The Cloud in your Hands: Mobile Cloud Services

By Jesse Cryderman and John Wilson

Mobile cloud computing is a booming phenomenon: Juniper reseach predicts the market for mobile cloud apps to reach $9.5 billion by 2014. As smartphones have become increasingly powerful and networks funnel data at higher rates, cloud computing has moved from the sky and into the hands of users. From data backup and storage to productivity, many common tasks can now be performed in the clouds, with the handset functioning essentially as a data and input portal. While cloud computing is gaining ground in the wired world, it is especially useful—and sometimes critical—for the mobile platform because handheld devices have significantly less hardwired storage space for native applications; space that disappears quickly and can negatively impact the performance of the mobile device.

> **"Cloud computing has moved from the sky and into the hands of users."**

My Android phone, for instance, came with a Gmail app that functioned well for the first couple of weeks. But as large amounts of email started flowing in, it bloated to a 40mb resource hog and all but froze my handset. (Note: Android 2.2 allows for the system to mount applications from an SD Card, which ameliorates some of these issues.) Now I just access Gmail in the clouds through my browser—problem solved. What other options exist for mobile cloud computing, and what's in store for the future?

Clouds Thick with Data

In 2010, the Digital Universe, that is all of the digital data created on the planet, reached 1.2 zettabytes, or 1.2 trillion terabytes. That's enough data to fill "a

stack of DVDs reaching from the earth to the moon and back," (roughly 480,000 miles) according to John Gantz and David Reinsel, authors of the IDC report announcing the figure. By 2020, the Digital Universe is projected to be 44 times larger than it was in 2009. All of that data requires storage and increasingly, people are turning to the cloud to provide it.

Services such as Dropbox, Windows Live SkyDrive, and Google Docs are increasingly popular, and often free, options for both creating and storing data in the cloud that can be accessed anywhere in the world through a web browser. Most consumer-level cloud storage services offer a minimum of 1 gigabyte of storage, with the ability to add more storage for a fee. It is now possible to store your entire digital life on someone else's computers, and the promise of being able to access gigabytes or even terabytes worth of personal data through a phone is obviously enticing, but the true beauty of the mobile cloud lies in the small things that cloud storage can offer.

When was the last time you dropped your phone in a puddle, and lost every contact you've ever made? With the advent of the cloud, "I lost my phone, what's your number?" Facebook pages are quickly becoming a thing of the past. Cloud-based offerings like Google Sync (available on a number of platforms, not just Google's own Android OS) can automatically backup

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and sync contact information over any number of devices using data stored in the cloud. Ever lost your place in a book? Thanks to the cloud, Amazon's Kindle app will remember where you left off, whether you were last reading on a Kindle, a smartphone, or a traditional computer.

HTML5

A driving force behind mobile cloud applications is the implementation of a new and improved web programming language standard, HTML5, which enables offline data caching. As a result, devices won't be dependent on a perfectly reliable internet connection—the applications will still function, even if the data connection goes down. Developers also like mobile cloud apps because they are comparatively easier to create and they offer a larger profit potential.

Business in the Clouds

Juniper Research reports that 75% of the mobile cloud market is enterprise-driven, and a recent

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Sybase Survey indicated "A majority (82 percent) of IT managers share the belief that it would be beneficial – not detrimental – to host more of their mobile applications in the cloud."

Both in terms of cost (development and implementation), and time, mobile cloud applications present considerable savings to the business customer and form the foundation for the distributed "anywhere workforce" of the future. Mobile devices can be used for just about anything: video conferencing, credit card processing, bar code authentication, fleet tracking, remote scanning and printing and office suite collaboration.

"The proliferation of new devices, coupled with the vast expansion of mobile applications used by consumers has paved the road for mobility solutions to enter the enterprise at the worker, workgroup, and workflow levels. Given all this, we expect 2011 to be the year of the transformation of the enterprise," said Dan Ortega, senior director product marketing,

Sybase.

Energy Efficiency

One beneficial component of mobile cloud computing—especially once you get into cloud-based operating systems—is energy efficiency. Mobile devices, especially powerful ones, are notorious battery hogs. Many use processors that run at over a gigahertz to chew through the many complex applications that run native on the device. What if, instead, the high-horsepower data crunching was done from a land-based server, and the resultant output was fed through the mobile portal? Voila, handheld devices could be optimized as portals rather than handheld supercomputers, and battery life could be dramatically improved. It's akin to the wired network/terminal topology of the past.

Clouds that Can Move Mountains

Arthur C. Clarke famously wrote, "Any sufficiently advanced technology is indistinguishable from magic." Today, new mobile services are announced regularly that are one step away from magic.

In a news release January 24th, Surrey Satellite Technology Limited (SSTL) revealed they will use an Android-based smartphone to control a spaceship in orbit later this year. The end goal is to create a

cloud service that allows mobile devices on earth to control spaceships, among other large, impossibly expensive devices. And since Android is open source, the outcome of the research might enable developers to create satellite control apps. Real-time photos from space anyone?

Clouds on the Horizon

The future of cloud computing may lie in the past. People have been tossing around the idea of "thin clients" (monitors and input devices hooked into a central, local, mainframe) practically since the dawn of computing, but with the advances in storage, security, reliability and processing power in today's cloud services, those dreams may soon become cloud-based reality. Major players, including Apple and Google have begun to take the idea of a "cloud OS" seriously, with Apple filing patents for a "Method and apparatus for administering the operating system of a net-booted environment" and Google soon to release its Chrome OS, an operating system who's only application is a web browser. These operating environments store all of their data and run all of their applications in the cloud, with the hardware merely serving to input and display data. By leveraging cloud services, a future cloud OS could store and process data with power well beyond the meager hardware used to access the cloud.

How long until these developments trickle down to mobile devices? It's impossible to tell, but as demand for storage and processing power increase, it is clear that cloud services will increasingly provide the solution for today's growing mobile needs.