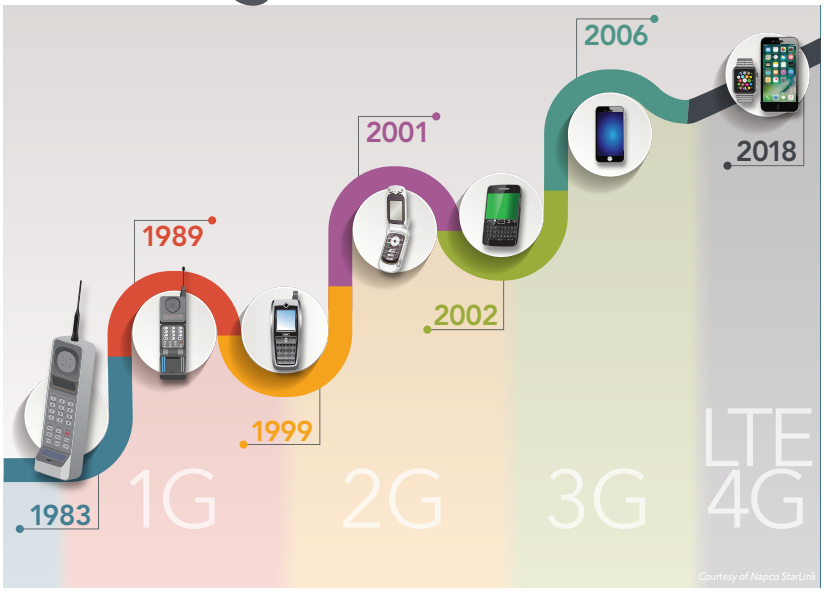
What's Next in the Cellular Evolution & How to Leverage it for New Business



Ride the New Wave in Cellular for New RMR

There's undeniably a lot of upside for savvy installing security contractors and fire/life-safety professionals whose billable offerings keep pace with the ongoing evolution of cellular technology, i.e., the demise of older cellular networks and the introduction of faster, more robust LTE communications.

The meteoric rise of cell phone technology and consumer adoption in the last 40 or so years, has been quite a wild ride. No longer are phones' principle use for making calls, and in place of the original 25-pound brick devices few lugged around in the early 80's, today virtually everyone, old and young, has one handily in their pocket or wearable on their wrist. Likewise, the connections they allow, SMS text, talk and social media, or interacting with all parts of the home or business, on-the-go, has proven one of the greatest, most-addictive phenomena of our times. Today, it's imperative we have to stay in touch with all aspects of our lives 365/24/7, and the handheld pocket computers, or smart devices, we use to do so are simply indispensable, as are the fortunate applications we choose to put on them.

The digital convenience factor and the *scary place in which we live* have combined, such that security too has a new starring role in consumer's wants and needs on those very phones, whether it's virtual security system control, remote video monitoring or long-distance doorbells. We as an industry are on the small screen to the tune of brand new relevance and new recurring revenue.

Indeed cellular-based alarm reporting and a variety of interactive services have already become a tremendous source of ready, dependable recurring monthly revenue (RMR) for installing security and fire/life-safety contractors. High-speed cellular translates into an extremely lucrative income each and every month for thousands of companies worldwide, thus assuring an ample flow of cash.

Ahead, we'll take a look at the new sunset facing the security and fire/life-safety industry, the technologies that are replacing 3G, as well as examine some of the new directions that 4G and LTE can be expected to take the industry going forward.

The Need for Speed: Circumstances Behind the Recent 3G Sunset

The need for fast, efficient, enterprise-level mobile communications grows with each passing day. As the world around us teeters on the brink of becoming a fully wireless and mobile society, it has become absolutely necessary for cellular service providers to create a technology that will perform faster with more possible connections.

As you will come to see, this goal can only be accomplished by phasing out 3G and reallocating the extra bandwidth to 4G LTE. This task can only be described as daunting and challenging from not just our security perspective, but more so from theirs.

Looking for more proof? First, because of demand it is necessary to upgrade all cellular networks on a regular basis. Two billion people on the planet use cellphones, according to James Katz, professor of communication at Rutgers University. In fact, as of 2011 there were more cellphone subscribers in the United States than people, according to a study, underwritten by CTIA, a trade association representing the wireless communications industry in the U.S., as reported by Bridget Kelly, author of "What Is the Role of the Cell Phone in Communication Today?"

Society at large is becoming more mobile-oriented because of convenience, business and personal lifestyles. According to market research firm Statista of New York City, the number of smartphone users is forecast to increase from 2.1 billion in 2016 to around 2.5 billion in 2019. Parks & Associates of Addison, Texas, finds that 19% of young consumers engage in live streaming, 35% of U.S. smartphone users use cellular for social networking, and 29% of U.S. consumers get their news via their smartphone.

Cellular Carriers are forced to meet this growing demand with faster, more connective technologies and 4G LTE will help make that possible.

Some business professionals question whether or not the current 3G sunset is being premature, considering that Cellular Carriers just phased out 2G no more than two to three years ago. But, before we draw any conclusions, it's important to know that

3G, in some way, shape or form, has been around since 2005. In fact, some cellular experts claim that 3G actually began to show up in some cellular systems as early as 2001. Generally, the effective life of any cellular communications generation is 13 to 15 years.

In brief, the primary reason for retiring 3G lies in the differences between it and 4G LTE, along with an incessant need for speed and effective bandwidth. Our understanding of the issues behind it begins with a brief explanation as to the primary difference between the two. Note that the G in 4G pertains to the "generation" of the cellular technology, which centers on data throughput within the cell system itself.

LTE technology itself pertains to cell-to-Internet connectivity, which in turn centers on IP networking. Together, 4G and LTE provide download speeds up to 10x that of 3G, making it a must-have for all concerned. However, in order to realize the true potential of 4G LTE, Cellular Carriers must gradually phase out 3G.

Security Technology and the Cellular-to-Internet Connection

Routine improvements made to the cellular network have greatly impacted the security industry's successful push into 21st-century wireless or connected services. Equipment manufacturers are busy designing, building and creating wireless devices that connect users to their homes & businesses, and their alarm companies, thus making alarm dealers and security integrators a lot of money. And it's all because of the robust, fast-as-lightning cellular network that runs its course from one end of the nation to the other. Likewise, this opportunity has not been lost on other Tech Giants, who in search of subscription-based business models, have also entered this dynamic market --like Google, Amazon & Apple, with their DIY or Pro. connected products.

There's another good reason why 3G must go, that directly pertains to security, too. Where 3G provides a typical data bandwidth of 2Mbps to 21Mbps, 4G offers up a data bandwidth of 100Mbps to 1Gbps, which is up to 10x faster. There's more. The upload data rate of 3G, which is extremely crucial for alarm systems and other security-related services, is 5Mbps, 500Mbps with 4G. In terms of downloading, 3G offers a download data rate of 21Mbps whereas 4G offers 1Gbps peak.

4G uses packet and message switching, in addition to LTE that offers full IP-based network connectivity. By contrast 3G uses circuit and packet switching, which is slower and less efficient. In addition to faster Internet connections, 4G LTE reduces transmission latency, which is the time it takes to receive data once the connection is made and the request is sent. Both are extremely important as seconds can mean the difference between life and death in a security or fire situation.

Through additional testing, it has been observed that 4G LTE is capable of even higher data rates. Cellular Carriers will continue to make improvements on the cellular system as needed, which is to everyone's advantage. For example, recent 4G LTE trials resulted in download data rates of 537Mbps for AT&T and 670Mbps for T-Mobile, to name only two.

When compared to the 3G's 2 to 21Mbps, 4G LTE is the only solution at present that will handle the rapidly growing demand for faster, more reliable cellular service. So it's easy to see how retiring 3G and moving valuable and essential bandwidth to the 4G side provides an even faster cellular-to-Internet connection, which is essential for the security and fire/life-safety markets that the alarm industry serves.

As to an end-of-life date, although Verizon, AT&T, T-Mobile and other carriers have announced a sunset date for 3G, in reality these networks have been moving bandwidth from 3G to 4G for a number of years. Through "spectrum harvesting," Cellular Carriers can effectively nudge users to invest in 4G LTE devices by allocating less and less bandwidth to 3G.

The issue of operating frequency centers on the penetration of cellular signals through construction materials. The lower frequency, such as 850MHz, is the preferred frequency because it will penetrate building materials easier and farther than the higher frequency, such as 1.9GHz (1900MHz). So over time, Cellular Carriers have been slowly throttling the older 3G tech while ramping up 4G LTE.

Napco UL Network Operations Center processes millions of cellular & IP signals/day enroute to central stations nationwide

4G LTE Brings Additional Service Offerings & RMR Opportunities

Some of the drivers behind 4G LTE include the ability to stream high-definition video, improvements in voice/audio quality, longer lasting smartphone batteries (because of the low-powered nature of 4G LTE), GPS asset tracking, fleet telematic services, Internet of Things (IoT), a faster pipeline for alarm signals, a host of interactive services for smart buildings and homes, and more.

One powerful benefit that 4G LTE cellular brings to the alarm industry is an opportunity for security dealers to cash in on the service itself. Not only do alarm dealers provide the cellular communicator and cell service, but they can also provide a host of cell-based services delivered virtually real-time to the consumer's favorite smart device, phone, tablet, etc. And, that speed and that multitasking mobile convenience, is precisely what today's digital society has come to expect and demand from all the services it values.

A Win-Win for Fire Alarm Dealers & Their Accounts

In this regard alarm dealers are actually saving their customers money as the cost for hardwired Plain Old Telephone Service (POTS), as part of the Public Switched Telephone Network (PSTN), is much higher than the cost of a cellular connection. This is double the case, with a fire alarm system equipped with a dual line DACT, the cost per leased phone line can be as much as $75 to $85 each, or $150 to $170 per month for the two.

The cost of cellular from the alarm dealer is many times less than that, and it's the dealer that makes that savings possible. Plus, it's also the dealer that puts that extra RMR into their bank account each month, not the local Telco. So, for Fire Alarm Dealers, and those who service and inspect fire systems, NFPA72-Compliant Universal Cellular Alarm Communicators are a real coup: For FACP system upgrade potential; new customer service savings; new prospective accounts for easy takeover; and new-found Fire RMR --all great for monthly cash flow & business valuation.

The original, underlying issue, as it relates to POTs now, is supply & demand. Today, it's not always possible to get a telephone line when and where you need it. Not only that but Telcos are no longer giving priority to their POTS network. Instead, their attention is on wireless where the heart of their bank account resides — wireless/cellular. So, even when you can get a POTS line or two, as for a commercial fire system, the quality of service is not always what it should be. And as of 2018, phone cos. are no longer required by the Government to support, service or maintain the POTs networks, so with each passing storm, hurricane, fire or similar event, there are simply fewer and fewer copper landlines left to secure.

And then there's the growing do-it-yourself (DIY) market that alarm dealers are also tapping into. A more robust, dependable and faster cellular connection to the central station through 4G LTE means that a technician no longer has to install the alarm system. Instead, the system can be programed and tested on the dealer's workbench, then shipped off to the end user for self-installation. Once the system is in place and turned on, the preprogrammed panel will automatically reach out to the central station for professional monitoring service. In addition, the security company will have remote programming capabilities.

Be Smart Offering Smart Services, including Business

Many of the universal alarm communicators on the market also enable dealers to offer the homeowner or small- to medium-sized business a number of home- or business management interactive services, that connect to the user's smartphone at the other end of the cellular connection. These include virtual keypads, SMS/MMS notifications, lighting; video surveillance; heating, refrigeration, ventilation and air conditioning (HVAC); arming/disarming; status checks; and the control of interactive deadbolts and locksets. These are only a few of the things that can be accomplished with some of the products now on the market. With a faster cellular system, plus players like Amazon & Google in the mix, there's sure to be more.

Cellular-connected video surveillance itself has become a tremendous money maker for the security industry. Although 3G/4G by itself was able to provide the service, the time to connect, upload and download were relatively slow and, hence, inconvenient. Adding LTE technology to 4G has been a godsend. Now, dealers and integrators can offer smartphone-connected services with Cloud storage and data processing to a growing list of online, interactive services. Because of the improved upload/download times associated with 4G, alarm dealers can actually offer smart remote business management options, including LP, HVAC and traffic monitoring as well as enterprise-level access and video surveillance services to their commercial clients. Another noteworthy point to make: Compare the RMR-potential in adding lucrative smart connected services to a commercial

account vs. a more-competitive residential account. While every brick and mortar business needs help competing 365/24/7 today, the resi market, entwined with DIYers and such, is facing eroding margins. Given they both take about the same time to install/upgrade, commercial may well be the road less traveled and the best route for dealers to go.

4G LTE (Long Term Evolution) is today's best, but there's always something new *Coming Soon*

Like consumers eagerly awaiting or queuing up for their next-gen. cellphone tradeup, sometimes the new models live up to the new hype with revolutionary features, other times, not so much. Depending on who you ask, or the application being discussed, 4G cellular definitively is here to stay for some time, with today's longest available cellular lifespan --- and should continue to be around from five to ten years, if the 13- to 15-year service standard holds true. However, the Powers That Be, in all four major Cellular Carriers, are already discussing what the next 5G introduction holds, although exact dates have not been given. What has been forthcoming are tremendously incredible statements, and projections, of the futuristic opportunities it may hold. These 5G performance expectations deserve repeating:

Speed and bandwidth can pay off huge benefits for the security industry, in terms of video service offerings and IoT. As you will recall, 4G is 10x faster than 3G , but although the 5G (with LTE) rollout is over a year away, this new technology is expected to have 100x higher user-data rates than 4G with LTE, according to Brian Lavallee, senior director of portfolio marketing with Ciena. It is also projected to have double the capacity for the number of IoT-connected devices. In addition, it is expected to have 1,000x more data volumes, as well as a latency factor that is 10x lower than 4G.

However, in order for homes, businesses and individuals to take full advantage of what 5G will have to offer, it's necessary to prepare them and the marketplace at large, with Cell Carriers outfitting them with some new onsite hardware. Verizon, for example, is rolling out 5G Home in some areas, which is a 5G-ready solution, with an antenna installed outside the home and extenders are included inside that effectively covers the entire house with both cellular and WiFi — today 4G, tomorrow 5G.

The reason Cell Providers require special new premises preparation is that 5G's upper frequencies can't penetrate some building materials. Their mmWave spectrum , that provides the premium services, 24GHz through 90GHz, will not penetrate typical home or building construction. Today, 5G's best bet is still literally walled up. It's the lower cellular frequencies that penetrate construction materials the best, which excludes the mmWave spectrum. WiFi and Bluetooth actually are in the middle of the 5G low-band to midrange subfrequencies, or 450MHz through 6GHz. As far as LTE goes, this IP network technology will likely be here long after 5G itself is retired.

So Cell Carriers will continue to develop a strategy for a new optimized residential or commercial footprint their new networks can exist in, all while evolving the next gen. of cellular technology, 5G or whatever G that becomes? While few of us like change, the most successful businesses are best at embracing it. Since technology and services are the business we are in, remember with every cellular sunset, there's been a win-win in market options and RMR opportunities. *Stay tuned*.