

EVIDEN

Lifelink Echo

**Tactical
IP-Radio
with LTE
capabilities**



Lifelink Echo – Tactical IP-radio with LTE capabilities

Ensure communication resilience by providing multiple connections at once.

Use Lifelink Echo (Enhanced Communication Hub for Tactical Operation) as a man-portable IP radio for standalone MCPTT and text messages or to provide IP connectivity to your Android mobile or tablet.



Ruggedized design

- Small, compact, portable multi-channel device
- IP68 certified
- Operational use has been validated by national defence organisations.



Secure device

- The device can be lost without impact on the global system security as no data is locally stored
- AES 256 encryption for device-to-device communication



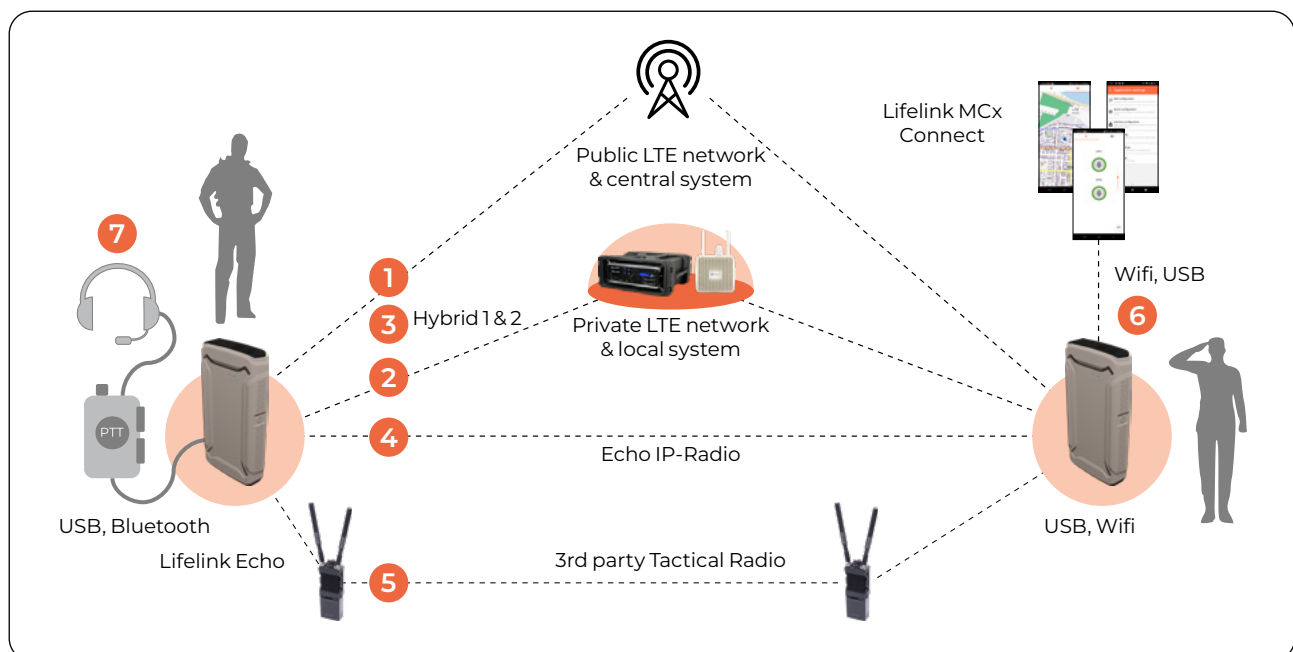
Resilient Communications

- Direct mode communication provides Device-to-Device connectivity for voice, geo position and messages, even if no LTE connection is available
- Benefit from two LTE network connections in parallel, e.g. to connect to a public and private network at once
- Device autonomy in operational Use Cases around 12h, up to 24h with additional external USB battery.

Lifelink Echo is suited for the following connection scenarios:

1. MNO connectivity e.g. to connect to central MCx server
2. Private LTE connectivity e.g. to connect to local MCx server
3. Both MNO & private network connectivity
4. Echo IP-Radio for PTT Voice, Blue Force Tracking, event management, text messages, text-to-speech
5. Tactical Radio link, same services as for Echo IP-Radio
6. Lifelink Echo providing connectivity to Eviden PTT application MCx Connect on mobile device
7. Lifelink Echo with the optional in-built PTT application from Eviden and a Push-to-Talk device from specific vendors

Overview connection scenarios

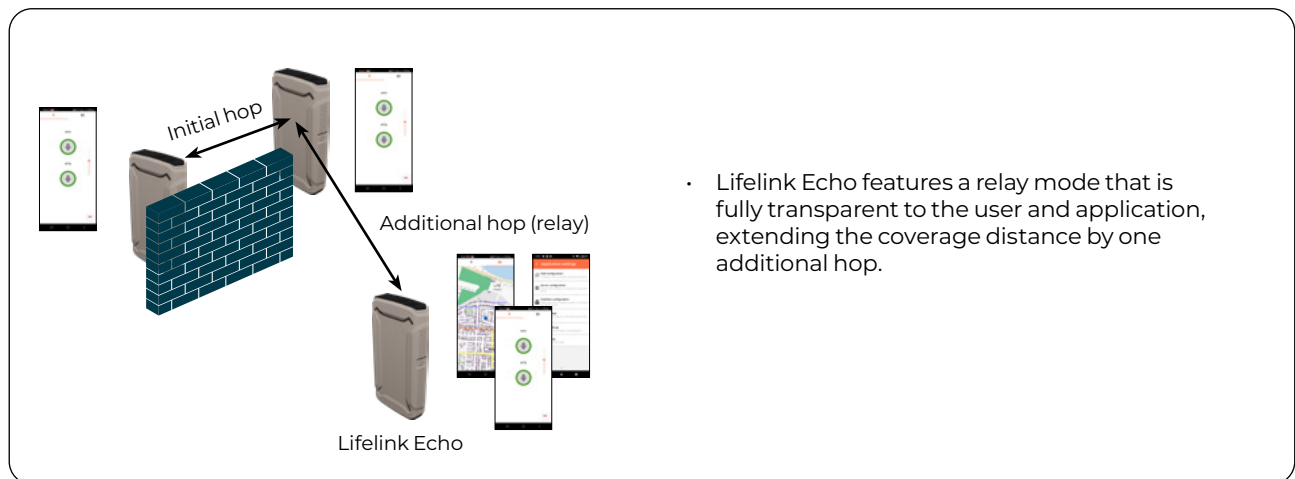


IP-Radio communication provides connectivity between Lifelink Echo devices

Communicate locally, even without a LTE network available - whether you are indoors, outdoors or underground, this mode brings an additional level of resilience to your communication.

- Featuring two independent upper- / lower communication channels, allowing voice, position sharing and text messages.
- Lifelink Echo IP-radio operates at 900 MHz (PoC at 700 MHz). Upon request, a 400 MHz variant can be developed. The physical layer is based on IEEE 802.15.4.
- Typical Lifelink Echo IP-Radio coverage distance at 900 MHz (doubled by one intermediate hop) - subject eg. to frequency, weather, terrain and local conditions: up to 700m in forrest and non-elevated terrain, and up to 2km in an open field, non-elevated terrain or LOS.

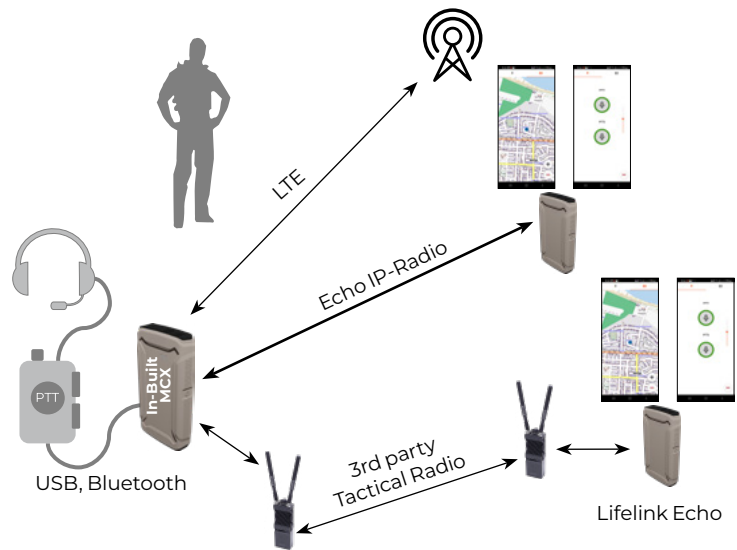
Scenario Lifelink Echo IP-Radio Relay Mode



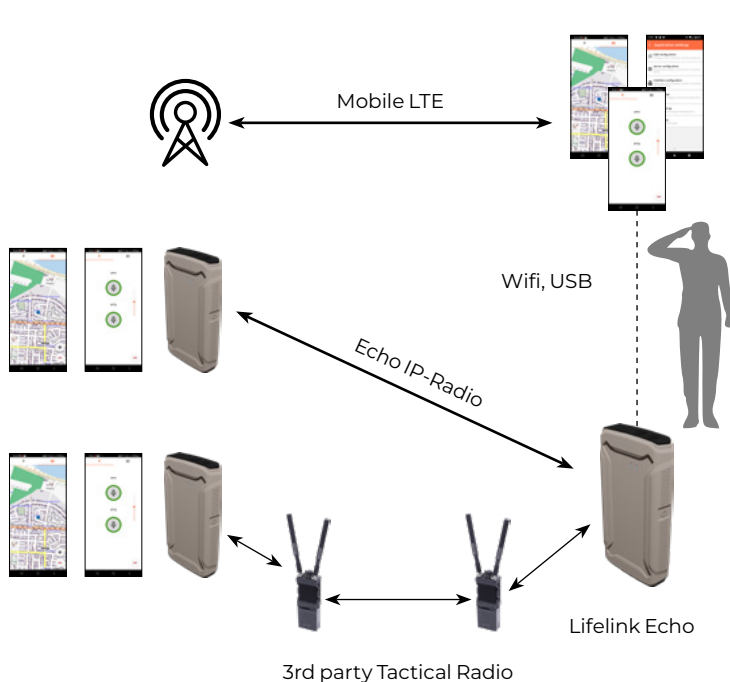
Scenario Lifelink Echo & Push-to-Talk

- The tactical IP radio can be used with the optional in-built PTT application from Eviden and a Push-to-Talk device from specific vendors
- Provides connectivity without the need to connect a mobile phone.

Mode	Connectivity
Device-to-Device	- Voice - Blue Force Tracking - Event management - Text messages - Text-to-speech
3rd party Tactical Radio	Upon request
LTE	Upon request



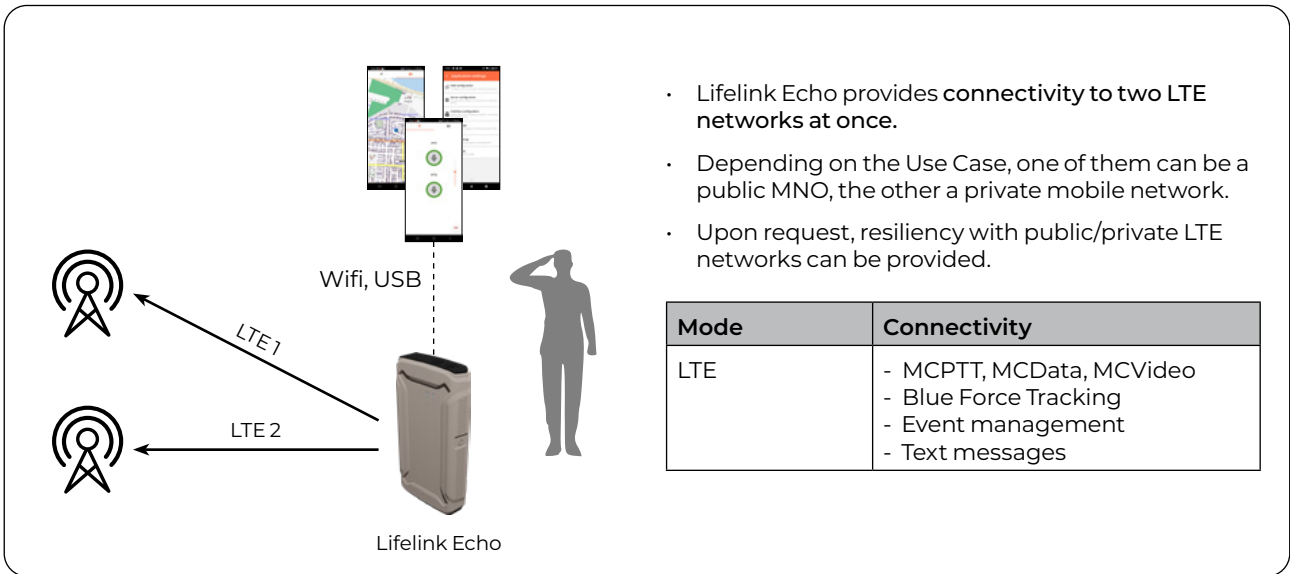
Scenario multiple connectivity for tactical communication apps



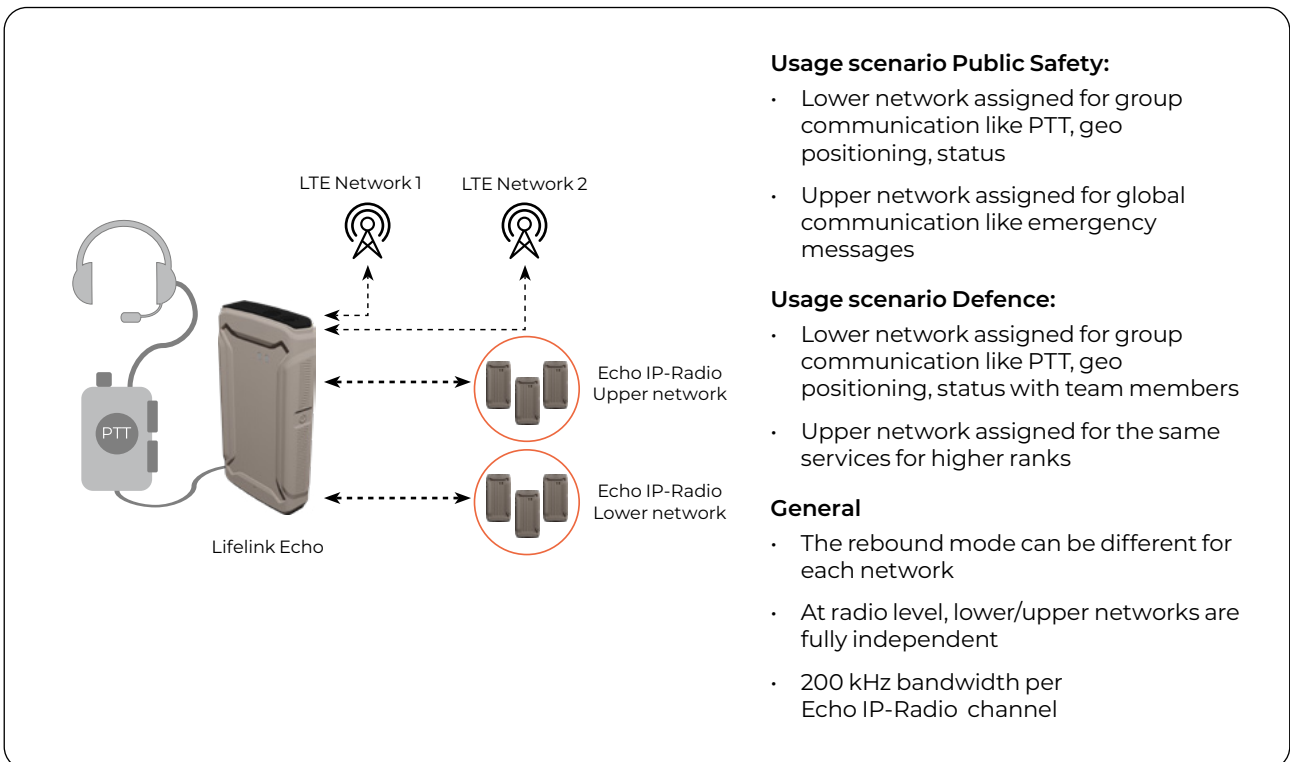
- Lifelink Echo provides **additional Echo IP-Radio and 3rd party Tactical Radio** connectivity to the mobile device.
- This improves communication resilience and connectivity eg. for underground scenarios, where no LTE coverage is available.
- Available **pre-integrated with Lifelink MCx Connect** from Eviden. Other mobile applications require integration.

Mode	Connectivity
Mobile LTE	- MCPTT, MCData, MCVideo - Blue Force Tracking
Echo IP-Radio	- Voice - Blue Force Tracking - Event management - Text messages - Text-to-speech
Tactical IP radio	Upon request
Mobile LTE Gateway	Echo IP-Radio / 3rd party Tactical Radio to LTE upon request

Scenario Mobile Network Operator connectivity



Independent Communication Paths



Technical features

General	<p>Reference: IP radio V3R V1.0</p> <p>Main radio Interfaces: 2 LTE modems, 2 Echo IP-Radio networks</p> <p>Other interfaces: Wifi, USB</p> <p>GPS: GPS, Glonass, Beidou, Galileo</p>
Physical	<p>Dimensions: 162 x 86 x 27,5 mm</p> <p>Weight: 440 g, including battery</p> <p>Color: Desert sand, black</p>
Environmental	<p>Temperature: -15° C to +50°C (operational)</p> <p>Degree of protection: IP68 certified (1.1m during 35mn)</p> <p>Shock and vibration: Ground portable</p> <p>Sand/Dust: Resistant</p> <p>Salt Fog: Resistant</p> <p>Maximum altitude: ~10km (0,2 bar min)</p>
Human-machine interface	<p>LEDs: 2 configurable RGB LEDs. By default: charge level and network status</p> <p>Buttons: 1 Power on/off + 2 configurable buttons</p> <p>Connectors: 2 x LEMO EGG.0T.306.KLL</p> <p>Cover: Removable (8 hex M2.5 wrench screws)</p> <p>Sim card connectors: 2 nano sim card connectors</p>
LTE	<p>LTE Modem 1: LTE bands 1, 3, 7, 8, 20, 28A, 38, 40, 41</p> <p>LTE Modem 2: LTE bands 1, 3, 5, 7, 8, 20, 28, 38, 40</p> <p>Other LTE bands can be addressed through a dedicated production</p>
Device-to-device	<p>Two networks: Upper- and lower communication</p> <p>Standard frequency range: 902-928 MHz</p> <p>Other frequency band: 700 MHz and other sub-GHz possible on dedicated production</p> <p>Frequency stability: +/- 1 ppm</p> <p>Radio protocol: IEEE 802.15.4</p> <p>Standard waveform: 2FSK, 4FSK, OOK, other wave form: Can be studied</p> <p>900MHz channels: 50</p> <p>900MHz power output: 32dBm</p> <p>900MHz sensitivity: -107dBm @ 50kbs data rate -102dBm @ 100kbs data rate</p>
Other interfaces	<p>USB left port: Charge + USB device</p> <p>USB right port: USB OTG</p> <p>Wifi: IEEE 802,11 a/b/g/n</p> <p>Bluetooth: Hardware: BT 5.0</p>
Supervision & interoperability	<p>Interface: Web interface. IP radio Management System (HMS) to configure Lifelink IP radio.</p> <p>Main features: Network Configuration, status, trace</p> <p>API: Documented API to allow the use of the IP radio with third-party application</p>
Power	<p>Battery Types: Lithium-Ion 7000mA</p> <p>Battery maintenance: Removable (maintenance process)</p> <p>Charge Power input: 5V +/-4% 2A</p>
Security	<p>Device connection: Secure pairing process</p> <p>Device-to-device encryption: AES256</p> <p>Third party security: Support the use of an additional VPN</p>

Certification	<p>Electrical safety: EN 62368-1</p> <p>Specific Absorption Rate: EN 50566 : 2017</p> <p>ROHS: IEC 62321-1 to IEC 62321-8</p> <p>REACH: EC 1907/2006</p> <p>Degrees of protection: EN 60529 (2000)</p> <p>Electromagnetic Compatibility Tests:</p> <p>ETSI EN 301 489-1 V2.2.3 : 2019</p> <p>ETSI EN 301 489-1 V2.2.0 : 2017</p> <p>ETSI EN 301 489-3 V2.1.1 : 2019</p> <p>ETSI EN 301 489-17 V3.2.4 : 2020</p> <p>ETSI EN 301 489-52 V1.1.0 : 2016</p> <p>Echo IP-Radio Tests:</p> <p>ETSI EN 300 220-2 V3.2.1 (2018-06)</p> <p>ETSI EN 300 220-1 V3.1.1 (2017-02)</p> <p>3G Radio Tests:</p> <p>ETSI EN 301 908-1 V13.1.1 (2019-11)</p> <p>ETSI EN 301 908-2 V13.1.1 (2020-06)</p> <p>4G Radio Tests:</p> <p>ETSI EN 301 908-13 V13.1.1 (2019-11)</p> <p>ETSI EN 301 908-1 V13.1.1 (2019-11)</p> <p>RF Collocation Tests:</p> <p>ETSI EG 203 367 V1.1.1 (2016-06)</p> <p>ETSI EN 301 908-1 V13.1.1 (2019-11)</p> <p>ETSI EN 301 908-2 V13.1.1 (2020-06)</p> <p>ETSI EN 301 908-13 V13.1.1 (2019-11)</p> <p>ETSI EN 300 220-2 V3.2.1 (2018-06)</p> <p>ETSI EN 300 220-1 V3.1.1 (2017-02)</p> <p>ETSI EN 300 328 V2.2.2 (2019-07)</p> <p>Bluetooth Radio Tests:</p> <p>EN 300 328 V2.2.2 : 2019</p>
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