Marketplace Update

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- ## Cornerstone Integration and Intel vPro: Making Every Second Count in the Golden Hour

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Mobility is a key driver in the IT marketplace, but it is a mistake to think that its influence is limited to latest/greatest smart phones and tablets, or issues surrounding Bring Your Own Device (BYOD) initiatives. Instead, the impact of mobile technology affects entire IT infrastructures and business environments, literally from the fingertips of employees and customers to the staff who manage and maintain corporate data centers.

With that in mind, what does an ideal mobile computing infrastructure look like? What are its characteristics, its basic strengths and potential weaknesses? That depends in large part on the processes and applications—the IT lifeblood, if you will—of the organization itself. But let's consider an extreme case: businesses in the business of saving lives.

Mobility has been an inherent factor in medicine and healthcare for millennia. The sick and injured are often unable to travel to places of treatment, so medical professionals go to them. The enduring and endearing images of country doctors making house calls, nurses caring for patients in remote surroundings and medics treating the wounded on battlefields are virtually universal.

Making the Most of the Golden Hour

In urban, suburban and rural locales, mobile first responders, including emergency medical technicians (EMTs), have key roles in the "Golden Hour" that is so crucial in the treatment of traumatic injury. How can mobile IT better serve doctors, nurses and EMTs, along with the patients they care for?

That is a question that piqued the interest and imagination of Steven Graves, CEO of Cornerstone Integration, Inc. (CII) during a discussion with officials at Valley Health, a nonprofit healthcare organization that currently operates six hospitals in Virginia and West Virginia: Winchester Medical Center (WMC) and Warren Memorial Hospital (WMH) in Winchester, VA; Shenandoah Memorial Hospital (SMH) in Woodstock, VA; Page Memorial Hospital (PMH) in Luray, VA; Hampshire Memorial Hospital (HMH) in Romney, WV; and War Memorial Hospital in Berkeley Springs, WV.

According to Graves, Valley Health's immediate problem was how to improve the care and health of heart attack victims. Given the rural locations where many patients live, lengthy transportation times were impacting patient outcomes, but alternatives, such as helicopter "life flights" were too risky and costly to use in any but the most extreme cases. In addition, communications in the countryside were often problematic due to poor radio and cellular support. Plus, security was a critical concern given the importance of patient privacy and regulatory issues.

What was needed was a framework that securely connected remote EMTs with trauma centers to actively transmit 12-lead electro cardiogram (EKG) data so that staff and labs could assess the patient's condition, prepare for his or her arrival and accelerate the treatment plan to help ensure positive results. Graves realized that the problem and its solution was similar to work he was doing with another of his businesses, the Corner Group, in providing secure communications solutions to the Department of Defense (DoD).

"What they wanted is real time situational awareness. In military terms, it's called 'staying inside the enemy's OODA (observe, orient, decide, and act) loop.' In healthcare, it requires having the skills and tools to improve both service delivery and patient outcomes." To support these and other requirements, Graves saw just one possible IT solution: Intel's vPro.

Make it Fit
According to Graves, he and CII staff developed a solution— Mission Critical Media (MCM) —for Valley Health by first contacting the people who would be using the systems daily. "We focused first on their needs. We started by talking with nurses, then doctors, then administrators, then IT reps. We did not start with the CIOs, and intentionally did not start with IT requirements, as that would have limited our solution set."

Cornerstone's approach is based on a "three legged stool" model consisting of:

1. **Security**—Must be present from the very beginning, since it's too costly and complex to retrofit. This includes the ability to audit, protect, monitor, enforce, enable/disable, activate/deactivate systems whether on or off. This lowers risks of data loss, leakage and compromise.

2. **Management**—Must be able to remotely update, enable, diagnose, repair, inventory and update systems anywhere/any time, whether they are on or off, even without a functioning operating system, hard drive or software agent.

3. **Fit**—Must fit current needs and yet be adaptable to changing operational environments. This includes the ability to support numerous disparate multi-vendor software applications, hardware environments, multiple OSs and virtual machines, security levels, use cases, users and locations while also being easy to implement, support and operate.

Graves explained, "'Fit' is driven by being Adaptable, Flexible, Scalable, Reliable, Mobile, and Affordable." In essence, Intel's vPro provides the foundation for supporting the 'fitness' of the Valley Health MCM solution.

Intel "Core to the Cloud"
Why Graves chose Intel for the project becomes clear as one considers its structure. "Our goal was to create sustainable value and competitive advantages by using commodity, open source, COTS-based technology platforms. The technology had to be capable of delivering services defined by Valley Health at the lowest TCO, while also requiring the lowest

capital investment up front. Intel supported this approach by providing the means to develop our own "Core to Cloud" management offering."

In early 2014 CII's MCM solution transitioned to embedded Intel Core i5 vPro-enabled NUC (Next Unit of Computing)-based fanless platforms. These run as Mobile Cloud Servers which are located on Advanced Life Support units (ambulances). The affordable NUC-based system currently runs VMware ESXi 5.5 concurrently hosting Microsoft Windows 7 and Ubuntu Linux 11.0 on virtual machines.

By using virtual machines, CII can support a broad variety of applications, both embedded and commercial, while providing secure access over commercial broadband cellular and commercial satellite networks using narrowband M2M communications. CII's MCM solution also supports geopositioning and secure real-time streaming video, voice and image transmission. Communications traffic is managed by hospital IT staff, and the ambulance systems are monitored and maintained by personnel at CII's Intel-based cloud data center.

Client devices, including tablets, smart phones, notebooks and Ultrabooks are networked to the on-ambulance cloud server, seamlessly securing their data, as well. Since the NUC Mobile Cloud Servers are fully virtualized, they can support multiple client operating systems, including Linux, Windows and iOS and related devices, and diverse applications and suites. In other words, CII's MCM solution also qualifies as a highly affordable, innovative, mobile BYOD platform.

The vPro Difference

Though Graves emphasized the heterogeneous qualities of the Valley Health solution, he also encourages customers to adopt Intel vPro-based client devices wherever possible. "Intel vPro is embedded inside the Core architecture. It is proven, reliable and consistent across past, current and future architectures. In addition, vPro is an 8th generation commodity that's available in numerous vendors' platforms. We've been actively, successfully using it since 2008 in both US DoD efforts and in healthcare solutions."

But the Intel value proposition doesn't stop there. "Intel freely provides the software management tools required to maximize vPro features and performance: AMT Commander, AMT Discoverer and so on. Or customers can use their own existing tools, including HP OpenView, Symantec ALTIRIS and Microsoft System Center, for example."

At the same time, Graves noted, "Intel vPro is the only client platform that supports secure remote management whether the system is on or off, improving maintenance efficiency and cost effectiveness." That's a critical point in situations like Valley Health's where the remoteness of rural communities and lack of local IT personnel makes system diagnosis and repair expensive.

In fact, management costs can account for as much as 70 percent of the total cost of owning an IT asset. Graves estimates that by using the Intel vPro platform, CII can often cut those costs in half and deliver significant savings to healthcare customers." "For us, some-

times the equipment is the patient. So we needed to create a solution that allows us to affordably 'treat in place' the equipment, as well as the patients. No one else does what Intel does."

Final Analysis

The Mission Critical Media solution that Cornerstone Integration, Inc. developed for Valley Health is an unqualified success. Facilities using the MCM solution found that it helped accelerate hospital interventions by shortening or eliminating the 30-minute wait time that patients previously faced after arrival. Most impressively, Valley Health found that patients treated with the MCM-based regimen were discharged with their hearts in stronger condition. As a result, Cornerstone's MCM solution is also being evaluated for use in assessment and treatment of strokes and other emergency conditions.

But the lessons Graves took away from the experience have wider ramifications. "Healthcare IT must transition from being an in-house cost center to a care delivery service enabler. Much of this is being driven by the Affordable Care Act (ACA), Health Insurance Portability and Accountability Act (HIPAA) compliance, the increasing adoption of electronic healthcare records (EHR) and electronic incident reporting. More broadly, care provider organizations must find ways to gather, correlate and share information, and deliver services rapidly, effectively and at lowest cost."

As Cornerstone Integration's work with Valley Health demonstrates, Intel's vPro offers a firm foundation for successful solutions addressing these and other healthcare challenges. Mobile technology, whether it serves EMTs and ambulances racing to save someone's life, or the doctors, nurses and other medical staff collaborating on patient care, is poised to alter healthcare in elemental ways. From our own perspective, people and organizations in the business of saving lives should seriously consider Intel's vPro solutions.