

The logo for Aprisa XE, featuring the word "Aprisa" in a white, italicized sans-serif font, followed by "XE" in a bold, white, italicized sans-serif font inside a green rectangular box.

Remote rural deployment

ADVANCED POINT-TO-POINT WIRELESS SOLUTIONS

A wide-angle photograph of a long, straight asphalt road stretching into the distance. The road is flanked by dry, brownish fields and sparse vegetation. In the far distance, two prominent, rocky buttes or mesas rise against a cloudy sky. The overall scene is desolate and rural.

Cellular mobile coverage regardless of location: customers demand it, and operators want to provide it. In addition to deploying mobile base stations across large geographical areas, operators need a compelling business case for traffic backhaul to justify the widespread rollout of services. Add to this the need for high capacity, low latency, flexibility, security, and above all reliability, it is easy to understand why locating the right backhaul infrastructure can be a complicated process.

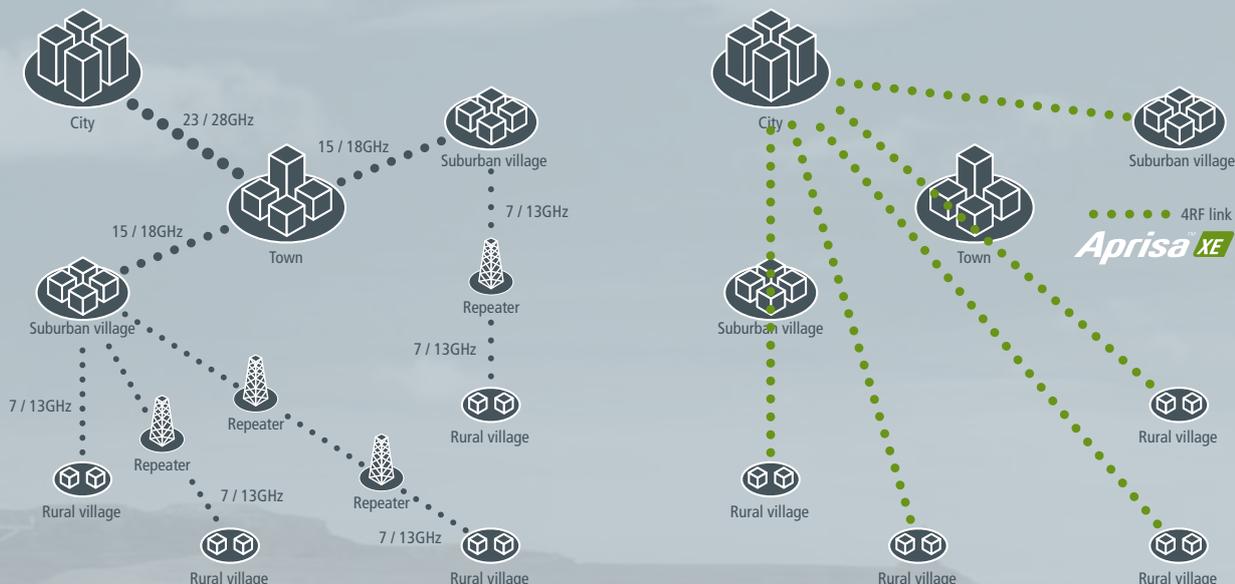
Enter the Aprisa XE point-to-point microwave radio family from 4RF Communications. Operating in the sub-3GHz licensed bands, the Aprisa XE products provide up to 65Mbit/s throughput, over distances of up to 250km, supporting both E1/T1 and Ethernet traffic. Whether bypassing existing microwave infrastructure to save capital expenditure in rural backhaul or replacing VSAT backhaul to overcome deployment issues and reduce operational expenditure, the Aprisa XE delivers a cost-effective, high performing backhaul solution.

4RF Communications helps mobile cellular operators and their customers realise the dream of ubiquitous mobility.

Infrastructure bypass

APRISA XE

Making a viable business case for operating mobile base stations in rural areas is difficult. The typical backhaul route involves a series of point-to-point microwave links from the rural location to a suburban tower, to a regional town, then finally to a city location where traffic reaches the core network.



The backhaul capacity required by each rural base station propagates back through the network, accelerating congestion in urban markets. This often results in the need to upgrade capacity right through the network. This is further complicated by the fact that larger channels in the traditional microwave bands between 7 and 38GHz may be unavailable, and where they are, they are often prohibitively expensive.

The end result – despite the desire for wireless coverage in even the most rural areas, cellular operators cannot make an economically viable business case and are forced to make a choice: deny coverage or deploy loss-making infrastructure.

THE 4RF SOLUTION

Connect each rural base station directly to the core network using a single Aprisa XE long distance microwave point-to-point link.

Rural traffic can be backhauled with a single link without impacting the rest of the network. Using lower frequency licensed bands means that quality and reliability of service are not compromised. Bypassing existing microwave infrastructure brings many benefits:

- Capital expenditure and spectrum licensing costs are reduced by eliminating the need to invest in higher capacity equipment and additional bandwidth in the existing spectrum bands throughout the network.
- Where in-band mobile frequencies can be used for the Aprisa XE links, additional spectrum licensing costs are eliminated altogether.
- Additional revenue opportunities are generated by freeing up existing rural infrastructure, such as deploying WiFi hotspots or offering WiMAX-based broadband services in more rural areas.

Why choose Aprisa XE?

The Aprisa XE is the ideal backhaul infrastructure for cellular operators, bypassing capex-intensive microwave infrastructure in rural locations and replacing opex-draining VSAT links elsewhere in the network. Overall, the Aprisa XE presents operators with class-leading price-performance – a compelling backhaul business case throughout mobile networks.

VSAT replacement

APRISA XE

Satellite backhaul for suburban or rural mobile base stations enables a relatively simple network configuration, but presents many problems, including the operational expenditure incurred by monthly rental charges. These can undermine the economic viability of base stations, particularly in rural areas.



Satellite latency can impact network performance, particularly for time-sensitive voice calls. Deployment can be time-consuming and difficult, requiring large antennas, and with the need for a clear view of the sky, obtaining the relevant roof rights can be problematic.

Weather conditions can also cause signals to fade significantly.

The end result – operators invest significant operational expenditure in the form of service charges, equipment rental and roof rights, for a network they do not themselves own, often making the business case for a cell site untenable.

THE 4RF SOLUTION

Use Aprisa XE terrestrial microwave long distance point-to-point links to backhaul traffic from mobile base stations to the core network.

Mobile base stations can be quickly and cost-effectively connected to the rest of the network. Replacing satellite backhaul with terrestrial point-to-point links brings many benefits to operators:

- Operational expenditure is greatly reduced, with the Aprisa XE's return on investment time often as little as six months.
- Control is retained over the network, eliminating reliance on third party service providers.
- Equipment installation is easier, less expensive, and less time-consuming than satellite, with small lightweight antennae maximising location options.
- Service quality, reliability and security are maximised, whilst minimising latency, essential for bandwidth-demanding time-sensitive applications.

Cost-effectiveness bypassing existing infrastructure significantly lowers capex and replacing VSATs eliminates ongoing opex.

Flexibility with T1/E1 and 10/100BaseT Ethernet options, the Aprisa XE is a flexible backhaul solution for voice and data applications today and tomorrow.

Capacity up to 65Mbit/s throughput, with class-leading spectral efficiency.

Carrier-class performance with 99.999% availability, the Aprisa XE provides the quality of service mobile cellular operators need.

Availability with non-line-of-sight operation even over obstructed paths, traffic can be backhauled from base stations in topographically challenging locations.

Licensed frequencies with support for more than ten frequency bands between 300MHz and 2.7GHz, the Aprisa XE provides deployment flexibility, with the use of licensed frequency bands eliminating interference.

Range a single Aprisa XE link can cover up to 250km, perfect for rural base stations, eliminating multiple hops and minimising capital expenditure.

Environmental robustness the use of lower frequency bands minimises the effects of rain fading, ducting, dust and sand storms that impact satellite and higher frequency microwave.

Minimal maintenance an all-indoor single box, front access to interfaces and connectors, and 4RF's SNMP-based management tool mean minimal maintenance, reducing network running costs. Lower frequency bands mean no split mount equipment, eliminating the need to climb towers for maintenance.

Ease of install with its small form factor and lightweight grid or yagi antennae, the Aprisa XE maximises site selection options, eliminating many planning constraints and reducing the rigidity required for mounting.

Aprisa™ XE

ADVANCED POINT-TO-POINT WIRELESS SOLUTIONS



The Aprisa XE family of digital microwave radios is deployed by operators and companies throughout the world, for rural broadband access, inter-exchange linking, DSL extension, remote monitoring and control and base station linking. The Aprisa XE digital microwave radios enable always-on connectivity and the transmission of Internet, voice and data traffic between two fixed points over distances of up to 250km.

The radios operate in the licensed sub-3GHz frequency bands and transport a wide range of broadband-enabled services including Internet, VPN and LAN interconnect, VoIP, video conferencing, web-hosting and E-business applications; and voice services for telephone and fax.

SPECIFICATION	APRISA XE	
SUPPORTED FREQUENCY BANDS	300MHz (330 – 400MHz) 400MHz (400 – 470MHz) 600MHz (620 – 715MHz) 700 MHz (698 – 806MHz) 800MHz (805 – 890MHz)	900MHz (850 – 960MHz) 1400MHz (1350 – 1550MHz) 1800MHz (1700 – 2000MHz) 2000MHz (1900 – 2300MHz) 2500MHz (2300 – 2700MHz)
MODULATION	16 / 32 / 64QAM and QPSK, software configurable	
CAPACITY	32 kbit/s – 65 Mbit/s	
CHANNEL SIZES	500kHz (in 300 and 400MHz bands) 2MHz (in 300 and 400MHz bands) 3.5MHz (in 300 and 400MHz bands)	7MHz (in 600, 700, 800, 900, 1400MHz bands) 14MHz (in 1800, 2000, 2500MHz bands)
INTERFACES	E1 / T1 G.703 / 4 2-Wire FXO / FXS 4-Wire E&M	V.24 / RS-232 High-speed synchronous X.21 / V.35 / RS449 / RS530 10 / 100Base-T

ABOUT 4RF COMMUNICATIONS

Operating in more than 150 networks and 95 countries, 4RF solutions are deployed by cellular mobile operators, utilities, oil and gas companies, international aid organisations, fixed line telcos and public safety and security organisations.

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All 4RF products are optimised for performance in harsh climates and difficult terrain, and support legacy and IP applications.

4RF Communications
connecting further – connecting faster

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