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Dawn of a brave new world for 4G

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Over the past five years, the evolution of wireless networks to 3G data speeds, alongside increasingly sophisticated yet cost-effective cellular routers and antennas, has allowed many kiosk and

digital signage deployers to have either successfully deployed stable networks using cellular technologies or at least seriously consider it as a viable alternative to landline options.

Now that 4G is available via Sprint and Clearwire, what does that mean for kiosk and digital signage deployers interested in deploying a cellular network?

4G is especially compelling for those deployers with bandwidth-intensive applications, such as content streaming or video. Consider that with more bandwidth, applications such as a live video call from the kiosk to a customer service agent to enhance the user experience are very possible and can be delivered with great quality.

First, though, let me offer a word of caution: I believe we are experiencing the dawn of a new world for cellular networks, meaning this is just the beginning. For self-service it's promising, it's real and it will allow for the support of applications that we could only dream of before. But in order to adopt 4G completely for the purposes of an un-manned, machine-to-machine, mission critical network, many factors need to be considered and vetted out before rolling full force ahead.

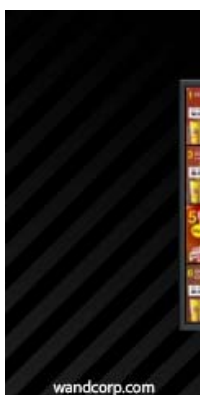
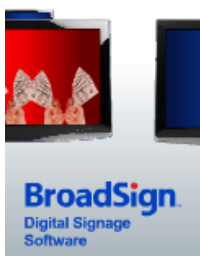
Now, let's first take a look at the technology itself and what is available today in the United States.

What is 4G?

4G refers to the fourth generation of cellular wireless standards and is the successor to 3G and 2G standards. In the same manner that data-transmission speeds increased from 2G to 3G and allowed for the adoption of new applications utilizing cellular networks, the leap from 3G to 4G again promises higher data rates and lower latencies that could realistically support applications such as real-time streaming of multimedia voice, data and video.

The 4G spectrum services available through Clearwire and Sprint are based on a technology known as WiMAX (Worldwide Interoperability for Microwave Access). WiMAX is an international standard developed expressly for sending high-speed data signals to mobile users that blends the speeds of Wi-Fi with the portability of cellular. It broadcasts on the 2.5-GHz portion of the radio frequency spectrum and has a longer range. In the real world (not the lab),

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speed depends on variables such as how many subscribers are using the network at the same time, how far you are from a transmitting tower and how much data is being sent across the Internet.

However, a realistic expectation can be up to 3 Megs or 5 Megs per second download, which to a user will feel more like a high-speed DSL or cable type of experience.

What markets are available to deployers today?

The Clearwire and Sprint 4G footprint currently serves 28 markets.*

For self-service deployers who are planning a nationwide reach, a more likely scenario is that 4G won't be a realistic option until 2011 and beyond. If ubiquitous coverage is required, the best plan is still to deploy 3G equipment but to ensure the 3G equipment is future proofed as much as possible for a 4G upgrade when available.

What cellular equipment is required to properly support a kiosk or digital signage network?

Carrier Modem: Sprint's 57 percent ownership stake in Clearwire allowed the two companies to launch a cellular USB device that is backward- and forward-compatible with both networks. It utilizes the Sprint 3G network wherever necessary and will automatically jump to a 4G network when available.

Cellular Router: TeraNova takes a more conservative approach to designing and building robust and reliable kiosk or digital signage wide area networks, and we recommend the use of a router with the carrier modem. We leverage 3G cellular routers to provide a consistent connection with the cell tower and to provide over-the-air (OTA) functionality to the equipment in the field. This is especially important in the self-service sector where the systems are unmanned, and every truck roll is a cost consideration. We want to see high network uptime and the ability to remotely manage the network as much as possible.

Don Bush, director of marketing at CradlePoint Technologies, a leading manufacturer of 3G/4G equipment, shared CradlePoint's vision to allow the customer to "future-proof" their solutions:

"We believe it is in the customer's best interest to provide them a product that allows them to take advantage of the best current technology without replacing hardware with every technological leapfrog."

CradlePoint's cellular routers have firmware that has been successfully tested with 4G equipment. As well, CradlePoint offers the ability to "push out" new firmware as required OTA to the routers one by one or all at once so that it can accept new carrier modems (aircards) and limit the amount of truck rolls required to maintain and service the network. Routers start at \$250 and virtually pay for themselves after the first dispatch.

Client Case Study:

Five hundred kiosks are rolled out in Q1 2010 on a Sprint network so that 3G can be utilized today with a clear roadmap to 4G. *Note: ATT and VZW are pursuing LTE, which is their 4G strategy and technology of choice and is also very promising but has not rolled out yet in any markets.***

3G/4G Routers are deployed in the kiosks that are compatible with the carrier equipment. Once the 4G network is ubiquitously available and the 4G equipment is tested and proven, the deployer can then choose to exercise specific terms and conditions we negotiated in their carrier contract that allows them to switch out to 4G without incurring additional cost.

The next step is to utilize the remote management software to command the routers that are forward-compatible with 4G to accept the new firmware OTA. This deployer enjoys the best of both worlds: a current deployment utilizing proven technology and equipment, with a clear roadmap for the future that does not put the burden of technology obsolescence back on the deployer.

As a conclusion, despite an evolving arms race between WiMAX and LTE 4G technologies in the carrier world and trying to stay informed

of the many acronyms that form the alphabet soup of our cellular space — our advice is to not get overwhelmed or overly optimistic about bleeding-edge technologies. The idea is to build a kiosk or digital signage network using proven technologies today yet future-proofed without significant re-investment required to capitalize on the brave new world.

** Currently the 28 markets are Atlanta and Milledgeville, Ga.; Baltimore; Boise; Chicago; Las Vegas; Philadelphia; Charlotte, Raleigh, and Greensboro, N.C.; Honolulu and Maui, Hawaii; Seattle and Bellingham, Wash.; Portland and Salem Ore.; and Dallas/Ft. Worth, San Antonio, Austin, Abilene, Amarillo, Corpus Christi, Houston, Killeen/Temple, Lubbock, Midland/Odessa, Waco and Wichita Falls, Texas.*

This year Clearwire and Sprint plan to expand into at least the following markets: Los Angeles, Miami, St. Louis, Cincinnati, Cleveland, Pittsburgh, Salt Lake City; New York City, Houston, Boston, Washington, D.C., Kansas City, Denver, Minneapolis and the San Francisco Bay Area.

*** LTE, short for Long Term Evolution, is considered by many to be the obvious successor to the current generation of UMTS 3G technology, which is based upon WCDMA, HSDPA, HSUPA, and HSPA. It will enable significantly faster data rates for both uploading and downloading. Verizon Wireless, partly owned by Vodafone, has announced it will support LTE as its 4G technology of choice, abandoning its current CDMA based network. AT&T also previously announced plans to boost its mobile broadband capabilities by investing in next-generation broadband technology (LTE).*

Natasha Royer Coons is the managing director of [TeraNova Consulting Group Inc.](#), the creators of the Kiosk Wide Area Network (K-WAN) kit. The kiosk connectivity specialists will be at KioskCom 2010 in Las Vegas at Booth #335.