City Clinic taps VDI technology to save lives and cut costs

City Clinic implements an innovative cloud-based mobile telemedicine solution combining state-of-the-art medical instrumentation and proven virtual desktop technology from VMware to expand the reach and lower the cost of medical examination. Applications include disaster response, prevention programs, chronic condition monitoring, distributed first-contact care, home care and many more. City Clinic blazes the trail for both private and public healthcare organizations, gaining the ability to provide high quality care to more people, faster and cheaper – all at the same time – and with existing human resources.

For all the hype it gets, telemedicine is often just that, a hype. The reason is simple: most solutions have limited features accompanied by high price tags and thus, little chance for broader adoption. This is, however, not the case with Aossia’s Sphere of Care.

The challenge
As an IT solution integrator Aossia works with a large number of technologies using them to build industry-specific solutions for customers. One of them is City Clinic, the leading healthcare provider in Bulgaria who recently tasked the company with developing a solution for remote medical examination. The reason was City Clinic doctors’ frustration while evaluating various telemedicine solutions available on the market. In short, in their view, most of them did not deliver on the initial promises of productivity improvement and long-term cost-efficiency gains, while also imposing compromises in other areas, such as openness or mobility.

“We were not interested in integrating many single-purpose, often proprietary solutions. Rather, we wanted to see an open platform enabling us to perform a multitude of medical examination procedures as well as tests remotely. That essentially meant having one solution integrating many medical instruments. We also stressed the need to tightly integrate remote examination with centralized, standards-based Electronic Medical Record systems. Without such integration, the solution would not be much of an improvement for our doctors’ productivity” – explains Ilian Grigorov, CEO, City Clinic.

Aossia took all those remarks home with the aim to give the idea a serious try. After further consultations, technology tests and investments the company came up with a solution being exactly what City Clinic hoped for. “Internally, we developed a set of projects, each with goals addressing specific challenges on the way to the envisioned solution. These were, for example, device integration, interoperability and standards, security, compliance, management, teleconferencing, usability, mobility, cost and a lot more” – explains Miroslav Ivanov, Sales Manager, Aossia.

The solution
“Working with City Clinic we have developed, tested and productized a general purpose remote medical examination solution. It enables hospital-type medical examination just anywhere with a cellular or fixed Internet connection. Combining any IoT medical...
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SOFTWARE
• vSphere for Desktop
• Horizon View 6

“Any decent broadband can handle the connection. The bandwidth requirement is 5 Mb/s or more. In the case the connection slows down the solution automatically drops the frame rate while keeping the picture and voice quality intact. The solution reliably works even over a 3G cellular data link which speaks volumes about the robustness of the Horizon View 6 and its PCoIP remote protocol”

Roch Norwa, Lead System Engineer, VMware who validated the architecture

devices with the latest medical and information technology innovations, the Sphere of Care gives City Clinic new service delivery options as well as radical cost savings” – says Ivaylo Petrov, CEO, Aossia.

Conceptually, the solution imitates a medical examination room in a clinic or hospital, the key difference being both the patient and the doctor can be anywhere in the world, teleconferencing in real time. The patient is attended by a nurse who acts the ‘doctors’ hands’, physically operating medical instruments e.g. a stethoscope, a heart monitor, a blood pressure monitor, an ultrasound scanner, a glucose-level meter or a laparoscope set. In fact, any digital medical device can be used as long as it can transfer data over a USB, Wi-Fi or Bluetooth to a laptop (Windows, Mac OS), a tablet (Android, iOS) or even a smartphone (Android, iOS) running VMware Horizon View 6 software.

The VMware vSphere for Desktop and Horizon View are VDI, or Virtual Desktop Infrastructure software products which are the core enabler for the Sphere of Care solution. Both the nurse and the doctor use it to access their virtual desktops running in Aossia’s cloud.

“VDI is a crucial part of the solution because medical desktop applications often require a lot of computing resources and high speed networking available as well as some special operating system. These, of course, may be hard to get under truly mobile circumstances. Centralizing desktops is also essential because of information security and compliance requirements. With vSphere for Desktop and Horizon View, no data is stored on a remote location – it is only displayed while constantly residing in the security vault in the cloud. We have chosen VMware’s VDI technology for its flexibility, reliability and proven track record worldwide” – stresses Aossia’s Petrov.

Secure access to patient information is based on dedicated server software, distributed hardware security modules and user’s smart cards. The solution assumes two separate HD screens are used – one for the patient-doctor teleconferencing using telepresence software and the other for imaging and medical applications. In the case when a tablet or smartphone are used for urgent cases, screen switching is inevitable, but it is still very usable. As for connectivity... “Any decent broadband can handle the connection. The bandwidth requirement is 5 Mb/s or more. In the case the connection slows down the solution automatically drops the frame rate while keeping the picture and voice quality intact. The solution reliably works even over a 3G cellular...”

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It doesn’t take much imagination to envision a broad array of use cases for the Sphere of Care. Working with Aossia, City Clinic has crystallized real-world requirements for telemedicine and essentially blazed the trail for many new initiatives, including in public healthcare. “Public healthcare faces ever mounting demand for services while budgets and human resources are already very strained. Long waiting times even for basic public medical service have become a norm across the world. We believe we can help local governments address the ever mounting cost and resource-shortage issues” – City Clinic’s CEO, Grigorov argues.

These arguments are fair but obviously, this is just a tip of the iceberg in terms of optimization opportunities. “The Sphere of Care provides a practical means to solve a long list of problems. For example, better prioritizing patients in time critical situations, avoiding unnecessary medical transport, speeding up diagnosis and preventing deterioration, better serving the chronically ill and the elderly as well as enacting prevention programs. Being able to quickly consult many doctors in real time reduces the risk of inappropriate diagnosis or treatment which is highly desirable not only by patients but doctors as well” – Aossia’s Petrov adds.

This is not to say City Clinic stops being a private healthcare provider. Just to
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Meanwhile, Aossia sees even more advanced scenarios looming.

“Private healthcare providers can offer premium services to patients who want to implement Sphere of Care at home. This would probably include a limited set of medical devices due to significant cost but... there are people who can afford even the full set. On the other hand, in many typical cases, especially with chronic conditions, one or two specialized devices would be enough. In terms of long-term operational efficiency and profitability, home-based service delivery coupled with subscription-based business model is preferable. I can easily imagine device subsidies offered, telco style” – Ivanov opines.