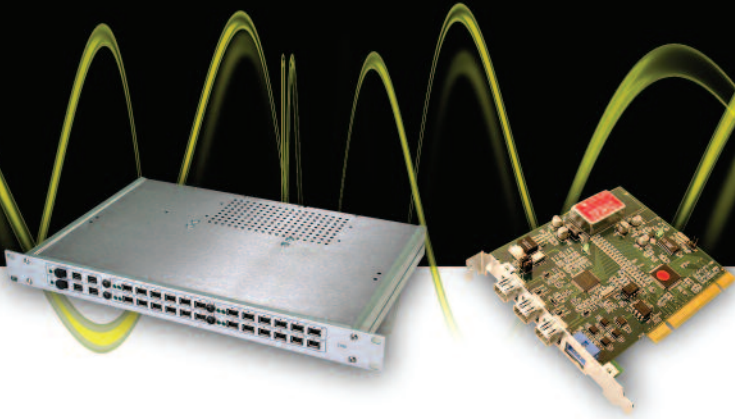


IEEE-1394

Hardware & Software
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» *Embedded Systems* » *IEEE-1394* » *Software*

Averna's IPv4-over-1394 Offering

In order to determine which version of IPv4-over-1394 best fits your application's requirements, a few questions must be answered. The first is to determine whether your application requires heterogeneous or homogeneous host activities.

Heterogeneous Host Activities

Your host needs to communicate with other hosts via both IPv4-over-1394 communication and other IEEE-1394 protocols such as AV/C and SBP-2 (compare with Homogeneous Host Activities)

- If your application requires heterogeneous host activity, as a strict minimum it will use IP-over-Stack and certain other high-level protocols

Homogeneous Host Activities

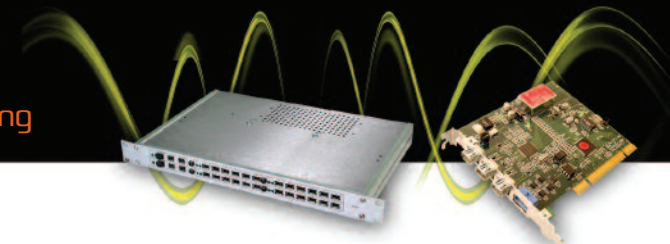
Your host needs to communicate with other hosts using only IPv4-over-1394 communication (compare with Heterogeneous Host Activities)

- If your application requires homogeneous host activity, it will use IP-over-LLA (Low-Level API)

Choosing the Right IP-over-1394 Product

As a dedicated product for IPv4-over-1394 communication (homogeneous bus activities), the modular, customizable nature of IP-over-LLA lends itself perfectly to a variety of implementation possibilities. Each of these implementations can enable you to obtain maximum results, depending on the application's characteristics. Five main scenarios are possible, as described on the next page.

- Heterogeneous Bus Activity: IP-over-Stack Product
- Homogeneous Bus Activity: IP-over-LLA Product



> Flavors of IP-over-LLA

Five use cases have been developed to help you determine which flavor of IP-over-LLA is right for you. Depending on the use case that applies to a particular environment, some requirements may be defined as optional in order to achieve heightened performance. These use cases are shaped by the following communication environment factors:

External Communication

At least one node using IP-over-LLA must communicate with at least one IP address from outside the local bus (compare with Local Communication Only)

Local Communication Only

All nodes using IP-over-LLA need to communicate with IP addresses on the local bus only (compare with External Communication)

Heterogeneous Bus Activities

The local bus activities include both IPv4-over-1394 communication, as well as other types of 1394 communication (compare with Homogeneous Bus Activities)

Homogeneous Bus Activities

The local bus activities are limited to IPv4-over-1394 communication (compare with Heterogeneous Bus Activities)

Heterogeneous IP-Capable Nodes

The local bus includes at least one IP-capable node using a product other than IP-over-LLA for communication (compare with Homogeneous IP-Capable Nodes)

Homogeneous IP-Capable Nodes

All IP-capable nodes on the local bus are using IP-over-LLA for communication (compare with Heterogeneous IP-Capable Nodes)



> Scenarios

Use Case #1: Fully Compliant

This use case applies to applications categorized by Heterogeneous Bus Activities or Heterogeneous IP-Capable Nodes and External Communication. The application running IP-over-LLA will coexist and/or communicate with nodes that have been implemented with communication modules other than IP-over-LLA. In this case, IP-over-LLA must be compliant with the IP, IPv4-over-1394 and IEEE-1394 standards to ensure interoperability.

Use Case #2: Fully Compliant without Gateway Support

This use case applies to applications categorized by Heterogeneous IP-Capable Nodes and Local Communication Only. The application running IP-over-LLA will coexist and/or communicate on the local bus with nodes that have been implemented with communication modules other than IP-over-LLA. In this case, IP-over-LLA must be compliant with the IP, IPv4-over-1394 and IEEE-1394 standards to ensure interoperability; however, it does not need to support a default gateway because no external communication will take place.

Use Case #3: IP-Compliant with Optimized Local Communication

This use case applies to applications categorized by Homogeneous Bus Activities, Homogeneous IP-Capable Nodes and External Communication. The application running IP-over-LLA will communicate outside the local bus through a gateway, and all nodes on the local 1394 bus will communicate amongst themselves via IP-over-LLA. In this case, IP-over-LLA must be compliant with the IP standard to ensure interoperability for external communication. On the other hand, it does not require compliance with the IEEE-1394 or IPv4-over-1394 standards because all communication on the local bus is completed via IP-over-LLA.

Use Case #4: IEEE-1394-Compliant with Optimized Local Communication

This use case applies to applications categorized by Heterogeneous Bus Activities, Homogeneous IP-Capable Nodes and Local Communication Only. The application running IP-over-LLA will only communicate on the local bus, and all nodes on the 1394 bus will use IP-over-LLA. In this case, IP-over-LLA must be compliant with the IEEE-1394 standard to ensure interoperability with other IEEE-1394 bus activities. On the other hand, it does not need to be compliant with the IP and IPv4-over-1394 standards because interoperability with other IP implementations is not required.

Use Case #5: Not-Compliant with Maximal Optimized Local Communication

This use case applies to applications categorized by Homogeneous Bus Activities, Homogeneous IP-Capable Nodes and Local Communication Only. The application running IP-over-LLA will only communicate on the local bus, and all nodes on the 1394 bus will use IP-over-LLA. The IP-over-LLA implementation does not need to be compliant with the IP, IPv4-over-1394 and IEEE-1394 standards because no interoperability with other manufacturers is necessary.

> Use Cases Supported by IP-over-LLA

Use Case	External Communication		Local Communication Only	
	Heterogeneous Bus Activities	Homogeneous Bus Activities	Heterogeneous Bus Activities	Homogeneous Bus Activities
Heterogeneous IP-Capable Nodes	Use Case #1	Use Case #1	Use Case #2	Use Case #2
Homogeneous IP-Capable Nodes	Use Case #1	Use Case #3	Use Case #4	Use Case #5

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OEMs rely on Averna 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 Averna'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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