ENABLING CONNECTED HEALTHCARE
VMware Pulse IoT Center
According to McKinsey and Co., IoT will have a potential economic impact of up to $1.6 trillion in the human health and wellness sector globally by 2025. Most of this value will be generated by using IoT-enabled devices to monitor and treat illness. In addition, the Boston Consulting Group expects direct spending on healthcare-related IoT to reach $16.1 billion by 2020 – a threefold increase on the 2015 figure. But the implementation of IoT within healthcare organizations creates numerous challenges for their IT departments: from maximizing the value of existing investments, to protecting patient privacy, ensuring data security and maximizing system reliability.

For example, nurses and doctors equipped with IoT-enabled devices can be updated in real-time on patients’ vital signs, with automated alerts that enable them to react more quickly when a potential problem is identified. A similar system can be used to keep family members informed on the progress of surgery and to provide regular updates on their post-operative condition. Patients can take advantage of IoT-enabled blood-pressure monitors or other equipment to treat themselves at home, saving them and their medical professionals time and money compared with regular hospital appointments or home visits.

The use of advanced analytics applied to data generated by IoT networks in hospitals can also deliver big advantages for healthcare providers. For example, the use of predictive analytics at one Texas hospital has allowed managers to reduce 30-day readmission rates for heart failure patients by nearly half, based on a calculated risk score that allows physicians to target cardiac patients most in need of intensive follow-up care.

Moreover, the starting point for introducing IoT is not an easy one. The technology infrastructure within a hospital or clinic is typically large, diverse and complex. Workloads are high, and compliance with patient privacy regulations is a top priority. Within this context, the introduction of thousands of new data points and devices could quickly overwhelm available resources. One response to this scenario is to delay or even reject the expansion of IoT into the healthcare environment. However, in the long term, the potential benefits are simply too significant to ignore.

Realizing these benefits is dependent on having the right infrastructure in place to effectively and efficiently manage the rapidly rising volume of data generated by an increasing number of diverse devices.

VMware Pulse IoT Center allows healthcare providers to manage, monitor and secure their entire IoT infrastructure through a single pane of glass to help create a responsive and efficient healthcare system to deliver exceptional patient care.

IoT devices and data will make healthcare provisioning more efficient, effective, and tailored to individual patient needs. A flexible, secure IoT management platform is the essential enabler.
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**LOWERING COSTS DUE TO INVENTORY LOSS**

Industry statistics show that within many hospitals and clinics, up to 30% of medical devices get lost every year. The definition of a ‘device’ is necessarily broad. It encompasses, for example, relatively large and low cost items such as wheelchairs and trolleys that are never returned to the correct ward or nursing station after use. But it also includes expensive surgical kits that can cost five figure sums, which slip down the back of cupboards in store rooms and surgical theatres, are presumed lost, and then replaced. In the worst cases, the total value of these losses can amount to tens of thousands of euros over the course of one weekend within a single hospital.

These shocking figures make it easy to see how IoT device tracking could make a dramatic contribution to improving the financial performance of healthcare organizations. Firstly, attaching a chip or RFID tag to every item of inventory would make it much more difficult for hospital assets to simply disappear off the inventory radar. And secondly, when stocks of particular items run low, an integrated IoT implementation would enable the automation of inventory management and ordering, so that ‘empty shelf’ incidences become much less common. However, the enablement of this more efficient scenario requires an infrastructure that allows effective execution, while maintaining watertight security and the separation of sensitive patient data.

VMware Pulse IoT Center offers an IoT infrastructure management platform for securely managing all the data required to improve device, equipment and inventory management as described above.
PROTECTING PATIENT PRIVACY

Data is arguably more sensitive in the healthcare sector than most others. There is also a complex mix of information in play, ranging from patient health records to proprietary research, device readings and test results. Moreover, the arrival of IoT in hospitals will inevitably lead to a significant increase in the volume of data being generated, stored and communicated.

Privacy issues and the potential commercial value of this data means that public cloud-based approaches to data management are inappropriate in most areas of healthcare. Data must be stored and managed securely onsite or within a tightly controlled private cloud environment. Even so, additional hard to control risks can still arise. For example, technology vendors may not coordinate the registration of new devices on hospital networks with the site’s IT department, or patients could try to take their treatment into their own hands by hacking devices to increase medication does - in fact, this has already happened.

In the context of such a varied range of potential risks, it’s vitally important for healthcare providers that they have a secure, integrated platform for managing, storing and analyzing all their data.

VMware Pulse IoT Center offers healthcare providers the flexibility they need to maximize and protect the value of their data along with secure data orchestration capabilities to deliver relevant data wherever it is needed.
PROACTIVELY MANAGE PATIENT STATUS

The movement of people around a hospital is just one of the variables that makes the day-to-day operations of healthcare facilities so complex – but it’s also one that can mean the difference between life and death. For example, patients can get lost, suffer illness or injury while not being monitored, or leave wards and buildings without permission. Moreover, with multiple demands on their time, healthcare professionals may also not be exactly where they are most needed at any given moment.

Through connected, wearable devices, IoT offers the opportunity to, for example, track patient well-being more closely. This would enable the transfer of critical information that could positively influence the results of the procedure and/or identify potential problems before they endanger patient health.

VMware Pulse IoT Center enables integrated, over-the-air management of all the gateways required to build this infrastructure. Using a sophisticated and flexible rules engine, it can enable healthcare organizations to precisely and comprehensively define and track what, where and when ‘things’ are updated or changed and by whom.
ENHANCING THE PATIENT EXPERIENCE

In the healthcare sector as in every other industry, the user experience is becoming increasingly important for establishing differentiation. IoT is part of a healthcare revolution that will transform the user (patient) experience by personalizing healthcare service delivery in completely new ways.

For example, connected wearable or in-body devices such as pulse trackers and pacemakers will make it possible to: send medication reminders; adjust device settings; or even automate the delivery of medicine directly through the skin or into the bloodstream. These capabilities not only increase convenience and treatment immediacy for patients, but also save time and money for healthcare providers by, for example, eliminating the need for some patient visits, and reducing the likelihood of human error in self-medication scenarios.

IoT also offers the potential for integrating these services into smart home infrastructures and providing proactive patient protection. For example, a sensor-enabled floor covering can send out an alert to the emergency services when it detects a heavy impact that is likely to have been caused by a patient falling or collapsing.

VMware’s end-to-end IoT solution enables the integrated gateway management required to enable an intelligent, tailored patient experience that can also save lives by delivering the right information to the right person or ‘thing’ at the right time.
VMWARE PULSE IOT CENTER

VMware Pulse IoT Center is a secure, enterprise grade, edge infrastructure and IoT device management solution that creates a digital foundation for deploying any IoT use case. Pulse IoT Center implements a consistent scalable framework for deploying applications to IoT gateways across your entire edge and IoT infrastructure.

WHY VMWARE IS THE RIGHT CHOICE FOR YOU

VMware is a recognized world leader in helping you run your business successfully from the desktop, to the data center, to the cloud. As enterprises prepare for the onslaught of upcoming IoT use cases, VMware Pulse IoT solutions ensures that your business is ready to support these with its core expertise in Device Management, Operational Analytics, Security, and Cloud Management. VMware is working with strategic IoT partners and many niche IoT providers to give customers a one-stop, single-point solution.

VMware Pulse IoT Center can help you simplify the complexity, improve the reliability and security of your IoT infrastructure and accelerate the ROI of your IoT use case.

FOR MORE INFORMATION:

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