

**Mission Critical
Connectivity:
Event and
Emergency
Services
Applications**



SMALLCELLS
WORLD SUMMIT

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Mission Critical Connectivity: Event and Emergency Services Applications

Key Topics:

- Growing demand for mission-critical wireless
- Key challenges in events & emergency services
- Small cells as the foundation of reliable connectivity
- Today's purpose-built 5G solutions
- Real-world deployments and results
- Security, resilience & future roadmap



Introducing CableFree:

- A global leader in Private 4G/5G
 - Over 300 RANs deployed globally
 - Advanced 5G tech, developed & manufactured in UK
- Established 1996, Privately owned company
- ISO-9001 Design, Manufacture & support based in Oxford, UK
- Proven track record of innovation in 5G
- Worldwide reach: 90+ countries
- One-stop-shop for Wireless

CableFree: Global HQ at
The Oxford Science Park



Why Mission Critical Connectivity Matters

- **Public Safety:** Police, Fire, Ambulance, Search & Rescue
- **Major Events:** Concerts, Sports Stadiums, Festivals, Marathons
- **Requirements:**
 - Ultra-high availability (>99.999%)
 - Low latency (<10ms)
 - Guaranteed bandwidth under load
 - Seamless coverage in dense/crowded areas
 - Rapid/Temporary deployment requirement
- **Consequence of Failure:** Delayed response, public safety risk, reputational damage.



Key Challenges

Real-World Obstacles in Events & Emergencies

- Simultaneous users/devices - 10's to 1000's per location
- Temporary or rapidly changing environments
- RF congestion and interference
- Strict security & encryption requirements
- Need for rapid deployment & scalability
- Rapid Tactical deployment: on vehicles, backpacks or drones
- Integration with existing TETRA, LTE, and 5G networks

Small cells are the only practical answer to deliver localised capacity and coverage



Why use Small Cells ?

Small Cells – The Backbone of Mission Critical Networks

- Densification: Targeted capacity where it's needed most
- Private Networks: Complete control & isolation from public networks
- Multi-Operator & Neutral Host capabilities
- Easy integration with macro networks
- Fast deployment (minutes or hours, not months)



Available today: Industry-leading small cell + intelligent flexible backhaul combinations, customisable solutions. All bands available



Small Cell Solutions Portfolio

Engineered for Mission Critical Use

- **Small Cells** – Outdoor & Indoor, 4G/5G, 1-2 bands
- **“On Premise”/local Core network** – lightweight, low power
- **Rapid Deployment Kits** for temporary events & disaster zones
- **1Gbps+ Backhaul:** Microwave & mmWave, LEO Sat options
- **Resilient Topologies:** self healing, redundant HW & paths



Build Sovereign Networks: All under customer control, no offsite dependencies

Customise the network to the exact use case

Emergency Services Applications

Supporting Blue-Light Services

- Dedicated private networks for First Responders
 - Permanent or Temporary
- Real-time video streaming from bodycams & drones
- High-priority push-to-talk & data services
- Coverage in challenging environments (tunnels, rural, high-rise, “MNO down” scenario)
- Failover & redundancy across multiple technologies

Result: Faster incident response, better situational awareness, officer safety.



Major Events & Venue Applications

Delivering Flawless Experience & Safety

- Stadiums & Festivals: High-density 5G connectivity
- Crowd management & safety via real-time analytics
- Rural festivals with off grid power & sat backhaul
- Temporary networks for one-off events
- POS tills/retailer connectivity
- Integration with public safety networks (MCPTT)

Case Highlight: Major UK festivals – small to large scale,
First Responders & POS services: zero network downtime



Security & Resilience

Zero-Trust Mission Critical Architecture can include

- End-to-end encryption & network slicing
- Physical & cyber security hardening
- Redundant sites/paths & automatic failover
- Jamming/spoofing resistance
- Compliance: UK & EU public safety standards (including 3GPP MCX)



For mission-critical applications, security is a top priority

Small Cells for Events & Emergency Services



CableFree 5G-SA Small Cell Radios
Outdoor grade versions
Widely deployed worldwide

Indoor Micro/Femtocell
1-2 radios, POE & fibre interfaces
Ideal for vehicles, indoor & more



CableFree 5G-SA Small Cell Radios
Lightweight versions for aerial platforms
& in-vehicle mounted

SmartPack backpack radio:
2 radios in 1 box, core, sat backhaul
integrated



"Cell on a drone" already exists
Other versions already exist including
Stratospheric-optimised

SmartPod radio: fully integrated
SmartPole with 1-4 radios, antennas,
optional V-band backhaul & more



Wide range of cells in standard and custom form factors
Full range of bands, power level & MIMO versions available



CableFree 5G-SA Rail Construction



CableFree 5G-SA Radios
Deployed underground for Rail
Infrastructure construction project in
Germany "Stuttgart 21"

4G/5G radios installed on temporary
underground sites in 2x2 MIMO
configuration. Connects to mobile
devices and IOT sensors

Mobile 5G Core located onsite: no need
to connect to above-ground services

Coverage up to 2km along tunnels

Deployed by regional partner

5G-SA Mobile Base Site:
CableFree 5G-SA n78 (3.7GHz) radios
Using 2x2 MIMO Sector antennas
Gives 5G Coverage in underground tunnels

5G-SA Private network for Rail Infrastructure construction
CableFree 5G Private Network for underground connectivity
Secure, Private Coverage using licensed 3700MHz Spectrum



CableFree 5G-SA at Festivals & Events



CableFree 5G-SA Radios deployed Private 5G Network at "Sunshine Festival" in the UK

5G network connects "point of sale" devices and event organiser applications

Starlink Backhaul: up to orbit

- No fibre or ISP needed

Solar+Battery off-grid power

- No emissions/noise during events
- Works day and night

Massive improvement compared to previous "Mesh WiFi" type solutions: coverage, uptime, stability, latency

Deployed by partner Virtuser

Mobile 5G-SA Private networks for Events, Shows and Festivals
CableFree 5G mounted on mobile vehicles or tripods
Secure, Private Coverage using shared access 3.8-4.2GHz Spectrum



CableFree 5G-SA Mobile Cells



CableFree 5G-SA Radios
mounted on customised
Landrovers
Deployed at events and festivals
for Private 5G Networks

4G/5G network connects "point of
sale" devices and event organiser
applications

Starlink Backhaul: up to orbit
- No fibre or ISP needed

Solar+Battery off-grid power
- No emissions/noise during
events

5G-SA Mobile Base Site:
CableFree 5G-SA n77u (3.8-4.2GHz) radios
using Omni antennas. Mast stowed for transport
Excellent 5G Coverage around show/event ground

Deployed by partner Virtuser

Mobile 5G-SA Private networks for Events, Shows and Festivals
CableFree 5G mounted on mobile vehicles
Secure, Private Coverage using shared access 3.8-4.2GHz Spectrum



CableFree 5G-SA Mobile Cells



CableFree 5G-SA Small Cell mounted on customised towable trailer

Deployed at construction sites for Private 5G Networks

5G network connects "point of sale" devices and event organiser applications

Starlink Backhaul: up to orbit
- No fibre or ISP needed

Solar+Battery off-grid power
- Can use where no AC available
- No emissions/noise during operation

Deployed partners Plinx & Telet

Mobile 5G-SA Private networks for Construction Sites

CableFree 5G mounted on towable trailer

Secure, Private Coverage using shared access 3.8-4.2GHz Spectrum



CableFree 5G-SA at Shimizu Port, Japan

CableFree 5G-SA Macro deployed with partners in Japan using n79 band

CableFree 5G-SA Macro (BBU+RRH)
Deployed in Shimizu Port, Japan

2x2 MIMO coverage of port in n79 band
(4400-5000MHz) which is available in Japan

Remote Rubber-Tired Gantry (RTG) crane
operation at the Shin-Okitsu Container
Terminal: cranes are equipped with multi-
viewpoint video functions.

Safety-critical operation Goals:
HD video with Smooth, Responsive & Stable
communications and low latency

Improve safety & efficiency, Reduce costs,
downtime



5G-SA Private Network for Port Application

Secure wireless HD Video for remote crane operation & more
5G Coverage using n79 Private Network Spectrum license



The Path Ahead:

Roadmap for critical communications

Roadmap to 2030 for events & emergency services

- 5G-Advanced & 6G readiness
- AI-driven network optimisation & predictive maintenance
- Greater integration of drones, robots, autonomous vehicles & IoT sensors
- Lower cost, low-power small cell designs: “densification”
- “On demand” 5G coverage from HAPs
- UK sovereign capability leadership in critical comms



CableFree: UK-developed tech is helping to lead this evolution



**For Further Information
Please Contact Us:**



CableFree: Wireless Excellence
www.cablefree.net