Ekinops

SOLUTION BRIEF

Deploying Managed Fixed Wireless Access over 5G

Managed Gigabit services can be installed everwhere - Supervised and under SLA



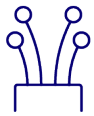
From back-up link to primary link

The radio in the router used to be the spare tire. Sold as a managed backup link with a true SLA on availability and repair time, it waited for the fibre to fail. Radio is now good enough to do the driving: service delivered without waiting for fibre, temporary sites and events covered, and — over LTE and now 5G — the primary link itself. That is fixed wireless access.

Doing the driving is the hard part. A link that waits in reserve only has to work on the day it is needed. A primary link carries the customer's business every day under contract, so it has to be installed, provisioned, supervised and repaired like one — and it has to hold performance at the sites where radio coverage is hardest to find, in the locked data room deep inside the building where the router actually lives.

Fixed Wireless FWA adoption and challenges

A complement to fibre — at fibre-like speed



Fibre cannot reach everywhere, and where it can, local policy and investment cycles decide when. FWA fills that gap credibly, because the speed is now there: 5G opens up generous new spectrum in the 3.5 GHz C-band, and with it gigabit-class throughput — up to 2.5 Gbps down and 900 Mbps up — enough that the customer cannot tell the difference from an entry or mid-range fibre line, and can be sold at the same level. The catch comes with the gift: the higher the frequency, the harder the signal finds its way into a building.

The challenge nobody sees on the datasheet: getting the signal indoors

Higher frequencies mean worse building penetration. At GHz frequencies the signal does not travel far inside a building — and the router sits in a locked data room, deep inside, exactly where coverage is worst.



The classic answer, an antenna cable from the router to a better spot, hits a physical limit. Above 3 GHz coaxial loss is severe: Even the best LMR400 cable (which have a 10mm diameter per cable and 5G's 4×4 MIMO requires four of them) loses half its power in 10 m. Yet, such cable is not only expensive, it's simply incompatible with most deployment constraints. The throughput gained by moving to 5G is handed straight back in the cable.

This is what turns an FWA order into a complex project: truck rolls, site and radio surveys, and too often a site accepted at degraded performance. Installation labour costs more than the equipment - and that is the most important threat to the profitability of an FWA offer.

Activating the "line"

Activation is where mobile-first sites are won or lost on cost. A technician waiting on a progress bar is billable time, and the classic culprit — a software upgrade pulled over the network — is exactly what a fresh FWA site cannot do: until the mobile access is provisioned there is no connectivity, and the equipment has to configure itself on first power-up.



The answer is to arrive ready. Configuration data and bootstrap SIM connectivity are loaded at the factory, the software the site needs is already on the device, and the on-site step is a simple web form limited to the essential information — zero-touch provisioning in minutes rather than a morning. The customer notices the difference too: a technician who is in and out in fifteen minutes signals a service provider in control of its own product, where two hours of improvised setup in the server room is the first impression of the service they just bought. Getting that workflow right is a precondition for rolling out mobile-first sites, not a detail to settle later.

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The unpredictability challenge of radio

On fibre or copper the deliverable service level is known before the contract is signed. Radio is less predictable: weather, interference, obstacles between the base station and the site, and the number of subscribers sharing the cell all affect performance, and sometimes availability.

Customers accept that radio varies but still expect a committed minimum, particularly at a premium over residential access. That means engineering enough margin into the link for the floor to hold in the worst conditions — which stays affordable only if signal levels are measured and documented at installation, then monitored continuously in service.

Managing outages

When an outage happens, the clock on the SLA starts running — and the customer expects both a fast restoration and an explanation of what went wrong. FWA makes both harder: losing the mobile link removes the only path for remote intervention. The device has to recover unaided — robust reboot with fail-back, dual-bank flash for failsafe upgrades, watchdog mechanisms — and log power interruptions and mobile connectivity events so the cause is provable afterwards.

One coverage problem, two deployment options

For more than a decade Ekinops has shipped routers with integrated 4G/5G radio running the OneOS6 software. The Ekinops solution is the answer to the specific needs of service providers: carrier-grade hardware in customised xDSL / fibre / 5G combinations, factory pre-configuration, management through CLI, NETCONF/YANG, SNMP and TR-069, fanless low-power design, and integration into Business VPN and SD-WAN / SASE services.

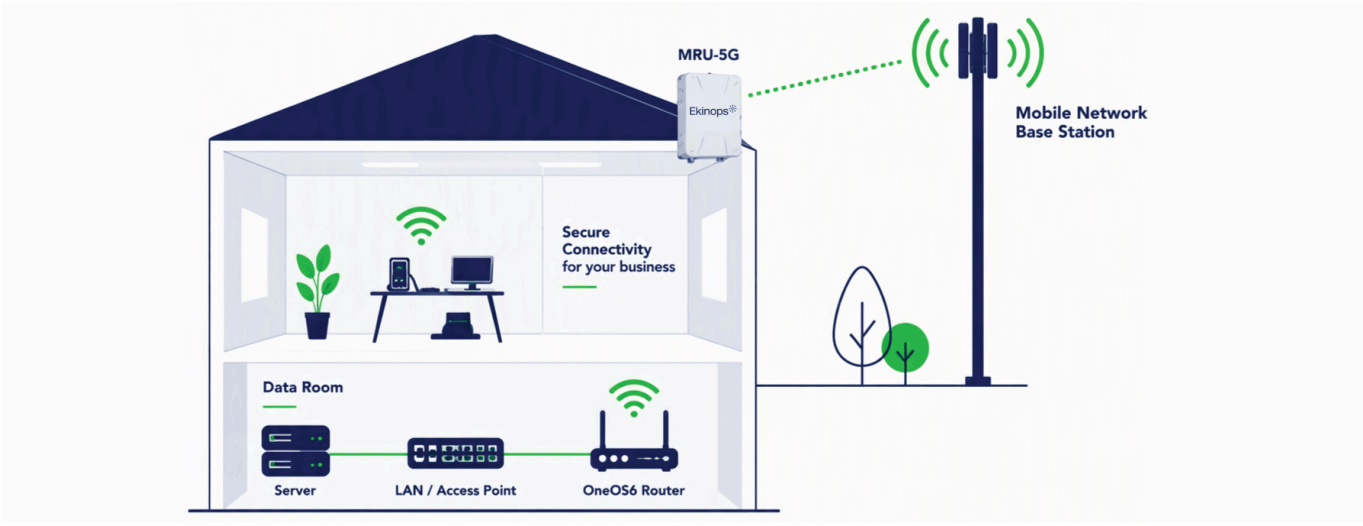
Whichever of the options below a site calls for, the configuration and monitoring are identical from OneOS6 — the remote unit behaves exactly like an internal module. Provisioning templates, OSS integration and support processes stay as they are; only the hardware at the site changes.

Routers with an integrated radio module

Routers with an integrated 5G module ship with antennas mounted directly on the SMA connectors. This is the option allowing the fastest and cheapest installation. A range of remote indoor and outdoor antennas is available where the signal is a few metres away from the router.

Managed Remote Unit (MRU) — when the antenna cable is not an option

The MRU-5G moves the entire radio, not just the antenna, to the point of good coverage. The link back is standard Ethernet, up to 100 m, carrying data and power (PoE 802.3af) with zero RF loss. Existing building cabling can be reused. Because the radio sits at the antenna, the throughput measured on site is the throughput delivered to the LAN.



The MRU-5G moves the radio to the point of coverage; a single Ethernet run carries data, power and management back to the router - no RF cable, and no separate management platform

MRU-5G: what makes it deployable at scale

Everything below exists for one reason: a remote radio the service provider cannot see is a remote radio that cannot be put under an SLA and that cannot be proactively supervised.

Managed exactly like an internal module



The MRU-5G is configured from OneOS6 exactly like an internal 4G/5G module: CLI, NETCONF/YANG, SNMP and CWMP through the router, predefined templates, remote firmware upgrade with dual image support, signal and carrier-aggregation supervision, logging. No separate cloud management system to buy, integrate and secure, and no extra attack surface — the management platform talks to the router, never to the remote unit.

From the router the operator reads signal levels, band and carrier-aggregation state, serving cell and module temperatures, with minima, maxima and averages retained over 60 minutes, 24 hours and 30 days. That history makes a degraded link diagnosable — interference, a failing serving cell or a jamming attempt all leave a trace — and makes a radio SLA defensible. All data is exportable via management interfaces and can easily be integrated into AI-based preventive maintenance and customer-care applications.

Firmware updates are signed-only, with an A/B flash bank and a watchdog that reverts the unit if it fails to re-register after an upgrade.

Not just a 5G outdoor modem

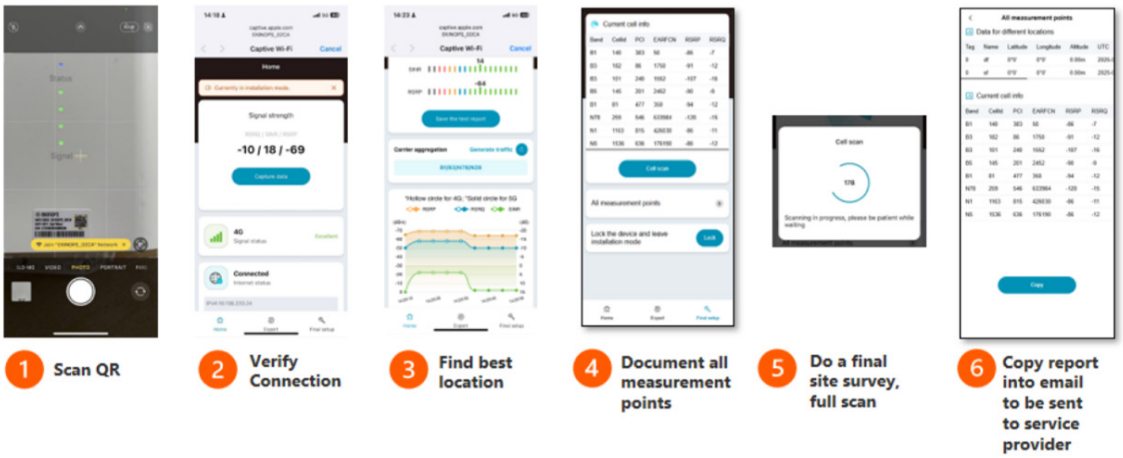
Entry-level 5G outdoor modems solve the same physics. What they cannot do is carry a service-provider SLA. They cannot be supervised: there is no way to inspect the radio channels they are attached to, no signal history, and no record of what was measured at installation against which today's signal quality can be compared. They need a skilled integrator on site to configure the unit and align it with the customer's IP addressing, where the MRU-5G pairs with the router automatically and minimises on-site intervention time. Their software life cycle and security posture are built for the residential market — a difficult proposition once a LAN cable leaves the building. The "M" in MRU is the point: managed.

One SKU, installed and proven on site

One unit covers every case — desktop, wall, pole, mast, balcony and window, indoor or outdoor, with brackets and tape included. Stock is one SKU, not a catalogue.

Installation support

Outdoor work on roofs and poles needs certified subcontractors, rarely the same people doing the router activation. The unit embeds a Wi-Fi access module and an installer application that pairs by QR code and produces an installation acceptance report with coverage measurements and serving cell information. The site is accepted on measured evidence, not on the installer's word, and the service provider then locks the configuration. The reference data required for future AI-enabled preventive maintenance and supervision is now well defined.



The installer application, step by step: QR pairing, location comparison, measurement log and the generated acceptance report.

Security, resiliency and power

- Secure boot and signed firmware on both devices; no shell access, no cloud dependency
- Certificate-secured REST API with per-device certificates; management over mTLS, reachable from the LAN only; no open ports towards the mobile network
- Installation Wi-Fi uses a per-unit key and is switched off after commissioning; no USB port, no debug access
- Up to six APNs mapped to separate VLANs and MAC addresses, keeping management traffic apart from customer data
- Several units per router — different sides of the building, different base stations, different operators — each monitored continuously, which a dual-SIM modem cannot do for the SIM it is not attached to
- PoE power monitoring and remote power-down, plus a dying gasp sent over 5G so the NOC can tell a power failure from a network fault
- K.21 surge protection to 6 kV, no earth connection needed at the unit
- Enterprise-grade OneOS6 life cycle with continuous CVE monitoring and a proven record of long-term updates

Ready for Ekinops SASE solutions for service providers

The FWA solution is “SD WAN native” and supports to grow step by step into the full range of Ekinops COMPOSE services: a complete SD-WAN / SASE offer, and any voice or data service including ONeSBC-based SIP trunking and Microsoft Teams Direct Routing.

The same OneOS6 software, management interfaces and configuration templates run across the whole Ekinops router portfolio, which keeps the IT integration efforts as low as possible.

Related documentation

- Branch Office Routers with embedded 5G modules datasheets: ONE531-5G, ONE621-5G, ONE641-5G
- Branch Office Router with Wi-Fi7 and PoE output (the ideal companion for MRU-5G): ONE541 datasheet
- Large Office Routers: ONE2560, ONE2561, ONE3550 datasheets
- MRU-5G datasheet
- 5G Antennas datasheet
- OneOS6 datasheet
- SD WAN datasheet

About Ekinops

Ekinops is a European leader in optical networking and secured connectivity solutions for service providers, enterprises and public organizations around the world.

Ekinops designs, develops and manufactures high-performance solutions with cutting-edge software used to deliver high-bandwidth connectivity and managed services in over 70 countries worldwide.

Ekinops leads in the areas of:

- Advanced coherent optical networking for all metropolitan, regional, long-distance and datacenter interconnection applications
- Secured connectivity solutions for enterprises, from voice and data routing devices to Secure Access Service Edge (SASE) capabilities, including ZTNA (Zero-Trust Network Access), SD-WAN, and SSE.

Ekinops operates globally and is listed on Euronext Paris (FR0011466069 - EKI).

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