

New developments in IEEE 1394 (a.k.a. FireWire)

by Les Baxter

Although IEEE 1394 (better known as FireWire) began as a "high-speed serial bus" in 1995, it has branched out to become a full-fledged LAN.

IEEE 1394 networks have a number of interesting characteristics. First and foremost is support of isochronous as well as asynchronous communications, which makes them ideal for streaming audio and video. IEEE 1394 networks are self-administering-on plug-in, each device identifies itself so that every device is aware of the capabilities of every other device on the network. The networks also support a variety of bit rates from 100 Mbits/sec (known as S100) to S3200, or 3.2 Gbits/sec.



In addition to their original application in audio/video networks, IEEE 1394 networks are used in a variety of areas, including residential networks (an IEEE 1394 interface is required by the FCC on every set-top box), storage networks, and industrial applications such as machine vision. There is also widespread interest among car manufacturers in the automotive version, which is known as IDB-1394.

IEEE 1394 originally was restricted to operation over shielded cords with a maximum length of 4.5 m. However, it has been enhanced to include operation at 100 m (or more) over several media, including unshielded twisted pair (UTP) cable. Interfaces for coaxial cable are under development to support

residential and automotive applications.

IEEE 1394 also supports a variety of fiber-optic interfaces. Fifty micron multimode fiber (with the LC connector) is specified for data rates of S400 and higher. IEEE 1394 is unique among LANs in specifying operation over plastic optical fiber. Currently, the specification calls for either 1,000-micron step-index POF or 225-micron hard polymer-clad fiber (HPCF).

There are a number of new projects on the horizon. Two of them, higher-speed operation (specifically S6400) and support of singlemode fiber, are being addressed in a new group led by Larry Stark (lstark@xponentinc.com). Another potential project is to update the POF specifications to include new, higher-performance fibers covered by IEC 60793-2-40 and improved connectors such as the small-multimedia interface (SMI) connector.

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