# Aquantia Announces Breakthrough 100G Technology for Hyperscale Data Centers and Cloud Computing Environments

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*Collaboration with GLOBALFOUNDRIES to extend copper interconnects to 100G bandwidth lowering the cost of high-performance data center connectivity*

NEWS HIGHLIGHTS

- Aquantia's new QuantumStream™ technology delivers the world's first single-lane 100Gbit/s direct attach solution by leveraging the industry's highest performance 56Gbit/s SerDes from GF.
- QuantumStream™ is enabled by Aquantia's proven and patented architectural innovations in interconnect technology and delivers ultra-low latency performance critical in next-generation hyperscale architectures.
- Aquantia and GF's collaboration to enable up to 800Gbit/s Ethernet Direct-Attach Cable connections.
- The collaboration includes licensing of Aquantia's QuantumStream™ IP to GF, expanding the ecosystem of products, thus continuing the cloud computing revolution.

**San Jose, Calif., October 24, 2016 –** Aquantia Corp., pioneer and market leader in high-speed Ethernet connectivity solutions for data centers and enterprise infrastructure, today unveiled QuantumStream™ technology, a new class of high-performance connectivity architecture that has the potential to revolutionize next-generation hyperscale data centers. QuantumStream™ technology, which is being developed by Aquantia through a strategic collaboration with GF, is creating a 100Gbit/s bandwidth all-electrical technology to deliver low latency to networking applications. Aquantia's technology delivers a quantum leap in bandwidth performance over a single lane of copper previously believed to be solely the realm of optical techniques. The availability of this technology will enable system vendors and data center operators to push towards higher performance and newer topologies in hyperscale architectures while keeping the reliability, low-cost and ease-of-use of electrical-based interconnects. QuantumStream™ technology is aimed at inter and intra rack connectivity up to 3 meters complementing longer reach optical connectivity solutions used in hyperscale data centers.

"As a principal engineer in global infrastructure architecture and strategy at LinkedIn, my focus is on designing next generation data centers. I have long believed that 100G connectivity would be widely deployed when it reaches a price point of one dollar per gigabit per second for optical interconnects," said Yuval Bachar. "Aquantia has come up with a very innovative 100G technology to deliver on lower cost per gigabit utilizing copper connectivity. Lower prices will transform the economics of in rack connectivity in hyper scale data centers, which obviously is of great interest to everyone looking to achieve below one dollar per 1Gbit/s on an accelerated path within the rack."

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"To date, industry watchers have projected that only optical connectivity will serve the needs of 100Gbit/s and beyond. This presents a huge barrier since optical technologies are intrinsically higher cost," said Faraj Aalaei, CEO of Aquantia. "Our expertise in complex high-speed copper transceivers, coupled with the legacy of robust SerDes leadership with GF's 14nm FinFET technology will enable a continuous roadmap to the required 100G connectivity and provide our customers with the best combination to differentiate and stay ahead of evolving marketplace demands."

**Strategic Collaboration, Results in Breakthrough 100Gbit/s Interconnect Technology**

GF has more than 20 years of deep technical expertise in high-speed Serializer-Deserializer (SerDes) design. A SerDes integrated circuit is a fundamental building block responsible for the transport of data between switches, servers, routers and storage equipment in data centers and IT environments, over a variety of channels such as optical fibers, electrical copper cables, and backplanes. GF's FX-14™ Application-Specific Integrated Circuit (ASIC) platform, designed on the company's most advanced 14nm Low Power Plus (LPP) process technology, delivers an optimized IP portfolio, including the latest generation of SerDes, which is capable of transporting data at speeds of 56Gbit/s.

Under the collaboration, GF provides access to its 56Gbit/s IP core to Aquantia's team of experts. Aquantia combines the 56Gbit/s IP core with its patented Mixed-Mode Signal Processing (MMSP) and Multi-Core Signal Processing (MCSP) architectural innovations of high-speed interconnect over copper, which it has developed over the past decade to deliver a unique 100G interconnect high-performance SerDes solution. In addition, Aquantia will provide access to its QuantumStream™ IP to GF for

incorporation into its customers' ASICs, therefore expanding the ecosystem of solutions supporting this revolutionary interface.

The collaboration seeks to break through the perceived technical barriers in continuing the current electrical connectivity roadmap to 100Gbit/s bandwidth. In addition, Aquantia's QuantumStream™ technology is easily leveraged to deliver multiples of 100Gbit/s of bandwidth on conventional DAC cables, resolving one of the most significant challenges facing the networking and data center industries today.

**QuantumStream is Ideal for Short Distance**

- 100G over 3m Direct Attach Cable SFP
- 400G over 3m Direct Attach Cable QSFP
- 800G over 3m Direct Attach Cable OSFP

An analysis of the deployment of switch and server connectivity in hyperscale data centers shows that a large concentration of them are within a few meters. According to Crehan Research, the majority of direct server and storage Ethernet network connections in hyperscale data centers are currently within 3 meters. Since interconnect solutions that are optimized for hundreds of meters or even a couple of kilometers would not be adequate for a few meters, this leads to the need for complementary solutions for connectivity over short-reach applications and long-reach connections. Traditionally, electrical interconnects have delivered the lowest-cost and -power options for the short reach space whereas optical solutions have been deployed in longer reach applications thanks to low-loss of optical fibers.

Responding to a sweeping industry trend toward higher density switch and server configurations, a number of optical solutions have already been proposed for 100G. Aquantia's QuantumStream™ technology, a complementary 100G solution for mass server and switch connectivity at shorter reaches over copper lane implementations is now possible for the first time.

"To meet the tremendous growth in bandwidth and data demands, GF is continuing its commitment to investing in network and technology enhancements including a best-in-class high-speed SerDes solution that will bring tremendous benefits to our customers," said Mike Cadigan, senior vice president of global sales and business development at GF. "Aquantia's innovative design expertise in high-speed copper interconnect technologies, combined with our world-class FX-14 ASIC platform and SerDes IP portfolio, will enable the continuation of electrical interconnect paradigms for hyperscale data centers."

**About Aquantia**

Aquantia is a leading developer, and global supplier of high-speed semiconductor connectivity solutions. Backed by more than a decade of technology leadership and execution, Aquantia's market leading product portfolio enables the world's most innovative computing, data center and enterprise infrastructure applications. Aquantia addresses ever-changing market needs by providing an extensive portfolio, based on architectural innovations that deliver high performance, low power consumption, high density and high-quality silicon solutions to its customers. Aquantia is headquartered in Silicon Valley, Calif., with strong venture capital and strategic investors. For more information, visit www.aquantia.com

QuantumStream™ is a trademark of Aquantia Corp.

**About GF**

GF is the world's first full-service semiconductor foundry with a truly global footprint. Launched in March 2009, the company has quickly achieved scale as one of the largest foundries in the world, providing a unique combination of advanced technology and manufacturing to more than 250 customers. With operations in Singapore, Germany and the United States, GF is the only foundry that offers the flexibility and security of manufacturing centers spanning three continents. The company's 300mm fabs and 200mm fabs provide the full range of process technologies from mainstream to the leading edge. This global manufacturing footprint is supported by major facilities for research, development and design enablement located near hubs of semiconductor activity in the United States, Europe and Asia. GF is owned by Mubadala Development Company. For more information, visit http://www.globalfoundries.com.

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**Cautionary Statement**

This press release contains forward-looking statements concerning Aquantia including, among other things, the extent to which its products provide technological advantages and will be accepted by the market. Forward-looking statements herein are based on current beliefs, assumptions, and expectations, speak only as of the date hereof and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Factors that could cause actual results to differ materially from

current expectations include, without limitation, technological and business developments in the data center and Ethernet enterprise markets for ICs.