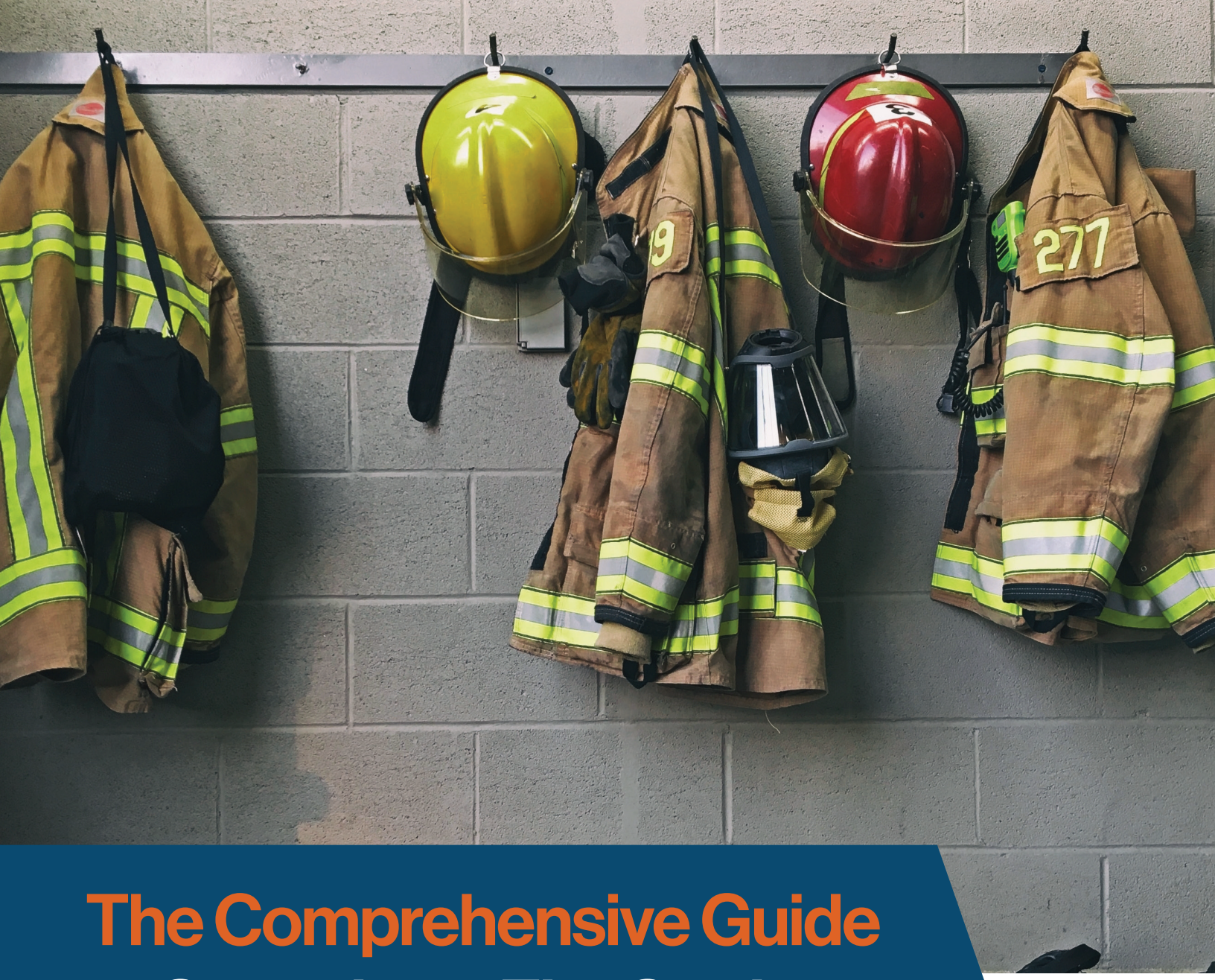

The Comprehensive Guide to Selecting a Fire Station Alerting System

PURVIS SYSTEMS

Technology Solutions with Peace of Mind

PURVIS SYSTEMS

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There are plenty of reasons why you may be contemplating a change in your fire station alerting solution. Perhaps your existing fire station alerting system is nearing the end of its useful life. Maybe you're struggling with system reliability or integration issues. You might be looking to add more sophisticated features to your present voice or tones-only system. Or, you could be faced with regional consolidation or expansion into a new station. Whatever your reason for considering a new fire station alerting solution, the system you select must be reliable, flexible, and suited to your particular environment.

Why Read This eBook?

Throughout this eBook, you'll learn about critical system components you should consider in your selection of a fire station alerting system. By the end, you'll know what the best options for your particular station might look like based on the specific needs and nuances of your fire and rescue personnel.

What to Consider

1. Reducing Response Time & Improving ISO Rating

When lives and property are at risk, every second of the emergency response cycle counts. The solution you choose should be tightly integrated with your community's computer-aided dispatch (CAD) system, and provide reliable, instantaneous alert delivery in multiple formats to your first responders. Additionally, a faster response time plays a critical role in improving your community's ISO rating.

2. Leveraging Multiple Modes of Communication

Accurate and clear communications are integral for maintaining NFPA compliance as well as reducing turnout time. Increase the accuracy of information delivery with a solution that ensures communication to a variety of devices that convey critical information to the appropriate personnel.

3. Adopting a Flexible Deployment Architecture

One size does not fit all. The system you choose should be modular, customizable, scalable, and utilize off-the-shelf devices, allowing for reconfiguration and expansion as needs and budgets change.

4. Leveraging Existing Equipment

Undoubtedly your fire station has systems and devices in place. Get the most from your investment by choosing a solution that provides seamless integration with your existing CAD, public address (PA), and radio-based systems, as well as other station devices.

5. Prioritizing Firefighter Health

Firefighting is physically exhausting, mentally demanding, and highly dangerous, but often

overlooked is the stress caused by alerts received in the fire station. The very best systems provide ramped and auto-adjusting audio levels, low-intensity pathway lighting, and incident- or unit-specific alerts to reduce the stress of night calls.

6. Considering Remote Personnel

Not all first responders are at the station when an alarm comes in. An ideal system is one that can activate your personnel irrespective of their location – in station or remote.

7. Building for High Reliability and Accessibility

Station and personnel alerting is a life-critical function. Look for a system that offers device, server-side, and geographic redundancy and system self-monitoring backed by a committed team, providing ongoing support and maintenance whenever and wherever you need it.

8. Designing for Service First

Since downtime is not an option, look for fire station alerting solutions that are architected to make servicing easy, and select a vendor with a strong track record of service and proven experience in public safety.

9. Using a Standards-Based Approach

Adopting a system that is standards-based and National Fire Protection Association (NFPA) 1221 & 1710 compliant will keep you within guidelines for public safety and insurance purposes.

1. Reducing Response Time & Improving ISO Rating

In the world of first responders, time has always been of the essence. Responding quickly can make all the difference in saving lives, reducing injuries, and minimizing property damage. Much of the focus on reducing response time is placed on reducing the travel time interval from the fire station to the scene. However, two critical elements of the overall response time are “alarm handling time” and “turnout time.”

Each step of the process—from incident reporting to first alert, dispatch, and acknowledgment—can cost valuable time and can have detrimental impacts, such as:

- An overly-heavy reliance on the CAD operator’s manual efforts to activate emergency personnel via a multi-step process
- Unreliable communications and message integrity due to RF channel interference, signal fading, and intermodulation distortion; downed hard-link connections; and ambient noise in the firehouse

- Inaccurate or ambiguous and slow delivery of critical information
- Missing or unclear incident information
- Limits of firefighting personnel to assimilate and retain verbal information while in emergency response mode

Adopting a fire station alerting solution that is intelligently integrated into your communication center's CAD system and automates the process of getting communications out to first responders is priority #1 in improving response time. A good fire station alerting solution will also offer automated tracking and reporting on turnout times, helping stations better identify opportunities for improvement or optimization. This feature, along with having a reliable, modern system with redundant, automated alerting paths, help to improve a department's ISO fire rating score. Emergency communications systems are one of the four main criteria of an ISO fire rating score, and a better ISO rating indicates a better level of community protection by the fire department and lowers an area's homeowners' insurance premiums.

Beyond these features, the right fire station alerting solution should deliver reliable alerts, and utilize a wide array of alerting media and devices to meet the varied roles, locations, and communication styles of your emergency personnel.

What Makes Up Response Time?

Alarm Handling Time: from initial receipt of alarm to station notification

Turnout Time: from station notification by audible and/or visual alerts to when a responding unit is en route

Travel Time: from responding unit en route to arrival on scene

Total Response Time: from alarm receipt at the primary public safety answering point (PSAP) to when the first emergency response unit is initiating action or intervening to control the incident

NFPA 1710 states that turnout time should be 80 seconds for fire incidents and 60 seconds for EMS incidents. Travel time to a fire suppression incident, by the initial arriving company, should be 4 minutes or less, or 8 minutes or less for the deployment of a full first alarm assignment.

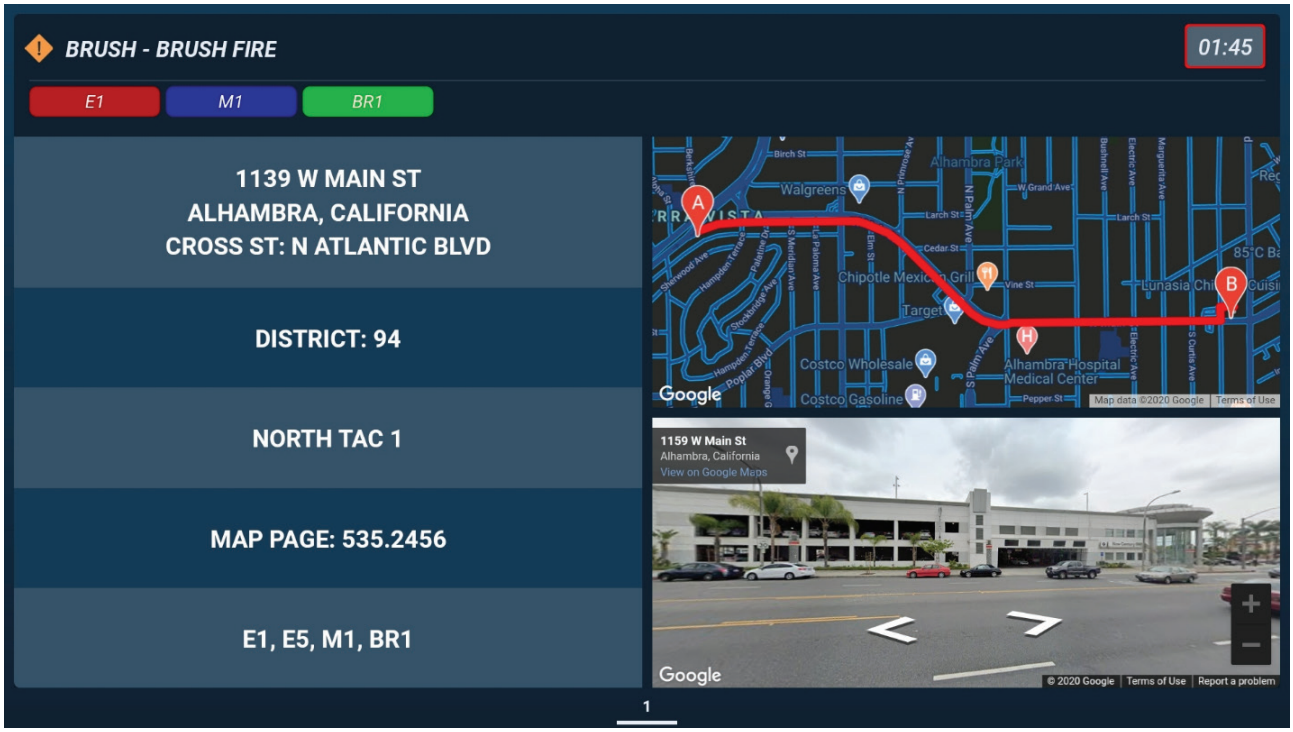
2. Leveraging Multiple Modes of Communication

Communication clarity and accuracy are key to helping responding fire and EMS units understand the type of emergency they're responding to and where they are going. A lack of clear and thorough communications often results in multiple calls to the dispatch center with requests for information to be repeated. With older bell and tone systems, the only information available is what the dispatcher reads over the radio. When station personnel are moving fast, it's easy to misinterpret spoken instructions about an emergency. Fire station alerting solutions can efficiently and effectively mobilize fire station staff for responding to an incident by controlling a wide array of alerting devices that present critical information to the appropriate individuals as quickly as possible in redundant configurations:

- **Automated alerts and announcements** can be instantaneously conveyed to all responding parties via text-to-speech broadcast. Incident information is converted to speech automatically, saving the CAD operator time. Alerts can be preceded with pre-announcement alert tones and text. Select a system that allows you to easily modify automated voice translations without vendor involvement and one that performs translations in real-time, eliminating the need for you to maintain a complex database of audio files.

- **Both audible and visual devices** should be employed as your personnel have different communication and comprehension styles, and may be in a situation, such as a noisy room, where one type of communication is critical for message delivery. Further, one mode serves as a backup to the other should a device fail.

- **Informational displays** such as LED flat panels provide specific incident information including incident type, address, cross street and common name, and responding units. Displays also provide mapping with turn by turn directions and situational awareness information like a real-time list of all active calls in a department or region, general messaging, and bulletin board information. This additional information ensures that first responders are armed with the critical information they need to respond safely, quickly, and appropriately.



Example of an effective in-station Message Board display showing critical incident information and mapping with turn by turn directions for an active station alert

- **Rip-and-run printers** provide hard copies of dispatched information and CAD notes, if available, to responding units, eliminating the need to call back in if an alert was missed, thus saving time and clearing the dispatch channel. Unlike other types of alerts, printed copies travel with the first responders as they board their vehicles.
- **Touch-screen controls** give responders fast, easy access to information, and the ability to effortlessly interact with the system. Faster access translates to a faster response.
- **Two-way messaging** with acknowledgment and real-time communications provide live dispatcher interaction (dispatcher to station and station to dispatch) and ensure private and secure communications.
- **Camera and doorbell controls** allow for emergency notifications to happen at the fire station door. It could be someone utilizing the station as a safe haven zone, or looking for help for a medical emergency happening nearby. An integrated camera, doorbell and microphone system enables two-way dialog with the person(s) standing outside a station. The system also provides a

video feed into the station and back to the communications center. Any caller to the fire station can get immediate assistance, either from station personnel who can get a "visual" on the caller, or from the communications center if station personnel may be away or occupied.

- **Zone control** ensures that only those units or individuals required for response are alerted

3. Adopting a Flexible Deployment Architecture to Accommodate Growth

One size does not fit all. Your fire station is unique and so are the needs of its personnel. Your fire station alerting system needs to balance several considerations including cost, scalability, and failover capability. There are several unique ways a station alerting system can be deployed and expanded upon.

The most flexible architectures enable you to utilize a wide variety of alerting devices and transmission protocols. Deployment strategies can change as your implementation grows to support more locations, companies, jurisdictions, and alerting options.

- **Scalable:** Once installed, the fire station alerting solution will likely be in operation for many years, so you will want to keep the future in mind as you evaluate choices. Even if you don't have the

Automated Voice Dispatch Solution

Systems with announcements that can be automatically sent to mobile personnel or broadcasted over your existing radio network via natural sounding speech converted from dispatch data. Alerts can be simultaneously delivered to the fire stations dispatched for a call.

IP-based Station Alerting

Systems that come with flexible options for smaller departments working with smaller budgets that provide the basic functionalities a station alerting system needs. Systems should also be scalable for mid-size and larger departments that require more complex components and alerting functionality.

Expansion on Base-Level Systems

Systems that can support additional features and functionalities down the road and expand to incorporate a variety of in-station alerting options.

funding to activate specific features today, you will want to invest in a system that will be capable of supporting them later.

- **Modular:** The system you choose should be modular, allowing for reconfiguration and expansion as needs and budgets change—without requiring extensive hardware changes. Choose the best and most cost-effective technology within your financial limitations.
- **Configurable:** Your system should be software-based, highly configurable, and tailored to meet your unique needs.
- **Flexible:** Even a very large organization may start by enabling a single station or a subset of the department before deploying more broadly across multiple stations and departments, or they may choose to start with fewer alerting options and expand to more over time. Flexible deployment architecture can help ensure a streamlined initial project while enabling the implementation to scale to any size needed.
- **Off-the-Shelf:** Utilizing nonproprietary devices gives you the flexibility downstream to add new features and capabilities to the system. Off-the-shelf devices are also more readily and more quickly available, which in mission-critical environments, is imperative when parts fail. It also means that you are not locked into a single vendor.

One department might use several different types of alerting devices—even for a single station. Even if you're starting with a basic fire station alerting solution implementation, you should have the flexibility to choose the best devices for your application, and know that as your device requirements change, your fire station alerting solution will adapt and grow with you. Expect that the system you choose will support a broad range of nonproprietary devices from different manufacturers.

4. Leveraging Existing Systems and Devices to Minimize Costs

Does your fire station alerting solution supplier have the expertise to engineer a system that really fits your department? Can they craft a plan that leverages existing investments in communications infrastructure and station devices, while also expanding and modernizing over time?

It's important to maximize the use of your existing infrastructure. Your day-to-day department processes are supported by your existing CAD, radio, PA, phone, and lighting systems. With the

substantial time and money you have spent analyzing, selecting, and implementing these systems, your new fire station alerting solution should integrate with them without costly retooling.

For example, you might choose to reduce the cost of your infrastructure by tying into existing equipment and deploying a combination of audio alerts and displays.

Maximize your investment by choosing a solution that seamlessly integrates with existing CAD, PA, and radio-based systems. Insist on using standard, off-the-shelf in-station hardware devices that are easy to service and replace. Using nonproprietary equipment makes it easy to integrate to existing systems and makes purchasing and maintenance more cost-effective.

5. Prioritizing Firefighter Health

Occupational stress is inherent in firefighting and emergency response. But at no time in the history of the American fire service has this been more acute—as the increase in arson, acts of domestic violence, terrorist acts, automobile accidents, airplane crashes, hurricanes, tornadoes, earthquakes, and pandemics will attest. The rigors of firefighting, rescue, and victim extrication are such that only the bravest among us need apply.

Other stresses on firefighters are more subtle, such as the effect of receiving alerts in the fire station — especially at night. Interrupted sleep, startling alarms, and bright lights take their toll immediately as heart rates soar in response to alerts and again later with the onset of fatigue due to sleep deprivation.

Aspects of a system that minimizes these stressors include:

- **Ramped audio levels** awaken firefighters without the acute stress that abrupt loud tones can produce.
- **Low-intensity lights** illuminate dorms, bunk rooms and exit corridors so that first responders don't lose precious seconds adjusting to bright lights and can safely navigate the egress while preserving their night vision.
- **A consistent, automated voice** is often easier to understand than a human voice. The consistency and clarity of an automated voice make it easier and less stressful for first responders to gather necessary information efficiently.

- **Customizable day/night settings** allow interior volume levels to be lower at night and higher during the day. Speaker zones, such as outdoor speakers, can also be automatically turned off/on at specific times of day.
- **Ambient noise level sensors** detect ambient background noise and automatically adjust volume levels accordingly to ensure critical audio alerts are heard, especially in noisy areas such as drive bays.
- **Zone-specific notification** provides custom tones and announcements, colored light indicators and appropriate speaker activation – by unit/incident, individual bunk or personal space, or all – so first responders not needed for a call can continue sleeping, while those required can begin responding immediately.
- **Automated controls** open and close doors, display apparatus status, turn off appliances, control egress lighting, open bay doors and activate traffic signals, letting responding individuals concentrate on the incident.

Heart attacks were responsible for 40% of firefighter deaths in 2018. This single-year total is a near average proportion of firefighter deaths from a heart attack or stroke in recent years. This nature of fatal injury has remained relatively constant, while others, on average, have been reduced over the past decade.

- U.S. Fire Administration (USFA) 2018 Fatality Report

6. Considering Remote Personnel

Not all first responders are at the station when an alert comes in. They may be out of range of normal dispatch communications, they may not have access to their pagers, or they may be volunteers or remote personnel.

The most up-to-date fire station alerting solutions support text messaging, smartphone, and email notification in addition to radio and pager. Emergency alerts automatically delivered via these multiple devices ensure the appropriate first responders are activated irrespective of their location. Capabilities to look for include:

- **Emergency alerts** utilizing the same text-to-speech announcement that goes to the station, allow responders to receive the actual dispatch page right on their department-issued radio or personal cell phones.
- **Group message selections** facilitate communications according to rank, title and unit, such as chiefs, hazmat, or dive team or according to incident type

7. Building for High Reliability and Accessibility

For people who put their lives on the line every day, reliable communication is vital. Reliable fire station alerting depends on crucial alerts reaching their destination. When a communications or device failure occurs and fire station personnel are not made aware of it, units are delayed in responding to emergency calls.

Automated Self-Monitoring

Automated fire station monitoring allows designated personnel to quickly determine equipment problems within the fire station such as failed communication hardware, downed lines and backup power system operation. Your system should have sophisticated self-monitoring that provides in-station visual and audible notification and ties into email servers or text messaging for real-time notification of a network or alerting system malfunction. This enables fire service personnel and the system vendor to begin proactive correction of the problem, thus maximizing system uptime and reducing the chance of a missed call.

Redundant Architecture Design

Take a fully redundant and "layered approach" to your fire station alerting solution plans. Look for a system that provides:

- **Alerting over multiple communications paths simultaneously** provide necessary level of redundancy should one communications path fail.
- **Uninterruptible Power Supply (UPS**) backup that alerts the station when the power is out
- **Redundant servers** that will operate in an active mode, eliminating the need for manual failover actions to be taken.
- **Geographic redundancy** with support for multiple dispatch locations and the option for geographically separated backup servers with near-instantaneous switchover (automatically or manually)

You will want to implement a high-availability system. Redundant equipment, communication paths, and backup sites can take over for damaged parts of the network, ensuring uninterrupted communications. Backup power supplies ensure your critical systems stay up during power failures.

Leverage Radio for Voice and Data

Your radio network is an important channel for the delivery of voice communications and it can also serve as an alternate data delivery network to your fire and rescue stations. Automated radio alerts can also be used for in-station automatic failover, in the event of a network failure and for tone alerting through analog (e.g. two-tone and dual-tone multi-frequency [DTMF]) and digital tones via a dispatch console interface.

Some fire station alerting vendors understand networking communications at a level of sophistication that enables them to implement data compression techniques and effective protocols to utilize lower-bandwidth networks like radio for delivery of incident data, in addition to voice-based alerts. If your goal is to implement a modern fire station alerting solution with redundant communication paths, your existing radio network can be leveraged as one of those paths.

Software-Based System

Rather than selecting a system that is rigid in design and forces you to adapt to how it works, select a system that is flexible and installed by a vendor with the ability to configure the system to your specific requirements and existing protocols. In addition to providing more flexibility to customize a solution to meet your unique needs, software-driven technology is more cost-effective to maintain than traditional hardware-based systems. Because they are digitally programmed, customers can make easy, on-the-go changes to the configuration.

8. Designing for Service First

Downtime is not an option. Look for fire station alerting solutions that feature a service-friendly architecture—serviceability should be designed into the technology.

The fire station alerting solution should also be designed for remote administration so that updates and fixes such as changes to the translations of automated voice announcements can be easily made and installed from a central location. This eliminates costly and time-consuming trips to the individual fire stations throughout the city or county for normal service calls.

9. Using a Standards-Based Approach

You need an alerting system that will ensure NFPA compliance for the long-haul. A good solution must meet NFPA 1221 standards and help you meet the requirements of NFPA 1221 and 1710.

In the interest of interoperability and cost justification, many first responders are being asked to participate in citywide, countywide, statewide, or nationally shared communications systems.

Fire departments are setting up more mutual aid agreements with nearby communities and with local, state, and federal agencies, which places critical importance on networks that can interoperate with other departments and jurisdictions. Communities are recognizing the benefits of sharing one system across multiple departments in order to share costs and ensure reliable and available communication when events require a joint response.

National Fire Protection Association (NFPA) 1221 Recommendations

- Redundant dispatch circuits
- Switch-over operation
- Self-monitoring
- Back up time during power loss
- Alert tones
- Automatic recording of system activity
- Alarm alert acknowledgment from the fire station to the dispatcher
- Manual GUI alerting backup to CAD for added level of redundancy

Fire departments seeking modern fire station alerting solution technology should look for hardware and software products that adhere to NFPA and other standards for several reasons:

- Compliance protects the health and well-being of first responders and the community it serves.
- Observance minimizes liability exposure for the fire department.
- Standards incorporate best practices for architecting scalable fire station alerting solutions.
- As standards evolve compliant products will keep pace with technological advances.

10. Partnering With an Experienced Vendor

Perhaps more important than any single system component or feature is the vendor you choose to partner with. Look for a vendor who has a demonstrable attitude of service and proven experience supporting complex and vital systems. One who will do whatever it takes—from providing preventative maintenance and repair, to supporting you whenever and wherever you need it. Ensuring your systems operate seamlessly 24/7 lets you focus on priority #1: protecting the lives and property of the communities you serve. Your chosen vendor should end up feeling like more than a vendor, they should become your go-to partner.

In addition to proven experience, your vendor of choice should be financially stable. Demand audited financials to ensure your vendor has adequate resources and staying power for the long haul.

Look for a vendor who provides:

- A skilled, reliable, responsive team with deep client relationships, domain knowledge, and skills
- A time-tested approach, sustainable processes, and exceptional customer service
- 24/7 support, infrastructure, and capabilities
- Proven record of high-value support
- Fully equipped maintenance facilities
- Proven methodology for planning, implementation, testing, and customer training
- Non-proprietary devices and replacement parts
- An intelligent approach to equipment spares
- Personnel who have direct fire industry experience
- A breadth of capabilities, including system integration, software and hardware development, defense expertise, engineering, field services, call center, and more
- A collaborative, consultative partnership with your station

Conclusion

The world of first response is not static. Fire departments continuously review and revise processes in response to community needs, organizational changes, new locations, compliance and interoperability requirements, and/or new technologies. Because a fire station alerting system is a critical part of your overall response process, your implementation should be tailored to your department's needs, system requirements, schedule, and budget.

Fire Station Alerting Solution Checklist

Whatever your objective—replacing or upgrading an existing system, expanding your fire station alerting options, or building out a new alerting system—the factors discussed in this eBook are critical to your success. To review, implement a complete fire station alerting solution; one that:

- ✓ Reduces response time
- ✓ Improves communications
- ✓ Adopts a flexible deployment architecture
- ✓ Leverages existing systems and devices
- ✓ Minimizes firefighter stress levels and supports firefighters health and wellness initiatives
- ✓ Supports remote personnel
- ✓ Is built for high reliability and accessibility
- ✓ Is designed for service first
- ✓ Uses a standards-based approach
- ✓ Is supported by an experienced and trusted vendor

And offers some key features:

- ✓ Automatic recording of turnout times
- ✓ Zoning of alerts and use of dorm remotes for zone control
- ✓ Ramped lighting
- ✓ Automatic opening of bay doors when a call comes in
- ✓ Automatic failover to radio when network connection is lost
- ✓ Automatic printing of alerts via rip-and-run printers
- ✓ Alerting message boards and displays
- ✓ Remote touch screens
- ✓ Wall-mounted microphones
- ✓ Exterior doorbells with microphones and live camera feeds

Innovative fire departments recognize the strategic value of fire station alerting solutions and are expanding early deployments to include a broader range of capabilities. By following the ten critical success factors outlined here, your fire department will be well-positioned to integrate fire station alerting solutions into its operations, reducing operating costs, improving the speed and efficiency of response, and enhancing the safety of responders.

About PURVIS' Fire Station Alerting System™ (FSAS)

PURVIS' Fire Station Alerting System™ is an IP-based alerting solution designed to automate the process of alerting fire and rescue personnel, enhance communications, and decrease response times. Its rich features and functionality proactively support the day-to-day operations and environmental health, comfort, and safety of first responders. Our system integrates seamlessly with your community's computer-aided dispatch system (CAD) and is able to automatically and instantaneously deliver incident details in a way that is tailored to the needs of fire and rescue personnel.

For more information, please visit PURVIS.com.

PURVIS Fire Station Alerting System (PURVIS FSAS)™

We work to solve challenges, so you can focus on protecting life, safety, and property.

Performance you can count on

- ✓ NFPA compliant system that reduces stress on first responders
- ✓ Integrates and leverages existing systems & devices
- ✓ High system reliability through real-time monitoring & built-in redundancy
- ✓ Improved response times through streamlined dispatch communications & accurate incident alerting

About PURVIS Systems

PURVIS is a technology solutions partner with 45+ years of experience in the public safety industry that develops, implements, modernizes, and maintains life-critical solutions for fire departments, dispatch centers, and emergency medical services.

Seconds save lives. We understand the critical role technology plays in response times and make it our mission to implement solutions that empower you to handle life-critical situations quickly and safely. As your trusted partner, we tailor technology solutions to your organization and provide expertise, training, and around-the-clock support that you can count on. We work to solve challenges, so you can focus on protecting life, safety, and property.

PURVIS Systems has long-term engineering and technical services contracts with clients such as:

- New York City Fire Department (FDNY)
- Boston Fire Department
- District of Columbia
- Charleston County, SC
- DuPage County, IL
- Los Angeles Fire Department (LAFD)
- Kitsap County, WA
- Ft. Collins, CO
- Williamson County, TX
- Jacksonville, FL
- Pittsburgh, PA
- Various other government establishments

If you have questions about what to look for in an FSAS solution or partner, let's connect. Our team of public safety industry veterans are ready and willing to help answer any questions and steer you in the right direction.

For more information, please visit PURVIS.com.