

REPORT REPRINT

Very smart cooling: Vigilent sees datacenter capacity, cooling risks before they happen

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The company, which uses artificial intelligence to control cooling units in datacenters, has launched a predictive analytics suite that further sets it apart in an increasingly competitive sector.

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The datacenter cooling optimization specialist Vigilent launched predictive analytics software and cloud services, called Prescriptive Analytics, that leverage its artificial intelligence and automation capabilities. The new capabilities are likely to help 12-year-old, VC-backed Vigilent to continue to grow, particularly with its primary datacenter colocation customers. In addition, it recently launched a telco-specific version of its core datacenter cooling optimization platform. The company has successful go-to-market partnerships with key players Schneider Electric and NTT Communications. Two additional big hitters, ABB and Siemens, have also recently begun to market their close relationships with Vigilent.

THE 451 TAKE

Vigilent's new forecasting capabilities will help it further differentiate in a market that today is niche, but predictive analytics will become increasingly important for software-driven datacenters in the future. While broad demand for its technology is tempered by overcooling, still a generally acceptable approach despite the inefficiencies, and by efficient ambient and in-row cooling, we believe the colocation sector will increasingly seek out dynamic cooling controls to better manage their capacity and reduce costs. Vigilent's new forecasting and costing tools can deliver significant new value, although because it is a new type of capability for the industry it could be an educative sale, at least initially. Furthermore, despite its momentum, Vigilent faces increased competitive pressure from suppliers such as Emerson Network Power, which is embedding more intelligence into its cooling equipment. Still, Vigilent's capabilities are unique and given its track record and strong analytics focus, we view Vigilent as an acquisition target, potentially for one of its partners or rivals.

CONTEXT

Since it launched in 2004, as Federspiel Controls, the Oakland, California-based company has raised \$16m in three rounds of institutional capital. Accel Partners and NTT Communications are investors.

In 2015, Vigilent returned to profitability on the back of 50% year-over-year revenue growth, partly the result of its European expansion and partly because of its partnership with Schneider Electric (a deep integration with StruxureWare for Data Centers) and others. Vigilent is increasingly shifting its sales efforts toward the channel, which today represents about 40% of its deal pipeline. It has already outsourced some of its operations. As a result, Vigilent has reduced its headcount from about 70 in 2015 to fewer than 50.

The company maintains a small direct sales team that focuses on key accounts. This includes in Europe, which Vigilent expects will be its fastest-growing geography in 2016 and will account for about 35% of total revenues. It expects North America will drive about 40% of sales this year, with the remainder in Asia and elsewhere, including in emerging markets like Brazil.

Vigilent does not disclose its financials but we estimate its revenues to be \$15-20m. It has nearly 410 deployments, including 365 Data Centers, Hutchison, NTT Communications, the State of California, TELUS and Verizon. In Europe, at least one large telco is planning to deploy Vigilent's control system across hundreds of its sites.

There has also been increased interest from telecommunications operators seeking to remotely control small and distributed central offices, leading Vigilent to launch a version of its dynamic cooling optimization system specifically for telco huts and SMEs, initially in Asia.

PARTNERS

While Vigilent's primary channel partnerships are with Schneider Electric and NTT Facilities, the company has been expanding its relationships with other big players. Siemens has been promoting an end-to-end chiller-to-rack control system with Vigilent and server power management specialist TSO Logic.

ABB also recently began promoting Vigilent as a system that can be sold and integrated, using standard protocols (BACnet/IP), into its datacenter infrastructure management (DCIM) software Decathlon. There have been no formal announcements, but it seems likely that Vigilent's new Prescriptive Analytics will become part of these relationships.

Vigilent's existing partnership with Schneider Electric's DCIM suite, StruxureWare for Data Centers, does not yet include Vigilent's new analytics features. However, we believe they may, at some point, be folded into Schneider Electric's forthcoming cloud-based DCIM services – potentially for remote optimization of cooling, and for alerts and alarming, as well as for site-change management and what-if scenario and capacity planning.

TECHNOLOGY

Vigilent's control system is based on machine-learning 'artificial intelligence' software that determines and continually 'learns' relationships between variables such as rack temperature, cooling unit settings, cooling capacity, cooling redundancy, power use and risk of failure. It controls cooling units, including variable frequency drives (VFDs), by turning units on and off, adjusting VFDs up or down and adjusting units' temperature setpoints.

At the heart of the system is an artificial intelligence engine that polls data once a minute (or more) from carefully placed wireless temperature sensors (typically Vigilent's own). As discussed in earlier reports, what sets Vigilent apart from some other DCIM suppliers is the amount and types of data it collects and analyzes. The software then predicts what would happen if an operator took a certain action – such as shutting off a cooling unit or increasing the set-point temperature – but until now, the forecasting data had not been explicitly exposed to or could be fully exploited by end users.

The new Vigilent Prescriptive Analytics suite is available either as on-premises software or as a cloud-delivered service. Initially, it has three discrete modules: Reliability, Capacity and Energy (more options will likely be added over time). All modules are designed to improve cooling operations by addressing challenges – around maintenance, reliability and unknown risks; capacity management; and energy use by providing alarming and recommended actions, and also by enabling user-led what-if scenario planning.

The Reliability module is focused on identifying and forecasting areas of unknown risk by using data science to predict rooms that have a higher likelihood of extreme temperature events. Vigilent says it can uncover hidden issues before they escalate into an event. These can include units that are consuming power but not providing full cooling capacity due to an inefficient fan or faulty compressor for instance. The product includes specific suggestions to remedy issues, both present and forecasted.

The Energy module quantifies the cost savings if cooling improvements were made – that is, it identifies which actions would deliver the most potential energy savings, as well as the cost of inaction.

The Capacity module is arguably the most attractive, particularly to colocation providers. It has been designed to enable users to understand the actual cooling capacity required to meet business objectives, such as installing additional customers in a colocation facility, without overprovisioning. It tracks the real-time operating conditions of cooling equipment and how it varies with different IT load, IT utilization, outside weather conditions and other factors. The measurements (and forecasts) are based on actual operating performance, as opposed to manufacturers' ratings.

With the Capacity module, users can visualize (actual) cooling load, capacity and utilization by room or by datacenter, across a portfolio of facilities. Color coding on mapped-out datacenters shows which rooms or sites have the most excess capacity, from which users can drill into specific details in order to take action. The module can also project how much cooling capacity will be required in the future, taking into account external weather and extreme weather trends, and help prioritize in which room or datacenter users should focus on addressing capacity issues.

What-if planning includes scenarios based on a mix of different configurations, including IT load, committed cooling load (for colocation providers, for example), required cooling redundancy, and so on.

The software has been developed with a focus on usability and customization. There are three broad target users: the datacenter or portfolio manager, the day-to-day operational staff on-site, and the technical or building engineer who is responsible for maintaining the facility.

While the suite analyzes data at room-level redundancy, future versions are likely to be more granular and will drill into rack-level redundancy.

Some of the new analytics, such as the Reliability module, do not require Vigilent's complete cooling optimization system to be deployed. However, the full system is required to enable some of the advanced analytics features. Vigilent has also launched a version of its dynamic cooling optimization system for telco huts and SMEs. It delivers similar functionality but with reduced hardware and installation costs. With this version, Vigilent's AI Engine is virtualized and shared, either on an enterprise network or in the cloud. And because telco and SME sites tend to be somewhat similar, Vigilent has streamlined some common analysis features.

COMPETITION

We believe that Vigilent's Prescriptive Analytics suite, combined with its core technology platform, provides a unique set of capabilities in the datacenter sector. In terms of its core dynamic cooling optimization product, Vigilent's most direct rival is California-based SynapSense, which is part of datacenter equipment supplier Panduit. Both Vigilent and SynapSense deploy advanced wireless networks, sensors and a cooling-optimization engine. While Vigilent emphasizes its analytical engine and its new 'Prescriptive' capabilities, SynapSense emphasizes its breadth and positioning as an optimizing DCIM system.

Emerson Network Power (ENP) is becoming more competitive in this area, with its tools to visualize and manage the efficiency of cooling – its Thermal Systems Manager software and Liebert i-COM unit and iCOM-S system controls.

These tools, some of which are beginning to be embedded inside ENP's (Liebert-branded) cooling units, have some of the same functionality as Vigilent's – such as visualization, alarming and limited automated control – but do not nearly have the same breadth and depth of functionality. However, given ENP's leadership position in datacenter cooling equipment and its renewed corporate focus (the company will either be acquired or spun off from its parent by the end of September), it seems likely it will continue to develop its cooling optimization capabilities.

SWOT ANALYSIS

STRENGTHS

With its strong intellectual property and its differentiated risk-reduction and capacity-management analytics, Vigilent is widely regarded as a forward-thinking specialist of datacenter cooling optimization. The company's growing customer base includes some of the world's largest colocation providers.

WEAKNESSES

Vigilent is a small company with a specialist product that will often require an educative sale.

OPPORTUNITIES

Interest in software-driven datacenters and the fact that datacenter environments are becoming increasingly variable should help drive demand for Vigilent. Colocation providers, in particular, increasingly view cooling optimization as a way to reduce inefficiencies and drive down costs.

THREATS

A growing number of large suppliers from related datacenter sectors are increasingly interested in developing (or acquiring) integrated control systems, which will compete. Some free air cooling and efficient prefabricated datacenters, including micro-datacenters, may not require such optimization, or the amount of savings may not justify the investment. Newer IT equipment may use less power and may run hotter without damage, reducing cooling needs.