

Microsoft Windows 2000 Server Documentation

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Attaining fast speeds with a 56 Kbps modem

A modem connection must fulfill three requirements to support a 56 kilobits per second (Kbps) (also called **V.90**) connection.

1. The host server must use a digital connection to the network. Your Internet service provider can tell you if they support 56 Kbps service.
2. Both ends of the connection must support the same protocol, the V.90 standard or either of its predecessors, K56flex, or 3COM/USR X2. For example, if your Internet service provider has a V.90 device, your modem must support the V.90 protocol.
3. There can only be one analog connection between your modem and the host computer. The phone line in most homes is an analog line.

If a connection does not meet these requirements, a modem falls back to the fastest protocol that works for the connection. For example, a 56 Kbps V.90 modem falls back to the 33.6 Kbps V.34 protocol if it cannot make a V.90 connection. Even if your connection fulfills these requirements, other factors may reduce either the transmission speed or the number of times that you successfully obtain the highest speed connection. For example, old lines or lines that are subject to interference may reduce transmission speeds. Maximum throughput speeds of 26 Kbps are not unusual in these cases.

Devices to improve the quality of your telephone service may also hamper 56 Kbps V.90 modem connections. Load coils found on long wire lengths to improve voice quality do not usually prevent V.90 connections, but can reduce the speed. Digital pads, which balance the volume of voice calls, usually do not prevent V.90 connections, but they can reduce the speed. Analog pads prevent V.90 connections, because they convert the digital data to analog to balance the volume and then back to digital. This inserts an additional analog section in the line.

In practice, the 56 Kbps speed supported by the V.90 and other protocols is unattainable. U.S. government regulations to safeguard public phone systems right now limit transmission speeds to 53 Kbps. Phone-line noise and other limitations of phone systems usually keep average transmissions in the 40 to 50 Kbps range.

For more information, see [The V.90 modulation protocol](#), [Data transfer speed](#), [Improving modem throughput speeds](#), [Optimizing data transfer speed](#), and [Protocols and standards](#)

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