Fire Alarm Communications Regulations Information
AReS^{TM} Fully Managed POTS Replacement Solutions

In August of 2020, MACH Networks introduced their new AReS POT Replacement Solution. This solution is engineered to replace old, copper-based analog telephone lines with cellular-based LTE connectivity.

In 2013, NFPA 72 was approved to allow multiple communications methods, including landline Internet access and a cellular appliance, to replace all existing fire panel wireline communications landline services. AReS (as a network carrier access device) was designed to serve as a dedicated communications path for commercial and residential fire alarm systems. By providing a communications network interface and pathway, alarm signals initiated by and from the fire panel communications devices can be transmitted over several different telco provisioned IP-based pathways, including MPLS, Internet, and cellular LTE networks designated monitoring station. Certain conditions apply, including providing a minimum of 8 hours of standby or battery power if local power is lost.

On average LTE-based cellular network communications pathways offer faster, more reliable transport to the end-user at a significantly lower cost than traditional analog landline communications.

PLUG-N-PLAY LINE REPLACEMENT

The AReS series of solutions provides dial tone, voiceband signaling, FSK, modem tone, or DTMF signals transmitted over the LTE-based cellular networks. This solution is a true plug-and-play configuration where installation involves disconnecting the analog landline connection and reconnecting to an FXS port on the AReS series of LTE routers.

No change of communication initiating hardware is required, and no dialer initiation device reprogramming is necessary. All other aspects of the current system architecture—from the master control unit through the central station monitoring activity—will not notice any difference in operation. This is due to keeping the Public Switched Network (PSTN) call completion included within the network architecture instead of the Fire Alarm panel equipment. Only the "last mile" of wireline access is being replaced with LTE-based cellular data connectivity.

SIXTY MINUTE SUPERVISION

For existing installations, landline services may be swapped out for LTE connectivity using the new sixty-minute supervision option mode approved by NFPA, Section 72. The new rule change Landlines services may be swapped out for LTE connectivity for existing installations using the new sixty-minute supervision option mode approved by NFPA, Section 72. The recent rule change allows for single Cellular only communication pathways with the requirement that such circuits must communicate a signal with status once every hour. When installed with multiple network communications technologies, it is acceptable to supervise the cellular communication path just once daily. The AReS services of routers facilitate that requirement.

PRO TIP

BEST PRACTICES WHEN INSTALLING THE POTS IN A BOX® SOLUTION AS THE SOLE PATH FOR A COMMERCIAL FIRE SYSTEM:
- *Ensure the best possible cellular reception during installation.*
- *Achieving maximum reception may require optional external antennas.*
- *Provide access to required standby power.*
- *Access MPLS, Internet pathways as necessary for diversity.*

IN THE EVENT OF ANY LOSS OF CELLULAR COMMUNICATIONS LASTING LONGER THAN SIXTY MINUTES LOCAL ALARM PANEL MUST TAKE THE FOLLOWING ACTIONS

(NFPA 72 213, 14.2.7.2):

• Local equipment must trigger an indication or provide notice of loss of supervisory communication connectivity.

• Immediately notify the central station of the disrupted connection, if possible.

• Central Station supervisory system must note failure to meet check-in parameter and take appropriate action to include notifying AHJ and customer.

ALARM MONITORING STATION RESPONSIBILITIES UPON RECEIVING THE NOTIFICATION

(NFPA 72 2013, 26. 3.7.3):

• The monitoring station must dispatch a runner or maintenance person to arrive within two (2) hours to investigate the loss of supervisory signal communications.

• Notify the AHJ if the disruption exceeds eight (8) hours.

• Notify the customer or AHJ when the service has been restored if the disruption exceeds eight (8) hours.

When using multiple communication technologies, the central station must annunciate trouble within 6 hours after loss of communication. Communication initiating devices are tested and certified against standards by Underwriters Laboratories (UL). Standards come from multiple sources, including the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA).

We consider AReS^{TM} to be telecommunication terminal equipment and network infrastructure equipment and not a communication initiating device. AReS^{TM} is listed under the UL 60950-1 standard applicable to equipment designed for use as Telecommunication Terminal Equipment and Network Infrastructure Equipment. Also carries UL E335801 for electrical and EMC standards compliance normally associated with powering AV, information and Communications Technology Equipment.

The traditional Fire Alarm listings below do not apply as AReS™ is a Telephone Network Interface device providing for Network Access AND is not specifically a fire alarm appliance or accessory.

- UL864 Fire Protective Signaling Systems
- UL985 Household Fire Protective Systems
- UL1610 Central Station Burglary Alarm Units (Grade AA)
- UL365 Police Station Connected Burglary (Grade AA)
- UL1076 Proprietary Burglar Alarm Units
- UL1023 Household Burglar Alarm Systems

State Fire Marshalls feel that these are unnecessary given the architecture of the PSTN Network and the non-initiative nature of the communications device. AReS is permanently wired on the Network side of the Standard Network Interface (SNI) or demarcation point and/or on the network side of the FCC RJ-31 jack. As such, the local alarm and corresponding dialer or communications initiation device sees only an analog provisioned dial tone circuit with appropriate electrical signatures. AReS presents a traditional central office or landline-based "dial tone" as a signature. Local equipment is expected to behave accordingly with no changes in operational modes.

JURISDICTION, CERTIFICATION, AND TESTING

UL provides safety-related certification, validation, testing, inspection, auditing, advising, and training services to a wide range of clients, including manufacturers, retailers, policymakers, regulators, service companies, and consumers. AHJ organizations often use UL as a standard. UL is one of several companies approved to perform safety testing by the Occupational Safety and Health Administration (OSHA), an agency of the US Government. OSHA maintains a list of approved testing laboratories, which are known as Nationally Recognized Testing Laboratories.

CONCLUSION

AReS is a network gateway or portal to the PSTN. As such, the connection provides a dial tone connection with the addition of network connectivity supervision. AReS delivers dial tone and connectivity to the PSTN via several steps. But, in the end, analysis AReS is a Network Service with access via multiple protocols. AReS is not a local alarm system, communicator, alarm initiation device, annunciator, or other alarm system equipment. AReS is a Network Transport system to the PSTN as IP-based Network infrastructure equipment.

Learn More at MACHNetworks.com