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CHELSIO T6 SMARTNICS REVOLUTIONIZE KUBERNETES NETWORKING WITH LINE-RATE THROUGHPUT AND EXCEPTIONAL CPU EFFICIENCY

Sunnyvale, CA – July 31, 2024 – Chelsio Communications, Inc., a leading provider of high-performance (1/10/25/40/50/100/200/400Gb) Ethernet Unified Wire Adapters and ASICs for storage networking, virtualized enterprise datacenters, cloud service installations, and embedded and cluster computing environments, today announced groundbreaking benchmarking results for its Chelsio T6 adapters, showcasing their transformative impact on Kubernetes environments. Delivering line-rate throughput of 98 Gbps with only 35% CPU usage, the Chelsio T6 adapters set a new standard for performance and efficiency in containerized and AI-driven applications.

Transformative Impact on Kubernetes and AI Workloads

The Chelsio T6 adapters provide unmatched networking performance for Kubernetes environments, addressing critical challenges in modern data centers, cloud infrastructures, and AI workloads.

- **High Throughput**: The Chelsio T6 adapters achieve a line rate of 98 Gbps in both transmit and receive directions, ensuring fast and reliable data transfer, which is crucial for high-performance computing, data-intensive applications, and AI model training.
- **Exceptional CPU Efficiency**: With only a maximum of 35% CPU usage on the host, the adapters leave significant CPU resources available for other processes, optimizing overall system performance and enabling higher container and AI workload density.

- **Scalability**: The Chelsio T6 supports up to 64 Virtual Functions (VFs) per adapter, enhancing the scalability of network resources and allowing efficient deployment of multiple containers and AI instances.
- **Cost Efficiency**: By consolidating all traffic over a single network, the adapters reduce the complexity and cost of building and maintaining multiple networks, resulting in significant acquisition and operational cost savings.
- **AI Optimization**: The high throughput and low latency of Chelsio T6 adapters are particularly beneficial for AI workloads that require rapid data processing and low-latency communication between distributed AI models and data sources.

"These benchmarking results underscore the exceptional capabilities of our T6 adapters in handling high-performance workloads in Kubernetes and AI environments," said Kianoosh Naghshineh, CEO at Chelsio Communications. "With their high throughput, low CPU usage, and scalability, Chelsio T6 adapters meet the demands of modern data centers, cloud infrastructures, and AI-driven applications."

"Kubernetes is the defacto deployment platform today for modern applications like AI. AI and other modern workloads increasingly have high-performance networking requirements, so optimizing Kubernetes for high bandwidth, scalable, and low overhead networking will be key to enabling this new wave of AI," said Gary Chen, Research Director, Software Defined Compute at IDC.

Performance Highlights

The tests were conducted in a 3-node Kubernetes cluster with high-end hardware configurations. Each node was equipped with Intel Xeon CPUs and Chelsio T62100-CR adapters. The testing environment utilized the Iperf2 tool to measure throughput and CPU usage across various I/O sizes, demonstrating the adapters' robust performance.

- **Throughput**: Line rate 98 Gbps in both transmit and receive directions.
- **CPU Usage**: Only 35% CPU usage on the host at lower I/O sizes.
- **Scalability**: Support for up to 64 Virtual Functions (VFs) per adapter.
- **Cost Efficiency**: Significant acquisition and operational cost savings by running all traffic over a single network.
- **AI Optimization**: Enhanced performance for AI workloads, facilitating faster model training and real-time inference.

Additional Resources

[High-Performance Networking for Kubernetes (Chelsio Technical Report)](#)

About Chelsio Communications

Chelsio is a recognized leader in high-performance (1/10/25/40/50/100/200/400Gb) Ethernet adapters for networking and storage within virtualized enterprise data centers, public and private hyperscale clouds, and embedded and cluster computing environments. With a clear emphasis on performance and delivering the only robust offload solution, as opposed to simple speeds and feeds, Chelsio has set itself apart from the competition. The Chelsio Unified Wire and DPU solutions fully offload all protocol traffic, providing no-compromise performance with high packet processing capacity, sub-microsecond hardware latency, and high bandwidth. Visit the company at www.chelsio.com, and follow the company on [X](#) and [Facebook](#).

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