

WALKair

Point-to Multipoint, Multi-Service Wireless Infrastructure
for Carriers, Cellular and Network Operators



Fiber Alternative - Multi-Service and Broadband IP

- High-Capacity, point-to-multipoint solutions
- Access and backhauling applications
- Complete licensed spectrum: 3.5, 10.5, 26, 28GHz
- Deployment flexibility and network scalability
- Low entry level, pay-as-you-grow
- Field proven in over 130 countries worldwide

WALKair

Point-to-Multipoint Wireless Access on Every Wavelength

Leveraging broadband wireless technology to bring operators and carriers a new class of multi-service and fiber alternative for the last mile, the WALKair ensures consistently robust, high-capacity service. It facilitates a full complement of value-added service options, including Legacy Voice, Voice over IP (VoIP), Virtual Private Networks (VPN) and superior Quality of Service (QoS). WALKair systems support all commonly allocated bands in Europe, Latin America and Asia, including 3.5GHz, 10.5GHz, 26GHz and 28GHz.

The solution's support of multi-frequency bands, large-capacity base stations, feature rich applications and low investment requirements, makes WALKair a superior wireless access solution for carriers seeking to deploy networks in emerging markets that can provide quick and stable sources of new revenue. Serving Tier-1 Carriers, SNOs (Second National Operators) and Cellular Providers, WALKair is an ideal solution for access and backhauling applications in last-mile markets.



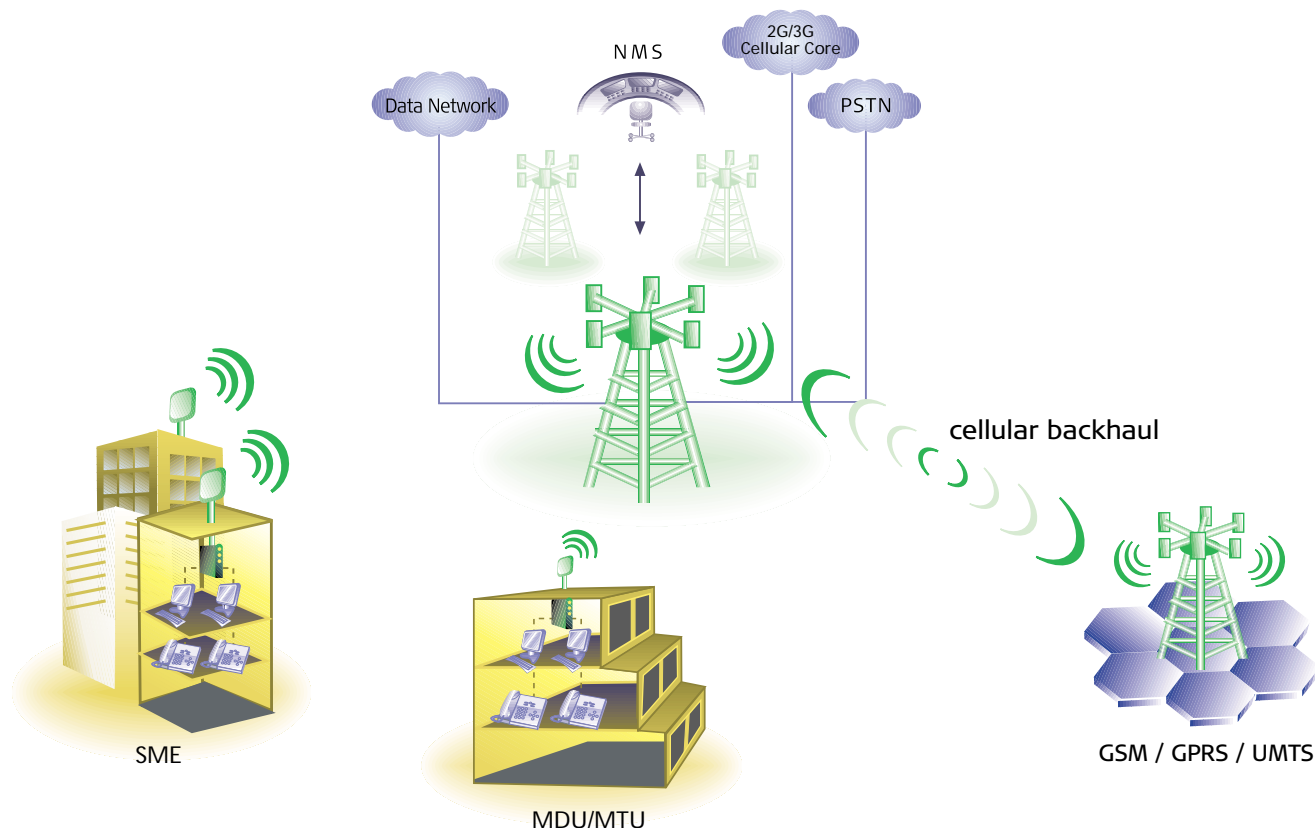
Opportunity Knocks Over the Airwaves

The wide range of WALKair wireless solutions enable customers to optimize their network to suit their unique environment and business model with a superior broadband network infrastructure. WALKair solutions feature rapid roll out, minimal initial investment and low installation costs. The scalable WALKair enables operators and carriers to deliver sustainable voice and data services to every market segment and reap the benefits of rapid return on investment, substantially enhanced revenues and increased profitability.

Connecting Customers Beyond the Broadband Loop

The last-mile is a dynamic and evolving marketplace. Delivering quality, broadband-driven voice and data services for Small and Medium Enterprises (SME) and Multi-Tenant/Multi-Dwelling Units located beyond the reach of wire line infrastructures is a formidable and expensive challenge. WALKair provides a convincing alternative in the form of wireless Point-to-Multipoint (PMP) connectivity, enabling carriers and operators to enter these markets successfully at a fraction of the cost they would incur through the deployment of copper, cable or fiber. Beyond the demands for access services, WALKair also provides mobile operators with a highly efficient and cost-effective solution for next-generation cellular backhauling to the network backbone.





Interference-Free Broadband Networking

Using packet and circuit switching technology optimized for TDM and IP-based applications, WALKair ensures dependable, interference-resistant transmission and “always on” connectivity. WALKair is augmented by a wide variety of CPE units to suit every type of customer – such as SOHO, SME, large corporations and MDU/MTU – and provides the highest total CPE population per cell. WALKair offers a fully flexible Base Station (BS) platform to optimize the operator’s business case for the capacity and service requirements within a specified area.

Operating in the 3.5, 10.5, 26, 28, GHz Licensed Bands, WALKair features include:

- Efficient air protocol with Dynamic Bandwidth Allocation (DBA)
- Multi-carrier approach at the base station level for increased savings (CAPEX & OPEX)
- A wide variety of rooftop-based Outdoor Units (ODU)
- Smooth capacity upgrade
- Diverse range of services: Legacy voice, IP, PRI, V5.1, LL, FR Quad-BRI, Multi POTS and ATM
- CPE diversified scale of capacity: 4Mbps, 8Mbps up to 36Mbps net payload full-duplex
- Adaptive/Manual modulation per Terminal Station (TS) for capacity and coverage optimization
- Enhanced Quality of Service (QoS) features, such as 802.1Q based VPN, 802.1p and Diffserv based prioritization, CIR/MIR setting and CoS
- Easy-to-use SNMP-based remote management system

WALKair Systems

Base Station Platform Flexibility

WALKair entry points are designed around two distinct base station platforms:

- WALKair 1000/3000 micro base station BS-SA (Stackable Architecture)
- Alvarix solution -Integrated WALKair 1000 and 3000 base station

Delivering superior flexibility in architecture and network deployment, WALKair ensures demand-based scalability combined with flexible modularity.

Stackable Base Station

Operators in the 10.5 GHz, 26 GHz and 28 GHz markets need to adapt to existing customer requirements and simultaneously provide scalable and adaptable solutions. WALKair 3000 enables full flexibility of BS platforms using a Micro-Base Station (the Stand-Alone) solution.

The BS-SA has been developed to provide customers with both a cost-effective, low-entry price solution for one sector deployments, as well as a fully tailored system for long term growth and multiple sector deployments.

Base Station

Alvarion's WALKair 1000/3000 BS-SA system enables operators to supply the most cost-effective entry level for the customer, depending on the customer's current capacity demands and subscriber needs. Each solution can evolve as a pay-as-you-grow modular architecture, exhibiting flexibility for dynamic growth and development as customer and subscriber requirements change.



WALKair 1000

Frequency – 3.5, 10.5, 26GHz

Throughput – 8 Mbps

WALKair 1000 is the ideal point-to-multipoint broadband wireless access system for Carriers servicing Small and Medium Enterprises (SMEs), Multi-Tenant and Multi-Dwelling Units, (MTUs and MDUs), SOHOs, industrial, retail and residential subscribers.

WALKair 1000 maximizes data throughput volume by providing a total cell capacity of 256 Mbps at a 28 MHz frequency allocation and more than 512 Mbps at 56 MHz, using single polarization. A single WALKair 1000 Base Station can support up to 2048 Terminal Stations with peak data burst rates of 4 Mbps.

Operating in the 3.5, 10.5 and 26GHz bands, the WALKair 1000 offers an extensive range of features including:

- Single platform – combines all communication and information technologies, including IP, Ethernet, Frame Relay, Leased Line, multi-POTS and ISDN
- Multi-carrier FDD & TDMA system – up to 16 carriers per sector with a single outdoor unit / sector
- Efficient backhaul connectivity guarantees superior coverage for mobile and fixed narrowband wireless system Base Stations
- Highest spectral efficiency - 2.5 Bit/Sec/Hz over channel spacing of 1.75 MHz
- IP QoS/CoS mapping to ATM – QoS at the Base Station eliminates the need for multiple rooftop outdoor units
- 64 QAM modulation – ensures higher capacity, coverage and availability



WALKair 3000

Frequency – 10.5, 26 & 28GHz

Throughput – 36 Mbps

WALKair 3000 is designed for new and established carriers, requiring proven, last-mile solutions for small, medium and large businesses and multi-dwelling and multi-tenant units. Moreover, it is the optimal solution for next generation cellular backhauling applications. Industry-leading high spectral efficiency, frequency reuse and dynamic bandwidth allocation technologies ensure the highest coverage capacity available from any broadband wireless access vendor.

Operating in the 10.5, 26 and 28GHz bands, WALKair 3000 offers:

- Single platform solution – combines all communication and information technologies, including IP, ATM, Ethernet, Leased Line and TDM Voice.

- Symmetrical and asymmetrical data rates – up to 36 Mbps per customer (upstream and downstream) over 3.5 MHz, 7 MHz and 14 MHz channels
- Multi-carrier FDD & TDMA system – up to four carriers per sector with a single outdoor unit / sector
- Dual modulation, 16QAM and QPSK with automatic and manual switchover
- Highest spectral efficiency - 2.5 Bit / Sec / Hz
- Flexibility – suitable for 2G & 3G backhaul feeding and fixed access applications
- Full end-to-end QoS – supporting IP and IP QoS/CoS mapping to ATM QoS at the Base Station, QoS using IETF standard in differential service (diffserv).



Alvarix

Frequency – 10.5GHz & 26GHz Throughput – 36 Mbps

As operators in the 10.5GHz and 26GHz market seek to adapt their business model to meet existing customer requirements and extend coverage to previously unreachable customers, the need for a flexible, low cost integrated solution continues to rise in parallel with technological advancements.

Combining the qualities and flexibility of WALKair 1000 and WALKair 3000 base and terminal stations within the 10.5GHz and 26GHz band, Alvarix addresses the need to provide operators with an adaptable and cost-effective solution. By fully integrating the components and functionality of both systems, Alvarix ensures that each solution is specifically tailored to both the operator's and the subscriber's needs.

A winning combination of maximum available capacity, low deployment costs, a pay-as-you-grow modular structure and diverse entry levels, Alvarix delivers a convincing and unparalleled value-added proposition for operators in the 10.5GHz and 26GHz market.

The flexible architecture of Alvarix includes:

- Two entry level base station options
- Different terminal stations to accommodate a wide range of customer capacity profiles

Alvarix provides an optimal price/performance solution by minimizing both CAPEX and OPEX, thus assuring the operator a rapid ROI, growth potential and maximized profitability:

Supports diverse segments applications and multi-service	Increases opportunities to penetrate new markets and target new customers
Converged BWA and Cellular backhauling application	Enables the same BWA PMP infrastructure to be used for both applications increasing business opportunities and improving the operator's business model
Smooth integration and migration between the two product lines (WALKair 1000 and WALKair 3000) that are integrated into the Alvarix platform	<ul style="list-style-type: none">• Same ODU and IF components at the TS and BS• Same network management (WALKnet) and Frequency Planning (NIR) tools• Saving the operator OPEX when integration/migration of both product lines is needed
High spectral efficiency (2.5 bits/sec/Hz) in conjunction with high capacity per BS (Up to 144 Mbps per sector and 1 Gbps per cell)	Provides high data rates over a minimal bandwidth that enables highly efficient use of the spectrum and maximizes revenues by deploying less base stations within a given territory. Resulting in less CAPEX and OPEX spending.
Multi-Carrier approach per sector reducing the number of ODUs required	Reduces OPEX & CAPEX by saving the number of required ODUs, roof-top Base Stations and infrastructure
Automatic/Manual dual modulation scheme (16QAM/QPSK) per Terminal Station	<ul style="list-style-type: none">• Increases the system availability and optimizes the coverage• Improves the operator's business model by increasing the number of potential customers per BS• Reducing both the operator's CAPEX and OPEX by eliminating the need for deploying new base stations to cover remote customers

access

Multi-Service

Enhanced QoS

Fiber Alternative
Multi-POTS

Rapid ROI

Wireless exp

AlvariBase

Frequency – 3.5GHz

Throughput – 8 Mbps

AlvariBase was developed to provide operators with unprecedented flexibility, targeting customers and providing services. Combining the very best of Alvarion solutions, AlvariBase enables operators to create a BWA system that delivers the multiple advantages of BreezeACCESS and WALKair over a single infrastructure.

WALKair systems are based on cell transport technology and deliver carrier-class TDM services as well as highly efficient IP connectivity.

BreezeACCESS systems deliver fast packet data and high quality VoIP telephony services, with the advantages of quick, simple and cost-effective BWA deployment. In addition, BreezeACCESS provides IP and POTS services to businesses and residences, with non-line-of-sight operation and simple CPE installation.



Network Management

The WALKair can be managed using two advanced SNMP compliant management tools, WALKnet and AlvariStar. Both systems have been developed to maximize network potential by incorporating feature-rich functionality including network topology, fault management, configuration, performance monitoring and security management.

WALKnet	AlvariSTAR
SNMP based NMS	SNMP client server based management
Low-entry solution optimized for small & medium enterprises	Optimized for medium and large deployments
Stand-alone or over HPOV platform	Enhanced FCAPS capabilities

Which Solution to Choose and When

WALKair 1000	Multi-service in sub 11 bands
WALKair 3000	Fiber alternative - for high capacity and QoS LMDS services
Alvarix	Flexible multi-service offering for multi-services and high capacity
AlvariBase	3.5GHz solution for multi-service DSL replacement

High-Capacity carrier class
Modularity
 advertise backhauling

About Alvarion

With more than 2 million units deployed in 130 countries, Alvarion is the worldwide leader in wireless broadband providing systems to carriers, ISPs and private network operators. Leading the WiMAX revolution, Alvarion has the most extensive deployments and proven product portfolio in the industry covering the full range of frequency bands. Alvarion's products enable the delivery of business and residential broadband access, corporate VPNs, toll quality telephony, mobile base station feeding, Hotspot coverage extension, community interconnection, and public safety communications. Alvarion works with several top OEM providers

and over 200 local partners to support its diverse global customer base in solving their last-mile challenges. As a wireless broadband pioneer, Alvarion has been driving and delivering innovations for over 10 years from core technology developments to creating and promoting industry standards. Leveraging its key roles in the IEEE and HiperMAN standards committees and experience deploying OFDM-based systems, the company's prominent work in the WiMAX Forum™ is focused on increasing widespread adoption of standards-based products in the wireless broadband market.



Alvarion Customer Service

Designed to complement its leading Wireless Broadband solution, Alvarion Customer Service provides the best ratio of cost-effective support to its customers. Our customer support includes overall cooperation in fields like network planning, installation engineering and technical education. Customer Service for us means partnership, shared experience and total commitment.

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Alvarion offers the industry's most-comprehensive line of broadband wireless access systems serving the full range of frequencies, markets, and carrier needs.

- **WALKair**
 - Multi-service wireless broadband systems
 - Access and mobile base station feeding, backhaul
 - Licensed spectrum solutions: 3.5, 10.5, 26, 28 GHz
- **BreezeACCESS**
 - Broadband IP systems for wireless DSL
 - Access, backhaul, and mobility
 - Complete Spectrum™ Solution
 - 900 MHz, 2.4, 3.5, 5.0, 5.2, 5.4, 5.7 GHz
- **MGW/eMGW**
 - Wideband voice and data systems
 - Toll quality voice and data access
 - 1.5, 1.9, 2.4, 3.4-3.8, 5.7 GHz
- **BreezeNET**
 - Wireless networking system
 - Bridging and backhauling connectivity
 - 2.4 and 5.8 GHz
- **BreezeMAX**
 - 802.16 / HiperMAN Design
 - IP based at 3.5 GHz
 - Non Line of Sight
 - WiMAX Platform



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