The Future of Alarm Transmission.

POTS End of Life and it’s effect on central station monitoring.

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Introduction
In early 2009, Congress directed the Federal Communications Commission (FCC) to develop a National Broadband Plan to ensure every American has access to broadband capability. Congress also required that this plan include a detailed strategy for achieving affordability and maximizing use of broadband to advance “consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.”

Finished early in 2010 the 377 page plan, titled “Connecting America” sets out four ways that government can influence the broadband ecosystem and recommends that the country adopt six long term goals to serve as a compass over the following decade. The plan sets out what is considered broadband, and how government will set policy to ensure that broadband is delivered to every location where Americans live.

The current mainstream methods for communication are voice telephone calls which take place via copper lines known as Plain Old Telephone Service (POTS) or cellular, both of which utilize the national Public Switched Telephone Network (PSTN) and secondly, the internet which can be used for electronic services such as the world wide web, email, voice over IP, streaming video, and others. Clearly, with a government mandate in place to ensure every American has access to broadband capability, much will change in the ways we communicate.

Transition from a Circuit Switched Network. The POTS End of Life.
Section 4.5 of the National Broadband Plan sets out the scenario for a conversion from the current PSTN to a circuit switched network consisting of IP communications. The plan states “Increasingly, broadband is not a discrete, complementary communications service. Instead, it is a platform over which multiple IP based services – including voice, data and video – converge. Convergence raises a number of critical issues. Consumers benefit from options that broadband provides, such as Voice over Internet Protocol (VoIP). But as consumers leave the PSTN, the typical cost per line for Plain Old Telephone Service (POTS) increases, given the high fixed costs of providing such service. Between 2003 and 2009, the average cost per line increased almost 20 percent.”

Regulations currently require certain carriers to maintain their POTS networks. Given the trend for consumers to switch from higher cost POTS based telephone services to the lower cost alternative of IP based telephone, the requirement for carriers to maintain these networks will become unsustainable.

Due to this trend and the associated costs involved, the nation’s largest carriers have petitioned the FCC to set a firm date when they will be able to cease maintaining the POTS networks. The National Broadband Plan does not currently include a date for this end of life, however it is generally accepted that the FCC will set a date when conditions permit.
How This Affects Alarm Transmissions

The currently installed base of security systems has been evolving over many decades. Even though newer systems have the potential to utilize cellular and native IP connections, there are still a large number of security systems installed which utilize older transmission formats over a POTS connection.

Consumers that have already transitioned their premises to broadband based communications services such as VoIP have encountered many problems with their security systems. Almost all of the formats currently in use with a POTS connected panel have problems communicating with central station receivers if the premise is converted to a VoIP telephone service.

Alarm transmission formats require delicate timing during the transmission of the data. Older formats that use a frequency shift key, or pulses to communicate can be affected by latency and jitter on the IP network, which can cause the loss of critical digits during the transmission. Newer formats that use DTMF tones to transmit signals more quickly are affected because the timing of the tones is also critical. The Contact ID format specifies that the DTMF tones used to transmit data are 50 milliseconds in length with a 50 millisecond space between tones. Any latency or jitter in the VoIP network can affect the length of the tones or spaces which can also cause the receiver to miss critical digits in the transmission.

Consumers have many choices as alternatives to their POTS lines. In some areas the cable TV operators offer digital telephone service using VoIP protocols on their existing network. These services are known as facilities based, where the operator is in complete control of the network from the consumer premise, all the way to their interconnect with the PSTN. Facilities based VoIP is the highest quality, and is usually provided using no compression, to ensure quality of service. With these facilities based VoIP services, alarm systems have great success and failure rates are extremely low.

Lower cost alternatives that are not facilities based use the public internet to communicate. In these cases there is no management of the network, so quality of service cannot be guaranteed. Latency and jitter can occur at any time, therefore it is almost guaranteed that an alarm system connected to this type of service will fail to communicate at some time, if not all the time.

With a national transition from PSTN at the backbone, and POTS at the premise, every installed alarm system which currently utilizes those services could encounter issues when attempting to communicate with central station receivers. Although there is no clear date set for such a transition, the existence of the National Broadband Plan, clearly sets out a future where this will occur.

How to Ensure that Panels can Continue to Communicate

With the likelihood that existing panels will not be able to communicate using a broadband network, dealers must plan for a conversion to a communications method that will work reliably and consistently. Newer panels have multiple communications technologies on board, and older systems can be converted with the use of add on modules.

Many new panels have on board options to use an internet connection, or cellular communications as an alternative to the POTS connection. For new installs, it is recommended to check with the
manufacturer of your panels to see which devices are suitable for installation in broadband enabled premises, or have the options available to convert over when the premise changes to VoIP.

Older panels can often be converted with an add on module. Add on modules made by the same manufacturer as the panel, often enable more options and a more robust communications solution than using a third party module, however third party manufacturers do have modules that can connect to other manufacturers panels. Third party modules connect to the panel by voltage triggers, or sometimes by dialer capture. Dialer capture modules allow the panel’s POTS line terminals to be connected to the dialer capture module. The module simulates a telephone line, and central station receiver. It captures the signal, and re-transmits it to the central station over an internet or cellular connection. Manufacturer specific modules usually connect to the panel via it’s internal communications bus in the same manner as a keypad.

When a panel is converted to an internet based communicator, one issue that needs to be considered is that the network may be unavailable when the panel needs to communicate. To address this need, many of the communicators available offer a dual path option, where the primary communications method is the internet (or IP network) and a secondary path is cellular. These dual path systems offer the best protection for consumers, and peace of mind for installing dealers.

Whether you are installing new panels, or are taking steps to prepare for conversion of installed panels, all of the major security manufacturers, and some third parties have products available today to meet the needs of an evolving communications network.

**What is Security Central doing to Meet these Needs**

Due to consumer transition to VoIP telephone service, and in preparation for mainstream broadband communications, Security Central has been upgrading receiver infrastructure for several years. We can currently monitor all IP (internet) and cellular communications formats from all major manufacturers. We continue to enhance our infrastructure as conditions dictate in order to meet the ever changing needs of consumers, and thus our dealers.

Our relationships with manufacturers have afforded us the ability to keep pace with the rapidly changing communications technologies. As this change has occurred, Security Central has made major investments to ensure that our receiver technology keeps pace with those changes, and continues to provide services for existing systems as well as emerging technologies.

Our affiliations with industry associations and groups, ensures that we remain informed, and are active participants in any state or local changes to industry practices.

Whichever path our dealers choose to ensure that their customers retain effective alarm communications, Security Central has taken steps to offer technologies that meet the needs of consumers and dealers. We continue to invest in these emerging technologies as they are introduced, and consumer demand warrants such investment.