

Protecting Your Fire Alarm Accounts from the 2G Network Disconnect

BETTER BURN RUBBER...

The End of Old 2G Cell Networks & POTS lines is No Longer “Down the Road”, It’s Here: Why It’s Important to Upgrade Your 2G Commercial Fire Communicators Now

BY ALLAN B. COLOMBO

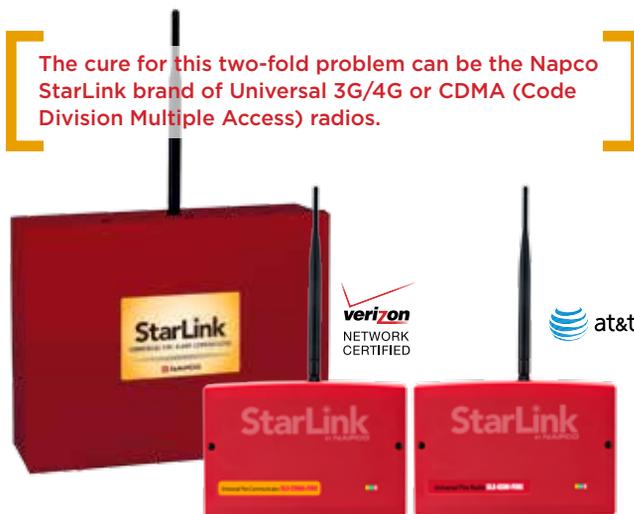
The fire alarm business of today relies on quality, reliable signal transport between a client’s fire alarm system and a UL-Listed supervising station. If one or more channels of communications happen to fail at the most critical, inopportune moment, such as during an actual fire, it can result in a sizable financial loss for the subscriber. Even worse, it can result in undo injury or the loss of life because rapid firefighter response was not assured within a reasonable period of time.

All of this can lead to angry customers, lawsuits, and a potential loss of RMR (Recurring Monthly Revenue). And, even when there is no financial loss or physical injuries involved, a recurring FTC (Failure to Communicate) can undoubtedly erode customer trust, not to mention the general loss of credibility with regards to the community and word-of-mouth advertising.

Now more than ever, there are two significant reasons why fire alarm contractors need to seriously evaluate the fire alarm signaling technologies they currently use. The first is the on-going demise of POTS (Plain Old Telephone Service), which was once the most reliable means of alarm signal communication ever devised, and the second concern is the looming 2G Sunset due to occur within the span of two years.

The cure for this two-fold problem can be the Napco StarLink brand of Universal 3G/4G or CDMA (Code Division Multiple Access) radios.

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The Demise of POTS

POTS technology (telephone lines), which is part of the PSTN (Public Switched Telephone Network), uses circuit-switched technology and it's served the fire alarm business well. The technology upon which POTS is built may not be the fastest at transmitting fire alarm data from a UL-Listed fire alarm panel to a UL-Listed supervising station, but it is undoubtedly the most fault-tolerant means of signal transport in existence.

The reason for POTS' excellent track record is the fact that each telephone company CO (Central Office) is required by law to have a sustainable source of back-up power that includes a large bank of batteries and, sometimes, a gas-fired generator to recharge them when power begins to wane during an extended blackout.

For those who will recall, a typical phone line will continue to provide a dial tone and communication with the outside world well into a power outage of almost any duration. This is because legal regulations, enforced by the PUC (Public Utility Commission) of each state, require that these companies maintain power in reserve so when the public electric bus fails they maintain telecommunications services. Unfortunately, packet-switched networks are not built to the same standards, yet.

"That is why the phone network was considered one of the most reliable networks in the world," says Ray J. Vaughan, manager telecommunication, Viacom International Inc.

All of this has changed, however. On the one hand, there is less and less demand for circuit-switched services as home and business owners opt for cellular and other means of broadband communications that uses packet-switched technology. And on the other, consumers want high-speed broadband capability, especially on the mobile front, because of the advanced applications that are available to them.

For these reasons, phone company ROI (Return on Investment) is higher with these newer technologies than the older ones. This has resulted in carriers giving less and less attention to the upkeep of their POTS networks. Instead, they're devoting most of

The Great Napco \$100 2G Radio Tradeup Offer



Before 2G cellular officially dies on or before January 1, 2017, and before your client's outdated POTS (Plain Old Phone Lines) go silent, professional fire and burglar alarm dealers should consider switching to one of Napco's universal StarLink 3G/4G or CDMA radios.

"Fire and burglar alarm dealers should act now, while there's still time to take advantage of our 2G cellular upgrade program," says Brandt Phillips, national director of sales, commercial fire and security with Napco of Amityville, NY. "Right now Napco will give dealers back \$100.00 for every 2G StarLink upgrade they do, both fire and burglary."

No matter what brand of 2G cell radio your client is using, the StarLink Universal Commercial 3G/4G CDMA Radio will report fire and burglary data to your central station in an efficient, timely, code-compliant manner with minimal programming, which is ideal in retrofit and take-over situations.

"This is a great tool for fire and burglar alarm dealers that will save them time. The StarLink employs 'dialer capture' that enables the radio to read and interpret the data from



any DACT (Digital Alarm Communicator Transmitter) from any make or model fire or burglar alarm panel using CID (Contact ID) or high-speed 4/2," says Phillips (Note: 4/2 support pending, est. Oct/Nov 2015).

Programming is fast and easy because all you have to do is enter a radio ID number and Napco's StarLink radio and SecureCom Wireless does the rest. It can be used as a primary means of reporting or as a primary means of data reporting, although telco supervision is only available when used in back-up mode.

For those using a Napco brand fire alarm panel, there is the added advantage where you can use cellular for remote programming. In this situation an additional interconnecting cable linking the StarLink unite and panel is required. This can save considerable money because programming changes can be made from the dealer's office, as oppose to sending a tech to the client's location. It's also possible to download the event buffer before deciding to visit the location. Burglar alarm clients also can download an app, which will allow them to remotely arm and disarm their Napco panel.



For more information, go to <http://www.napcosecurity.com/contact/starlink4gupgrade>.

their time and monetary resources to developing and building high-speed, high-throughput methods of communications. The game is to eventually phase POTS out altogether.

Because Telco's are not as attentive to the quality of service with regards to POTS, NFPA has come to require four test timers per day, one every six hours on an alternating basis. Not only that, but the cost per POTS line far exceeds the cost of cellular.

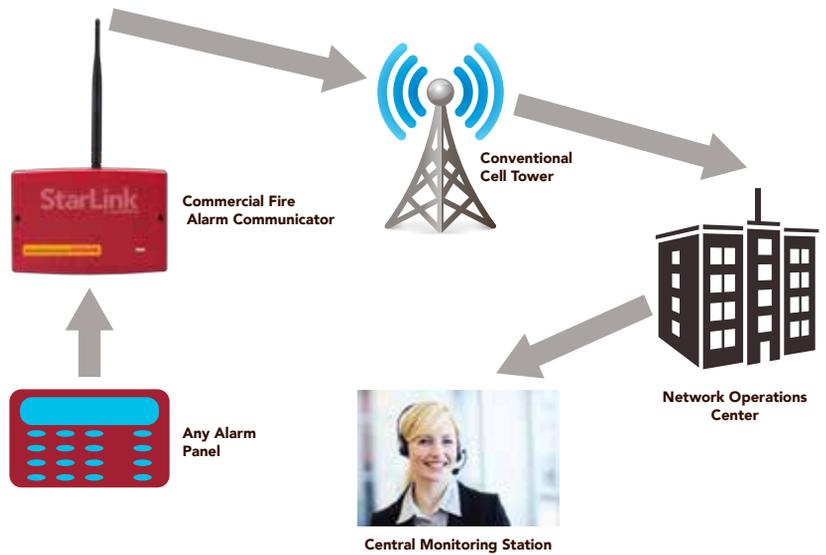
"The cost can be as much as \$150.00 a month for a set of dual phone lines. In some cases the AHJ (Authority Having Jurisdiction) requires dedicated phone lines, which ends up costing end users a lot more than cellular service would," says Brandt Phillips, Commercial Fire & Security Director of Sales with Napco Security Technologies of Amityville, NY. "NFPA and AHJs also are holding fire alarm dealers to a higher standard when using POTS, requiring four test timer events a day."

In many cases, older fire alarm systems are grandfathered in simply because they met established code requirements at the time the project was submitted for plans examination and final inspection.

"This can quickly change, however, when the system owner requires alterations to their system, such as the addition of carbon monoxide (CO) detectors or additional smoke detectors, manual fire pulls, and/or notification appliance devices," says Phillips. "The AHJ can then require the property/system owner to comply with the community's current fire alarm codes."

The fact is, contrary to what some may believe, today's cellular IP is reliable and up to the task of reporting fire alarm data in a code-compliant manner. In fact, compared to dial-up, cellular/IP is usually much faster.

According to Phillips, Section 26.6.3.1.10 of NFPA 72, 2013, addresses one of the largest problems for Telco communications moving forward; end-to-end communications timing.



Progression of alarm signals using a cellular reporting system

"It states that the maximum duration between the alarm initiation on the premise, signal transmission, retransmission (if required) and acknowledgement of the signal at the Central Station shall not exceed 90 seconds total," says Phillips. "The real problem is with digital phone lines, VoIP, and digital interconnects. It is common knowledge that those digital circuits often require the panel to attempt multiple transmissions to the central station."

Multiple dialing attempts is often required to reach the central station receiver due packet loss, noise, frequency inaccuracy, and other unforeseeable issues. For this reason, a fire alarm contractor must pay close attention to how many attempts the DACT in his fire alarm panel takes in order to reach the supervising station. The issue at hand is anything over 90 seconds essentially is a code violation.

"The [bottom line is this], true land lines are slowly going away. Even the land lines at my house are IP-switched at the CO," says Nick Markowitz, owner of Markowitz Electric & Integration in Verona, PA. "In addition, cell units are much better designed and reliable than phone lines."

All of this as a whole is driving the demise of POTS. For alarm dealers, turning to cellular and Internet-based reporting systems is not really a choice, it's soon going to be a necessity.

The 2G Sunset

If the loss of POTS isn't enough, on January 1, 2017, another lucrative source of RMR (Recurring Monthly Revenue) will suddenly cease to work--unless security dealers do something about it now. At that time, the 2G CDMA cellular network will no longer provide signal transport for the fire alarm systems you install on a daily basis.

According to AP writer Peter Svensson on August 3, 2012, "AT&T said it's shutting down the older network, which doesn't support high data speeds, city by city. It said earlier this year that the process has started in New York City, and it's trying to move the city's 2G subscribers to new phones. By shutting down 2G and using the same space on the airwaves for 4G, AT&T can increase data capacity by more than a hundred-fold. Data use is skyrocketing as people adopt smartphones, and the company is facing a 'spectrum crunch' in some areas."

Since that time other 2G carriers have come forward to make similar announcements. In October of the same year Verizon, which employs CDMA (Code Division Multiple Access), not only announced the demise of their 2G CDMA service, but also their on-coming 3G CDMA as well.

"Verizon Wireless plans to shutter its 2G and 3G CDMA networks by 2021, giving the carrier close to a decade to move its customers off those networks and onto its LTE network," says Mike Dano with Fierce-wireless. LTE is an acronym for Long Term Evolution, which promises a data throughput of 5Mbps to 12 Mbps, as opposed to GPRS (General Packet Radio Service), the data side of GSM, which has a data rate of 56 to 114 Kbps. By contrast, CDMA has an average data rate of 384 Kbps up to 2 Mbps.

You have to wonder how Verizon can make such a prediction so many years ahead of time, but it's obvious that changes in technology are, for the most part, well planned and dated. Even more difficult to believe is that despite more than seven years of advanced warning, there are still fire alarm companies that have, for whatever reason, procrastinated in making the 2G-to-3G switch with their existing clientele.

"Believe it or not, the push to replace 2G units is only now getting underway," says Mike Stefancin, an inside security sales consultant with Security Source, an equipment distribution firm located in Parma, Ohio. "Right now, Napco is leading the charge in assuring that all alarm dealers know about the issues and that they have time enough to do something about it."

The Unexpected Gradual Death of 2G

Although it's not January, 2017, some fire alarm dealers already have experienced 2G service failures. The two most common reasons for this are:

1. The cell carrier has prematurely pulled the plug on the local 2G network.
2. AT&T is shifting 2G service to a higher frequency.

With regards to the first cause of failure, it appears that 2G service is disappearing city by city, as mentioned by AP writer Peter Svensson in an earlier section.

"AT&T is arbitrarily turning off 2G service even though the Sunset date is in January of 2017. So what we run into from time to time is a cell radio that simply stops working," says Fred Milam, owner of Sentry Alarm Systems in LaHabra, California. "When we stop receiving test timer signals we call Napco. Nine times out of ten we're told that AT&T has turned the 2G off in that area, so we have to rush to get it replaced. We use the Napco line of StarLink radios."

Milam says that the test timer feature enables him to closely monitor every cellular reporting account so he knows what's going on with all his fire and security systems. This gives him early warning of 2G outages, including that final moment when the carrier pulls the plug locally.

Regarding the second cause cited above, AT&T is routinely allocating premium frequencies for 3G use. This means the cellular carrier is slowly migrating 2G use from lower to higher frequency bands, which is not as effective for alarm system reporting do to how radio waves propagate through wall and floor materials.

In a typical cellular system a cellular carrier commonly deploys on two frequencies--850MHz and 1900MHz. The lower frequency is more effective for alarm systems because cellular signals are better able to penetrate construction materials than at the higher frequency. By placing what's left of 2G service onto these higher frequencies, a stationary cellular radio may experience occasional reception problems or it may stop working altogether. In this case the fire alarm dealer has a decision to make.

Actually, the math is to do. The fire alarm dealer can install an external antenna, which can cost him anywhere from \$50 to \$150 (cost), or he can upgrade the radio by installing a newer 3G model, which usually carries a lower price tag, especially when taking advantage of Napco's StarLink replacement offer.

"The Napco upgrade offer is primarily meant to replace competitive 2G radios prior to the 2G shutdown. We'll extend the upgrade itself to include 2G burglary radio's, too," says Phillips. "Because NFPA allows dual forms of communication, a lot of dealers were using POTS and non-listed radios. We're extending the upgrade to them as well so they can meet UL and NFPA standards." (see sidebar for more information).

Choosing a Cellular 3G Solution

The 3G-compliant cellular radio that you select should be UL (Underwriters Laboratories) listed for use with commercial and residential fire alarm systems. For fire, it must bare labels that show compliance with NFPA 72 and UL 864 ninth edition.

"Communication methods for supervising station monitoring hinges on the radio sending supervisory signals at least every 5 minutes," says Markowitz. "And when properly set up with cell coverage that includes two or more towers, I see no problem. I use cell backup mostly for my fire jobs because land lines and digital phone lines are becoming unreliable."

Dealers who are accustomed to installing dual telephone lines on a fire alarm panel may find it odd that code and standards making bodies would accept a single radio, single-path solution for alarm and supervisory signaling. But the fact that phone lines are disappearing has made it necessary for these organizations to embrace new methods of signal transport which has forced them to adopt changes in fire code. As such, they have sought to make these methods as safe and foolproof as possible.

CDMA or GSM, What's the Difference?

Brandt Phillips of Napco Commercial, explained, "We have seen some interesting metrics relating to cellular services in our industry over the last few years. In the burglary world, where fewer signals are typically sent and smaller data packages are required, GSM service providers have often been more aggressive in their pricing strategies. CDMA (Verizon) pricing has historically favored larger data packages, and as a result, usually translates into more cost effective service for more data intensive applications like fire alarm monitoring. The most interesting side effect of these metrics is how our industry has come to refer to cellular communicators; we often

refer to them generically as GSM units."

As a result, the overwhelming majority of dealers have installed GSM communicators primarily based on price. Industry estimates (preliminary findings of the AICC) are that 2G GSM communicators account for approximately 70% of the installed base of all cell communicators in place today.

Most dealers have historically installed GSM communicators, not because it necessarily offered better coverage in their area, but based solely on price or because it was the only option from their manufacturer of choice.



Napco believes that dealers have a better feel for which technology offers better coverage and reliability in their market. To aid in allowing dealers to make the best choice, we offer units in either flavor; Verizon or AT&T.

In the commercial systems world, I believe that CDMA is the preferred option for most dealers. The overwhelming majority of dealers I speak with prefer to use CDMA because they tell me that it offers better coverage in their area

Additionally as we look at Commercial Fire and UL Burglary installations, not only is CDMA significantly less expensive than GSM service for those larger data packages, is preferred by many dealers, but the fact that Verizon has already installed backup generators on over 90% of their cell towers nationwide ensures that the communication path will outlast even the most generous Fire or Burglary System's battery backup.

Brandt Phillips, (bphillips@napcosecurity.com), a former security & fire alarm systems dealer, is the Commercial Fire & Security Director of Sales For Napco Security Technologies, www.napcosecurity.com

As an example, consider Sections 26.6.3.1.1 and 26.6.3.1.5, NFPA 72, 2013 Edition: Section 26.6.3.1.1, entitled Conformance, says, “Communications methods operating on principles different from specific methods covered by this chapter shall be permitted to be installed if they conform to the performance requirements of this section and to all other applicable requirements of this Code.”

Section 26.6.3.1.5, entitled Single Communications Path, says, “Unless prohibited by the enforcing authority, governing laws, codes, or standards, a single transmission path shall be permitted, and the path shall be supervised at an interval of not more than 60 minutes. A failure of the path shall be annunciated at the supervising station within not more than 60 minutes. The failure to complete a signal transmission shall be annunciated at the protected premises in accordance with Section 10.15 (Trouble Signals).”

This requires the use of a relay, either onboard the radio or a separate module driven by a voltage output on the cellular unit. By connecting the NC (Normally Closed) output with the customary EOL (End of Line) resistor to one of the IDC (Initiating Device Circuit) or SLC (Signaling Line Circuit), the panel will annunciate the failure of the cellular signal path locally on the fire alarm annunciator. When using cellular with a second signal path, local supervision is not necessary.

In commercial fire applications, code allows remote monitoring stations to verify alarms, providing it does not require more than 90 seconds to do so. Code

also requires that the integrity of the cell pathway be supervised at least every five minutes. Depending on the cellular carrier and the intermediate, third- or fourth-party processing center, even shorter supervisory periods are available. And, just as it always has been, commercial systems must send test signals every 24 hours, one every six hours.

Residential applications are slightly different. Test signals are required every 30 days. According to Section 29.7.9.3, NFPA 72, 2013, “Household fire alarm systems shall be programmed by the manufacturer to generate at least a monthly test of the communication or transmission means.”

Fire alarm professionals need to act now by moving their present fire alarm systems into the 21st Century. You need to seek a cellular 3G solution at this time if you haven't already done so. Don't wait until the last POTS line is dead and 2G cellular service goes silent. As the old saying goes, “He who hesitates is lost,” and that is exactly what dealers who continue to procrastinate will be if they fail to act soon.



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