

The problems with sending Transmission Control Protocol (TCP) traffic over long-delay and high-bit error links - such as satellite links - are the result of a congestion control scheme that was designed for terrestrial networks. TCP interprets the delay inherent to a typical satellite link to be network congestion, and decreases data throughput as a result.

**The SkyPipe Eos Link Enhancement for Secure Satellite (LESS) is a pocket-sized, USB-powered SkyPipe hardware client designed to maximize data throughput over high-delay links, and is specifically designed for secure satellite links.**

A simple “plug and play” device, the SkyPipe hardware client includes features for enhanced data security, and is transparent to users and most applications. Minimal configuration and no specialized proxy settings are required!

### ► SkyPipe™ Eos LESS Features:

- SkyPipe™ Performance Enhancing Proxy (PEP) maximizes data throughput
- IPsec-compliant VPN client
- AES 256-bit encryption offers enhanced security
- Stateful Inspection Firewall
- Prefetching and caching
- On-the-fly compression
- Basic router functionality, including Network Address Translation (NAT)
- USB powered – no additional power supply required
- Compact and lightweight – 4.2 X 3.4 X 1.2 inches/15.6 oz.

**SkyPipe Eos LESS is a particularly timely solution for users of the new Inmarsat BGAN high-speed data service – and ideally suited for those who employ Government encryption devices to secure their mobile networks.**



**Optimized Data Throughput:** SkyPipe substitutes the TCP protocol with a highly efficient and reliable UDP-based protocol that is specifically engineered to maximize data transfer over high-delay and loss-intensive networks. The SkyPipe Performance Enhancing Proxy (PEP) supports multiple standard application protocols, including HTTP, HTTPS, FTP, SOCKS, and Protocol-independent Port Forwarding.

SkyPipe also utilizes HTTP prefetching and on-the-fly compression, further enhancing transfer of HTTP-based data, drastically increasing web traffic performance and decreasing download times for web pages. And as TCP throughput over satellite networks correlates directly to delay (RTT), SkyPipe is especially effective in enhancing throughput over “double hop”, mobile-to-mobile links.

**Security:** On-board VPN capability means that hardware encryption device users are afforded an optional additional layer of security by “double wrapping” of traffic. The SkyPipe Eos client can be terminated to any Cisco® PIX firewall or security IOS. Multiple options for user authentication are included. To further ensure flexibility and interoperability with other network or communications equipment, most SkyPipe features can be enabled or disabled via a simple set up menu.



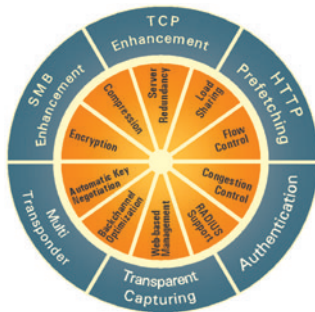
**Link Enhancement for Secure Satellite (LESS)  
Eos Hardware Client**



SkyPipe can be integrated effortlessly into the Ethernet connection of almost any system. In addition, SkyPipe is configurable to operate in a special “Stealth Mode”. This allows the SkyPipe unit to perform absolutely transparently, without requiring its own IP address. Additional benefits include:

- **Simple integration without configuration and without installation of drivers or additional software**
- **Independent operation in any multi-vendor environment, regardless of the processor technology and operating system version used**
- **Transparent SkyPipe Stealth Mode (single user only) utilizes the computer’s IP address, making the entire system unassailable to attack**
- **Platform-overreaching management with the SkyPipe Security Configuration Manager: fast, error-free and significantly more cost-effective configuration and management of all security setting and audits (optional)**

Public SkyPipe servers will be available from AOS satellite service partners. Various private server options are available, and can be installed at user facilities.



**Performance:** The following actual test results illustrate the effectiveness and value of SkyPipe:

**File Transfer**

Averaged results of testing file transfers over a 256Kbps Inmarsat satellite link (bonded-channel M4 (GAN), to landline):

| Without SkyPipe                     | With SkyPipe                         |
|-------------------------------------|--------------------------------------|
| Upload: 100Kbps<br>Download: 88Kbps | Upload: 240Kbps<br>Download: 228Kbps |

**Web**

Averaged results of HTTP traffic performance over Inmarsat BGAN satellite link, via public Internet:

| Without SkyPipe              | With SkyPipe                |
|------------------------------|-----------------------------|
| Web page load:<br>20 seconds | Web page load:<br>4 seconds |

**▶ Performances and Specifications**

|                                 |  |
|---------------------------------|--|
| <b>CPU</b>                      | Intel XP 42x with 266 MHz                                      |
| <b>RAM/Flash</b>                | 64 MB SDRAM/16 MB Flash  |
| <b>LAN/WAN</b>                  | Ethernet IEEE 802.3 10/100BaseTX; RJ45, full-duplex, Auto-MDIX |
| <b>Serial interface</b>         | RS-232, internal   |
| <b>Power supply</b>             | via USB interface (5 v at 500 mA)                              |
| <b>Dimensions</b>               | 4.28x3.42x1.16 in. (109x87x29 mm)                              |
| <b>Weight</b>                   | 15.6 oz (442 g)  |
| <b>Internet support</b>         | PPPoE, PPTP, Static IP, DHCP client                            |
| <b>VPN data throughput</b>      | 35Mbit/s   |
| <b>Maximum VPN tunnels</b>      | 10   |
| <b>Firewall data throughput</b> | 99 Mbit/s  |
| <b>IPsec mode</b>               | ESP tunnel/ESP transport                                       |
| <b>Authentication</b>           | X.509v3 certificates w/RSA or PSK                              |
| <b>Data integrity</b>           | MD5, SHA-1   |
| <b>Anti-spoofing protection</b> | Included   |

**For more information about the SkyPipe LESS Hardware Client, or SkyPipe Link Enhancement Software, contact AOS.**

