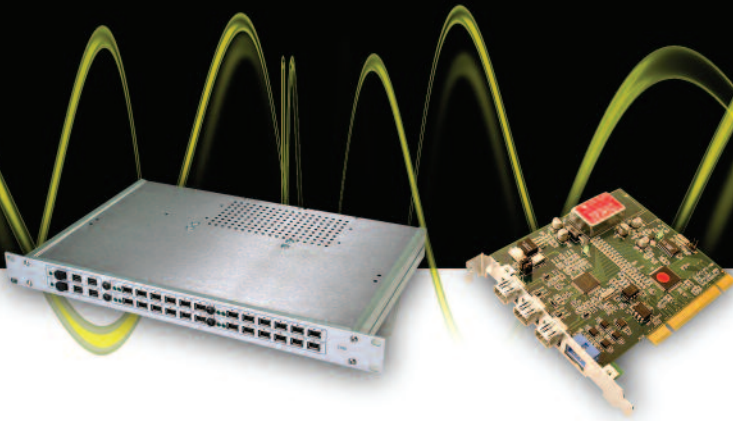


# IEEE-1394

Hardware & Software  
Solutions

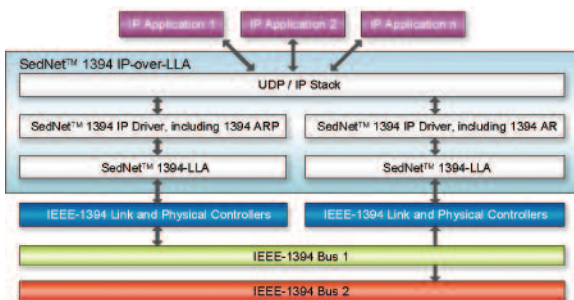


» Embedded Systems » IEEE-1394 » Software

## ➤ SedNet™ 1394 IP-over-LLA

### Product Description

The SedNet™ 1394 IP-over-LLA (Low Level API) focuses on providing IPv4 communication over the IEEE-1394/FireWire® bus using minimal footprint and minimal CPU power while ensuring maximum throughput. These requirements are typical in the industrial, medical, consumer electronics and aerospace/defense markets.



These markets can benefit from the SedNet™ 1394 IP-over-LLA software by using smaller CPUs and less RAM to perform the same or enhanced functionalities, which translates to reduced production costs.

For example, aerospace and defense applications have an increasing demand for data exchange, yet have a low tolerance for heat, which is difficult to dissipate, particularly in space. Heat is produced whenever a CPU executes instructions. Software products such as IP-over-LLA that can reliably exchange large amounts of data with minimal CPU usage consequently have enormous value for aerospace and defense applications.

The small code size allows lower latencies in packet transmission, and high throughput at levels close to the physical limits of the IEEE-1394 bus.

In a closed system, when multiple nodes use the SedNet™ 1394 IP-over-LLA to communicate, code customization is possible to further enhance its capabilities. For example, the IEEE-1394 media allows the UDP protocol to become more reliable without adding data exchanges between the nodes. CPU usage and throughput can be enhanced by removing unused features. Code becomes lighter and more efficient, although it may no longer be fully compliant with the IPv4-over-1394 or IEEE-1394 standards.

Note that the IP-over-LLA software is dedicated for IP communication. It is not possible to implement other IEEE-1394 protocols on a platform where the IP-over-LLA is used. If your application requires protocols other than IP, simply opt for Avera's SedNet™ 1394 Stack and High-Level Protocols instead of IP-over-LLA.



## > Technical Features

- Compliant with RFC768 (UDP), RFC791 (IP), RFC2734 (IPv4-over-1394) and IEEE-1394
- BSD 4.4 socket API
- Real zero-copy communication including fragmentation, re-assembly and an API similar to BSD 4.4
- Dedicated to IP-over-1394 operations
- Full support for multithread applications
- Available on Wind River's VxWorks and Green Hills' Integrity. Ask us about the availability of other RTOS.

## > Options Available on Request

- Redundancy
- Fault tolerance
- UDP/IP communication with reliability similar to TCP/IP communications
- TCP, ICMP and other IP-based protocols
- Porting to different RTOS, CPU or IP stacks
- Customizable for higher performances for closed environments, where interoperability with other
- IP-over-1394 implementation is not a factor
- Configurable allocation of static memory

## > Benefits

- Low CPU bandwidth usage
- Small memory footprint
- High throughput on 1394 link – up to 800 Mbps
- Source code available for the entire software stack, from the application down to the IEEE-1394 media, allowing code optimizations and review
- Complete training available (one-, two- or three-day sessions)

## > Applications

- Redundant Systems
- IEEE-1394 to Ethernet or Wireless Routers

## > Q&A

### Q: Is IP over LLA compatible with IPv4 devices?

A: Yes, IP over LLA is based on RFC 2734: IPv4 over IEEE 1394.

### Q: Is IP over LLA compatible with IPv6 devices?

A: No, IP over LLA does not include support for RFC 3146: Transmission of IPv6 Packets over IEEE 1394 Networks.

### Q: Does IP over LLA include support for IP Multicast?

A: No, IP over LLA is a stripped-down version of IPv4 over IEEE 1394. Multicast can be added as part of a customization project, however.

### Q: Does IP over LLA include support for TCP/IP?

A: No, IP over LLA is a stripped-down version of IPv4 over IEEE 1394. A design choice was made to include only UDP/IP support to reduce the overall footprint as much as possible. TCP/IP can be added as part of a customization project, however.

### Q: Is IP over LLA compatible with Windows® XP?

A: Yes, it will communicate with a Windows® XP workstation without any problem.

## > Technology Partners



## > Memberships



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"Windows" is a registered trademark of Microsoft Corporation

"LabVIEW" and "NI TestStand" are registered trademark of National Instruments Corporation

Avera is a global test engineering software, solutions, and services company. Avera's mission is to accelerate electronic product development and improve quality standards for innovative high-tech manufacturers in electronics, telecommunications, automotive, aerospace, and defense, throughout the design lifecycle of their products.

OEMs rely on Avera to establish a global test strategy, to standardize and streamline their test activities, and to deliver leading-edge test systems designed in parallel with their own R&D efforts. They leverage Avera's off-the-shelf software, instrumentation and communication solutions, and on-demand engineering services to maximize the impact of test on product success, from design to manufacturing.



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