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Background

As data usage escalates at an ever-increasing pace, organizations around the globe are looking at new network architectures to keep pace. InfiniBand™ (IB) is an open standard specification that defines architecture used to interconnect servers, communications infrastructure equipment and storage. One significant limitation of IB, however, is its relatively short link range imposed by its lossless flow control mechanism. The specification (InfiniBand Architecture, IBA Vol.1 v1.2.1 page 213-216) limits full-bandwidth communication to a maximum theoretical distance that contracts reciprocally with rising data rates due to buffer credit starvation, as seen in Table 1.

InfiniBand speed	Payload – Gbits/s	Max distance – km
SDR	8.00	13.05
DDR	16.00	6.53
QDR	32.00	3.26
FDR	54.30	1.92
EDR	96.97	1.08

Table 1

InfiniBand™ is thus unsuitable for direct application over any Wide Area Network and is in practice limited to “indoor use” only.

The Obsidian Invention

Obsidian’s invention solves IB’s link range limitation by disrupting the buffer credit starvation effect. Via the insertion of two devices into a long distance path, a single IB link is transformed into three links in series, controlled by three independent flow control state machines along the chain. Each device features a local area (IB) port and a wide area (optical) port such that they behave like two-port IB switches, passing data between their local and wide area sides. The local area ports are fully IB standards compliant, while the wide area ports are configurable to connect across a variety of standard wide area protocols (e.g., ATM, Packet over SONET, Ethernet or simple lightpaths such as WDM channels). The invention combines a proprietary link state flow control mechanism, very large internal buffers and Quality of Service functions to preserve IB’s lossless flow control semantics across global reach wide area network links connecting local area IB fabrics.

Obsidian's Longbow™ family of devices embody the invention, therefore effectively extending the short-range IBA into a high performance transport protocol covering much greater distances while maintaining full IB speeds and retaining the semantics specified by the IBA. Members of this family of products also variously provide additional functions, such as encryption and inter-subnet routing.

Global Intellectual Property

The Longbow™ suite of products is protected by patent and other proprietary rights throughout the world. A current list of patent rights covering the Longbow™ products may be found at the link below. Obsidian has teamed with the world-class IP legal firm of Fish & Richardson P.C. to provide global patent prosecution, technology licensing and IP enforcement services. For more information, please visit: <http://www.obsidianstrategics.com>.