



## CARRIER NETWORKS

### Microwave radio solutions for efficient inter-exchange linking and DSL extension

#### Application Overview 1

##### Application overview

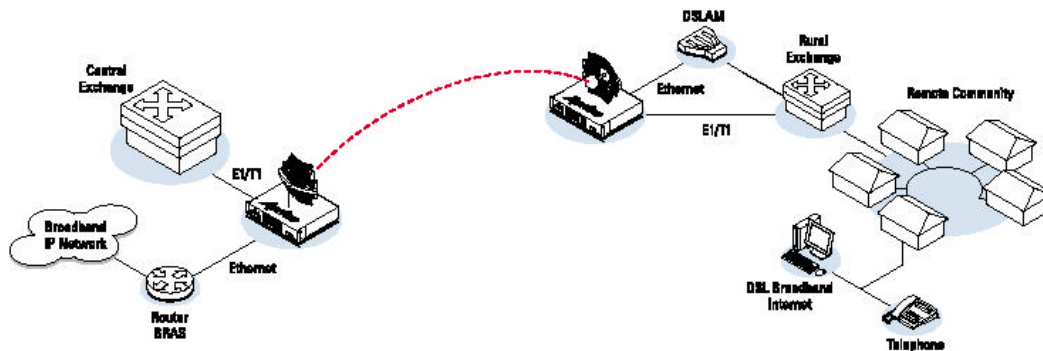
Telecommunications carriers deploy point-to-point digital microwave radios for inter-exchange linking and backhaul. The radios enable highly efficient connection between central and remote exchanges or to roadside cabinets to create new points-of-presence. The wireless backhaul of Internet, voice and data traffic enables carriers to swiftly extend network coverage and provides crucial capacity for growing demand and emerging broadband wireline technologies including ADSL. 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] add broadband access capability and evolve their networks to IP as subscriber demand increases [2] cost-effectively manage expanding backhaul and distribution demands [3] swiftly deploy versatile new points-of-presence and inter-exchange connections while reusing existing infrastructure.

##### Aprisa™ digital microwave radios

The REMEC HIMARK Telecom Aprisa digital microwave radios enable connectivity between two fixed points and the transmission of Internet, voice and data traffic over distances up to 100 kilometres. They transport a wide-range of broadband enabled services including Internet, VPN and LAN interconnect, VoIP, video conferencing, webhosting and E-business applications; and voice services for telephone and fax.



##### Aprisavantage

The Aprisa radio confers two key benefits to telecommunications companies and network operators seeking to expand backhaul capability or create new points-of-presence.

**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 enable networks to evolve from circuit-switched E1/T1 transport to packet-switched IP/Ethernet with the ability to support both standards concurrently.

**Specification overview**

Frequencies	Licensed 330 MHz to 2.7 GHz
Capacity	Up 16 Mbps (8 x E1)
Modulation	16, 32, 64 QAM and QPSK
Interfaces	E1/T1, Ethernet 10/100Base-T (plus 2-Wire, 4-Wire, N x 64kbps data)
Installation	19" rack mount, with 24/48 VDC or AC options
Certification	ETSI performance certification

**Indirect competition**

Alternative backhaul technologies such as high-capacity point-to-multipoint, fiber, and satellite technologies generally involve significantly greater capital costs and/or ongoing maintenance and service costs. The logistical difficulties of deploying these technologies can mean lost opportunities and market share, and poor return on investment.

**REMEC HIMARK Telecom**

REMEC HIMARK Telecom 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.

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