Lightbits Labs Revolutionizes Cloud Infrastructure with First Production NVMe/TCP Solution; Provides Hyperscale Storage Experience to Private Clouds

With $50 million in funding, Lightbits is galvanizing the NVMe revolution, providing private clouds and data centers the performance of local SSDs over standard networks with the hyperscalability of public clouds

SAN JOSE, Calif., March 12, 2019 – Lightbits Labs, the company that championed the NVMe™/TCP standard, today launched its solution for bringing hyperscale agility and simplicity to data center storage. Lightbits' software-defined disaggregation solution helps enterprise private clouds, Software as a Service (SaaS) and Infrastructure as a Service (IaaS) providers save unprecedented amounts of time and money while enabling higher application performance and public cloud grade hyperscalability. Lightbits Labs was first to recognize the opportunity created by combining newly-available affordable Flash solutions with high-performance standard networks. Its LightOS® software and LightField™ storage acceleration card are the first NVMe/TCP solutions to provide a Global Flash Translation Layer (GFTL) running over high-performance standard networks.

"Data center storage underutilization has reached epidemic and expensive levels," said Eran Kirzner, Lightbits Labs CEO and Co-Founder. "By unlocking the full value of NVMe, we've changed the playing field for private clouds. Our customers – private cloud and SaaS providers – can now capitalize on the best of both worlds: the application performance of using local NVMe SSD with the simplicity and efficiency of hyperscale."

In the data center, converged infrastructure deployments with direct-attached solid state drives (SSDs) have constrained ratios of storage to compute, leading to underutilized resources. The result is lost capital and operating expenditures, including power consumption, real estate and more. Reducing or eliminating stranded resources represents significant cost savings.

LightOS software and the LightField storage acceleration card provide a high-performance, end-to-end disaggregation solution that can scale without requiring any changes to clients or network infrastructure. The result is that cloud infrastructures can now achieve optimal scale at the lowest total cost of ownership (TCO). With LightOS and LightField, application owners can fully utilize truly composable storage that is indistinguishable from low-latency Direct-Attached Storage (DAS) SSDs. By transitioning from fast, but inefficient, DAS SSDs to disaggregated NVMe storage, users will enjoy a fast cloud infrastructure with dramatically higher storage utilization at scale.

By harnessing multiple NVMe SSDs in one large pool, the LightOS GFTL significantly boosts performance and delivers rich data services while enhancing the endurance of commodity SSDs. LightOS and LightField optimize application performance by supporting millions of IOPS at latencies that are similar to DAS SSDs.

Lightbits Labs enters the market with approximately $50 million in funding, with investments from marquee strategic investors including DellEMC, Cisco and Micron.

Analyst: NVMe over TCP Opens New Opportunities for NVMe Storage

"NVMe over Fabric allows customers to share high performance NVMe-based storage across servers, but the implementations available to date have required custom hardware and/or software on the server-side that can make these configurations complex to scale and manage," said Eric Burgener, research vice president, Infrastructure Systems, Platforms and Technologies Group at IDC. "A new option, based on the NVMe over Fabric standard and the TCP transport, uses the standard Ethernet adapters and drivers that ship with all industry-standard servers and requires no custom content in attached servers, making it not only much easier but much less expensive to share high performance NVMe storage. Vendors like Lightbits Labs that make these solutions available are opening up the opportunity for NVMe storage to be much more widely shared in enterprise environments, and IDC expects NVMe over Fabric deployments to begin to ramp based on the availability of TCP transport options."

LightOS

Lightbits LightOS is a software-defined storage solution that provides the following attributes:

- Easily integrates into existing data center infrastructure, without touching the network or clients
- High performance and low latency storage with linear scalability
- Shared pool of NVMe storage accessible via standard networking infrastructure
- Runs on off-the-shelf servers (Intel, AMD, or ARM based) with standard NVMe SSDs
- Designed for operational efficiency and ease of use
- Particularly suitable for container-based environments
- Provides advanced data services such as line-rate erasure-coding to protect against SSD failures, data reduction through compression, thin provisioning, multiple quality of service levels, and more.
- Enhances endurance of the SSDs while delivering more consistent latencies than direct-attached SSDs.

LightField

LightField is a PCIe storage acceleration card that speeds LightOS's NVMe/TCP target and GFTL. It is available for those customers who desire the highest performance at the lowest TCO.

LightField's features include the following:

- Seamless integration with the LightOS software stack
- 200Gb/s line rate compression/decompression and erasure-coding
- Hardware DMA acceleration engines for peer-to-peer data shuffling between SSDs, offloading SSD garbage collection management and data movement from the storage server's CPU cores
- Hardware scatter/gather engines for zero-copy network-to-storage data transfers that accelerate NVMe/TCP
- Data parity engine for offloading data protection services

- Future proofing through re-programmable and extendable user-defined in-storage processing functions

Customer Quotes

Zachary Smith, Co-Founder and CEO at IaaS provider Packet:

- "With Lightbits technology, we can provide network attached NVMe devices with 'as good or better' performance characteristics as local NVMe."
- "Doing this over our existing Ethernet-based network with standard 10/25G network cards is a game changer versus other solutions in the market."

Fortune 500 SaaS cloud service provider:

- "On standard server-hardware, Lightbits out-performs the most expensive flash-array solutions we have in our infrastructure at a fraction of the cost while providing a delivery mechanism that provides universal access to our entire server-fleet with no compromises."
- "Universal access to NVMe flash in our data centers is a key goal for 2019 and Lightbits is one of the leading solutions to getting us there."

Partner Quote

- "We are constantly on the lookout for innovations that could extend the value of the VMware™ Cloud Foundation to industries and customers more broadly," said Christos Karamanolis, VMware* Fellow and Storage CTO. "Lightbits is a VMware partner that delivers storage-compute disaggregation using NVMe over TCP/IP networks and a global FTL software layer that optimizes for performance and endurance. The technology holds great promise for customers looking to extend hyperconverged infrastructure to environments that are served by traditional storage products today."

Available Now

LightOS and LightField have been successfully tested in industry-leading cloud data centers. LightOS can be purchased separately as a software-only solution or purchased as a bundle with the LightField hardware accelerator.

About the NVMe/TCP Standard

Lightbits Labs, Facebook, Intel, Cisco, DellEMC, Micron and others collaborated on the NVMe/TCP standard, which was ratified by NVM Express® as an approved transport layer for non-volatile memory express (NVMe) in November, 2018. As the storage industry's pioneer in NVMe/TCP, Lightbits helped drive the standardization effort and worked closely with NVM Express and its member companies, including taking a leadership role in the initial development of the standard specifications. Designed to layer over existing software-based TCP transport implementations as well as future hardware accelerated implementations, NVMe/TCP lets large-scale data centers utilize their existing, ubiquitous TCP/IP infrastructure to realize NVMe's performance benefits.

Additional Resources:

- [Video: Meet Lightbits: Separation without Drama](#)
- [Video: Lightbits Demo at Flash Memory Summit 2018](#)
- [Article: Welcome NVMe™/TCP to the NVMe-oF™ Family of Transports](#)
- [Webinar: NVMe™/TCP: What You Need to Know About the Specification](#)
- [Webinar: What NVMe™/TCP Means for Networked Storage](#)
- [LightOS Product Brief](#)
- [LightField Product Brief](#)

*VMware is a registered trademark or trademark of VMware, Inc. in the United States and other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

About Lightbits Labs™

Lightbits Labs, founded in 2016, is remaking modern cloud infrastructure on a global scale. The company's mission is to reinvent the way storage and networking are conducted in cloud data centers. As trailblazers in this field, its solutions are successfully being used in industry-leading cloud data centers around the globe. With strategic investors including DellEMC, Cisco, and Micron, and with investments from Chairman and Founder Avigdor Willenz, Lightbits Labs is disaggregating storage and compute to improve performance and TCO.

Learn more at [www.lightbitslabs.com](#) or contact us at [mailto:info@lightbitslabs.com](#).

US Office
  1830 The Alameda,
  San Jose, CA 95126, USA

Israel Office
  17 Atir Yeda Street,
  Kfar Saba, Israel 4464313

PR Contact:

Alan Ryan, Rainier Communications
alanryan@rainierco.com
508-475-0025 ext. 116