



WHITE PAPER · FOR IT LEADERS, SCHOOL TECHNOLOGY DIRECTORS,
FACILITIES TEAMS, AND MANAGERS OF MULTILINE PHONE SYSTEMS

Emergency calling in multiline phone systems

Understanding federal E911 duties for multiline
business phone systems

**Prove direct dialing, the applicable location method, and
notification behavior at the actual site. Keep those records
current after changes.**

PUBLISHED BY
Greg Steinig, SPARK VoIP

DATE
October 2026

RESEARCH REVIEWED THROUGH
October 4, 2026

Executive summary

For covered systems, Kari's Law concerns direct 911 access and notification; the FCC's RAY BAUM'S Act rules address location delivery. [1] An emergency calling project should prove three separate outcomes: the user reaches 911 without an access code, the public safety answering point (PSAP) receives usable location information, and the organization's designated people receive the required notification. A vendor's enhanced 911, or E911, feature cannot establish those outcomes for a particular building without configuration and verification.

Federal rules for multiline telephone systems (MLTS) are forward looking. Section 9.17(b) applies the requirements to systems manufactured, imported, offered for first sale or lease, first sold or leased, or installed after February 16, 2020, subject to separately stated dates. The location deadlines were January 6, 2021 for fixed on-premises phones and January 6, 2022 for non-fixed on-premises and off-premises devices. Assess the system history and separate state duties. [2, 7] The October 2020 government guide explains the framework; current regulations anchor this paper. [1]

Dispatchable location combines a validated street address with further detail needed to identify the caller, such as a suite or apartment. [6] A classroom phone and a roaming laptop can require different location methods. The rule provides category-specific alternatives when automatic location is not technically feasible. [2] Notification has separate configuration, timing, and content qualifications. Assess each applicable provision before procurement. [2, 6]

Key findings

- 01 Applicability and device category determine the federal requirement. [2, 7]
- 02 Direct dialing, notification, and location delivery are separate controls. [2]
- 03 An alert must reach someone likely to see or hear it and must not delay the emergency call. [2]
- 04 A moved device can invalidate an accepted location record.
- 05 Tests should be coordinated with the carrier and local 911 authority. [3]

This paper is a United States procurement and operations guide. It supports a documented compliance assessment and acceptance process. Counsel and the responsible 911 authority should review the system-specific plan.

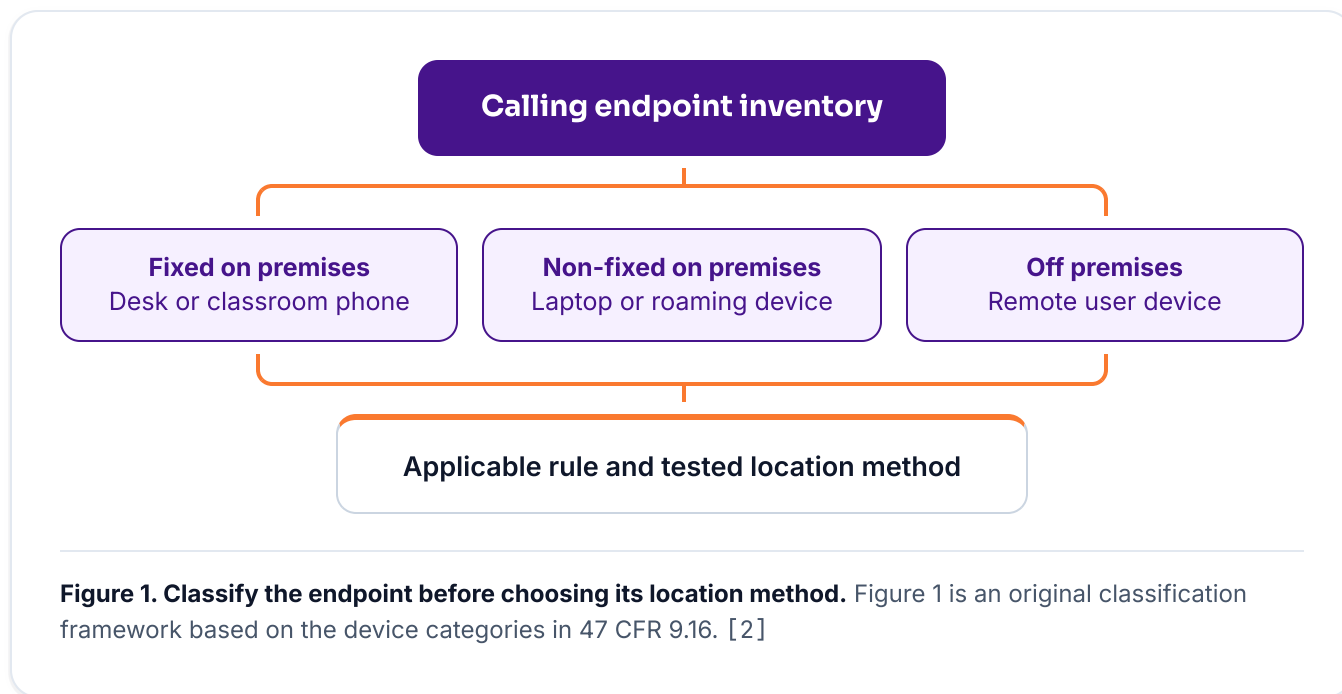
02

Assess applicability and device categories

A multiline telephone system, or MLTS, connects multiple stations through shared calling infrastructure. The regulatory definition includes premises and network systems, including private branch exchange (PBX) and voice over Internet Protocol (VoIP) systems. [6] Responsible parties include manufacturers and sellers, installers, and managers or operators. [2] A cloud hosting agreement needs a clear division of responsibility for physical deployment, location records, and staff procedures.

Record acquisition and installation dates, later replacements or reinstallations, and endpoint categories. Have qualified telecom or legal reviewers assess the applicability of section 9.17(b) to that history. A legacy system may fall outside a particular federal trigger; this does not establish an exemption from every state or local duty. Check the relevant jurisdiction and assess the operational risk of an inaccurate location. [7]

Fixed on-premises phones require automated dispatchable location. For non-fixed on-premises devices, the rule permits end-user manual updates or alternative location information when automated dispatchable location is not technically feasible. For off-premises devices, it permits manual updates or enhanced location information under its stated feasibility and reasonable-cost conditions. Assign each device to the right category before accepting a fallback. [2]



A location method should have an owner and a change trigger. If a desk phone moves to another floor, who updates the emergency record? If a laptop travels to a home office, what establishes the current location before the next call? Document those transitions as part of the design, rather than leaving them to user memory.

03

Specify dialing, location, and notification

Write requirements in observable terms. Direct dialing is tested at the endpoint; location delivery is tested at the emergency destination; notification is tested at the designated recipient. An internal email containing a room number is not proof that the public safety answering point received that room number.

Section 9.16(b)(2) requires notification configuration when the system can provide it without a hardware or software improvement. Start it with the 911 call when technically feasible. Send it to a location where someone is likely to see or hear it. It must never delay the call. [2] Section 9.3 specifies the fact of the 911 call, a valid callback number, and the caller location conveyed to the PSAP. Callback or location information may be omitted if technically infeasible. [6] Record each claimed qualification and its basis. The October 2020 guide is explanatory material. [1]

Table 1. Compliance control and required evidence

Control and provision	Acceptance evidence	Owner
Direct 911 dialing 9.16(b)(1)	No added access digits at the endpoint	PBX implementer
Location delivery 9.16(b)(3); 9.3	Receiving authority confirms delivered location; reviewer checks the required device method	Carrier and location owner
Notification 9.16(b)(2); 9.3	Call fact, valid callback, and location conveyed to the PSAP; documented qualifications; receipt and timing	Operations or security
Callback Recommended check	Agreed return call reaches a usable destination	Carrier and PBX implementer
Change control Recommended check	A change produces an updated record and closed retest	IT and facilities

Maps the applicable federal provisions to acceptance evidence. Callback and change control are recommended operational checks; they do not create separate statutory testing duties. Interpret applicability and permitted location alternatives with the responsible reviewers. [2, 6, 7]

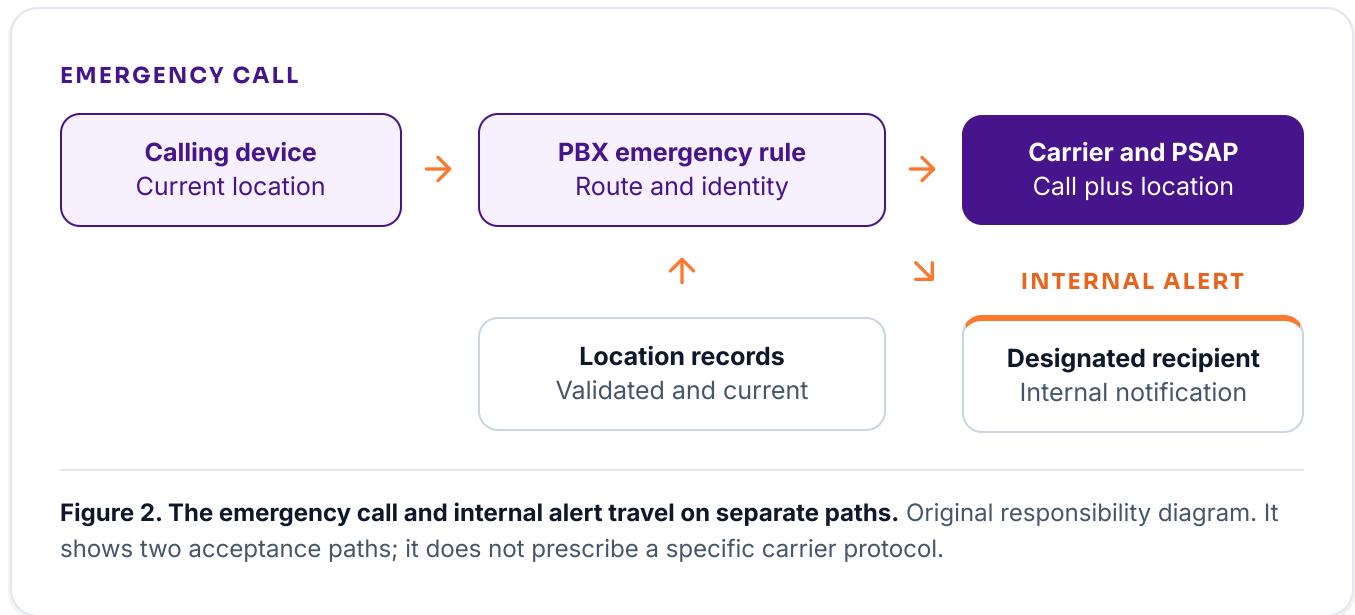
Choose interior descriptions that responders can use. A floor and room name should match the signs and the building map. An internal asset code that only IT understands adds a translation step. Validate the street address and the entrance route for buildings with multiple entrances or campus roads.

The organization should name a notification recipient for every operating period. A security desk that closes at 5 PM may leave an evening notification unattended. Test who receives the alert when the primary recipient is absent. This is an operational review of the requirement, not a claim that one notification medium fits every facility.

Keep emergency route identity separate from the marketing caller ID used for ordinary calls. A shared company number is convenient for customers; a distinct emergency identity may be needed to associate the calling device with the right location. The carrier should explain that association in writing.

Coordinate the PBX, carrier, and location service

In a hosted deployment, the PBX selects the emergency route, the carrier transports the call, and a location service or carrier database supplies information for emergency delivery. Every interface in that chain needs an agreed behavior. Procurement should name who registers locations and who resolves a rejected address.



3CX documents an emergency configuration that prioritizes designated numbers over ordinary outbound and office-hours rules. Its manual provides trunk routes, alternative routes, and caller ID configuration. These controls help implement a design; they do not validate the destination's location records on their own. [4]

3CX documents geolocation by reference: locations are created per trunk, assigned to users, and conveyed through a location reference during an emergency call. Its September 2026 guide identifies specific supported providers. Generic templates require customer and provider testing and are not supported configurations in that guide. [5] A configured reference does not prove automatic location discovery after a device or user moves. Verify the purchased release, trunk template, provider support, assignment and update mechanism, and receiving result. Ask the provider to demonstrate any proposed automatic roaming discovery in the site pilot.

Test each alternate route with its own location association. The 3CX guide requires a unique geolocation URI or ID for each trunk in that implementation. [5] Record the actual emergency path for each client; a business app, native mobile dialer, and forwarded callback may use different

paths. Table 2 separates those tests. A successful audio call on one path cannot establish the location or callback behavior on another.

05

Verify each client and emergency route

Use one record for each actual client, release, network context, and emergency route. Identify the path before testing: a business app may use a PBX route or another documented mechanism; native mobile emergency dialing needs its own carrier assessment. Do not apply an MLTS result to a separate native wireless path. Duplicate the relevant rows for each operating system, primary trunk, and configured fallback.

Table 2. Client and route acceptance record

Client and context	Path to identify	Evidence to retain	Initial result
Fixed room or desk phone	Primary and each fallback trunk	Direct dialing, received location, callback, and alert	Test in pilot
Roaming on-site client	Each supported location and route	Movement and stale-record handling; received location	Test in pilot
Remote desktop client	Home or remote network; VPN if used	Update mechanism, received location, and callback	Test in pilot
Mobile business app	Actual emergency path or native handoff	OS and app release; path, location, callback, and alert	Test in pilot
Native mobile dialer	Cellular emergency service	Carrier, OS, received location, and callback	Test in pilot
Native Wi-Fi calling	Actual Wi-Fi emergency path	Carrier address process and received test result	Test in pilot
Forwarded callback if used	Actual returned-call destination	Forwarding state, reachable endpoint, and caller access	Test in pilot

Original procurement template, not a completed deployment test. Test every initial result in the pilot. Record a dated pass, failure, or inconclusive result only after the named owner attaches evidence. Regulatory category and provider implementation references: [2, 4–7]

Retain the endpoint or user identity, current physical location, expected location, location reference, carrier and trunk template, OS and client release, and test condition with each result. Record what the receiving service obtained and where a returned call landed. A supported test service may establish fewer facts than a coordinated PSAP test; state that boundary. An unavailable or unsupported path needs a documented operating decision and user instructions.

06

Budget for location operations

The purchase price should include the work required to maintain accurate locations. A PBX subscription may omit address validation, interior mapping, emergency number assignments, location service subscriptions, recurring tests, and change administration. Ask for those costs separately so bids can be compared.

Table 3. Procurement cost fields

Cost field	What to request	Change driver
Initial mapping	Street validation, interior locations, and record imports	Buildings, rooms, and endpoint count
Emergency service	Carrier and location service recurring charges	Locations, identities, and device methods
Acceptance	Carrier coordination, scheduled tests, and records	Sites, device categories, and failover routes
Operations	Moves, staff training, and periodic reviews	Turnover, roaming users, and construction
Network resilience	Local power and alternate transport	Site outage requirements

Original cost collection model. No nationwide per-location charge or compliance price is asserted.

A school with five campuses and many room phones should not be priced as five unchanging street addresses if the chosen location method needs more detail. Ask each bidder to state the granularity included and the method used to keep it current. Confirm the number of billable location records and identities.

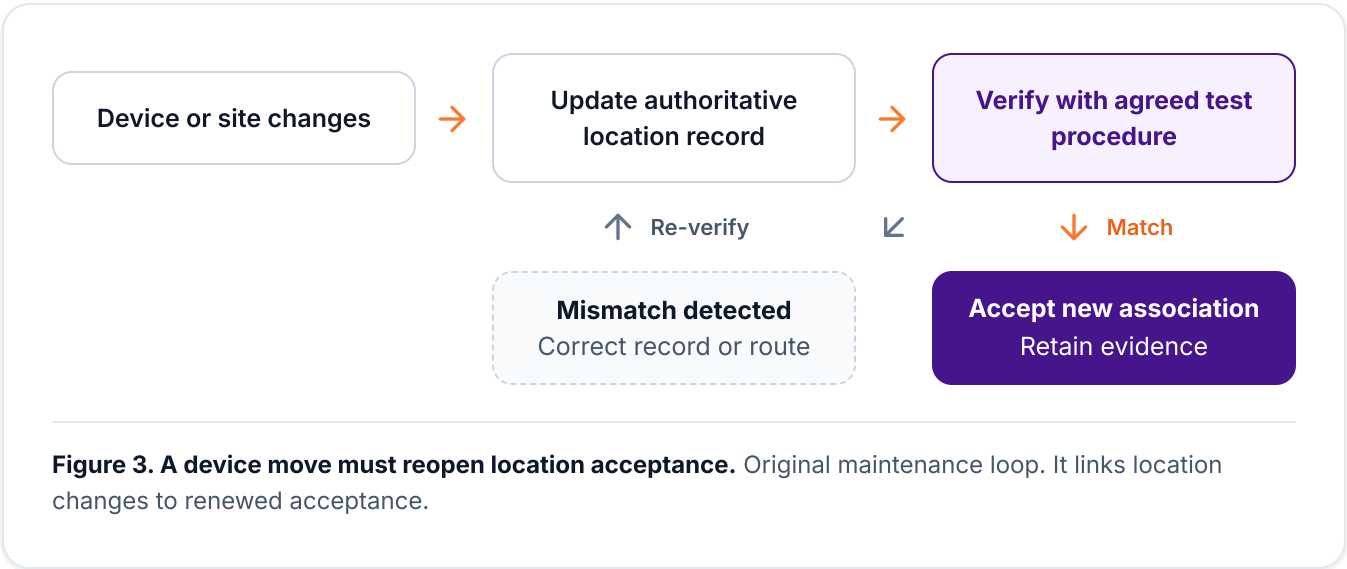
Compare three-year or five-year operating work with the deployment charge. A cheap installation that leaves manual changes to an unassigned employee can cost more to maintain and can create record drift. Specify the move workflow and the response time for correcting a wrong location.

Do not claim a calculated financial return from emergency response time without evidence. The business case here is a required or risk-driven control with measurable acceptance criteria. Procurement can compare its cost without inventing a monetary value for avoided emergencies.

07

Keep accepted locations current

Create one authoritative record for each accepted location association. It should include the endpoint or user group, validated address, interior description, emergency identity or location identifier, carrier route, notification recipient, and last verification. Separate the business asset record from any regulated location service record, but link them so changes can be reconciled.



Use a carrier-supported test service where available. Arrange any live 911 test with the local authority in advance and follow its procedure. A test must not consume emergency resources unexpectedly. Have the recipient confirm the location actually delivered, not the address shown in the PBX administrator screen.

ROUTINE CHECKS: DIAL 933, NEVER 911

The service reads back the address and callback number the phone would send. Check every fixed phone during acceptance and after relevant changes. SPARK VoIP advises testing from a phone in each building once a quarter. A 933 readback checks the configured information; it does not replace a coordinated live 911 test of receiving and notification behavior.

Retest affected paths after device moves, room renumbering, location edits, new campuses, carrier changes, client updates, or changed remote-work arrangements. Review alert coverage after staffing changes. Assign the change ticket to an owner and retain the updated location record and test evidence. These are recommended management controls, not a universal statutory testing interval. The checklist following Table 4 defines the closure record.

A failed verification should produce an assigned correction and a temporary operating plan. Record who approves that plan and how affected users receive instructions. Close the issue only after the corrected association has been verified.

08

Build an emergency calling test matrix

Record the endpoint model, operating system, app or client release, network context, carrier and trunk template, emergency path, location identifier, and notification destination. Use Table 2 to identify distinct paths and Table 4 to specify their tests. Retain each primary and fallback result separately. Apply the federal device category and any permitted location alternative to the actual deployment. [2, 6, 7]

Table 4. Emergency calling test cases and owners

Test case	Evidence to retain	Acceptance owner
Fixed desk or room phone	Routine 933 address and callback readback for every fixed phone; coordinated live test for direct 911 route and delivered location	Carrier and site lead
Roaming device on premises	Correct category method at each supported location	IT and location provider
Remote user	Supported off-premises method and user update behavior	IT and service provider
Internal notification	Call fact, valid callback, conveyed location, timing, receipt, and documented technical qualifications	Operations or security
Alternate carrier or route	Delivered location and usable callback under the selected test procedure	Carrier and PBX implementer
Device or room move	Old record corrected and new association verified	IT and facilities

Original recommended test matrix. Assign named owners and attach dated evidence for each client and route. Record untested or inconclusive cases for follow-up; the matrix is not a compliance certificate.

Coordinate live emergency tests with the carrier and local authority and follow their procedure. Use a supported non-emergency method when available. Retain both the configured location and the location actually received. Record a valid callback, its returned-call destination, and notification receipt during the tested staffing period. Close each case with the result, date, witness, and responsible owner. A PBX screenshot alone cannot establish delivery to the receiving authority.

Retest after changes

Open a change task with a named owner. Close it only after the affected paths have dated results and any failures have an approved correction or temporary operating plan.

- ✓ **Device or user move:** update the location association, then test the moved client and any stale-record condition.
- ✓ **Address or room edit:** validate the new description and confirm the location received on affected routes.
- ✓ **Carrier, trunk, or fallback change:** test emergency identity, delivered location, and the returned-call route.
- ✓ **OS, app, or PBX update:** check the documented emergency mechanism and retest affected clients.
- ✓ **Staffing change:** test alert receipt during the affected operating period and update coverage instructions.

09

Emergency calling needs an operating owner

DOCUMENTED CASE

The event behind the direct dialing requirement

2013

year of the event

4

attempts to call 911

9

required access digit

The National 911 Program recounts Kari Hunt's 2013 death in a motel. Her daughter attempted to call 911 four times, but the system required a 9 to reach an outside line. This documented event explains why an access code is a safety issue, even when an ordinary user knows how to place business calls. It does not establish that direct dialing alone solves location and response coordination. [3]

A hypothetical manufacturer may have a front office, production floor, and warehouse at one street address. A location test that identifies only the front office can pass an audio connectivity check and still leave responders searching. The location description, visible signage, and responder access plan should agree.

Procurement decision

Select a deployment that documents each in-scope device category and emergency path. Require movement, stale-location, remote, and fallback tests where relevant, with correction responsibility in the contract. A simpler fixed-phone emergency path can be a rational choice when its coverage and accessibility meet the site requirements. It does not remove the need to assess other deployed clients. Untested paths should remain open in the acceptance record.

Emergency information is maintained data

Location technology will change, but building moves and staff turnover will continue. An organization that treats emergency information as maintained operational data can adopt new methods with less uncertainty. An organization that stores one address during installation and never revisits it will recreate the same problem on a newer platform.

Ask SPARK VoIP to show, building by building, how each phone's location is set and tested. Request a written division of responsibilities and a coordinated acceptance plan. A product feature list should lead to that plan; it should not serve as the final compliance conclusion.

References

Numbered references support factual statements. Recommendations and original analytical models are identified in the text. Sources were checked through October 4, 2026. Publication dates are included when established.

- [1] National 911 Program and FCC (October 2020). Kari's Law and RAY BAUM'S Act reference guide. Explanatory guidance on roles, dates, and requirements; current regulations control the legal assessment.
[Read source](#)
- [2] Office of the Federal Register. 47 CFR 9.16. Direct 911 dialing, notification, and dispatchable location. Current regulation.
[Read source](#)
- [3] National 911 Program (updated March 8, 2023). Kari's Law and RAY BAUM'S Act. Definitions, history, and implementation resources.
[Read source](#)
- [4] 3CX (updated September 8, 2026). Emergency Numbers. Vendor administrator instructions for priority routing, notification, caller identity, and alternative routes.
[Read source](#)
- [5] 3CX (updated September 10, 2026). Configuring E911 Geolocation. Vendor instructions for geolocation by reference, user assignments, provider support, and per-trunk identifiers. This is not evidence of automatic roaming discovery.
[Read source](#)
- [6] Office of the Federal Register. 47 CFR 9.3. Current definitions of dispatchable location, MLTS notification, and system roles. Notification content and technical-feasibility qualification. Checked October 4, 2026.
[Read source](#)
- [7] Office of the Federal Register. 47 CFR 9.17. Enforcement, compliance date, and state law. Current applicability trigger in paragraph (b) and state-authority provision in paragraph (c). Checked October 4, 2026.
[Read source](#)

Methodology and research limits

Research prioritized current 47 CFR 9.3, 9.16, and 9.17 for definitions, duties, and applicability. The October 2020 government guide supplies explanatory context; the National 911 Program supplies the historical example. Vendor manuals establish documented configuration capabilities, not actual delivery or legal compliance. Diagrams, cost fields, client and route records, and change checks are original planning tools. They do not report measured safety benefits or add statutory duties.

This paper does not inventory every state law or determine the legal status of an individual installation. Legacy status, later changes, and device-specific alternatives need case-specific review. No deployment, mobile handoff, roaming discovery, fallback route, or callback was independently tested. Confirm site-specific behavior through provider specifications and coordinated receiving evidence. A documented feature or configured address cannot prove what an emergency destination received.

Evidence gaps

Before acceptance, obtain system history, the jurisdictional assessment, device categories, validated locations, provider and trunk support, and the location update process. Collect a separate result for every supported client and emergency route, including movement, stale records, fallback, and callback. Retain notification receipt and coverage outside normal hours, change tickets, correction ownership, and retest closure. Missing evidence should remain visible in the record.

Figures and tables

Figure 1	Classify the endpoint before choosing its location method
Table 1	Compliance control and required evidence
Figure 2	The emergency call and internal alert travel on separate paths
Table 2	Client and route acceptance record
Table 3	Procurement cost fields
Figure 3	A device move must reopen location acceptance
Table 4	Emergency calling test cases and owners

Publication context

SPARK VoIP provides a 3CX based hosted VoIP offering. This paper is educational and does not establish a customer contract, a legal opinion, a certification, or a guaranteed result. Service scope, support, integrations, and any regulated workflow need written confirmation for the proposed deployment.



Talk to SPARK VoIP

SALES

(888) 223-1094

SUPPORT

(918) 608-8888

WEB

sparkvoip.net

Emergency support is available 24/7.