

Silicom Connectivity Solutions Ltd. Breaking Through the Network Performance Barrier

In today's hyper-scale networking world, IT's biggest challenge is to stay ahead of the game. Data centers designed for "over-kill" capacity yesterday are struggling to scale today, and no end is in sight. To handle the growing workload, networks must be designed for fail-safe, tera-bit performance, with an ability to be scaled easily and continuously. Every aspect of the network infrastructure – from physical components all the way through networking and software tasks – must be optimized to enable super-charged throughput, uncompromising security and bottleneck-workarounds.

In this performance-challenged environment, there is a growing need for innovative concepts and workhorse dependability in the area of network connectivity solutions. The right products and approaches can become the network's "secret throughput weapon," making all the difference in application dependability and running speed, whether by offloading routing and encryption tasks from the CPU, providing an automated bypass path, or simply by increasing the reliability of hyper-speed data transfer.

In fact, the right network connectivity components/solutions eliminate the weak links that too often bring well-planned applications and networks to their knees.

For the past 33 years, Silicom Ltd. has specialized in creating the industry's most innovative performance-boosting networking connectivity solutions. Based on Intel Ethernet Controllers, FPGAs (Field Programmable Gateway Array) and Network Processors, Silicom's solutions increase network bandwidth, reduce latency and improve the performance of network monitoring and analytics. As a "one-stop-connectivity-shop", the company designs and manufactures a full range of product and solutions, ranging from Foundation NICs, SmartNICs and Switch on NICs, all the way to advanced acceleration and offload engines for encryption and compression, such as intelligent server adapters based on Intel QAT technology, bypass switches, test access points (TAPs) and more.

"Most of our products have been developed in collaboration with our Telecom and Cloud Service Provider clients, who come to us to solve their most challenging connectivity issues," said Oren Benisty, Silicom's EVP Strategic Sales. "Our focus on connectivity gives us a unique perspective that translates into out-of-the-box concepts and solutions– based on both software

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The Network is no longer the Bottleneck

Intel® based solutions
 1G/10G/25G/40G/100G

and hardware – for eliminating bottle necks in Network Function Virtualization (NFV), Software Defined Networking (SDN), 5G, and IoT for Edge and Data Center networks. With a growing list of top-tier customers, our 2018 sales topped \$130 million, and we continue to grow rapidly."

Silicom offers scalable Ethernet solutions from 1-gigabit to 100-gigabit network speed to match all the platforms for high-speed digital communication. Its extensive range of products includes:

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Multi-Port Network Interface Cards
 Intel® based solutions
 1G/10G/25G/40G/100G

- **FPGA solutions** in a variety of form factors, including OCP and COTS-compliant Add-In-Cards with 1/10/25/40/100G network speeds.
- **Fully-programmable Smart NICs** for numerous use cases, including acceleration of Pattern Matching (e.g. RegEX), Encryption (e.g. IPSEC) and HFT (High Frequency trading) as well as 5G applications (e.g. LDPC).



- **Switch-on-a-NIC products** based on Intel's FM4xxx technology that offer multi-host adaptors with cut-through capabilities to enable the creation of a full mesh network between multiple servers.
- **Bypass cards (active and passive)** that automatically pass traffic to another server during a power outage or service disruption to assure service continuity and network integrity.
- **Edge products** used by telecom companies in virtualized (VNF-Virtual Network Functions) environments to connect to legacy GPONs (Gigabyte Passive Optical Network), OTNs (Optical Transport Networking), or other data centers to bring compute closure to the edge. These devices are strong and modular enough to run multiple VNFs, thereby supporting legacy infrastructure, improving flexibility, and efficiency.



We do R&D based on the creative value to our customers and offering unique solutions for example COTS compliant NIC offer 4 port of 10G , we offer 6 ports for higher port density. Smart NIC incorporate FPGA, we offer FPGA with Ethernet MAC for easy integration. To overcome ToR issues we offer distributed Switch on NIC for full mesh connectivity. Most of our products are the result of sitting down with clients and re-defining the solutions while innovating new Ethernet solutions



- **Offload products (primarily SmartNICs based on FPGA)** to relieve the CPU from performance-dragging switching and forwarding tasks, thereby enabling virtualized networks to achieve wirespeed operations. Silicom's expertise in this area enable them to serve as consultants to their clients, helping them evaluate how best to allocate network processing tasks between CPU and SmartNIC assets, from a performance and a cost point of view, to achieve results beyond the capabilities of a CPU alone.

"When our clients approach us with problems like CPU overload, we make them understand that they are looking for offload Add-In-Cards or programmable NICs," added Elad Blatt, Silicom's CSO. Assisting clients by finding solutions and designing products as per their requirements, Silicom is looking forward to expand its footprint in the security market. Since the market is moving from 4G to 5G, Silicom is introducing low-density parity-check (LDPC) which will provide customers the capability to integrate any type of split model into their 5G network. This fulfils the customer's demand to migrate from Common Public Radio Interface (CPRI) to eCPRI (IEEE1914) i.e. connectivity from their 4G radio head to 5G Ethernet based interfaces with Silicom's FPGA. **en**