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# Mobilized Monitoring Security Surveillance in Post-PC Era

As more consumers adopt smartphones and other mobile devices, users have come to expect from security systems the same level of mobility they have in everyday life. The "mobile revolution" has changed the way we consume and interact with information, and security is one industry that can take full advantage of increasingly capable mobile devices and faster data speeds.

BY GARY TANG

According to IMS Research, more than 420 million smartphones will be sold in 2011, and annual sales will exceed one billion devices by the end of 2016, thanks to low-cost handsets becoming readily available. Another research from Ovum predicts that global mobile phone shipments will reach 1.77 billion by 2016.

Currently, penetration of smartphones has reached more than 40 percent in Western Europe and 38 percent in the U.S., according to Nielsen in a prepared statement. "While less than 20 percent of APAC mobile users currently have smartphones, interest in upgrading is high: Nearly half of consumers intend on buying a smartphone in 2011."

Although it has only been a few years since the introduction of modern mobile devices such as smartphones and tablet computers, the world today is all about portable viewing, notification and control, said Gordon Hope, GM of AlarmNet Services, Honeywell Security. "Without the portable aspect, it is suspect as to the total value proposition in the eyes of the consumer, both commercial and residential."

Modern mobile

devices are becoming increasingly capable, and the portability factor means that they will always be there with the user, said Sr. Palasamudram, CEO of mobiDEOS. "This provides tremendous ROI. It also enables users to perform certain activities that they could not have accomplished before."

## MOBILE MONITORING

About 50 percent of desktop surveillance users who have smartphones also use surveillance on mobile devices,

Palasamudram said. Among these users, mobiDEOS estimates that approximately 60 percent use smartphones and 35 percent use tablets with other handheld devices comprising the remaining 5 percent. "The strongest demand is found in markets with large geographical areas to cover while operating with limited resources. These include retail, public safety, education, construction and vacation homes."

For Vivotek, the majority of users taking advantage of remote monitoring are from North America.



SHUTTERSTOCK

South America and Europe, said William Ku, Director of Brand Business. "Each month in the U.S., more than 50 users download our officially supported remote viewing application to their smartphones. In Italy and Spain, the average monthly download counts are 15 and 10, respectively. In Mexico, the monthly average is 25 downloads. These numbers do not include software from third-party developers."

#### KEY ENABLERS

"The proliferation of smartphones is the key enabler for security solutions via mobile devices. Advances in both hardware and software over the past few years have been astounding," Ku said. The competition among smartphone



Sri Palanisubramaniam, CEO of mobiDEUS



Paul Machacek, Director of Business Development, Winland Electronics



Neville Clifton, Chief Technologist and Director of Alarm New Zealand

vendors has sparked tremendous innovation in consumer electronics and mobile devices.

Although 3-G networks have been around for years, it was not until recently that remote monitoring via mobile devices became practical for most users. In terms of hardware, key enablers are more cost-effective

image sensors, higher speeds over cellular networks, more extensive coverage of 3-G and 4-G networks and increasingly powerful processors, Hope said.

The expansion of computing power in the palm of one's hand cannot be overlooked, Hope continued. There has been rapid development in

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▲ Business executives and consumers in general have grown accustomed to having access to vital information on the go.

both hardware and software, which "makes available a truly rich personal and portable experience to complete the end-to-end solution."

Larger display sizes, faster processors, extended battery life and optimized Wi-Fi chips are other key factors that enable remote monitoring on the go, Palasamudram added.

Furthermore, the 'app store' concept has revolutionized the way people consume software services, whether one-time purchases or subscription-based services, Hope said.

Modern video compression schemes have also helped by dramatically reducing the size of video streams, but further advances are unlikely to play a critical role in this space, at least for now. While more advanced video compression techniques lower the costs of data transmission over wireless networks, the amount of data is significant even with advanced compression, Hope said. "The ongoing improvement in compression will be important over time, but I do not believe it is the most important driver to the growth of systems at this point."

**DATA MATTERS**

While the cost of transmitting data over 3-G or 4-G wireless networks should not be overlooked, there is a different perspective than the pure cost of data transmission, Hope continued. "The TCO can be viewed as the time it takes to install a solution versus the perceived value of the solution relative to the need."

AlarmNet provides an example using video camera installations. "On a 2-G network, it technically was 'possible' to send video, but not 'practical' in terms of frame rate and viewing expectation of a customer (residential or commercial)," Hope said. "Enter 3-G/4-G network capability; all of a sudden, a wireless solution that meets expectations is available. The fact that the rates may cost a bit more may not weigh as heavily into the equation as the value that a wireless camera installation may bring. Unmanned buildings, traffic cameras, security cameras in less-than-safe neighborhoods all may benefit from a camera solution that is truly wireless."

Mobile surveillance provides value to the user regardless of data costs, Palasamudram stressed. "Mobile surveillance is not about continuous monitoring of a location. It is more like a spot check or response to an alert, which does not take a long time or require transmission of large chunks of data." As long as a user does not intend to continuously stream video over 3-G or 4-G networks, the slight burden of data costs should be outweighed by the value of mobile surveillance.

**PLATFORM WAR**

There are several platforms that dominate today's smartphone market, including Android,

BlackBerry OS, iOS and Windows Mobile, Palasamudram said. In terms of developer preference, the most preferred is iOS, followed by Android, BlackBerry OS and Windows Mobile.

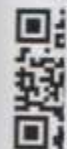
While Android's market share is the highest, it is also important to consider that it comes from devices from several manufacturers and the specs vary widely. The result is a relatively complex development process where developers must ensure that their applications support a wide spectrum of devices with different processors, display sizes and resolutions, and sensors, also varying in build quality. "It's a bit easier in that there is one platform with limited target devices," Hope said. "However, I do think if we can yet make the call in terms of one platform over the other, New Android phones are offering better performance and coming closer to iOS devices."

The tools that are available to developers are also a factor to consider. "The tools for developing iOS apps are more complete and user-friendly, which render the process for



Gordon Hope, GM of AlarmNet Services, Honeywell Security

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programming much easier and smoother," Ku said. "Also, from a programmer's perspective, integration requires less effort on iOS, compared to Android, where the process of building library components requires more work and the tools are less user-friendly. Although this has no impact on end users, it increases development time and cost."

Currently, Vivotek's priority is enhancing user experience and increasing functionality on iOS, Ku said. "With regards to other platforms, we will assess Windows Mobile 8 when it is released, as we need to see how the market reacts to it. As for BlackBerry, it has a very niche market."

The end-to-end experience is the real measure of any service, Hope

said. "There will always be a series of devices that are less powerful than others, but this is likely to be a constant in this business."

"Users will end up selecting their portable device on their intended use, and app developers need to be vigilant to do the best possible job to minimize the negative impact of low-end devices and maximize the experience of all higher-end/more capable devices."

"Users prefer specific devices, already own them and want to use them. Surveillance software should be able to provide for these users a seamless solution," Palasamudram added.

#### NATIVE OR WEB-BASED

It is next to impossible for a manufacturer to support all

platforms, as it requires a different code base for each, said Neville Clifton, Chief Technologist and Director of Alarm New Zealand.

"Support for four major platforms already requires significant resources, and is more likely to be provided by software companies than camera manufacturers," Ku said.

HTML5 and Javascript have come a long way in enabling Web apps but still require further development. "The generic approach of providing strictly browser-based solutions at this time is not likely to yield an optimized solution for the end user," Hope said. "However, we do not know if the gap will be closed in the future, so we need to be cognizant of both possibilities."

At this point, native SDK-derived

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apps appear to offer the cleanest looking apps for the targeted devices, Hope said. "Each SDK has its own set of tools that is designed to provide an exceptional end-user experience for the target devices it supports."

**IN OR OUT?**

If a manufacturer decides to develop a mobile application to complement its hardware, there are two paths: develop the application in-house, or outsource the work to professional developers. There are pros and cons to each.

Honeywell Security employs both strategies, Hope said. "We use in-house expertise to make sure that data security and connectivity to servers are realized while at the same time utilizing external resources to refine the GUI."

For in-house development, manufacturers are able to exercise better control over every aspect of the application and its development process, as well as quicker response to customers, Palasamudram said. However, this is challenging in that they must employ and manage a capable team, which may be more difficult than simply outsourcing.

Hardware manufacturers may be better served by outsourcing completely to a software developer than trying to outsource to a development company and maintain

it, Palasamudram cautioned. "The latter route will be far more expensive."

**BEYOND SECURITY**

Aside from typical security applications, there is a variety of settings where an end user would want to be notified of an event, wherever s/he may be. "There is strong demand for the ability to monitor for critical conditions, while also meeting regulatory compliance such as HACCP requirements as well as automatic data logging of cooler and freezer conditions," said Paul Machacek, Director of Business Development for Winland Electronics.

For example, "facilities storing perishable products or pharmaceuticals, such as hospitals, pharmacies, grocery stores and commercial kitchens, would benefit from having the capacity to monitor these critical environments where adverse conditions can affect critical assets, Machacek said. "Facilities with these types of applications want to have remote access to not only real-time sensor information but also historic, data-logged information and alarm alerts via email or text messages when an incident occurs."

In addition, "a device could provide two-way access to remotely monitor and collect data on up to

eight sensors for changes in temperature, humidity, water, gases, pressure, dry contacts and more via network connection," Machacek said. "Sensor settings may also be modified via a network connection,

eliminating the need for manual adjustments or service calls. Dealers can expand their monthly revenue by providing customers enhanced features of additional value."

**FUTURE DEVELOPMENT**

Solutions for mobile commerce via smartphones and tablets will increase in popularity, ultimately rivaling the capabilities of their desktop counterparts. "Audio is forthcoming, as is live-playback for a complete NVR management are also on the horizon."

Camera manufacturers recognize the power of mobile devices and will enhance their offerings for both software and hardware. "Currently, video streaming through mobile devices is made possible through VMS. However, we expect to see more," Kawanishi said.

Other security applications will also take advantage of the mobile revolution. As built-in NFC capabilities pick up in volume, a variety of cases will also be made possible. Clifton said, "Keypads and remote control will be displaced by NFC-equipped mobile devices within the next 15 years."

As mobile devices gain market penetration, there will be increasingly innovative applications that utilizes them as an extension of current applications and currently unimaginable capabilities. "The growth in the power of mobile devices and ever-decreasing costs will drive the adoption of applications that are tied to such devices," Clifton concluded.

**Worldwide Smartphone Sales to End Users by Operating System**

	Q2 of 2011	Q2 of 2010
Android	43.4 %	17.2 %
Symbian	22.1 %	40.9 %
iOS	18.2 %	14.1 %
BlackBerry OS	11.7 %	18.7 %
Bada	1.9 %	0.9 %
Windows Mobile	1.6 %	4.9 %
Others	1.1 %	3.3 %

Source: Gartner

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