

RESILIENCE BRIEFING

# Why mobile networks **fail your crowd** in an emergency

Hard numbers on why mobile networks overload at crowds and in incidents — and how broadcast-based crowd communication keeps reaching everyone.

**+250%**

Vodafone call volume during the 7/7 London attacks – network at capacity by 10am

**~250**

Realistic devices per 4G sector; only ~60–100 actively connected at once

**11M**

Calls O2 carried on 7 July 2005 vs 7M normally – excluding failed calls

**79%**

Of the UK's 41.9m 999 calls in 2023 were made from a mobile

A single mobile cell realistically carries only a few hundred connected devices at once – so when tens of thousands of people gather, or an incident makes everyone call at the same moment, the network saturates exactly when you need it. Broadcast-based crowd communication, which reaches every screen on site over its own signal, keeps working when the mobile network does not.

### ▶ How little capacity a mobile cell really has

A mobile mast is not a bottomless pipe. Telecoms engineer and author Martin Sauter puts realistic 4G numbers at roughly **250 devices attached per sector**, of which only about **60–100 are actively connected** at any one moment. In pure theory a cell can hold over 1,000 connections, but operators set the limit far lower because beyond that nobody gets a usable speed. Bring 20,000, 50,000 or 80,000 people into range of a handful of masts and the maths breaks long before everyone is reached – which is why your phone shows full bars yet calls and data still fail.

### ▶ What that looks like in a real crisis

The clearest UK example is the 7 July 2005 London bombings. According to the London Assembly's official Report of the 7 July Review Committee and contemporary reporting:

- Vodafone's call volume rose 250% and text volume roughly doubled; its network reached capacity at about 10:00am and it invoked access overload control (ACCOLC).
- O2 carried about 11 million calls that day, against a normal 7 million – roughly 60% more, not counting the calls that never connected.
- Cable & Wireless handled around 300,000 calls every 15 minutes, against 30,000 normally – about ten times the load.
- Police restricted the network to emergency use within 1 km<sup>2</sup> around Aldgate for four hours – and even some responders' phones were blocked.

It is not a uniquely British problem. On 11 September 2001, cellular traffic across New York and the US east coast roughly doubled and networks crashed. The pattern is always the same: the moment a crowd most needs to be reached is the moment the network is least able to carry it.

## ▶ Networks are built for typical demand, not simultaneous demand

This is by design, not a fault. Networks are dimensioned for typical traffic — there simply isn't enough capacity for everyone to use them at once. And we lean on them more than ever for safety: in 2023, **79% of the UK's 41.9 million 999 calls** were made from a mobile. A safety plan that assumes the mobile network will be there in a mass-casualty moment is planning around the one system most likely to fail under exactly those conditions.

## ▶ “Cells on wheels” are a patch, not a guarantee

Operators do deploy temporary masts, small cells and distributed antennas at big events. They help — but they mostly relieve low-bandwidth texts and voice, not the instant, guaranteed, site-wide reach a safety procedure needs, and they still depend on the congested public network behind them.

### What actually keeps working

Our technology — for which a **European patent application is pending** — drives video and audio independently over its own broadcast signal, with no reliance on mobile networks, public IP networks (which can be targeted) or cabling. From a central control room, an operator switches every HIKER LED screen across the site to the same clear instruction at once — no app, no signal and no phone-in-hand required from a single visitor. Because it does not depend on those networks, it keeps working precisely when they are overloaded or down — the scenario Martyn's Law is designed for.

## ▶ Sources

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“European patent application pending” — not yet granted; final wording subject to patent attorney approval. Prepared by CrowdCows, June 2026.