HPC SPECIAL

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COMPANY OF THE MONTH

Greg Osuri,
Founder & CEO,
OvrClk

MCoreLab

The Nexus of 'High' Performance

Elaine Wang,
CEO

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CIO REVIEW
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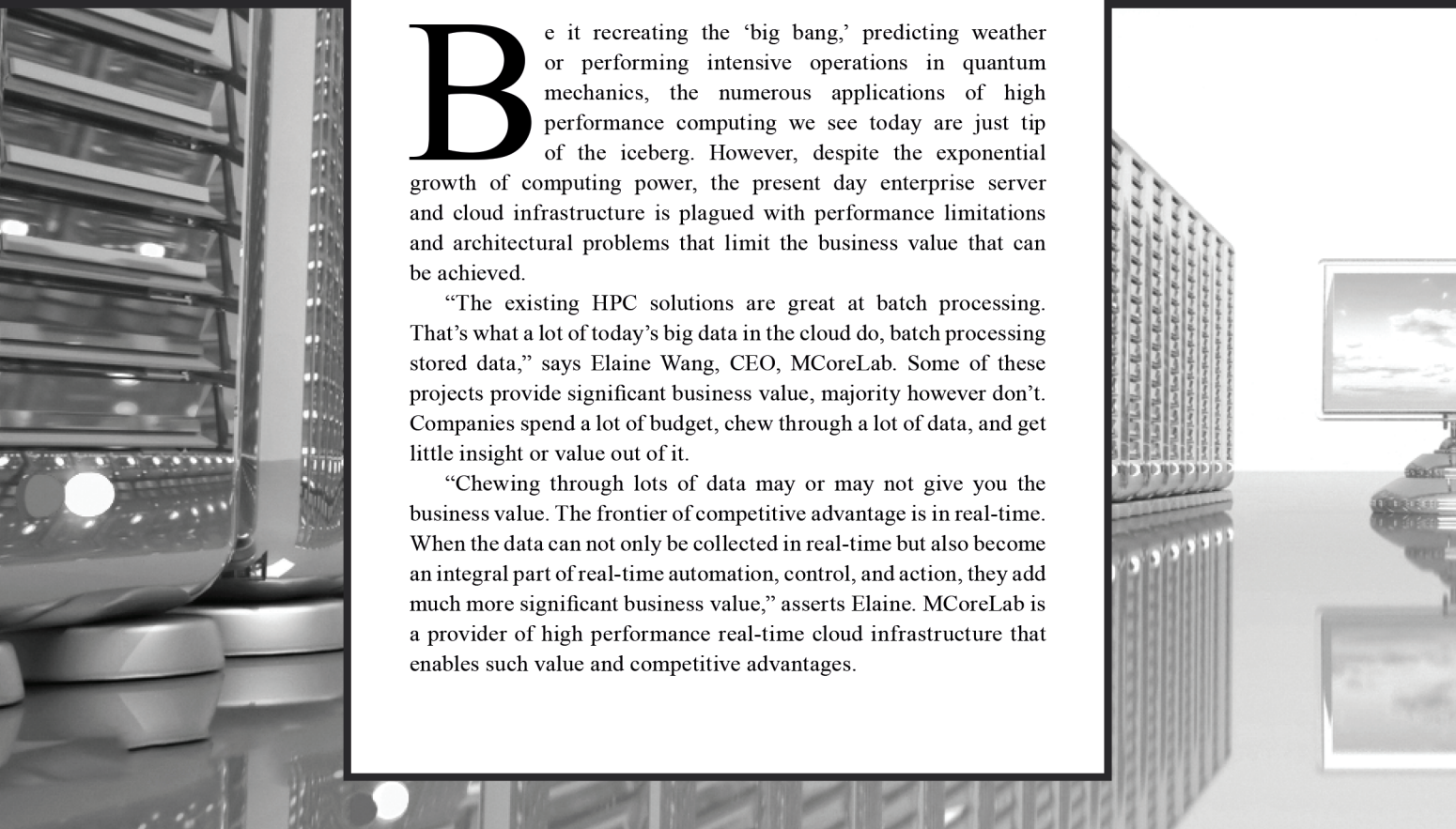
COVER STORY

MCoreLab

The Nexus of 'High' Performance

By Karuna Gautam

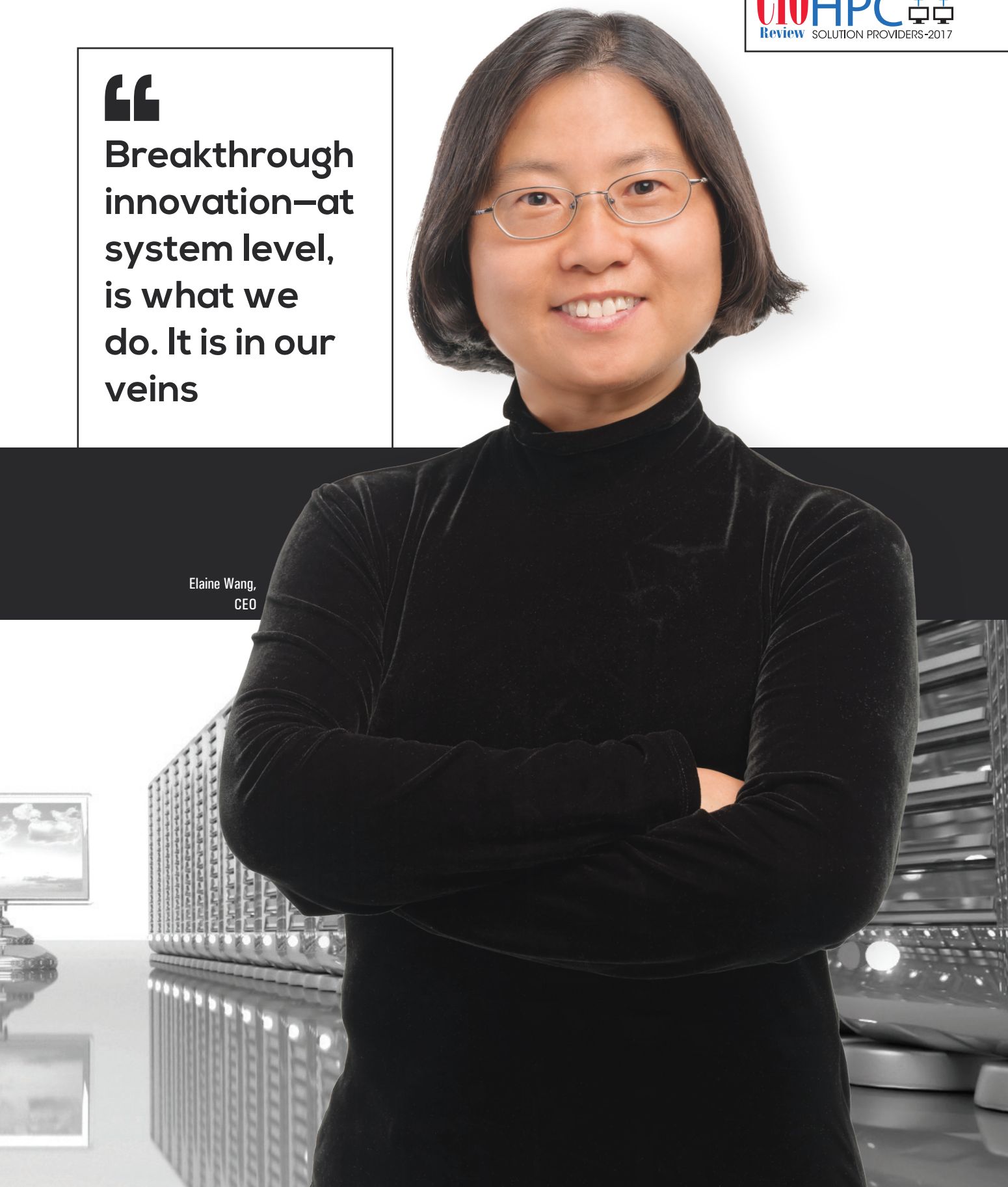


Be it recreating the 'big bang,' predicting weather or performing intensive operations in quantum mechanics, the numerous applications of high performance computing we see today are just tip of the iceberg. However, despite the exponential growth of computing power, the present day enterprise server and cloud infrastructure is plagued with performance limitations and architectural problems that limit the business value that can be achieved.

"The existing HPC solutions are great at batch processing. That's what a lot of today's big data in the cloud do, batch processing stored data," says Elaine Wang, CEO, MCoreLab. Some of these projects provide significant business value, majority however don't. Companies spend a lot of budget, chew through a lot of data, and get little insight or value out of it.

"Chewing through lots of data may or may not give you the business value. The frontier of competitive advantage is in real-time. When the data can not only be collected in real-time but also become an integral part of real-time automation, control, and action, they add much more significant business value," asserts Elaine. MCoreLab is a provider of high performance real-time cloud infrastructure that enables such value and competitive advantages.

CIO Review 20 MOST PROMISING HPC SOLUTION PROVIDERS-2017



> Breakthrough innovation—at system level, is what we do. It is in our veins

Elaine Wang,
CEO

The company is very unique in this regard. “Existing HPC, although are great at batch processing large quantities of data, do not have the right system technology and architectural strength to handle the highly concurrent workloads important to enterprise and cloud applications. On the other hand, today’s cloud servers that do handle concurrent workloads, are low performance—not good for real-time application that have time critical requirements, and miles away from where the future demands are going to be,” Elaine points out. MCoreLab brings in a compelling solution by providing not only order of magnitude lower latency, but also the scalability and architectural strength to work under high load, and highly concurrent workloads.

An Agent of Change

“Only a solution that can support highly concurrent workloads has the strength to offer the real solution for enterprise clusters and the cloud,” says Elaine. The team at MCoreLab provides solutions to real-time cloud infrastructure and real-time analytics projects with ultra high performance servers. The MCoreCloud Ultra High Performance Application Server is the perfect server for high volume high velocity real-time data ingestion, in real-time analytics projects and infrastructure.

MCoreCloud suite has three components. First, the order of magnitude higher performance application server that comprises of a high performance HTTP web application server, ultra high performance Websocket, and high performance cache router that offers low latency high performance access to the data/cache server cluster. Next is the order of magnitude higher performance in-memory data server that speaks the memcached protocol, and finally, a high performance low latency network stack that is built into both the application server, and the in-memory data server.

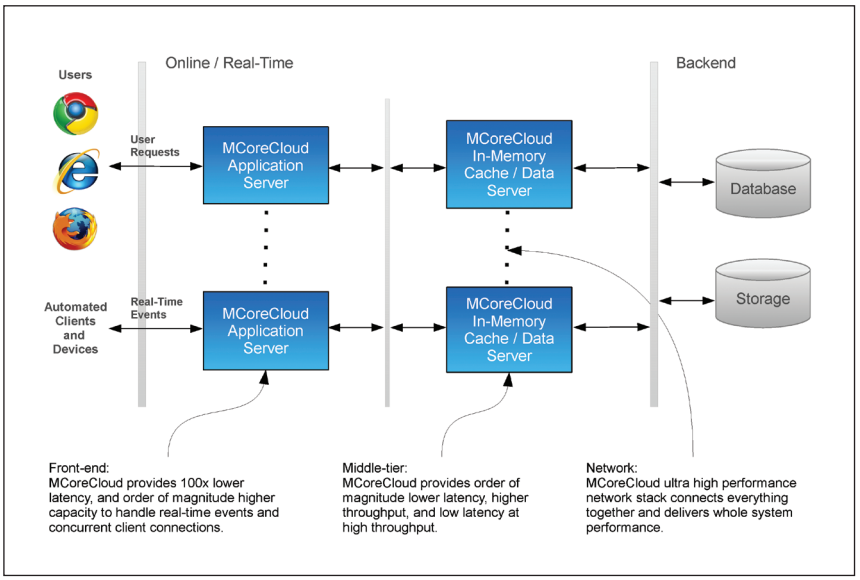
“With MCoreCloud, if you also install 10 Gbit Ethernet and low latency network switch, you’ve got a complete solution for order of magnitude higher performance data-center: from the front-end application servers, to middle-tier data servers, and the entire network,” says Elaine.

Complementing these, MCoreLab also offers MCoreRT, a component of MCoreCloud that provides the low latency network layer to MCoreCloud. It can be availed as a stand-alone product for customers who need a lower layer API. MCoreRT offers fantastic low latency and low jitter and remarkably unparalleled TCP/IP performance over standard Ethernet.

Delivering the Promise of High Performance

MCoreLab has positioned MCoreCloud as a server platform integrated with real-application high-performance network that incorporates true advancements in system software to deliver on the promise of high performance. “Our innovations are miles

deeper than other products—completely new server architecture at the core, and new key operating system technologies underneath," explains Elaine. That said, however, not all of existing operating system need be replaced. MCoreLab's products work alongside existing operating systems (Linux and Windows), so that applications get the best of both worlds–the high performance architecture and system technologies of the future (with MCoreCloud), and all the existing operating system services and tools familiar to programmers.



> We are the provider of high-performance real-time cloud infrastructure that enables value and competitive advantages

Evidently, there is a clear rationale as to why leading names from diverse industries relies on MCoreLab's turnkey solutions to achieve strategic and competitive advantages. One example is the financial industry where options and derivatives markets present some of the most challenging problems in HPC. To put things in perspective, Elaine reveals that option markets message rates are 10 times higher than the busiest stock market in the world. The number of messages option market makers process per second is also much higher than the number of requests Google processes—peak rate can be as high as 75 million messages per second, and if that kind of rate persisted, the whole day volume would be trillions. Billions per day, which is usually considered high in the cloud world serving human requests, is nothing compared to the challenges the top option market makers need to be prepared for. "MCoreCloud provides the turnkey solution to the world's top options and derivatives market makers, handling high message rates with ease and consistent low latency, and provide definitive competitive advantages to our customers," says Elaine.

In another instance, the firm worked in close partnership with a high-tech manufacturer, providing the client with the turnkey technology in a large scale automated test solution. The solution delivered 10 times better performance, real-time feedback and control, and improved the overall business process by order of magnitude. The list goes on. From mobile cloud advertising, to industrial IoT, to automotive applications, MCoreLab's solutions are helping clients navigate the complex arena of using high performance infrastructure to gain strategic advantages.

"Breakthrough innovation—at system level, is what we do. It is in our veins. Besides servicing customers, we devote all of our resources to R&D and innovation," Elaine adds.

Innovation and Thought Leadership

At the heart of MCoreLab, is a philosophy on innovation. Elaine likes to compare the art of management to being a good gardener. According to her, old fashioned organic gardening offers much wisdom that can be applied to management, and the way things are seen overall. "One can see the plants above ground, the leaves, and if they've done something right eventually flowers and fruits," she says. But the genesis lie in the roots—issues, problems, as well as the fundamentals—that support good health and productivity. "However, you can't see the roots—pulling up the roots is a bad idea. So you have to understand deeper, and make the right judgments from the surface phenomena you can see," she says. And, this is precisely what the team at MCoreLab does. Be it management, or computer system architecture, both are complex systems where the important things are deep somewhere not easy to see. "Understanding complex system, or continuously striving for a deeper understanding, is a collective strength of our team, and a core value we offer to our clients' project success," she adds.

Taking businesses to a new zenith, the team at MCoreLab is extremely focused on developing core technology and products. The company has etched a bright history, clinching projects from leading companies and replacing their run-of-the-mill existing server and cloud infrastructure with state-of-the-art technology. "We have been extremely focused on developing core technology and products. We will continue add to our core products suite, maintaining the order of magnitude leadership in core products," says Elaine. "In addition, we will devote more resources to developing tools, industry solutions, and application layer libraries that customers in different industries can use," she concludes. CR

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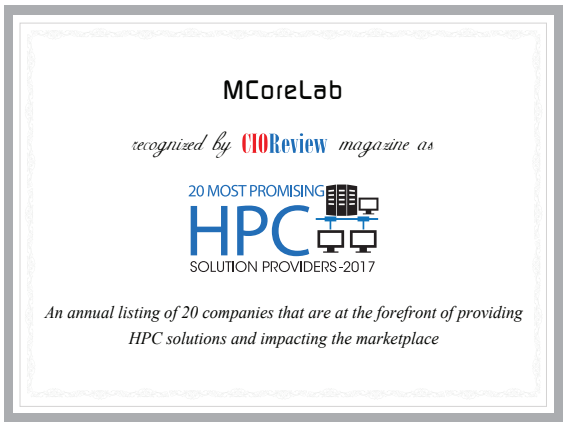
20 Most Promising HPC Solution Providers - 2017

The proliferation of the usage of High Performance Computing (HPC) systems beyond the scientific and academic world is quite eminent today. In the business of all sizes and types, HPC is widening its wings more into transaction processing and data warehousing. This exceptional desire for an advanced technology is empowering the users with a competitive edge in day-to-day business processes by overcoming the barriers to supercomputing in an increasingly aggressive market.

Spreading its wings into Data Storage and Analysis, Data Mining, Modelling and Software Development, HPC is instrumental in improving performance and productivity with enhanced software techniques. The HPC systems are reaping benefits of increased processing speed, reducing the cost, streamlining the processes, analyzing product development cycles within enterprises. Vendors have so far sensed these potential benefits of HPC technology and are now leveraging their expertise and experience to entice the customers with varied offerings.

With numerous HPC Solution providers in the industry today, finding the right solution is often critical for businesses. Our distinguished panel comprising of key decision makers and experts having industrial knowledge of HPC along with CIOReview's editorial board has selected the 20 Most Promising HPC Solution Providers of 2017 offering the ability to develop innovative technologies while offering outstanding computing speed.

In our selection process, we looked at the vendors' capabilities to fulfill the need for cost-effective and concrete solutions that add value to the HPC landscape. In this edition of CIOReview, we bring to you the "20 Most Promising HPC Solution Providers of 2017."



Company:
MCoreLab

Description:
Developer of high-performance infrastructure software for mission critical servers

Key Person:
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