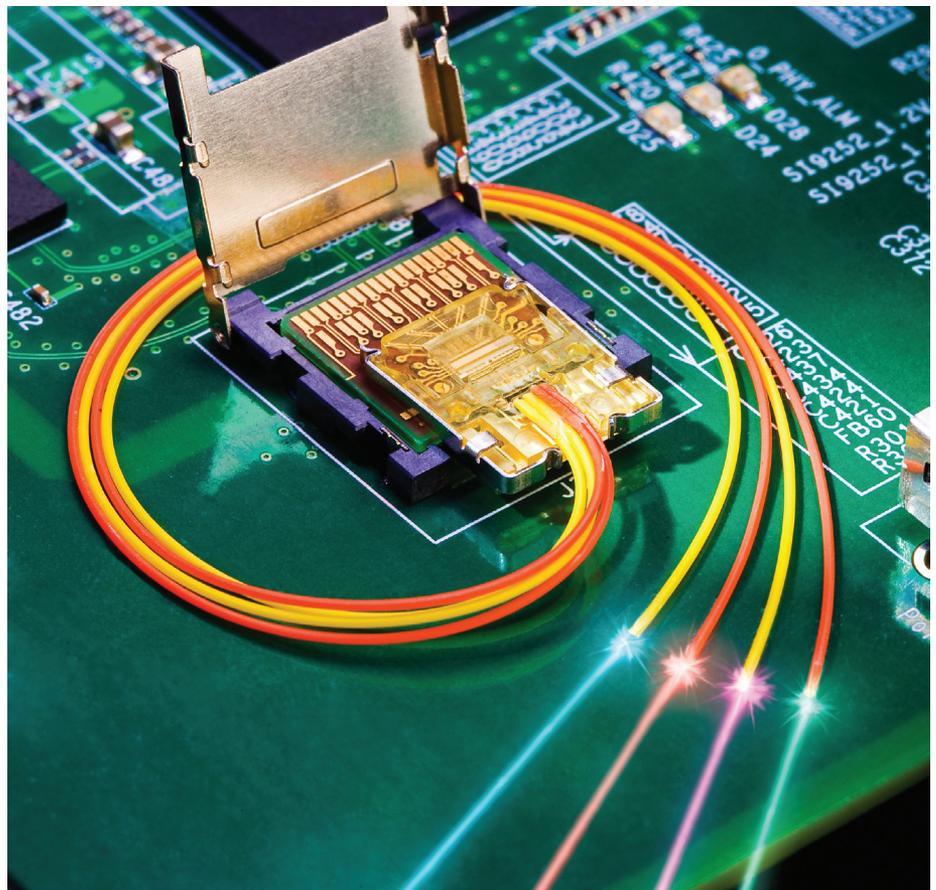


Light Peak: Overview



Transfer a full-length Blu-Ray*
movie in less than 30 seconds.

In Fall 2009 Intel made its first announcement of a new technology named "Light Peak" a multi-protocol optical cable interconnect for innovative and emerging client usage models that complements other existing interconnects. This year at Fall IDF 2010, Intel demonstrated Light Peak integrated into a laptop and several devices including high speed storage and an audio/video creation device, highlighting the significant progress on the Light Peak program.

Light Peak delivers high bandwidth using optical technology starting at 10Gb/s with the potential ability to scale to 100Gb/s over the next decade. At 10Gb/s, you could transfer a full-length Blu-Ray movie in less than 30 seconds or transfer all the books in the Library of Congress in less than 35 minutes.

Optical technology also allows for smaller connectors and longer, thinner, and more flexible cables than currently possible. Light Peak also has the ability to run multiple protocols simultaneously over a single cable, enabling the technology to connect devices such as peripherals, displays, disk drives, docking stations, and more.

Light Peak components are expected to begin to become available in late 2010, and Intel expects to start seeing Light Peak in computers and other devices in 2011.

Usage Models that Light Peak Enables

Light Peak was developed to increase cable performance and simplicity by enabling scalable bandwidth and an innovative new multi-protocol capability. A unique blend of speed and ease of use, Light Peak will enable users to connect more easily across devices without the mess and complexity of multiple cables. It will also allow system builders to create new and innovative designs that help users do more, and do it faster than ever before.

The explosion of media continues to drive the need for high-capacity, high-speed storage, beyond HD monitors, and high resolution cameras. Here are a few examples of how Light Peak can address these needs. First, Light Peak enables users to transfer and synchronize data across an SSD array at incredible speeds. As mentioned above, a Blu-Ray* movie can be transferred in less than 30 seconds. Next, Light Peak can connect a laptop to a Light Peak-capable (multi-protocol) docking station and transform it into a professional video production suite, complete with connections to multiple monitors, video editing devices, cameras and ultra-fast, high-capacity storage. Finally, Light Peak can extend high-end graphics capabilities by connecting an external graphics device to a laptop. Suddenly the same thin and light laptop a user depends on during the day can be extended to support enthusiast-level PC gaming at night, while still retaining its portability and sleek form factor.

Capabilities such as these mean system builders can rethink how systems are designed without additional OS software. High capacity requirements can be offloaded to other connected devices; laptops and other mobile devices can be streamlined, while at the same time delivering extended functionality. All of these scenarios and more will be possible with Light Peak.

Light Peak Controller Chip

The main component used in Light Peak is the controller chip. The controller chip provides protocol switching capabilities to support multiple protocols over a single cable. Today, to plug a display into a PC, one needs a display cable plugged into a display connector. Likewise, plugging a storage device into a PC requires a different cable and connector. Not so with Light Peak, because the Light Peak controller implements multi-protocol.

Making the Optics Inexpensive

Existing electrical cable technology in mainstream computing devices is approaching practical limits for speed and length, due to attenuation, noise, and other issues. However, optical technology, used extensively in data centers and telecom communications, does not have these limitations because it transmits data using light instead of electricity. Light Peak brings this optical technology to mainstream computing and consumer electronic devices in a cost-effective manner.

When Intel designed the optical system for Light Peak it was done with low cost in mind from the start. First, the optical modules were designed to be manufactured passively. Many telecom optical modules use active assembly, i.e., the module is turned on during

assembly to make critical alignments. Because the volumes are higher in the PC and related market segments, the vendors can economically justify automating the assembly and test.

Second, the Light Peak optical modules were designed for PC requirements, not the more stringent telecom requirements. This allowed many of the optical specs, such as operating lifetime, temperature ranges, hermetic sealing and component operating specifications to be relaxed. These relaxed specs mean that component yields go up—and when they do, costs come down. The optical modules used in Light Peak cost a mere fraction of those used for telecom.

A Collaborative Effort

Intel is planning to supply the controller chip and is working with component manufacturers to make Light Peak components ready to ship to customers in late 2010, and expects first systems in 2011.

Intel will then work with the industry for its implementation on a wide variety of devices, including computers, handheld devices, workstations, consumer electronic devices and more. Light Peak is complementary to existing I/O technologies, as it enables them to run together on a single cable at higher speeds. Light Peak is helping to provide a path to continued I/O progress into the future.

For more information on Light Peak, visit www.intel.com/go/lightpeak

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