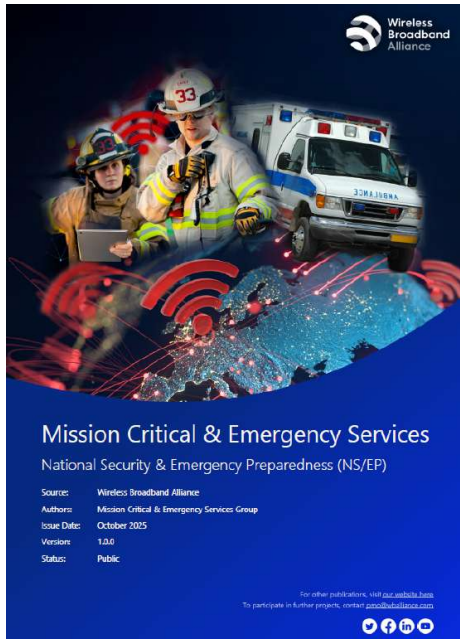
Wireless Broadband Alliance

WI-FI FOR MISSION-CRITICAL COMMUNICATIONS: STANDARDS, POLICY, AND DEPLOYMENT

DSA Global Summit
17th November 2025

WI-FI FOR MISSION-CRITICAL COMMUNICATIONS

WBA members are advancing Wi-Fi's mission-critical role when cellular is unavailable including first-responder connectivity and E911 calling over Wi-Fi using cellular identities via OpenRoaming.



Why this matters

1. People spend ~90% of time indoors; over 80% of smartphone data use is indoors.
2. Modern building materials block cellular signals (30 dB+ entry loss typical).
3. During disasters (e.g., hurricanes), Wi-Fi often remains available when cellular fails or is congested.
4. Extending emergency services access to Wi-Fi closes coverage gaps and can save lives.

Documents available to download at WBA Resource Center at: https://wballiance.com/resource/

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OPENROAMING™

ONE GLOBAL WI-FI NETWORK

Providing Automatic & Secure Wi-Fi Everywhere to Everyone

WBA OpenRoaming™ is a roaming federation service enabling an automatic and secure Wi-Fi experience globally. With WBA OpenRoaming™, we are creating an open connectivity framework for all organizations in the wireless ecosystem to power new opportunities in the 5G era.

LEARN MORE

OPENROAMING.ORG

CROWDSOURCING OPENROAMING MAP

3,000+
server certificates issued

3,000+
Operators, Enterprises, cities involved

www.wballiance.com/openroamingmaps/

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EXAMPLES OF DEPLOYMENTS

HEALTHCARE

MountainStar St. Mark's Hospital

Adventist Health

地方独立行政法人 東京都立病院機構 Tokyo Metropolitan Hospital Organization

St David's HealthCare

Houston Methodist LEADING MEDICINE

RETAIL

Ahold Delhaize

ZARA

SAFEWAY

SIMON MALLS

Albert Heijn

MUNICIPALITIES

CONNECTED LONDON WI-FI

Dublin City Baile Átha Cliath

VILLE DE LUXEMBOURG

EDUCATION

WAGENINGEN UNIVERSITY & RESEARCH

COLÉGIO DO CASTANHEIRO

Loughborough University London

TEATRO GAZETA AV PAULISTA, 900

مدارس الملك فيصل King Faisal School

OTHERS

Fira Barcelona

AIDA CRUISES

LONDON STADIUM

BOTTLEROCK MUSIC + FOOD NAPA VALLEY WINE + BREW

OSAKA, KANSAI, JAPAN EXPO 2025

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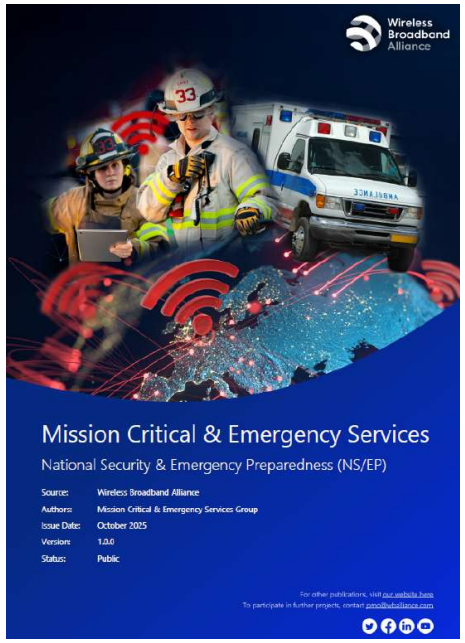

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EMERGENCY CALLING OVER WI-FI

- Enable E-911/E-112 calling over Wi-Fi networks
- Use Passpoint/OpenRoaming to discover, authenticate, and allow temporary access
- OpenRoaming is a federation of Wi-Fi Access Network Providers (ANPs) and Identity Providers (IDPs) with technical + legal frameworks.
- Complement — not replace — cellular emergency services
- Make connectivity possible even for devices without SIMs or mobile subscriptions

Typical scenario (no cellular coverage)

- User dials local emergency number (e.g., 911/112)
- Device activates an Emergency Passpoint/OpenRoaming profile
- It discovers a nearby Wi-Fi AP advertising the Emergency RCOI
- The device authenticates via the emergency realm; temporary access is granted

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CELLULAR EMERGENCY CALLING OVER WI-FI

- Mobile operators (IDPs) can authenticate subscribers on Wi-Fi to provide connectivity for IMS-based services, including voice and emergency calls.
- Approach complements cellular coverage; uses standards already deployed at scale across devices and networks.
- Device discovers ePDG and authenticates using SIM credentials;
- UE completes IMS registration over the IPSec tunnel and can place/receive calls over Wi-Fi, including emergency services.
- Carrier configs include IMS APN and an emergency APN accessible via ePDG.
- ANPs must send RFC 5580 location (civic and/or geo coords) in RADIUS Access-Request during authentication.

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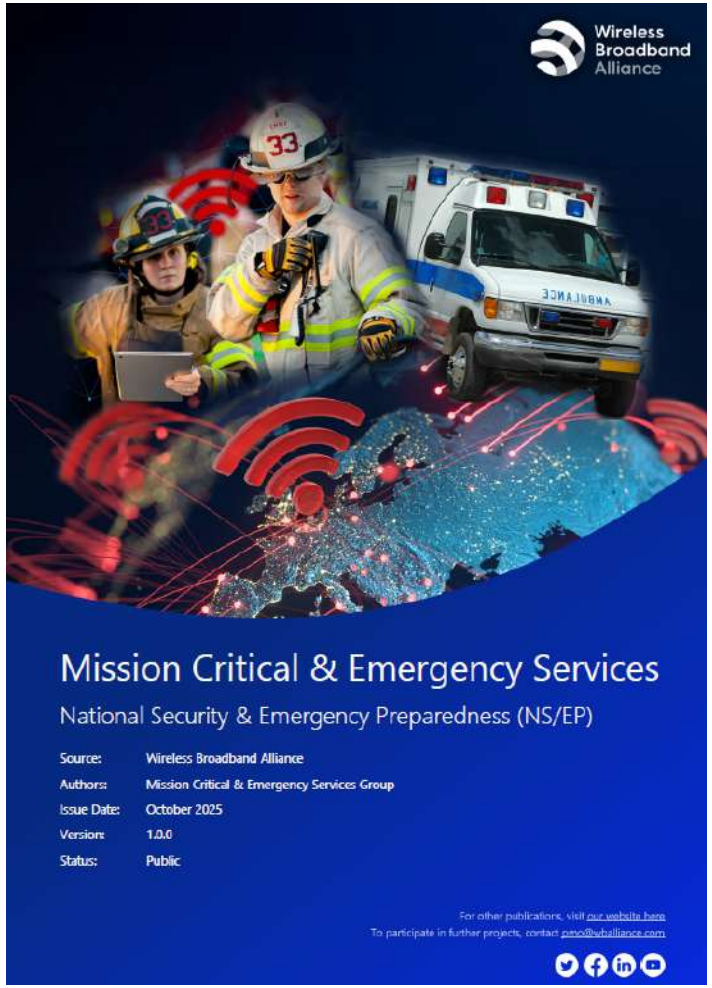
PRIORITIZATION OF NS/EP OVER WI-FI



- Prioritization over Wi-Fi lets authorized National Security / Emergency Preparedness (NS/EP) users communicate reliably, complementing cellular priority programs already used globally.
- Wi-Fi 7 adds Emergency Preparedness Communication Service (EPCS) for priority access on Wi-Fi.
- Authorizes specific users/devices to get preferential channel access during congestion—without blocking public/emergency calls.
- Standards stack: Wi-Fi 7 (802.11be) + 3GPP Multimedia Priority Services + Passpoint/OpenRoaming + RADIUS.

Functional architecture (high level)

- Device ↔ Access Point/Controller ↔ AAA (RADIUS) ↔ Identity Provider.
- AP caches authorization and manages priority vs non-priority devices.
- Discovery via Beacons + ANQP (NAI realms, RCOIs), then Authentication EAP methods (including EAP-SIM/AKA) over RADIUS (Wi-Fi).

THANK YOU
FOR YOUR ATTENTION

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LET'S CONNECT

Tiago Rodrigues

President and CEO

tiago@wballiance.com

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