Algo-Logic Systems Launches Datacenter Rack Solutions with Scalable Search and Switch for 10G/40G/100G Networks

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Santa Clara, California, December 3, 2014 – Algo-Logic Systems, Inc., a recognized leader in providing Gateware Defined Networking (GDN)®, announces the launch of their highly scalable search and switch Datacenter Rack Solutions based on Altera’s Stratix® V A7 Field Programmable Gate Array (FPGA) devices.

Algo-Logic’s Datacenter Rack Solutions feature Key Value Search (KVS) utilizing Random Access Memory (RAM) backed by an Uninterruptable Power Supply (UPS). A Top-of-Rack (TOR) switch allows multiple instances of KVS to operate within a rack. A Black Diamond server measures, logs, and charts the DC power consumed by the KVS to quantify power savings.

The solutions enable values to be easily shared across a large datacenter via standard 10G, 40G, and 100G Ethernet links. The system supports an open-standard binary message format which is smaller and more efficient than Memcached. Algo-Logic’s KVS achieves sub-microsecond lookup latency implemented on an Altera Stratix V FPGA. A Nallatech P385 half-height expansion card easily fits into a standard rackmount server and provides up to 70M IOPs for network-wide Key Value Search operations over a pair of 10G Ethernet links. A full-height expansion card supports up to 150M IOPs of KVS using 40 Gigabits of Ethernet bandwidth.

For rack-scale deployments, Algo-Logic’s 2nd generation GDN-Switch distributes traffic from a 100G or 40G port to multiple 10G and 40G ports. The 100G version of the GDN-Switch can selectively forward and load balance up to 150 Million Packets Per Second (MPPS). For replicated KVS tables, an adaptive load balancer module is available that evenly distributes network traffic across multiple provisioned ports based on programmable policies and measured data. For datacenter-scale deployments, FPGA-accelerated KVS cards can be installed in multiple rack-mount servers and interconnected via standard 10G, 40G, and 100G TOR switches.

“Algo-Logic’s hardware acceleration technology for networking flow classification and Key Value Search based on Altera FPGAs provide datacenter developers a unique solution that combines software-defined flexibility with low-power and very high-performance,” said Mike Strickland, director of Altera’s computer and storage systems business unit. “The Stratix V FPGA-based Datacenter Rack Solutions from Algo-Logic is capable of handling the most demanding datacenter tasks in a highly efficient manner.”

“We are pleased to launch our industry leading Datacenter Rack Solutions system. Network operators using our GDN 40G/100G Datacenter Rack Solutions can substantially increase their network throughput while reducing their network latency and saving power. The system is ideal for Cloud service providers, Internet Service Providers (ISPs), Host Service Providers (HSPs), and network security companies that want to offer real-time network services while also lowering the Total Cost of Ownership (TCO),” said John Lockwood, CEO of Algo-Logic Systems, Inc.
The GDN 40G/100G Rack Solutions performance metrics are listed below:

- **In-memory Key Value Search:**
  - Sub-microsecond lookup latency as measured from Ethernet input to output
  - 70M IOPs on a half-height FPGA card and 150M IOPs on a full-height FPGA card
  - 6 Billion IOPs with 40 FPGA cards installed in a single rack
  - Capability to add other Network Function Virtualization (NFV) in same FPGA hardware

- **Top-of-Rack GDN-Switch:**
  - N-Tuple packet classification and forwarding for switching, routing, and filtering
  - Capability to rewrite and forward packet header and payload data
  - Option to adaptively load balance traffic to multiple endpoints
  - Ability to measure packet processing delays within the rack to 6.4 nanoseconds of precision

- **Power efficient heterogeneous computing:**
  - KVS in FPGA consumes 13x to 21x less power than equivalent function in software
  - Operation from DC power achieves optimal power usage efficiency
  - Combined power savings substantially reduce datacenter Total Cost of Ownership (TCO)

**About Algo-Logic Systems:**

Algo-Logic Systems is a recognized leader of Gateware Defined Networking® (GDN) solutions built with Field Programmable Gate Array (FPGA) logic. Algo-Logic uses gateware to accelerate datacenter services, lower latency in financial trading networks, and provide deterministic latency for real-time Internet devices. The company has extensive experience building datacenter switches, trading systems, and real-time data processing systems in reprogrammable logic. Algo-Logic is partnered with all major FPGA circuit board vendors and provides gateware solutions across multiple commercially available, off-the-shelf platforms.

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