



Asanté MTU Tuner AsantéFast 10/100 PCI Fast Ethernet Adapter

In September 2000, Asanté announced the world's first 10/100 Fast Ethernet adapter that was "tunable for maximum Internet performance." When used with broadband Internet connections (cable or DSL modems), the AsantéFast 10/100 PCI Fast Ethernet Adapter may be adjusted to transmit data packets more efficiently than conventional network adapters.



This document describes the Asanté MTU Tuner and how the maximum transmission unit (MTU) parameter can be optimized for Mac OS. The software is included with shipments of the AsantéFast adapter (99-00590) beginning in October 2000 or may be downloaded from the Asanté website, www.asante.com.

Do You Need an MTU Tuner?

If you are using a high speed Internet connection, then answer these questions:

1. Are you using an external DSL modem?
2. Is your DSL service using Point-to-Point Protocol over Ethernet (PPPoE)?
3. Are you using access software like Ivation *MacPOET*, Sympatico *Access Manager* or NTS *EnterNet*?
4. Are you using a Network Address Translator (NAT), a router similar to the Asante FriendlyNET Cable/DSL Router (99-00617-01)?

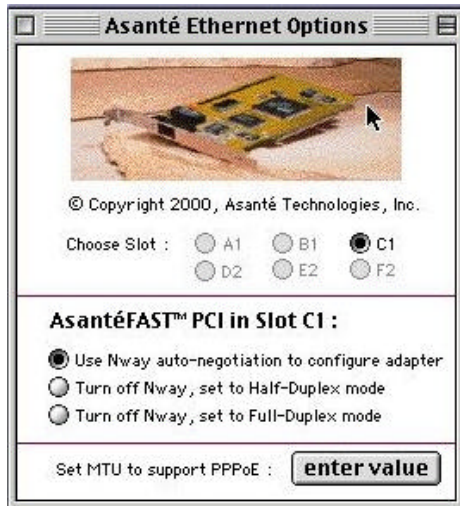
If you answer **yes** to these questions, then Asanté's software may improve the efficiency of your Internet connection.

Typically, only users who connect using Digital Subscriber Line (DSL) whose Internet Service Provider (ISP) with PPPoE DSL service, or who are using NAT, will benefit from an optimized MTU setting. If you are unsure which type of DSL service you have, please check with your ISP.

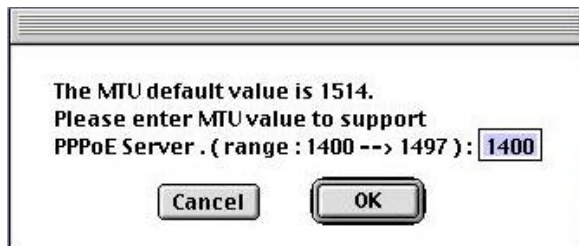
Using the Asanté MTU Tuner

Configuring the Asanté MTU Tuner is simple.

1. From the Apple menu, choose the Control Panel.
2. Select Asanté Ethernet Options.



3. Click the **enter value** button.
4. The default MTU is 1514. You may change this amount to a number within the recommended range (1400 to 1497).



5. Click **OK** when finished.
6. You will need to restart your Macintosh in order for the new MTU value to take effect.

SUPPORTED ASANTÉ ADAPTERS

The Asanté MTU Tuner is integrated into these network drivers for Apple Mac OS:

Network Adapter Model	Mac OS Driver	Part Number	Status
AsantéFast 590 10/100 Fast Ethernet	3.0	99-00590-XX	Released
		61-20590-01 (PNIC II, Rev D)	Released
		61-20590-02 (PNIC II, Rev H)	Released
AsantéFast 10/100 Fast Ethernet, Rev B	3.0	99-00493-87	Released
		09-00198-XX (PNIC I)	Released
AsantéFast 10/100 Fast Ethernet	4.5	99-00493-01	Beta (in testing)
		09-00169-XX (Davicom)	Beta (in testing)

OBTAINING DRIVERS

At this time, the AsantéFast 3.0 driver for Mac OS is available for download from the Technical Support section of the Asanté website. The 4.5 driver for the legacy 10/100 adapters are scheduled to be available in October.

Background on MTU and PPPoE

In order to understand what an MTU Tuner is and why it is important, it is necessary to know something about how TCP/IP is used to handle data within a LAN (Local Area Network), and across WANs (Wide Area Networks) and the Internet. It is also necessary to understand how PPPoE changes the dynamics of data transmission over the Internet, as it is the use of PPPoE that requires the ability to alter the TCP/IP packet.

TCP/IP AND ETHERNET

For sending information to someone in the next cubicle or across the world, TCP/IP has become the most common protocol in both private and commercial networks. Using TCP/IP to communicate between users is best likened to using the Postal Service to send a letter to someone. When you send a letter to the neighbor next door, in the next town, or across the globe, you put the letter in an envelope and write two addresses on the envelope: the destination address and your return address.

Computer networks use the same idea to send data. A TCP/IP application inserts its data into an IP envelope and writes the IP source and destination addresses on the envelope. When the information is sent via an Ethernet on a LAN, the IP envelope is then put into an Ethernet envelope, and the Ethernet source and destination addresses are written onto the Ethernet envelope.

TCP/IP AND PPPoE

Ethernet (like all LAN protocols) imposes a maximum packet size on its users. No Ethernet packet may exceed 1518 bytes. Since the Ethernet header (the addresses and other information) uses 18 bytes, that the maximum amount of data in each packet is 1500 bytes.

Many ISPs providing DSL connections to their customers provide them using a variation of the Point-to-Point protocol familiar to dial-up users. This allows them to use their IP address space more efficiently by not having their DSL customers connected to the network continuously.

An ISP providing PPPoE uses a device called an *access concentrator* that allows multiple clients to connect to it. The AC is an Ethernet device that has its own Ethernet address. When the client connects to an AC, it establishes a *session* that has its own addressing information. This information must be

written into the Ethernet packet along with the other address and control information. The combination of the client's and AC's Ethernet addresses, along with the session number, identifies the PPPoE session.

The additional information required by PPPoE occupies eight bytes in the packet. If the client's applications were allowed to send 1500 bytes of data, the additional overhead would result in an Ethernet packet of 1524 bytes—beyond the maximum allowed.

The Asanté MTU Tuner allows you to change Mac OS's maximum transmission unit to a lower value so that your Ethernet packets don't exceed the maximum size. This means that your Internet transmissions will be more efficient.

Network Address Translation (NAT)

A dial-up Internet connection gives the client a single Internet Protocol (IP) address. If more than one computer in a small office or home wants to browse the Internet at the same time, each of them will need a individual IP address.

One solution is to get additional IP addresses from your ISP. That solution requires that the LAN be permanently connected to the Internet, and is expensive for many small offices.

The other common solution is to use NAT. Each computer on the LAN is assigned an IP address from a range reserved for private networks, and the NAT router translates the private IP addresses into a public address before sending the packet to the Internet. When a reply is received, the router makes the translation in the reverse direction.

As with PPPoE, this may add to the overhead imposed on an ethernet packet, and require the MTU of the Ethernet interface to be reduced.

For More Information

The *network address translator* is described in RFCs 1631 <http://www.ietf.org/rfc/rfc1631.txt> and 2663 <http://www.ietf.org/rfc/rfc2663.txt>.

Information about addresses reserved for *Private Internets* is in RFC 1918 <http://www.ietf.org/rfc/rfc1918.txt>

More detailed information about *PPPoE* is available in RFC 2516. See <http://www.ietf.org/rfc/rfc2516.txt> for a copy of the RFC.