage that may pass through the phone lines so while most modems can actually achieve 56k the top speed on standard phone lines is about 53k. However the average connections speed is between 40 and 50 due to noise problems on even the best phone lines.

What's a 56k-compatible Line?

If you get a 56k modem, and you get 56k connections, you can safely say that you (presently) have a 56k-compatible line. However, if you don't get 56k connections, you cannot correctly assume that your line is not '56k-compatible'.

Possible reasons for not getting a 56k connect can include:

- The firmware in your modem isn't working properly for your line conditions

- The firmware in your modem isn't 'compatible' with the firmware in the server modem you are calling

- The firmware in one of the modems isn't 'compatible' with the digital portion of the telephone network being used

- Your line is not '56k-compatible'

In some of the above circumstances, you would be able to achieve a 56k connect with a different modem, or calling a different V.90 server.

56k Modem manufacturers have generally defined a '56k-compatible line' as being one that has only 1 D/A conversion (or 1 A/D conversion), and your local loop is less than 3½ miles. You may be able to get an answer - not always correct - if you ask your telco for the loop length and if your line has more than 1 A/D conversion. There is no 'requirement' or standard procedure for getting this information from a telco. But, even if you find you have only 1 A/D conversion (a '56k-compatible line'), you may still not be able to get a 56k connect with any 56k modem if your telco introduces certain types of digital impairments.

Buying a 56k Modem?

If you're buying a new system, you might have a choice on modem (Dell, Gateway, HP, Compaq, etc.), or one might automatically be included (most notebooks and many pre-configured desktop PCs). Rarely will they tell you what you're really getting (chipset, DAA, and drivers), and I recommend that, if you have a choice, you get no modem and purchase it separately.

Almost all modems being manufactured today support the latest V.92 as well as all the popular older modem standards. (Any modems that don't support V.92 should be considered outdated surplus and should be had for next to nothing.) V.92 modems with V.44 compression might provide slightly better performance (throughput) than V.90 modems - and add improved call-waiting compatibility: if your ISP supports V.92, and you have call-waiting service, you may place your Internet connection on hold while taking the call, then resume your Internet session. To V.90 servers, most V.92 modems also offer the ability you to incoming call and allow you to decide whether to ignore it or disconnect and take it.

What is a Voice Modem?

Most modems can be classified with these characteristics:

- Data/fax
- Data/fax/voice
- Data/fax/voice/speakerphone

Voice generally means that the modem is capable, with appropriate software, of supporting telephone answering machine functions: the modem can 'record' and 'play' to the Windows wave device. The answering machine software will also use the sound card on the machine to play and

record. The software may also include functions to dial or answer calls using your sound card's microphone and speakers or headphones.

Windows comes with a Phone Dialer. This utility will dial a number with any type of modem; after Phone Dialer dials a number, you use any normal phone (connected to the 'Phone' jack of the modem) to complete a voice call.

Third-party software can be used with a voice modem to enhance functionality. One such package: ModemSpy can record phone calls to wav files.

All modems are also capable of supporting voice functions provided by 'Internet Telephony' - the modem is connected to your ISP in data mode, and software on your system sends and receives voice-encoded data to a compatible telephony server to complete a call. (Many of these services used to be free.) Some providers include: Phone Free, DialPad, IConnectHere, and Skype.

A modem that includes speakerphone capability will have additional audio components on the modem to provide an interface for a microphone and speaker or headset. This allows the modem to dial or answer and provide high-quality full-duplex voice functionality.

Full duplex means you can talk and hear at the same time. Many 'voice' modems when used on voice calls will provide only half-duplex functionality: at any instant, you can either be talking or listening. The quality of the audio produced using a voice modem is often a problem.

Voice modem chipset makers include in the driver or firmware code to interface to the wave device, but do not develop the software that provides voice functionality. The modem makers generally bundle "compatible" third-party voice modem software. Some voice modem software offerings: Ring Central, BVRP, and Messaging Software. Microsoft Windows provides TAPI (a telephony application program interface) and a Unimodem service provider (driver). The Microsoft-provided Unimodem driver uses your modem driver (.inf file) to support TAPI-compliant applications and your modem.

CALLER ID is not automatically supported by all modems. In most cases, data/fax modems will not provide any caller id support. The chipsets for voice, speakerphone and even most data/fax modems are capable of caller id, but the modem must include additional components: the caller id signal is sent by the phone company between the first and second rings while the phone, or modem is still on-hook. Modems that support caller id must have a circuit to receive the caller id information without taking the modem off-hook.

DISTINCTIVE RING - Many modems are capable of supporting distinctive ring - however, Windows XP & 2000's Microsoft-provided Unimodem is not.

VoIP - Voice Over IP and Modems

VoIP - Voice Over IP - has suddenly become a hot topic. In case you've missed the basics - a broadband Internet connection (DSL, cable, etc.) can be configured to provide telephone service in addition to Internet access.

As VoIP proliferates - and it will - new challenges will emerge for dial-up modem users. And, VoIP opens up significant public policy issues. This special report touches on both.

Technical: Direct-dial local, national and international telephone service is available nearly everywhere and is based upon a 100+ year-old "circuit-switched" architecture. Once your call is routed (after you dial last digit and before the other end can ring), you effectively have a 64kbps dedicated channel between your line and the other end. This channel remains yours until you hang up. Each end provides an analog 2-wire line. A codec codes and decodes the analog and digital portions of the telephone network and a hybrid separates the 2-wire circuit to '4-wire'. This is imperfect, and there will be some 'echo' of the send on the receive - and if both ends are 2-wire, there will be near and far echo. The codecs are designed to provide speech-range (~300-3000hz) frequency response using the 64kbps datastream. As calls get more distant, there will be more delay, but, once the call is setup, the delay remains constant.

Note the 64kbps data rate used in the global switched-circuit telephone network. This is a high-enough data rate to provide near CD-quality mono audio using today's compression techniques, but what we've got today is pretty horrible audio - just acceptable speech because the system is based upon ancient technology. Modern codecs can provide switched-circuit phone network quality audio using around 5kbps! Not that VoIP uses such a low rate - at least not yet.

VoIP replaces all or part of the circuit-switched call with IP (Internet Protocol). With IP, packets of data are sent and received over local and/or wide-area networks. Each packet is routed to the

destination and travels on a shared network.

VoIP provides a "virtual switched-circuit" connection: the phone is connected via the broadband Internet connection to an Internet-telephony service provider, which routes the call via Internet Protocol to a switch that is connected to the public switched-circuit phone network to complete the call. Note that this allows all sorts of possibilities and features that used to be out-of-reach: with VoIP your phone number can be in a different area code, or even country, than where you actually are! Compression and Internet Protocol Routing introduces more delay than with a traditional switched-circuit call. While the IP end isn't restricted to a virtual 2-wire phone line, the other end is. If echo cancellation isn't perfect (and it often isn't), this delay can be much more significant - but tolerable? - for voice calls. Analog Modems, on the other hand, weren't designed with anything but traditional circuit-switched networks. When VoIP technology is used in any part of a call, the VoIP-switched-network interfaces need to recognize and support analog modems: more bandwidth than voice may require and if there's too much delay, the connection may fail. Dropouts - when the IP portion isn't working like it should - may be a new irritant to VoIP users, and a connection killer for modems - including fax modems. (Most VoIP providers claim to support modem/fax connections.)

VoIP is poised to take off due to compelling economics and competitive forces: Why does caller id cost you \$7.95 + tax from your phone company when the phone company's cost is near-zero? Why is caller id provided at no extra charge with cellular service? Answer: because no one else can offer you that service on your line, and, for cellular, everyone offers it. The game changes for wired-telco providers with VoIP - on all the enhanced services like call-waiting, 3-way calling, etc. Right now, telephone services are highly regulated (although "monopoly" services like caller id and call waiting often are treated as "competitive non-regulated"). Internet Service Providers are not. While VoIP service may not provide the reliability of the almost bullet-proof phone line we've come to expect from our phone companies, the cost savings may be more than enough to win customers.

VoIP requires broadband. While broadband is widely available in the US and elsewhere, broadband availability is not nearly as universal as phone service, and will not have such wide availability for some time. The 'last mile' - the connection to your home remains the biggest hurdle, and defines your options for any particular location.

For most home users, cable is today's only VoIP alternative. Cable companies are not among consumers most-loved and respected companies. But, cable companies have made huge investments to upgrade their networks to support 2-way digital connections, and cable modem service has become more reliable. Cable's primary high-speed competition - DSL - requires a phone line, and your phone company has the most to lose from VoIP (although most phone companies are making plans to provide their own VoIP services...). Expect the cable companies to begin offering telephone service - TimeWarner has already announced. Even without the local cable company offering phone service, third-party providers already offer it. Just remember: one would hope your cable company would do a few things to enhance service reliability before they offer telephone service: like UPS (uninterruptible power supplies) and the maximum possible fault-tolerance/redundancy. Anytime the cable internet service is out, your phone service will be out, too. With a third-party provider, your service becomes vulnerable to problems with your local Internet connection as well as with problems at the third-party and the connection between your ISP and the third-party. 911 issue: you may not be able to call 911, and if you are able, the call will not be handled like a normal 911 call and the emergency response center may not receive any information regarding your phone number or location.

The public policy issues are huge: Billions and billions of dollars are collected today in the USA from taxes, fees and surcharges on telecommunications services: the Universal Service (Slosh) Fund, Federal Excise Taxes, Line Cost Charges, etc., etc., etc. A VoIP provider must purchase access to the public switched network in order to allow you to make calls - so, look for a fight as the players try and lay down rules to catch up with technology. The phone companies will fight for regulation of VoIP providers to protect their turf, as VoIP argues for a chance to compete.

Why Slower Modem Speed may be Faster

Slower = Faster? Here's why: The modem business is very competitive, and the first thing a typical user will consider in evaluating a modem is how fast it indicates it has connected. With the advent of 56k modems, the CONNECT speed reported gives less than 1/2 the picture: first, only the downstream rate is indicated, and second, the modem may not be able to sustain the speed at which it connected.

If the modem is unable to decode the data at the connect speed, the modem will either retrain or do a rate-renegotiation. Both of these events interrupt all data flow - in the case of a retrain, the interruption can be 20 seconds or more of nothing!

Because most users do little more than compare connect speeds of modems, manufacturers have an incentive to be too aggressive with connect speed so you think your modem is faster.

If your modem is connecting at a rate below 40K bps, I strongly urge you to check your throughput with 56k disabled altogether. You may be surprised to find that your modem (a)

connects to your ISP faster; and (b) performs better.

If your modem is connecting at a rate of 40k bps or above, but your throughput doesn't match, or if you experience disconnects or unreliable connections, I recommend you try limiting your speed connection to a lower rate.

After you've tested the various options with your modem and present modem driver, I suggest you check to see if an updated driver available, and then re-check and compare the performance.

V.92 Trouble: Interoperability

V.92 and V.44 became International standards in November of 2000, and the first "V.92" modems were sold in November of 2000. As of late April 2003, the V.92 feature that provides for higher upstream rates is still basically non-functional: Cisco, Lucent, and Nortel server modems do not support PCM upstream at all. Patton and Commworks do, but the maximum PCM upstream rate you might achieve is 36kbps - 25% lower than the standard's 48k maximum. Some in the industry doubt 48k upstream is achievable. A consumer advocate might find much of the advertising for V.92 to be deceptive: modems or ISPs promising "...up to 48Kbps..." upstream should disclose that this is a future, possibly unachievable capability.

V.92/V.44 drivers for both client and server modems have undergone revisions to resolve connectivity problems. Some interoperability issues are still being addressed. Some ISP V.92 upgrades can cause connectivity problems for users with older V.90 modems, as well as users with new V.92 modems. The most serious problem is inability or difficulty in completing handshake and getting a CONNECT. Updating your modem driver may help in these situations. There are cases where V.44 fails to work between client/server modems which may result in a CONNECT but no data, a failure of the handshake, or a CONNECT without error correction. (Disabling V.44 on the client modem, or updating the modem driver might help with this problem.)

Modem-on-hold (MoH) is the most compelling feature for many users. Many V.92 modems are sold without the necessary MoH software. The drivers that come with the modem may also need updating to properly handle MoH. There is an issue with V.92 servers that have MoH disabled: when a call comes in, the server denies a MoH request and disconnects instead of allowing the client to decide whether to ignore the call or accept it and disconnect. (Level3, the only national V.92 network provider disables MoH by default. Level3 customers include the largest national ISPs - AOL, MSN, Earthlink, etc., and all major Level3 customers except United Online (NetZero/Juno) have requested MoH be disabled.)

Users getting reduced handshake times (Quick Connect) are hard to find. (Again, most modems will need a later driver than is shipped with the modem, and some modems might need extra initialization commands to enable the feature.) There are cases where quick connect fails resulting in a longer handshake, failure to connect, reduced connection speed, or connection without error correction. Quick Connect may need to be disabled.

V.44 compression is working for many V.92 client-server connections. The performance difference can be impressive with the right kind of data transfer. Only controllerless modems (DSP and Softmodems) are "ready" to benefit: most Windows PCs cannot support real serial port data rates above 115.2k without a high-speed serial card.

The bottom line: The only difference in V.90 vs a V.92 modem is software. Nearly all client modems being made today are V.92. New systems that bundle a modem are almost always V.92 now. ISPs are faced with a more complicated choice. Upgrading to V.92 will almost certainly cause some problems for some customers; and, the ISPs vendor may require expensive service contracts or hardware upgrades.

What 56k Connect Rate Should You Expect?

56k Modems rarely connect close to 56k. In the US, FCC-imposed power give most 56k modems a maximum potential for a 53.3k connection.

But, what happens in the real world? These are my estimates of 56k connections.

About 60-70% of 56k modem owners are getting 56k connects (rates higher than 33.6k). 30-40% get rates of 33.6k or less.

Of those getting 56k rates, 80-90% are getting 40k or higher. About 75% get rates between 44-49.3k. About 10% get rates of 50k or higher, and about 15% get rates between 34.6 - 38.6k. However, the throughput achieved by a substantial portion of the connections doesn't match the connect rate.

Of the 30-40% of 56k modem owners not getting 56k connects, about 15% are connecting at 31.6 - 33.6k, 70% at 26.4-28.8k, and 15% at 24k or lower.

The rate achieved depends upon a number of factors including:

- The Modem (sometimes the one you have won't work with your line conditions/ISP)
- The Modem Firmware/driver (sometimes a firmware upgrade/downgrade will yield improvement)
- Your line conditions (sometimes the facilities provided by the phone company prevent 56k connects)
- The ISP's Modems (sometimes your modem won't achieve 56k-interoperability with your ISP's 56k modems)
- The ISP's Modem Firmware (sometimes an ISP modem firmware upgrade will yield improvement)