

FDR InfiniBand Fact Sheet

What is FDR InfiniBand?

FDR InfiniBand™ (Fourteen Data Rate, 14Gb/s data rate per lane) is the next generation InfiniBand technology developed and specified by the InfiniBand® Trade Association (IBTA). FDR InfiniBand was announced in June 2010 and is targeted towards high-performance computing, enterprise, Web 2.0 and cloud data centers that are looking to optimize the cost and power/performance ratio for their communications networks.

InfiniBand lane speeds continue to increase in keeping with end user demands for enhanced cost/performance benefits and robust network capabilities to support multi-core processors, GPUs and accelerators. The progression of InfiniBand data rates and availability to date has been:

- 1999: Single Data Rate (SDR) 2.5 Gb/s
- 2004: Double Data Rate (DDR) 5 Gb/s
- 2008: Quad Data Rate (QDR) 10 Gb/s
- 2011: Fourteen Data Rate (FDR) 14.0625 Gb/s

It's important to note that the current PCIe development roadmap has matched – and is projected to continue to match – the increases in link speeds for InfiniBand. This has been a significant driver of InfiniBand adoption to date and also indicates future market opportunity.

FDR InfiniBand is supported by compliance and interoperability testing by both the IBTA and OpenFabrics Alliance (OFA).



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Is FDR InfiniBand available today?

Many IBTA member companies are developing products or have recently announced FDR-enabled products with immediate availability. Please check with individual vendors for details.

Why is FDR InfiniBand significant?

FDR InfiniBand highlights include:

- Link speed increase to 14Gb/s per lane, or 56Gb/s per 4 lanes (most InfiniBand ports are 4-lane ports), an increase of nearly 80 percent in the data rate compared to previous InfiniBand generations.
- The link encoding for FDR InfiniBand was modified from 8bit/10bit to 64bit/66bit. This allows higher network efficiency for data center server and storage connectivity.
- A new mechanism for network reliability was added: Forward Error Correction. Forward Error Correction allows the InfiniBand devices to fix bit errors throughout the network and reduce the overhead for data retransmission. The new mechanism provides superior network reliability in particular for large-scale data centers, high performance computing and Web 2.0 centers.

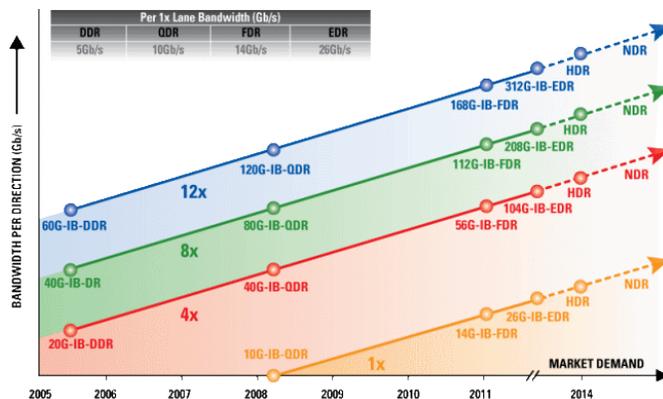
FDR InfiniBand is backward compatible with the previous specified InfiniBand speeds – SDR, DDR and QDR – and, together with PCIe 3.0, provides a step up for clustering and data center I/O throughput, efficiency, reliability and scalability.

What will be the impact of FDR InfiniBand on end users?

FDR InfiniBand addresses the market demand for increased performance in high performance computing, enterprise, cloud and Web 2.0 networks. InfiniBand provides end users across multiple industries with superior application response time and enhanced cost/performance benefits, while reducing cost of ownership and deployment times. InfiniBand is the only standard technology that enables the reduction of multiple aggregation layers to build flat, scalable high-performance networks for the next generation mega data centers.

What's the future for InfiniBand lane speeds?

The InfiniBand Trade Association has put together a roadmap which details per lane bandwidth for InfiniBand for the next several years. The roadmap details 1x, 4x, 8x and 12x EDR (Enhanced Data Rate) and FDR, incorporating 64bit/66bit encoding, with bandwidths reaching 300Gb/s data rate EDR by the early 2013 timeframe.



The InfiniBand Trade Association was founded in 1999 and is chartered with maintaining and furthering the InfiniBand specification. The IBTA is led by a distinguished steering committee that includes HP, IBM, Intel, Mellanox, Oracle, QLogic and System Fabric Works. Other members of the IBTA represent leading enterprise IT vendors who are actively contributing to the advancement of the InfiniBand specification. The IBTA markets and promotes InfiniBand from an industry perspective through online, marketing and public relations engagements, and unites the industry through IBTA-sponsored technical events and resources. For more information on the IBTA, visit: www.infinibandta.org