

Testing mobile services, the Keynote way

If someone in Silicon Valley is building a mobile application for global deployment, how does he test the application on a Chinese network or for handsets in Japan? Imagine the complexity of testing applications and services covered such as SMS, MMS, WAP, Push to Talk, OTA Transactions, Instant Messaging, Streaming Video, and Java/BREW applications over multiple mobile data network, including GSM (GPRS, EDGE, UMTS, HSDPA) and CDMA (1xRTT, 1xEV-DO).

The scale of challenge is humungous. Developers know the obstacles involved in creating applications for dozens of mobile phones. Yet, buying or otherwise obtaining dozens or more handsets can be a daunting, if not impossible and cost-prohibitive, task especially when the desire is to build for as many carriers as possible.

That's where Keynote Systems [Nasdaq: KEYN] comes in. Keynote is addressing the challenges of today's complex and fast-moving mobile marketplace. "The wireless ecosystem presents challenges for content providers, application developers, network operators and device manufacturers. We want to take our solution to everyone in this value chain," says Umang Gupta, CEO of Keynote Systems.

The company recently announced the build-out of the world's largest globally distributed mobile test and measurement network for testing and monitoring of wireless content, applications, and services using both real and simulated mobile devices on live wireless networks. Keynote has a market-leading infrastructure of 2,400 measurement computers and mobile devices in over 240 locations around the world.

The new service offers testing and validation of mobile content in an interactive fashion for portals and content developers. It provides a library of over 800 agents and device profiles to perform testing across the wide range of devices, operating systems, screen sizes, memory, and processing capabilities in the mobile world. In order to perform live testing across different carrier wireless networks, Keynote is installing measurement

devices in 20 locations around the world, including four in the United States. Initially, it will test over Verizon Wireless, Sprint, Cingular and T-Mobile networks.

Taking Apps Across the World

The growth in mobile data services means huge opportunities for several firms that specialize in mobile data application development. The speed at which consumers adopt the new services will ultimately be driven by the quality of the new data applications that these developers produce. Delivering high-quality mobile data services to every user is not easy.

The applications developed must cope with the bewildering diversity of devices, operating systems, versions, and protocols that exist in the mobile world. In addition, the same must be able to work over multiple, disparate, and proprietary networks.

Considering the form factor diversity of handsets—each with its own screen size, soft keys, memory size, graphics handling, and browser—the scale of the problem is monstrous. For instance, the size, color depth, brightness, and contrasts of the screens of each device differ. An application must accommodate all these differences with a degree of elegance, not usually needed for the tradition-



Umang GUpta

al Internet, to be executed well.

The differences in the physical form factors are only part of the picture. Different countries support one or more mobile standards and as a result there are very different implementations: PCS, GSM TDMA, CDMA, iDEN and UMTS. Added to this is the complexity of networks. Each operator has different configuration of gateways and use different sets of protocols to interface with application developers.

Keynote's Platform allows mobile developers to test their applications with automated tools over the web. These tools enable them to

sistently measured, monitored, and maintained using a globally distributed system.

Operators do understand that mobile device users accept inconveniences in usability in exchange for the many advantages provided by the wireless technologies. They know fully well that enhancing the user experience is essential for them to be in the game. In fact, a November 2006 report by the industry analyst outfit Frost & Sullivan stated, "Delivering a satisfactory end-user experience is paramount for the growth of the (mobile) industry, and this is something easier said

on-demand solution allows companies to measure and monitor their mobile applications, services and content quality on both real and simulated devices from 20 cities, across more than 50 carriers worldwide, with additional cities and carriers to be added as dictated by demand. Testing is offered by the daily time block, and measurements on the basis of transaction. The interactive testing and transaction monitoring services each come at a cost of \$500 per month.

"Offering a global testing and monitoring infrastructure on an as-needed basis matches the larger

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identify and locate problems with the applications when offered to Sprint or Verizon users in the U.S., or Airtel or Hutch users in India.

As mobile applications become ready for prime time, Keynote is also addressing the need to monitor and measure the response times and the quality of mobile content.

Bringing Content to Everyone's Hand

According to a recent report from eMarketer, only 10 percent of respondents had surfed the Web using a mobile device in the month of January 2007, while 29 percent said that they intended to do so in the future. "For the mobile Internet to reach the next level, users need to be confident that they will receive a consistent quality of service from their premium data services, content and applications," says Gupta.

For usage to grow and for the promise of the mobile Internet to be fulfilled, mobile content and application quality needs to be more con-

than done as the seemingly simple process of mobile media adaptation actually involves several considerations and processes before delivery."

Quality of service in the mobile content market is not simply about speeds and feeds. It is about the consistent and successful delivery of increasingly complex and custom applications to consumers on a multitude of platforms, devices and price plans. Keynote is enabling content companies—portals like MSN, Yahoo, and other enterprises too—to monitor the health of content and test the quality. So, when the content is delivered, it is received and rendered correctly on hundreds of different handsets.

The On-Demand Model

By providing testing and monitoring services on an "as-needed" basis, Keynote makes its cost-effective testing and monitoring solutions easily available to hundreds of small to mid-size mobile content developers and operators. Keynote's hosted

trends sweeping global IT markets such as virtualization, grid computing and SOA: making applications, services and capabilities available to a broad swathe of users on demand," says Jeff Cotrupe, Senior Analyst at EMA and former operations/business support systems (OSS/BSS) practice leader at Gartner.

With better networks and feature-rich handsets swamping the market all over, mobile applications are exploding. The challenges for carriers, handset makers, developers and content providers have increased significantly. And that, in turn, has created a healthy demand for automated software to monitor and test the products that can meet the high volume. Leveraging the trend, Keynote Systems is poised to kick growth into high gear. Gupta notes that as mobile commerce would take off, there will be more exciting challenges in this space. His bet on mobile monitoring and testing should pay off. 