EMBEDTEK

Hardware-Independent System Health Monitoring

EmbedTek is just as frustrated as original equipment manufacturers (OEMs) and enterprise-sized companies when it comes to system monitoring. Embedded computer solutions can take years to perfect, sell, and implement — only to be left to operate without any knowledge of performance, health, or impending failure.

Our software engineers took the initiative to develop an open source monitoring platform that can be applied to virtually any system developed by any brand. The result solves an industrywide issue. Our customers get a bird's eye view of their installed-base performance, and their end users have the peace of mind that their equipment is well-serviced.

The Power of Prediction

Most complex manufacturing floors or regional service facilities are made up of automated equipment solutions from a wide variety of sources. Some are old and reliable, some operate on an outdated version of the system manufacturer's platform, and others are new and custom-designed with the latest features on the market. This mix of proprietary operating platforms, software versions and hardware makes it too cumbersome and time-consuming to regularly and efficiently monitor whole-system health.

This is a lost opportunity for quality control and customer satisfaction because computers are enabled with sensors that predict or warn of impending failures. Sensors can monitor temperature, speed, and other critical component conditions that are predictive of a failure. Without predictive maintenance, a problem won't be apparent until a serious event occurs that endangers data or renders the system unusable.

Take a fan for example. If a fan fails, a computer can overheat and cause a serious system failure. An alert that notifies operators of a slower fan speed gives personnel flexibility to replace the fan at a time of their choosing when data and productivity are not at risk.

Result

In 2012, EmbedTek developed a platform to help. The software platform remotely monitors hardware sensors and other conditions on virtually any system from any manufacturer. We follow industry standards for monitoring system performance at the component and subcomponent levels.

System Status

Temperatures	✓
Performance	✗
Voltages	✓

Data is served up on an easy-to-use dashboard so all hardware from all manufacturers can be viewed at once. Customers have the ability to configure their alert system based on the conditions and thresholds pertinent to them, including system sensors (speed, temperature), system capacity (driver storage, CPU utilization), and more.

A Global Solution

Pitney Bowes Inc. is a leader in global mailing, customer information management, shipping, location intelligence, e-commerce, and customer engagement. Their machines and customers are located all over the world. Pitney Bowes' Commerce Complete® offering, for example, connects companies to 220 countries and territories and touches every element of the retail customer journey, from demand to delivery. They promise intelligent optimized delivery to the right location, at the right cost, at the right time, every time. There is no room for a disruption that could have been avoided.

"Our system has multiple computers at customer sites that operate in mild to harsh environments, so keeping an eye on the cleanliness and operation of computers inside the system is key to maintaining uptime," said Kenneth Vaughn, Director, Global Sorter Support & Self Maintenance for Pitney Bowes – Document Management Technologies.

The individual solutions within the Pitney Bowes systems have remote monitoring capability, but the tools for each solution are not compatible with one another, making it impossible to pull system-wide information or create alerts of impending failure.

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Pitney Bowes partnered with EmbedTek to leverage their existing architecture with EmbedTek's software to pull information from all parts of the system into one dashboard that is easily managed. If a voltage, temperature, or fan RPM reading it outside of an ideal range, the system automatically sends an alert for personnel to take action.

Result

Pitney Bowes is now able to monitor the health of the computers in their field-based systems around the world without any type of human interaction.

"It reinforces the value of remote diagnostics and remote access," said Vaughn. "If a CPU fan stops, the computer could overheat and we would have to repair it in order to get it back up and going. Now, we can proactively fix the issue before a fail."

Open Source Business Model

The first point of resistance to performance monitoring is the issue of multiple systems from multiple manufacturers. The second point of resistance, however, is often from the system manufacturers themselves. In most cases, system monitoring software is an add-on that requires a per-system or per-year fee in order to implement the tools. System manufacturers also commonly require that their software only run on systems they manufacture.

EmbedTek's hardware-independent monitoring platform pulls data from equipment in the field and organizes it in one dashboard. All EmbedTek-designed systems come with monitoring capabilities at no cost, then we work with our customers to create monitoring software tools for the remainder of their existing installed base. There is a one-time fee of approximately $2,000 per platform for software development. Ongoing use of the software for monitoring and reporting are free of charge.

Result

We share our customers' motivation to have a well-serviced and trusting customer base. The more we can proactively partner to solve problems for our customers, the more successful their businesses will be.

EmbedTek designs, invents, and manufactures computers, software, sensors, cameras, and displays for original equipment manufacturers. Our systems improve the quality of imaging in healthcare, simulation programs in the military, video analytics in security, and much more. Throw any challenge at us, from demanding environment and ergonomic requirements to High Level Assembly and nonstandard I/O. We'll evaluate it, carefully attack it, and solve it.