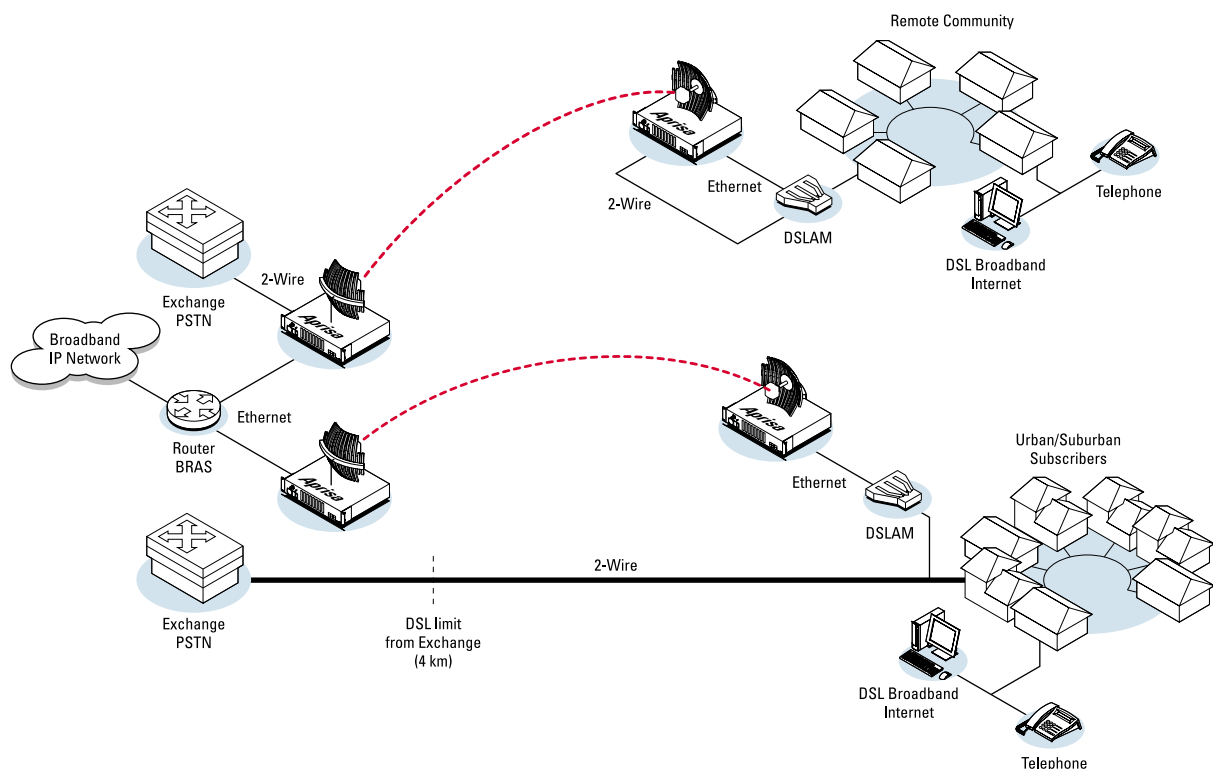


### Application overview

The advent of Mini-DSLAMs (Digital Subscriber Line Access Multiplexer) is enabling telecommunications companies to deliver broadband access to remote business enterprises and subscribers in low-density and sub-urban environments. Where subscribers are located beyond the limited DSL reach from a main exchange, point-to-point digital microwave radio systems enable Mini-DSLAMs to connect back to the broadband network. These highly effective, mini points-of-presence can be mounted in roadside cabinets to successfully leverage an existing wired infrastructure and deliver broadband DSL access. The systems are typically deployed where the speed or costs of deployment for wired, fiber, or satellite communications are not commercially feasible or viable due to distance, difficult terrain or harsh environments.

### Commercial perspectives

This microwave radio solution enables carriers to [1] swiftly-build broadband access networks and extend services over longer distances and difficult terrain [2] generate new revenue streams and profitably answer governmental imperatives for rural broadband access, and [3] leverage and realise greater returns on their wired infrastructure.



### Aprisa™ digital microwave radios

The 4RF Communications Aprisa digital microwave radio enables connectivity between two fixed points and the transmission of Internet, voice and data traffic over distances up to 100 kilometres. They connect for example a mini point-of-presence and a DSL Local Loop to the broadband network and PSTN exchange. They 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.

## Aprisavantage

The Aprisa radio confers two key benefits for telecommunications companies and network operators establishing mini points-of-presence and extending DSL reach.

**Superior performance** Sub 3 GHz licensed frequency bands enable extremely reliable transmission over long distances and difficult terrain, particularly over water and partly obscured paths. These regulated bands permit exclusive frequency assignment guaranteeing carrier-class performance and minimizing interference. The RF design integrates high-performance digital processing techniques including FEC (Forward Error Correction), interleaving and advanced radio equalization to minimize transmission degradation from interference and atmospheric effects. Sophisticated modulation techniques in the radio platform enable highly efficient transmission in narrow channels. This enables the optimisation of available spectrum where that resource may be limited and/ or expensive.

**Greater flexibility** The design of the Aprisa enables swift network integration and redeployment. The radio features an in-built multiplexer managing Internet, voice and data traffic. This multi-use platform enables the delivery of bundled Internet and voice services. It creates new revenue opportunities and reduces costs by eliminating the requirement for external equipment. Advanced plug-in, customer-configurable interface modules support circuit-switched 2-Wire POTS, E1/T1 (for ATM PPPoA DSLAMs) and packet-switched IP/Ethernet (for PPPoE DSLAMs).

## Specification overview

Frequencies	Licensed 330 MHz to 2.7 GHz
Channel spacing	25 kHz to 3.5 MHz
Capacity	64 kbps to 16 Mbps (8E1)
Modulation	16, 32, 64 QAM and QPSK
Interfaces	Ethernet 10/100Base-T, 2-Wire, 4-Wire E&M, E1/T1, V.35, X.21, V.24
Installation	19" rack mount, with 24/48 VDC or AC options
Certification	ETSI performance certification

## Indirect competition

Satellite services necessitate revenue sharing with the satellite owner and can be subject to latency constraints and an inability to meet subscriber response-time expectations. Point-to-multipoint systems can be costly to deploy and uneconomic to operate for low-density applications.

## 4RF Communications

4RF Communications is in the vanguard of digital microwave radio and wireless product development. The company provides high-performance access solutions to leading network operators and telecommunication and utility companies for wireless applications in Europe, the Middle East, Africa, Asia, Oceania and the Americas.

4RF Communications Ltd,  
PO Box 13-506,  
Wellington 6032,  
New Zealand  
Telephone +64 4 499 6000  
Fax +64 4 473 4447  
Email sales@4rf.com  
Web www.4rf.com