Gabbit TrueLine™

Fire Safety Regulatory Compliance

When replacing legacy phone lines, building owners may have questions about regulations related to fire panels. This whitepaper describes the relevant sections of the National Fire Protection Agency (NFPA) guidelines that apply to Gabbit TrueLine.

Introduction

Historically, fire alarm control panels (FACP) sent signals to a monitoring station through the Public Switched Telephone Network (PSTN). These PSTN phone lines, also known as Plain Old Telephone Service (POTS) lines, were not part of the fire alarm system but were "shared communications" lines. The "shared" part means that in addition to supporting fire alarms, these lines could also be used for phone calls, faxing, or other uses.

As POTS lines started being eliminated, fire alarm service companies began replacing the shared PSTN lines with different technologies. These technologies differ in how they are installed and how they are regulated.

Categories of Fire Alarm Communications

Three new categories of phone line replacement solutions are specific to fire panels. In other words, they are not "shared" communication services. These solutions require installation by fire alarm service professionals. They usually require changes to the monitoring station receiver, the fire alarm panel, or both. Because of the complex installation and integration with the fire system, these solutions also require inspection by the local fire marshal, officially known as the Authority Having Jurisdiction (AHJ).

- Cellular Communicator – These devices are wired directly to the FACP. The communicator is considered part of the fire alarm system (i.e., not a shared communications path). The cellular communicator receives DC power from the panel. It communicates digital signals directly from the FACP to the Central Monitoring Station over a packet network such as cellular 3G or LTE. Cellular communicators must be installed by the fire alarm service provider. They require changing the protocol used between the FACP and the monitoring station. These solutions must be inspected by the AHJ after installation.

  *Gabbit TrueLine is **NOT** a Cellular Communicator.*

- Dial Capture Devices – These devices take analog output from the FACP and interpret the underlying digital protocol (e.g., Contact ID). They then send the digital alarm signal over IP to a receiver at the monitoring station. These devices must be customized to understand and interpret the signaling protocol in use between the FACP and the monitoring station. The signaling can be sent over standard wired broadband or cellular wireless. These solutions require changes at the monitoring station to accept the new digital signaling.

  *Gabbit TrueLine is **NOT** a dial capture device.*

Gabbit TureLine belongs to a different category:

- **POTS Replacement Service** – These services are shared communications services, like original PSTN lines. They may also be used for faxing, phone calls, and more. However, Gabbit does not permit TrueLine lines to be shared with other equipment. They do not touch the fire alarm system. Rather, they are installed in the telco room or demarcation point, also known as the minimum point of entry (MPOE) or "demarc."

  Like original POTS lines, POTS replacement services receive analog audio input from the FACP. They deliver the same analog audio as output to the receiver at the monitoring station. The system is a simple replacement of the original PSTN or POTS line. It does not require any changes to the FACP panel nor to the alarm monitoring station.

  Because these are shared communications lines that mimic old PSTN or POTS lines, the applicable requirements of the NFPA are a little different from those for cellular communicators or dial capture devices.

Compliance Considerations

Gabbit TrueLine is built as a shared communications device with compliance to section 26.6 of the 2022 edition of the NFPA 72 guidelines related to "Communications Methods for Supervising Station Alarm Systems."

Key Features of Gabbit's TrueLine include:

✓ Pathway Reliability

The NFPA 72 code requires communications paths for fire alarm signals to use a Managed Facilities-based Voice Network (MFVN), a physical network owned and operated by a voice service provider that delivers traditional telephone service via a loop start analog telephone interface.

MFVNs are interconnected with the PSTN and provide dial tone to end users. Historically, this was provided by equipment at Bell company central offices; however, today's MFVNs can include a combination of access network (last mile network of copper, coaxial cable, or fiber optics), customer premises equipment (CPE), network switches and routers, network management systems, voice call servers, and gateways to the larger PSTN.

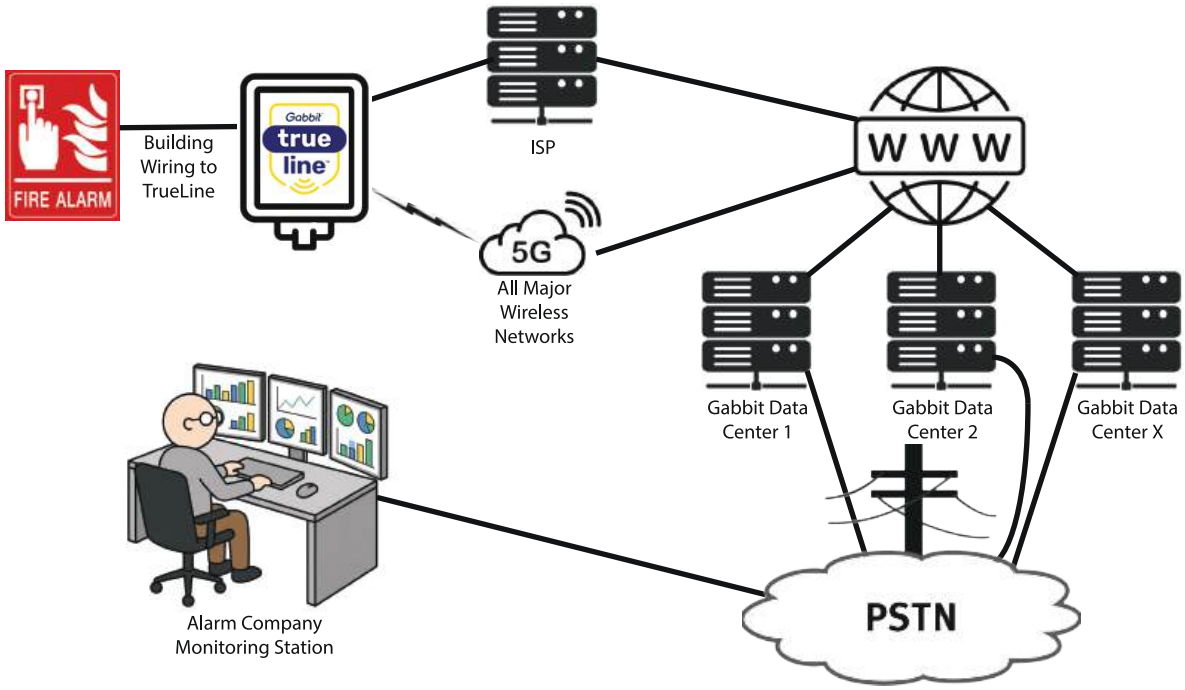
Section 3.3.161 of NFPA 72 now describes a MFVN as "a physical facilities-based network capable of transmitting real-time signals with formats unchanged that is managed, operated, and

maintained by the service provider to ensure service quality and reliability from the subscriber location to the interconnection point with other MFVN peer networks or the supervising station."

TrueLine routes all communications over network paths that are proactively managed and maintained by MFVN-compliant providers. Outbound TrueLine traffic is first routed over an MFVN-compliant Internet connection and secondarily / redundantly over an MFVN-compliant LTE cellular data connection. From Gabbit's data center, traffic is passed to an MFVN-compliant gateway provider, again with a direct hardwired connection. Our gateway partner then terminates the call to the PSTN.

This set of redundant connections is designed so that TrueLine communications will always reach our telephony switch regardless of network traffic. This is a critical feature of the TrueLine architecture ensuring that the customer's critical safety equipment is always connected and monitored.

In addition, Gabbit TrueLine has flexible support for combinations of communication pathways through a mix of LTE and wired broadband connections where specified or tolerated as pathway options by the Authority Having Jurisdiction (AHJ).



✓ Standby Power

Section 26.6.3.13.1.1 of NFPA 72 requires that "Secondary power capacity for shared equipment shall be permitted to have a capacity of 8 hours where acceptable to the authority having jurisdiction and where a risk analysis is performed to ensure acceptable availability is provided." TrueLine includes an integrated backup battery that will supply more than 20 hours of both standby and active usage of the device.

TrueLine can support secondary power of up to 48 hours at the protected premises with an optional additional internal battery.

TrueLine fulfills UL 2054 requirements for portable primary (non-rechargeable) and secondary (rechargeable) batteries for use as power sources in products. These requirements are intended to reduce the risk of fire or explosion when batteries are used in a product.

TrueLine also conforms to UL-62368-1 which is applicable to the safety of electrical and electronic equipment with a rated voltage not exceeding 600 volts.

✓ Loop Start Interface

Section 26.6.4 of NFPA 72 requires that communications equipment connected to the Digital Alarm Communicator Transmitter (DACT) must provide a loop start interface. TrueLine provides a standard loop start interface via its two, four or eight FXS ports, each with an RJ-11 jack. TrueLine does not provide a ground start interface.

✓ Line Seizure

Section 26.6.4.1.3 of NFPA 72 requires that DACTs must be able to seize the line and disconnect any outgoing or incoming telephone call and prevent use of the line for outgoing calls until signal transmission is completed.

Each TrueLine FXS port and its associated RJ-11 connector operates as an independent POTS line replacement. TrueLine does not allow multiple virtual lines to be assigned to any single FXS port. TrueLine does not operate as a “party line.”

It is required that each TrueLine port be connected to only one piece of equipment. If TrueLine is replacing a POTS line serving multiple pieces of equipment, the other equipment should be reassigned to use additional FXS ports on TrueLine, or on additional hardware device as necessary such as a dedicated Fax ATA. TrueLine FXS ports are not to be connected to voice equipment such as an analog telephone. Gabbit does not support standard voice connections with the TrueLine product.

✓ Central Office Requirements

MFVN requirements in Section A.3.3.161 of NFPA 72 provide that central office facilities maintain 24 hours of standby power supply capacity. The equivalent of “central office” for TrueLine are the data centers through which traffic is routed and terminated.

All data centers in the TrueLine MFVN network include more than 24 hours standby power capacity.

Section A.3.3.161 also requires that network equipment be safeguarded to prevent unauthorized access to the equipment and its connections.

All TrueLine data centers include extensive security measures to allow only authorized access to equipment. TrueLine data centers maintain disaster recovery plans to address both individual customer outages and widespread events such as tornados, ice storms or other occurrences of a catastrophic nature, which include specific network power restoration procedures equivalent to those of traditional landline telephone services.

Conclusion

Gabbit TrueLine is built with the applicable fire safety regulations in mind, including MFVN, standby power, loop start support, and end-to-end pathway reliability. Gabbit TrueLine is not a cellular communicator and not a dial capture device. TrueLine is installed in the telco room or "demarc," where the original POTS lines enter the building. TrueLine replicates original PSTN phone lines and does not require changes to the fire panel nor to the receiver at the monitoring station.

Gabbit and its distributors continue to collaborate with regulatory authorities to assess the status of compliance of the TrueLine solution with fire life safety regulations.