Opening the Mobile Net

Greg Goth

Like many students entering college, George Hotz had some projects to complete before his classes started at the Rochester Institute of Technology in August. In addition to the typical tasks facing most of his contemporaries, Hotz had to make sure he finalized a deal—trading his Apple iPhone for a Nissan sports car.

Hotz, as you might surmise, was no ordinary college student, and his iPhone was no ordinary mobile phone. Hotz was among the first of a small but notable (or notorious) number of technophiles who had "unlocked" the iPhone (http://iphonejtag.blogspot.com). This freed it to run on any GSM carrier’s network, in addition to Apple’s exclusive US partner, AT&T.

Using hardware or software modifications to free the iPhone from corporate shackles (from the hackers’ viewpoint) or to violate user agreements (from Apple and AT&T’s viewpoints) might be written off as another niche-y geeks’ parlor game—if the iPhone were just a nifty gadget released in a vacuum. But the iPhone’s astounding popularity among early adopters is dovetailing with other technical, regulatory, and market factors to show how tantalizingly close we are to the dream of a fully functional mobile Internet.

Hacking the iPhone, cracking the monopolies

"The iPhone hacks are indicative that people are expecting to pair up their best-of-breed devices with the access they’ve become used to on their PCs,” says Michael McGuire, research vice president at Gartner Group. “And we’re seeing a lot of significant pressure being put on carrier control of handsets. That’s not going to break apart instantaneously, but I think the carriers are going to have to react to this.”

As McGuire observes, the current "walled garden" business model for mobile telecom services shows no signs of collapsing, despite consumer unrest. In this model, carriers strike deals with hardware and software providers and enforce customer "loyalty" via long-term contracts on reduced-price phones. However, external forces signal a weakening in the garden wall mortar. Expanding mobile network capabilities, an upcoming US spectrum auction, legislation intended to free consumers from those long-term contracts, and Google’s widely speculated entry into the mobile market are all forces beyond the carriers’ control.

"Simply stated, the installed base of mobile phone users has obviously gotten everybody in the industry excited about all the possibilities in the market,” says Greg Sterling, principal analyst of Opus Research’s Local Mobile Search market intelligence service. "Beyond that, the range of newer devices as exemplified by the iPhone has created rising expectations among consumers. They want better devices, more usable devices, and access to more content.”

Apple now finds itself in the ironic position of defending the kind of closed, conformist system the company has been famous for lambasting since its famous “Big Brother” ad for the Macintosh aired in January 1984. That ad’s iconic heroine heaved a sledgehammer through the face of Big Brother. She’s since been replaced by a corporate statement warning that "users who make unauthorized modifications to the software on their iPhone violate their iPhone software license agreement and void
their warranty. The permanent inability to use an iPhone due to installing unlocking software is not covered under the iPhone’s warranty.”

“I think Apple’s vulnerable to charges of hypocrisy, but I don’t think anyone other than thoughtful people with a long memory are going to remember that,” Sterling says. “I don’t think that’s so much an issue as much as the practical issue of the phone not being widely available. This may emerge as a strategic blunder in time.”

Interestingly enough, Apple itself presented a kind of opening to the community at large on 17 October. On the company’s Web site, CEO Steve Jobs announced that Apple was working on a third-party iPhone software developer’s kit that would enable “hundreds of new applications for our users.” Jobs wrote that the company expected to release the SDK in February 2008. This would give Apple time to perfect a method for letting third-party developers write native applications for the iPhone while simultaneously blocking malicious (and presumably, harmless but unauthorized) applications from taking hold.

So far, however, the iPhone “unlocking” hacks have been the province of several groups of assuredly unauthorized hobbyist hackers, using techniques ranging from taking soldering irons and tweezers to the phone to modifying SIM (subscriber identity module) cards. Information that a hacker had unlocked the iPhone by modifying the Turbo SIM card manufactured by Prague-based Bladox created a global run on the card. A plethora of iPhone-unlocking blogs, wikis, and forums have arisen (for example, http://www.iphonehacks.com, http://iphone.fiveforty.net/wiki/index.php/Main_Page, and http://www.iphone-hacks.com). Even tech-savvy hobbyists say the instructions are rather daunting for those who don’t want to risk turning their phone into an expensive brick. But mainstream publications such as Newsweek (http://www.newsweek.com/id/42489) have also chronicled the phenomenon.

And McGuire and Sterling say this kind of mainstream attention is starting to trickle down to the mass market. “It definitely raises the profile that consumers want much more control over the device they use for network access,” McGuire says.

**Other x-factors for carriers**
The iPhone hacks could represent little more than tech-savvy users trying to poke chinks through the garden wall, but other factors might have more sweeping ramifications.

“The carrier stranglehold on the wireless consumer in the US is going to be broken eventually,” Sterling says. “Whether it’s by the iPhone now or in the future, or Google’s Gphone, or the Google OS on multiple handsets, or Google buying the wireless spectrum—regardless of who it is, we’re going to see the US market open up.”

Google’s specific mobile device plans are still undisclosed, but reports from sources ranging from bloggers to the New York Times have guessed the search giant will offer a Linux-based OS, perhaps on multiple devices and perhaps on its own network. In July, Google offered the US Federal Communications Commission a minimum bid of US$4.6 billion for the 700-MHz spectrum, provided the FCC ensured the winner would adopt four types of “open” platforms as part of the license conditions. In announcing their intentions, Google explained the “four opens” as follows:

- **Open applications**: Consumers should be able to download and utilize any software applications, content, or services they desire.
- **Open devices**: Consumers should be able to utilize a handheld communications device with whatever wireless network they prefer.
- **Open services**: Third parties (resellers) should be able to acquire wireless services from a 700-MHz licensee on a wholesale basis, according to reasonably nondiscriminatory commercial terms.
- **Open networks**: Third parties (such as Internet service providers) should be able to interconnect at any technically feasible point in a 700-MHz licensee’s wireless network.

The carriers are also facing legislation that would free consumers from paying hefty early-termination fees. In September, US Senators Amy Klobuchar (D-MN) and Jay Rockefeller (D-WV) unveiled the Cell Phone Consumer Empowerment Act, requiring wireless service providers to share simple, clear information with current and potential customers. Among the bill’s provisions are detailed data on coverage areas and dropped calls, prorated early termination fees for those who exit their contract after 30 days, the ability to exit a contract within 30 days without a termination fee when wireless service isn’t satisfactory, and transparency in contracts and billing, including explanations of taxes and fees. Carriers oppose the legislation, as you might expect, but Sterling says the sentiment in the bill illustrates the zeitgeist leading to a more open mobile Internet.

“People are definitely going to be using the mobile Internet in some form in the not-too-distant future,” he says. “The ones that provide the best experiences in the most consumer-friendly way are going to win. It’s pretty clear. Apple gets it except for their foolish deal with AT&T. Google definitely gets it.”

Software radio and global perspectives offer clues

One carrier-side technology might accelerate carrier interoperability by lowering the costs of operating multiprotocol networks. Vanu (http://www.vanu.com) has pioneered AnyWave software radio technology, which lets mobile-network operators remotely provision and administer networks using hitherto incompatible protocols such as GSM and CDMA. Vanu CTO John Chapin says the first wave of customers has been concentrated in rural markets and markets in which extreme climatic conditions make hardware upgrades prohibitively costly.

Chapin thinks the Vanu multiprotocol technology is largely decoupled from the client-side drive for greater access, but it could provide the means for more profitable roaming agreements. According to Chapin, setting up a Vanus software-only multiprotocol network is significantly cheaper than running two hardware-based networks.

Ironically, Chapin says that European networks currently offer less opportunity for multiprotocol software radio than the US. Despite Europe’s more open regulatory environment, GSM’s technology domination is entrenched. However, he says that carriers looking to overlay new technology on top of existing 2G and 3G hardware might be a lucrative market spot in the next three to five years.

Sterling says the perception that Europe is leaps ahead of the North American market in full-scale mobile Internet usage isn’t completely correct. “There’s more reliance on mobile devices in general and more texting,” he says, “but full Internet usage is not dramatically ahead of the US.”

Sterling points to Apple’s exclusive AT&T-like deals with carriers in various European nations to illustrate that open mobile access will continue to be a global discussion topic.

Gartner’s McGuire says the transition to a more open mobile Internet might be simply a matter of having carriers shift away from subsidizing the purchase of handsets via long-term customer contracts and exclusive content deals with providers. They could instead adopt the sort of hybrid model many hardwired ISPs pursue.

“They say they don’t want to be relegated to dumb-pipe status,” McGuire says, “but in the end there may be as much growth in the ability to maintain or manage terms by becoming sort of a smart managed-services provider. By getting away from having to control the handset, you also relieve yourself of having to be in the inventory management business.”
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- DS Online's Mobile and Pervasive community
- "Stumbling Forward into the Connected Future," IEEE Internet Computing (http://doi.ieeecomputersociety.org/10.1109/MIC.2007.114)
- "iPhones Target the Tech Elite," Computer(http://doi.ieeecomputersociety.org/10.1109/MC.2007.212)

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