



Wireless Broadband Solutions

Airmux Wireless Radio



data communications



Wireless Costs Less!

Leased line savings, lower operating costs and rapid deployment of services are just some of the compelling reasons why enterprises, service providers, government agencies, and mobile operators are electing to use wireless links instead of terrestrial connections. With the congestion of popular and ubiquitous 2.4 GHz frequencies, more and more transmissions are shifting to newly available 5.x GHz radio bands, which are unlicensed in most countries. Unlicensed point-to-point wireless solutions are extremely efficient in utilizing spectrum and are easily deployed.

RAD's Airmux-200 and Airmux-400 broadband wireless multiplexers enable the transport and backhaul of multiple services with unbeatable price performance and rapid ROI.

The Airmux system is part of RAD's AXCESS+ portfolio of multiservice access solutions.

AXCESS+



Why Choose Airmux Broadband Wireless Radio?

The Airmux system offers the added value of a complete access solution, combining the functions of a multiplexer, integrated access device and radio unit. This ensures the interoperability of all system components – reducing deployment time and expense.

The entire system can be monitored and managed from a single network management platform, simplifying operations – and cutting operational costs – dramatically.

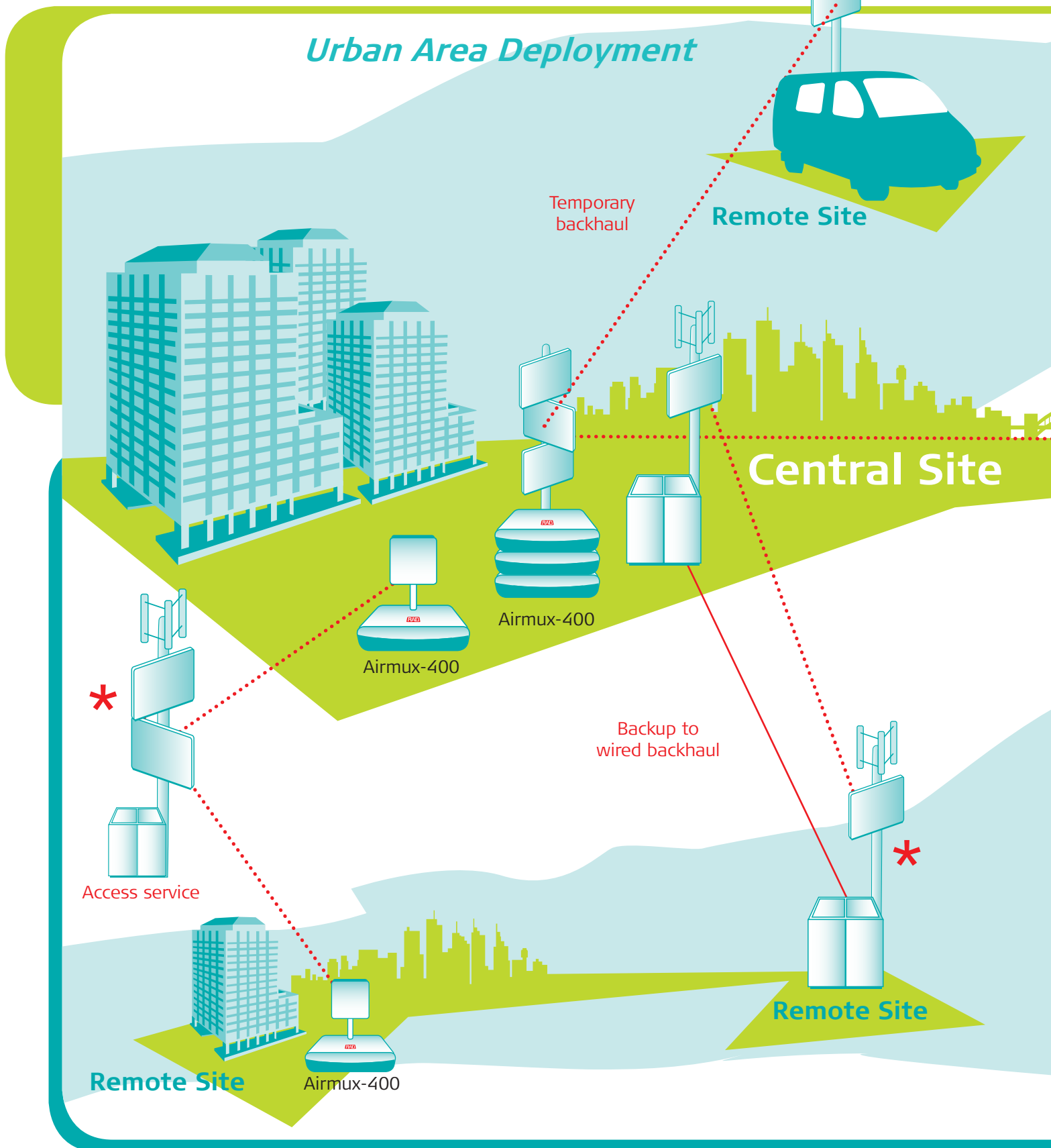
- ✦ **Enhanced radio system for sub-6 GHz frequencies**
- ✦ **Suitable for point-to-point, multiple point-to-point and ring topologies**
- ✦ **State-of-the-art technologies such as ACS, AES-128, ARQ, FEC, OFDM, and adaptive modulation guarantee high service availability**
- ✦ **Easy to mount, easy to align and easy to configure with plug-and-play simplicity**
- ✦ **Worldwide installed base**
- ✦ **Reduced CapEx and OpEx**
 - Long-haul solution operates at up to 120 kilometers (75 miles)
 - Average savings of 50% over landline alternatives
 - Very low power consumption (10-30W)
 - Hybrid solution incorporating Ethernet and TDM in the same product
- ✦ **Comprehensive network of RAD-accredited field technicians**
- ✦ **Excellent as a disaster recovery solution**

Selected Customers

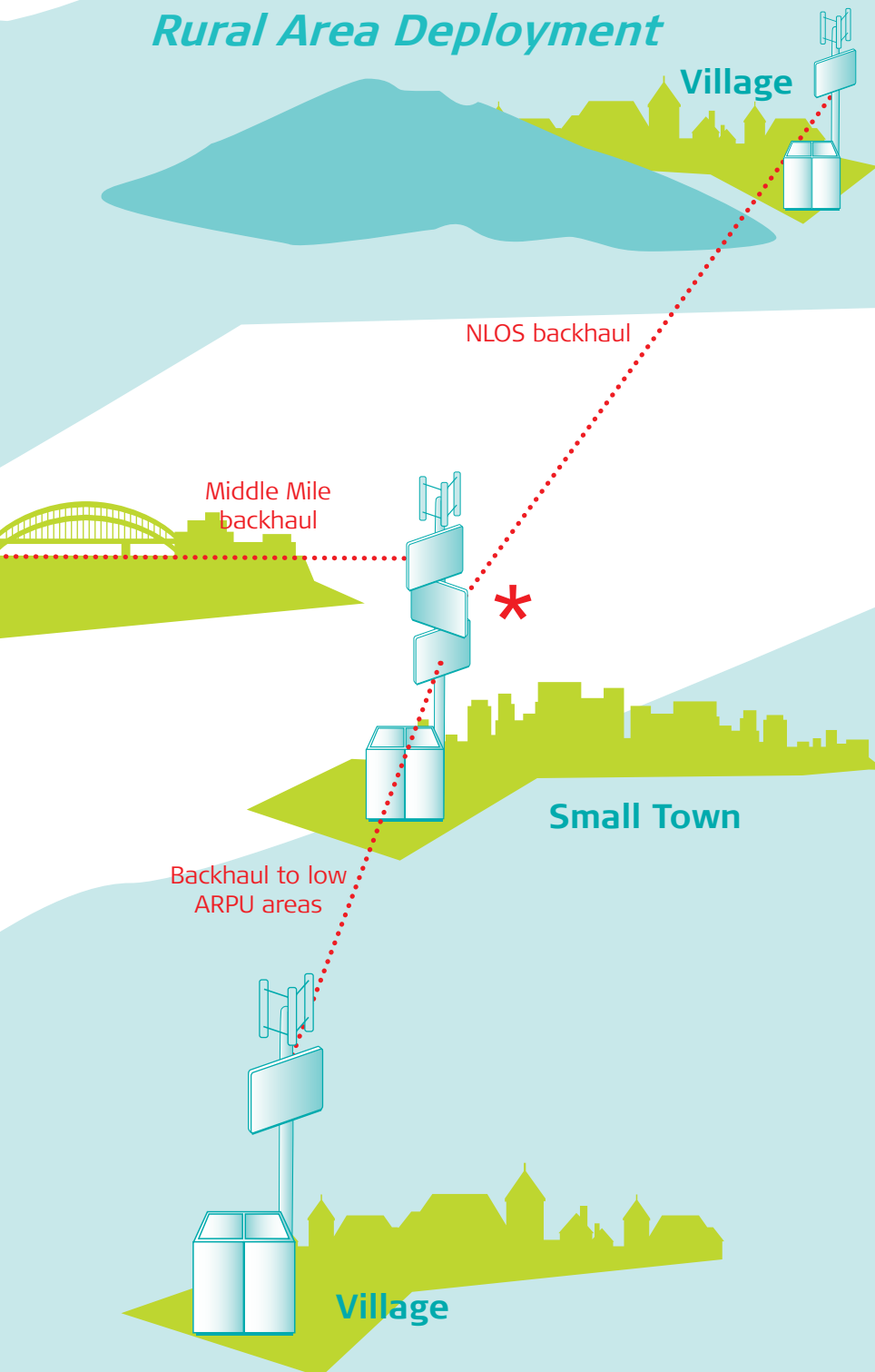
- **AEG** - Belgium • **AEROTHAI** - Thailand • **AES Eletropaulo** - Brazil
- **BC Hydro** - Canada • **BT** - Nigeria
- **Camtel** - Cameroon • **City of Boston EMS** - USA • **Clear Channel Communications** - USA • **Digicel** - Jamaica • **Federal Aviation Administration** - USA • **Frontier Communications** - USA • **GTA Teleguam** - Guam • **MAC Telecom** - Belgium • **Moov** - Côte d'Ivoire & Togo
- **MTN** - Cameroon • **Orange** - Cameroon • **Petrobras** - Brazil
- **Portugal Telecom** - Portugal
- **Sea-to-Sky Highway** - Canada
- **Springfield Neurological and Spine Institute** - USA
- **Telecel Faso** - Burkina Faso
- **Telefónica** - Brazil • **TKL** - Kenya
- **Total Oil** - France • **UTL** - Uganda
- **Vodafone** - Portugal • **VTN** - Vietnam
- **Zain** - Uganda • **Zantel** - Tanzania



Typical Topologies



Rural Area Deployment



* Airmux ODU with integrated antenna



Airmux-200

- 18 Mbps full-duplex
- Maximum distance of 80 km (50 miles)
- Asymmetrical bandwidth ideal for video surveillance
- Port options: Ethernet-only or Ethernet plus 1, 2 or 4 E1/T1
- 2.3-2.9 GHz or 4.9-6.0 GHz frequencies

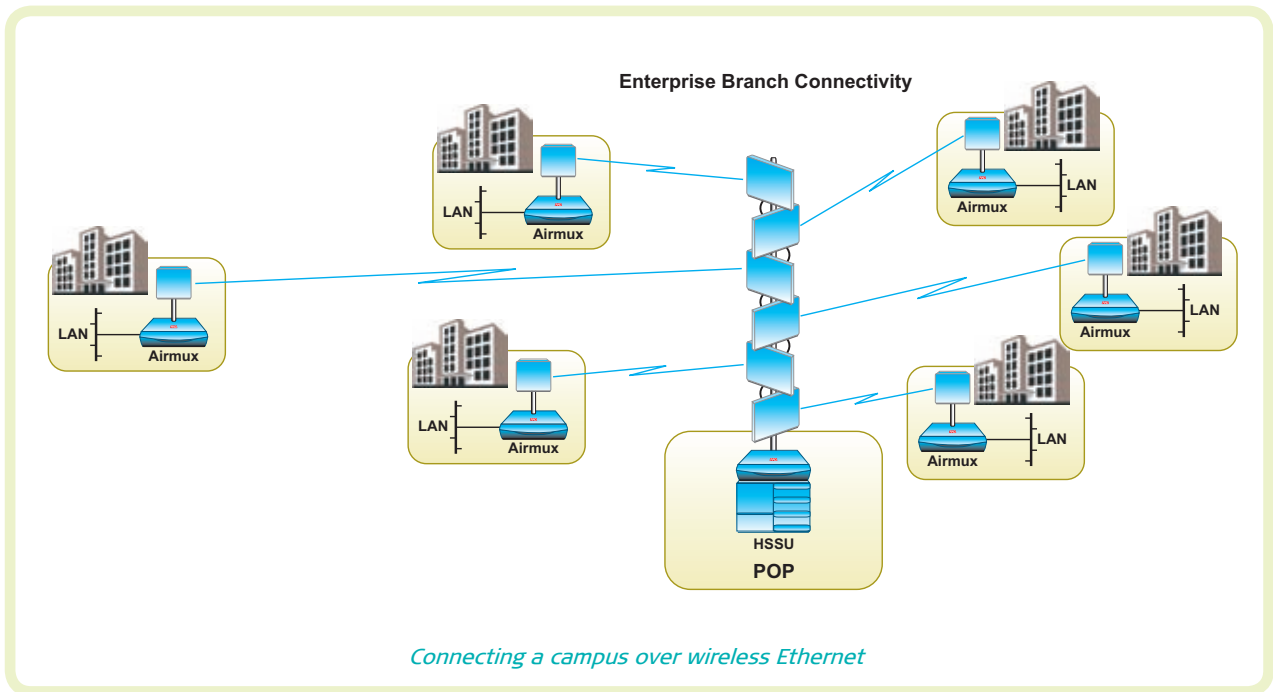


Airmux-400

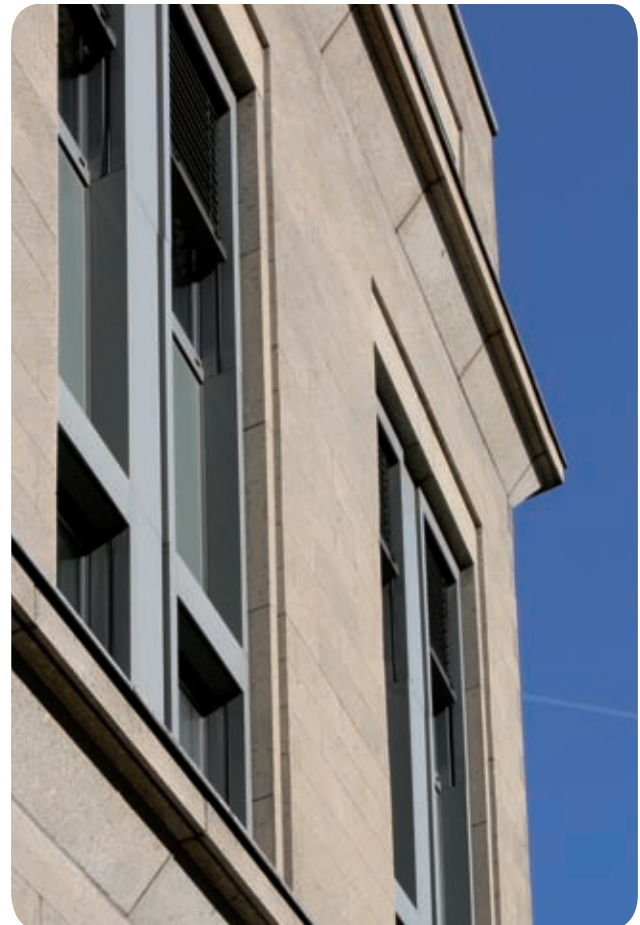
- 100 Mbps full-duplex (200 Mbps aggregated)
- Maximum distance of 120 km (75 miles)
- Multiple frequencies, including 2.4, 3.5 and 4.8-6.0 GHz, supported in a single device
- Hybrid solution with up to 16 E1/T1s and up to three Ethernet ports
- State-of-the-art OFDM and MIMO technology

Market Segments and Applications

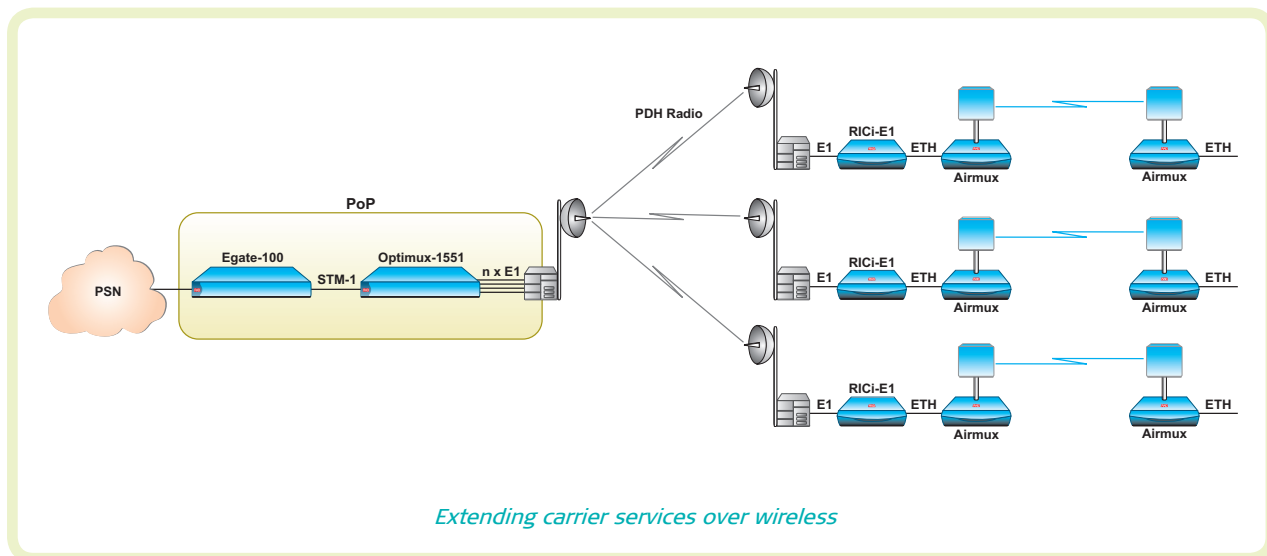
Private Networks, Enterprises, Utilities, and Transportation



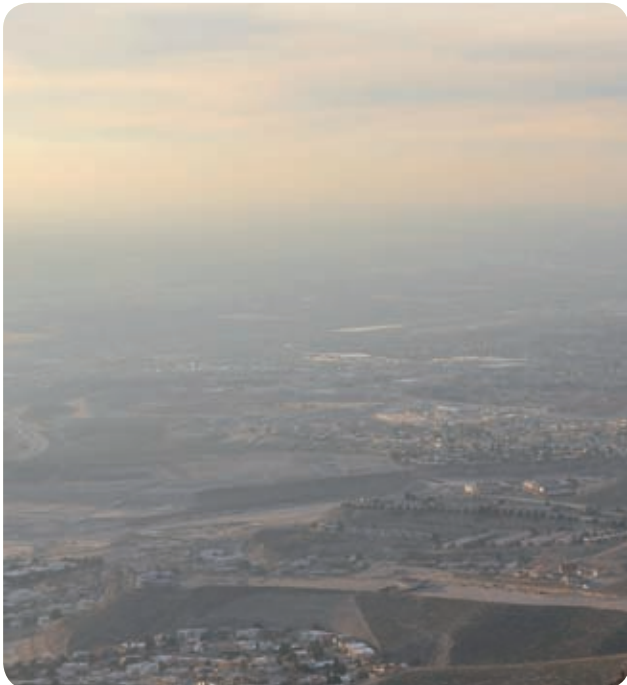
- High capacity inter-branch connectivity for large corporations
- Perfect for video surveillance in utility and transportation environments such as oil refineries, power generation stations, shipyards, airports, highways, and railroads
- Ideal for temporary installations, such as construction and mining sites, military camps



Carriers, Service Providers and ISPs

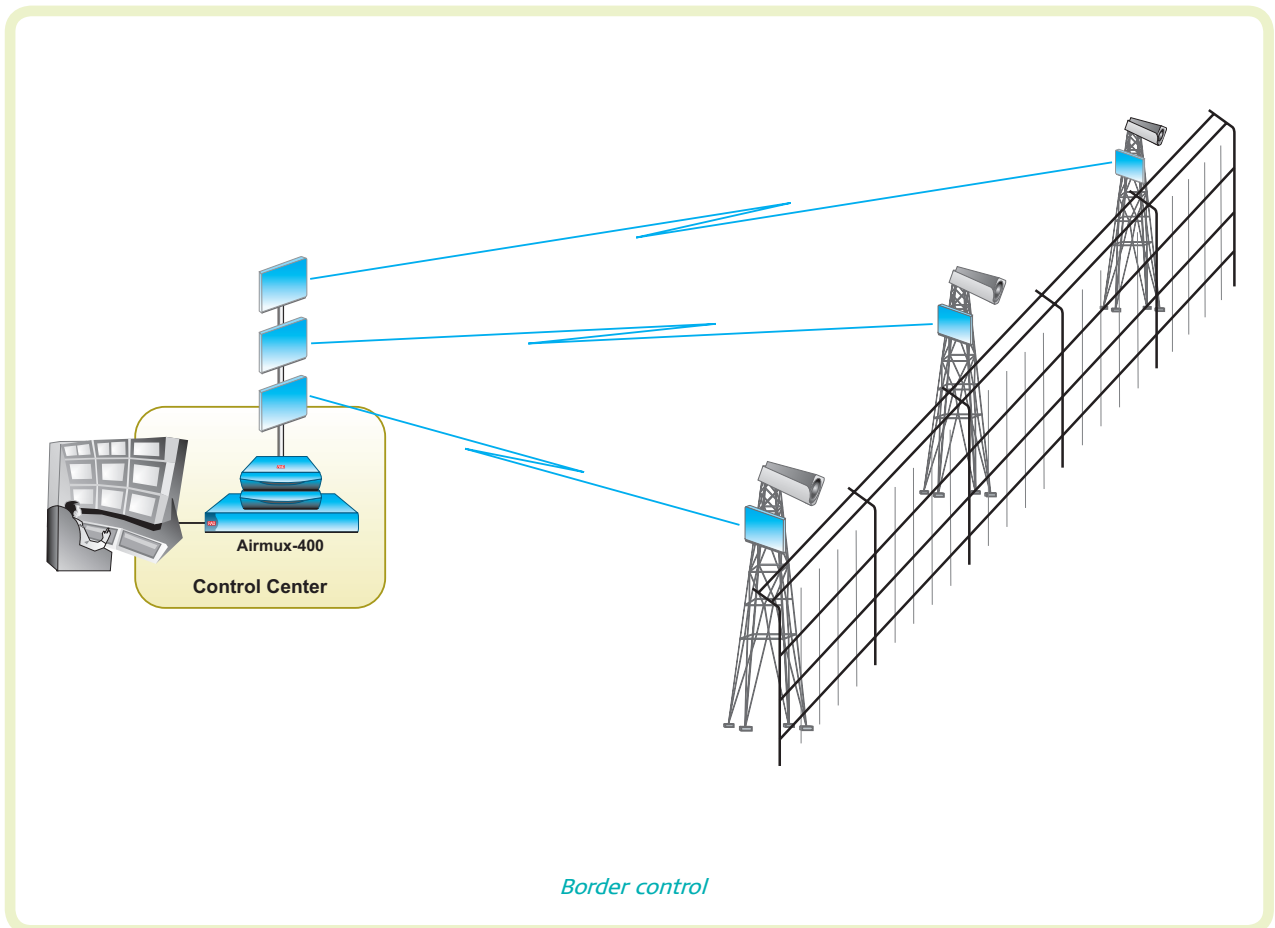


- High capacity 100 Mbps (200 Mbps aggregated) meets increasing bandwidth demand
- Single-box hybrid solution for extending TDM and Ethernet services
- Carrier-class solution with complete system backup
- Unmatched robustness in all environments and under severe weather conditions
- Fast return on investment (ROI)



Market Segments and Applications

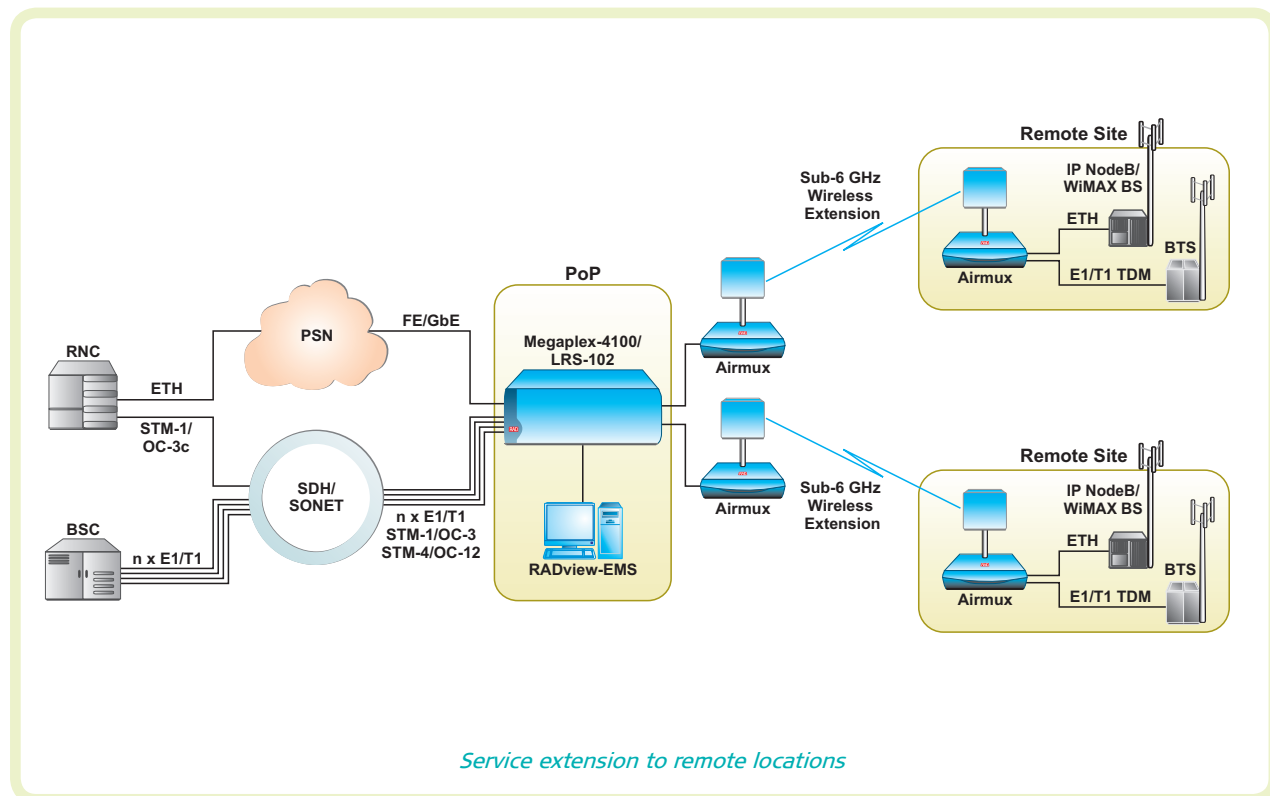
Government, Local Authorities and Homeland Security



- High capacity asymmetrical bandwidth appropriate for high-definition cameras and advanced video applications
- Ideal for urban and wide area surveillance, including public facilities, educational institutions and international borders
- Enables immediate response by security personnel when needed
- Low power consumption using a 12V power source



Mobile and WiMAX Backhaul



- Suitable for NLoS and nLOS scenarios
- Enables expansion of mobile services over long distances to isolated, rural areas unserved or underserved by wireline infrastructure
- In urban environments, sub-6 GHz wireless backhaul is a cost-effective alternative to expensive leased lines
- In most countries, additional savings accrue because the sub-6 GHz band is license free
- Can be deployed permanently or as a gap-filler to jump-start revenue while the radio planning approval cycle is being completed



Airmux Components and Accessories

Airmux-200 Components

ODU (outdoor unit) is a radio system that supports 2.3-2.9 and 4.9-6.0 GHz bands



IDU (indoor unit) and IDU-E (enhanced indoor unit) are the devices that connect the user interfaces to the radio system



External or integrated dish, flat panel and grid antenna with single polarization



Airmux-400 Components

ODU (outdoor unit) is a multiband radio system that supports 2.4, 3.5 and 4.8-6.0 GHz bands



IDU-E (enhanced indoor unit) is the device that connects the user interfaces to the radio system



External or integrated dish and flat panel antenna with dual polarization



Accessories for Airmux-200 & Airmux-400

Synchronization Units



HSSU: Hub Site Synchronization Unit



GSU: GPS Synchronization Unit

Lightning Protection Kit



External surge protector

Power over Ethernet



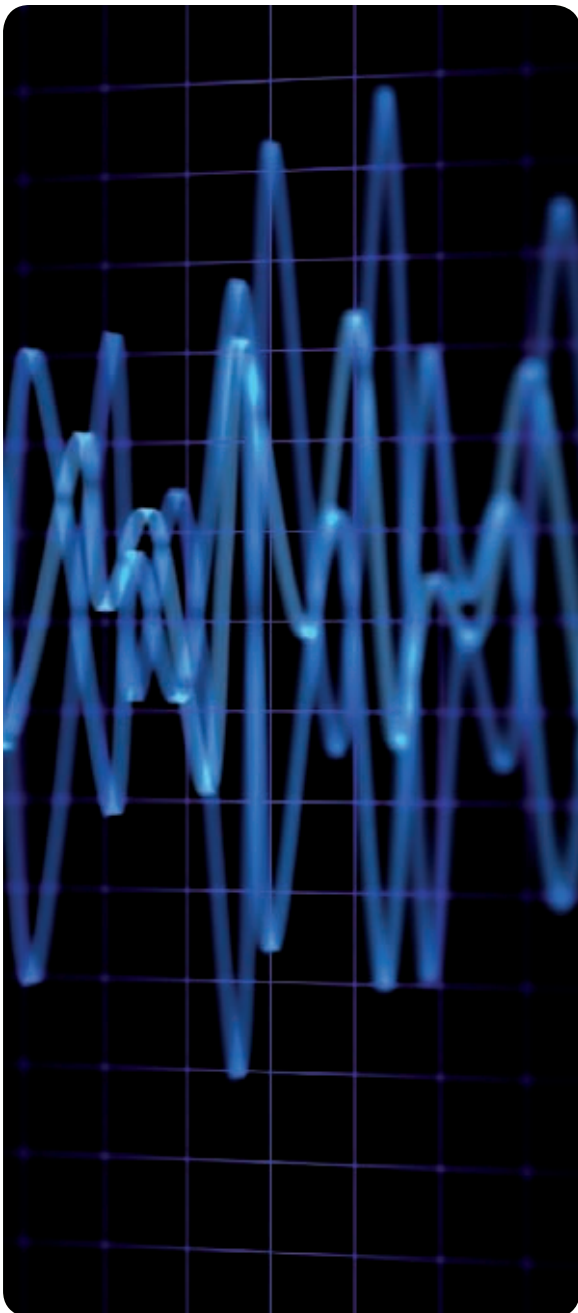
PoE: Single port unit



PoE-8: Eight port unit

Technologies

The following is a glossary of technical terms used in this brochure.



A Advanced Encryption System (AES)

B AES is a 128-bit key data encryption that significantly enhances security.

D Automatic Adaptive Rate (AAR)

E AAR is a method for dynamically adapting the transmitted rate and modulation according to interference conditions, to optimize data throughput while maintaining service quality.

Automatic Channel Selection (ACS)

ACS enables an access point to determine which available channel has the least amount of interference.

Automatic Repeat Query (ARQ)

Also known as Automatic Repeat Request, ARQ is an error-control method for data transmission that uses acknowledgements and timeouts to achieve reliable data transmission over an unreliable service.

F Forward Error Correction (FEC)

G FEC is used to control errors in data transmission. By adding redundant data to messages, the sender allows the receiver to detect and correct errors without having to request additional data from the sender.

H Hub Site Synchronization (HSS)

I HSS is a unique burst synchronization technique that synchronizes Tx and Rx timing for all units at a hub site to eliminate colocation TDD interference. It supports simultaneous transmission from up to 16 collocated Airmux-200 and Airmux-400 units.

M Monitored Hot Standby (MHS) 1+1 Redundancy

MHS guarantees optimal network availability by providing backup to the primary link. In the event of an equipment failure or loss of air interface in the primary link, TDM traffic is automatically switched over to the secondary link in less than 50 msec.

Multiple Point-to-Point

A multiple point-to-point topography allows service providers and ISPs to provide multiple end-users with carrier class services (TDM and/or Ethernet) and dedicated bandwidth from a single hub site.

Multiple Input and Multiple Output (MIMO)

MIMO is the use of multiple antennas at the transmitter and receiver to improve communication performance.

N NLoS and nLoS

Near Line of Site (NLoS) enables rural deployment when the inner Fresnel zone is obstructed by up to 40 percent. Non-Line of Site (nLoS) enables urban deployment when the signal is obstructed by a physical object. In such a scenario, the signal finds an alternate route by reflecting itself off of surrounding windows and buildings.

O Orthogonal Frequency Division Multiplexing (OFDM)

OFDM is a frequency-division multiplexing scheme utilized as a digital multi-carrier modulation method.

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Regional Offices

Far East

RAD Far East Ltd.
Suite A, 26/F, One Capital Place
18 Luard Rd., Wanchai
Hong Kong, China
Tel: 852-25270101
Fax: 852-25284761
email: market@radfe.com.hk

Latin America

RAD América Latina S.A.
Gorostiaga 1664 1° A Floor
1426 Buenos Aires, Argentina
Tel: 54-11-4779-1117
Fax: 54-11-4771-0460
email: info@radal.com.ar
www.rad-espanol.com

Oceania

RAD Data Australia Pty Ltd.
Level 7, Suite 2, 100 Walker Street
North Sydney NSW 2060, Australia
Tel: 61-2-9922 7581
Fax: 61-2-9954 0577
email: info@raddata.com.au
www.raddata.com.au

Local Offices

Brazil

RAD do Brasil Ltda.
Edifício Diamond Tower
Rua Maestro Cardim, 1.191, Floor 13
Cj. 135 CEP 01323-001, São Paulo, SP
Brazil
Tel: 55-11-3171-2940
Fax: 55-11-3253-7754
email: rad_brasil@radbr.com.br
www.radbr.com.br

China

RAD China
Suite 801, Global Trade Center
36 Beisanhuan Donglu
Dongcheng District
Beijing 100013, China
Tel: 86-10-5825 7665
Fax: 86-10-5825 7795
email: info@raddata.com.cn
www.raddata.com.cn

France

RAD France
Vecteur Sud - Bat A
1er étage
70-86, Avenue de la République
92320 Chatillon, France
Tel: 33-1-41 17 41 80
Fax: 33-1-41 17 41 81
email: rad.info@rad-france.fr
www.rad-france.fr

Germany

RAD Data Communications GmbH
Otto-Hahn-Str. 28-30
85521 Ottobrunn-Riemerling
Germany
Tel: 49-89-665927-0
Fax: 49-89-665927-77
email: info@rad-data.de
www.rad-data.de

India

RAD Data Communications Pvt. Ltd.
407, Madhava, Plot No. C-4, E-Block
Bandra-Kurla Complex
Bandra (East) Mumbai 400 051
India
Tel: 91-22-65-200200
Fax: 91-22-30-683687
email: radindia@rad.com
www.radindia.in

Japan

RAD Japan K.K.
Bureau Toranomon 10F
2-7-16 Toranomon, Minato-ku
Tokyo, Japan
Tel: 81-3-5251 3651
Fax: 81-3-5251 3652
email: japan-rad@raddata.co.jp
www.raddata.co.jp

Russia

RAD Data Communications Ltd.
10, B. Tulskeya St., Building 9
Floor 7, Office 9705
Moscow, 115191, Russia
Tel: 7-495-231-1239
Fax: 7-495-231-1097
email: info_russia@rad.ru
www.rad.ru

United Kingdom

RAD Data Communications Ltd. (UK)
PO Box 318
Romsey, SO51 1AS
England
Tel: 44-1794-514220
email: info@raddata.co.uk
www.raddata.co.uk

International Headquarters

RAD Data Communications Ltd.
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-7604732
email: market@rad.com
www.rad.com

North America Headquarters

RAD Data Communications, Inc.
900 Corporate Drive
Mahwah, NJ 07430, USA
Tel: 1-201-529-1100
Tel: 1-201-529-1100
Toll free: 1-800-444-7234
Fax: 1-201-529-5777
email: market@radusa.com
www.radusa.com