

ClearBlade demonstrates scalability and edge analytics with IoT platform

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It is a challenge from both marketing and technological standpoints to clearly demonstrate differentiation among the crowded Internet of Things (IoT) platform market. It is even more challenging for emerging providers in this industry, which are typically financially and technologically restricted, making it difficult to participate in a long sales cycle and have extensive scalable IoT offerings, which are typically required for selling to enterprises. ClearBlade is attempting to flip the script, having already attracted multiple large enterprise clients for IoT with its platforms at the device, edge and application management layers. Its 'run anywhere' packaging of a complete IoT instance differentiates it from typical cloud-only deployments. We identified the importance of a cloud and edge portfolio in our [2017 Trends in the Internet of Things](#) report.

The 451 Take

ClearBlade is innovating by driving its IoT platform's comprehensive business rules, event thresholds, coding engine and analytics to the edge. These edge-platform capabilities use the same code base as the cloud IoT platform, and tie into important business applications (Microsoft, Oracle, SAP). Implementing significant security methods and processes between the two creates a developer-friendly, flexible architecture geared toward Industrial IoT (IIoT) and controlled environment use cases. ClearBlade alleviated scalability concerns that commonly come with small IoT platform providers by

winning a major enterprise deal with Stanley Black & Decker against much larger competitors. Competition to become the central platform in enterprises among midmarket IoT platform providers and the IT giants is fierce; ClearBlade will continue to bid for these six-figure-plus deals by exemplifying its core competencies.

Context

ClearBlade was founded in 2007 as an enterprise modernization service provider, but completely pivoted its focus toward IoT in 2013. The company has grown to 26 employees, residing in its Austin, Texas headquarters, and bolstered its go-to-market efforts by adding former IBM sales executive Dana Wright as VP of sales in June 2016.

The company is in the midst of a Series A venture funding round, having received \$2.39m in November 2016, with another \$3.0m planned in July 2017. ClearBlade anticipates taking on a series B round next year to further fuel its growth plans. The company hopes to achieve \$5-10m in subscription revenue for CY 2017; we estimate CY 2016 revenue to have been less than \$4m.

Technology

ClearBlade's framework consists of software spread throughout the IoT stack while connecting third-party systems via APIs and integrations to devices, back-end business applications and cloud services. Its ClearBlade Platform is the central IoT application management console, with hosting options on-premises or in the cloud, and its management functions are replicated closer to the device and gateway levels to enable edge computing with the ClearBlade Edge. ClearBlade is flexible and adheres to the customer's requirements for where data should be processed, analyzed and stored, and where device management should occur.

The ClearBlade Platform provides five different pieces for device, application and middleware enablement broadly marketed as 'data, messaging, code, triggers and portal.' Data ingesting, streaming and analyzing into a common language is pivotal for IoT platforms that receive many different data transmissions from different sensors and devices. ClearBlade can customize streams by designating certain data to be processed in real-time, while other data can be sent to a back-end cloud-based platform for historical trend analysis. An MQTT messaging broker is self-built by ClearBlade and can switch from proprietary protocols (CAN

bus, Modbus), enhancing scalability and enabling communication between connected sensors, devices and users.

The coding engine is serverless and runs JavaScript services that can be modified for applying rules-based logic, machine-learning algorithms and pattern recognition. ClearBlade maintains a developer-friendly mindset with several prebuilt SDKs and APIs. Leveraging predetermined rules, the 'triggers' engine sets alert thresholds based on the coding engine, which is important for issuing event-generated actions based on these alert thresholds exceeding predetermined capacities, timers and even the absence of scheduled events.

The platform is able to further streamline IoT information with widespread business systems, applications and databases, through integrations with Oracle, SAP, Microsoft and Salesforce, among others. ClearBlade also has its own management portals and dashboards, providing comprehensive views of the entire IoT ecosystem under management, as well as some business application features and its own database architecture. It provides auto-sync capabilities to keep replicated instances up to date, but it also allows for developer control of packages.

The ClearBlade Edge takes the technological capabilities and processes from the ClearBlade Platform and its many different pieces of middleware, and brings them to the edge. Full-stack functions to the edge are attractive because having simple rules and event-triggering based on machine learning and device patterns lessens the need to maintain open lines of communication to a cloud instance and the correlating security concerns that come with data in transit. It allows continuity of processes in disconnected scenarios.

ClearBlade Edge further enables its edge software through partnerships with device and sensor manufacturers, including Stanley, Samsung, Allen-Bradley (Rockwell Automation), Bosch, Intel, Silicon Labs, Texas Instruments, ARM and NXP Semiconductors.

The ClearBlade Platform was built with security in mind, and while this may not be the company's primary value proposition, it is an important consideration for any enterprise launching an IoT initiative. ClearBlade follows an OAuth model for access control, where every user and device has a token that needs to be authorized before access is granted. New users are not given access to anything on the platform until permissions are added for individual actions. This authorization model is far more secure than granting access by default and trying to restrict it after the fact. In terms of data security, ClearBlade is encrypting data at rest as well as data in transit. Data in transit is encrypted using OpenSSL libraries with TLS encryption for transport to the internet, and is done the moment communications are translated into MQTT from proprietary protocols by the MQTT broker.

Strategy

In March 2016, ClearBlade signed a major deal with Stanley Black & Decker against some of the largest IoT platform vendors in the market, despite being more limited in human and financial resources. It was able to accomplish this largely due to its focus on the edge. By enabling its software at the edge to perform all of the compute, data-processing and security tasks as its cloud-based platform, ClearBlade improves the resiliency of its offering, ensuring uptime even if the cloud experiences a failure. In addition to Stanley Black & Decker, ClearBlade is working in other emerging IoT markets, such as the commercial construction and railway industries, where its focus on the edge should prove especially useful. ClearBlade should continue to point out its differentiation from the hundreds of other platform vendors in the market by emphasizing its capabilities at the edge, since that is where the majority of compute will need to be done in real-time IoT environments, not at the cloud.

By working with ClearBlade, Stanley Black & Decker was able to reduce its time to market for its products from 30 months to four months. Other use cases that ClearBlade enables include tracking tools for the mobile workforce, as well as connected job sites, facial recognition and real-time inventory management. An airline manufacturer uses ClearBlade to connect ERPs to physical assets for improved inventory management, to make sure that maintenance crews put all the right tools back where they are supposed to and that there aren't any tools or debris left in the engines. In the transportation market, ClearBlade is installed in a major railway company's systems to monitor train speed and track temperature in real time, helping to reduce the possibility of an accident.

We expect IoT-specific security vendors to be mostly complementary to ClearBlade's offering, and the

company can enhance the value of its platform by establishing key partnerships with vertical-specific vendors in its target markets of industrial, automotive and healthcare. This would make the platform more secure, simplify management for customers that could implement security policies and controls from a single dashboard, and help to attract more customers.

Competition

The vast space of the all-encompassing term 'IoT platform' has generated over 500 providers. That the IoT market is still in its early stages makes it difficult to separate legitimate platform and middleware incumbents from those that are 'IoT washing.'

Although ClearBlade proved it can compete with them, the IT giants are rolling out significant IoT frameworks and have the resources to reach further areas in the market. SAP [purchased PLAT.ONE](#) and Fedem Technology in September 2016 to strengthen its IoT platform and edge capacity. IBM Watson announced earlier this year that it was working on a distributed edge pattern for Cisco gateways, and Intel purchased edge-of-network neural net processor and algorithm supplier Movidius. PTC continues to add capabilities stemming from its ThingWorx platform; similar to ClearBlade, it has its own MQTT broker from the acquired technologies of Kepware.

FogHorn Systems' Lightning edge-intelligence software platform provides cloud-free analytics for brownfield IIoT. The Mountain View, California startup also inked a major partnership to create an IIoT framework architecture geared toward digitizing smart factories and other industrial settings with Yokogawa Electric, Microsoft and Bayshore Networks. Fluke Corp [is also targeting](#) the brownfield IIoT integration opportunity with edge analytics on its portable sensing devices. Electric Imp [is operating from the device up](#), to include connectivity and security in its middleware and application enablement platform.

It is an over-crowded market, with a plethora of small to medium-size providers, including LogMeIn Xively, Telit, Ayla Networks, EVERYTHING, Bsquare, myDevices, Autodesk (SeeControl), Bright Wolf, Mesh Systems, MachineShop and Davra Networks.

SWOT Analysis

Strengths

ClearBlade has an advanced full stack available in the cloud or at the edge, with analytics and necessary security layers intertwined from the device and back-end integration. It has proven enterprise scalability through a significant customer win against larger IoT competitors.

Weaknesses

Its limited resources make it a challenge to separate itself from the rest of the IoT platform midmarket and the IT giants, where its edge differentiation may be difficult to stand out with.

Opportunities

Intelligence at the edge will become increasingly popular for IoT deployments because it is often more cost-effective to compute and process data at the device level than to send it to a cloud-based platform. Many major IT and software providers have yet to show much expertise and technology in the edge computing space, making those that can effectively communicate IoT and edge value propositions increasingly attractive.

Threats

Although the major software providers may lack edge capabilities, they make up for it with comprehensive IoT platforms, add-on offerings throughout the stack and large-scale engineering teams for enterprise integrations of IoT.

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[ClearBlade](#)

COMPANY MENTIONS (OTHER)

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