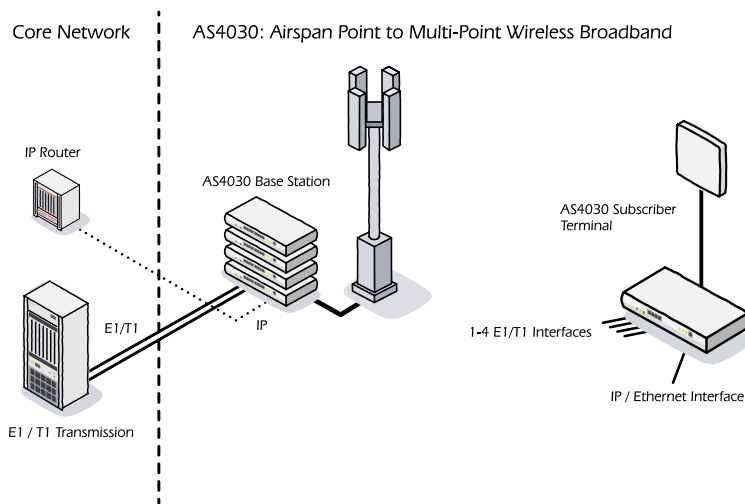




Airspan's AS4030 product is a high capacity, IP based Broadband Wireless system which can be configured for Point-to-Multipoint (PMP) or for Point-to-Point (PtP) applications. AS4030 implementation is in accordance with the IEEE802.16a standard approved in January 2003. Its Orthogonal Frequency Division Multiplexing (OFDM) technology ensures non-line-of-sight (NLOS) operation. Furthermore, thanks to its adaptive modulation capability across its BPSK, QPSK, 16QAM and 64QAM modulation schemes, AS4030 makes best use of the available spectrum whilst maximising delivered bandwidth to each individual customer.

### Product Information



### Overview

The heart of the AS4030 system is the Base Station (BS), which provides radio access for the Subscriber Terminals (ST) deployed at the end users' location. The BS connects to the core network either through E1/T1 span and/or through 100BaseT Ethernet interfaces. Each BS can support a number of sectors, typically 4 or 6, depending on the service requirements and available spectrum. Each sector comprises of an outdoor unit and an indoor unit, which is 1U high, that can provide up to 4 or up to 8 E1/T1 and two 100BaseT interfaces.

The ST also comprises of an outdoor unit and an indoor unit with similar characteristics to those of the BS. Typically the ST will support up to 4 E1/T1s.

The ST, working together with a Integrated Access Device (IAD) located at the customer premises and a Media Gateway connected to a Class 5 switch provides a high quality VoIP solution.

The AS4030 can be deployed as a PtP system as well as a PMP system. In PtP configuration the BS sector serves a single ST.

All aspects of the AS4030 system is managed through the AS8300 management system. The AS8300 is an SNMP based system that runs on a scalable Windows NT or 2000 platform. The AS8300 server also incorporates an SQL database. It is easy to install and use through its intuitive graphical user interface.

### Key Features

(Benefits)

- Frequency Bands  
3.4-3.8 GHz
- IEEE 802.16a compliant
- PMP and PtP operation
- Orthogonal Frequency Division Multiplexing technology allows NLOS operation
- Up to 70Mbps over the air in 14MHz channel
- High speed data rates in excess of 36Mbps
- Support for VoIP
- Intelligent rate adaption to optimise spectral efficiency
- Programmable channel bandwidth
- Compact, integrated design
- Full range of QoS features
- Can transport multiple E1s/T1s



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## Applications

AS4030 is ideally suited to ILECs, CLECs, DLECs and ISPs wishing to roll out IP services to the more demanding SME, Business Park, Campus applications as well as to SOHO and residential customers in MTUs and MDUs, where high-speed and high quality services with committed QoS levels are essential.

The combination of multi service IP, Voice over IP and the ability to replace costly PDH based E1/T1 leased lines maximises the return on investment and enhances the business case for operators.

Here are some of the applications of AS4030:

- **Broadband Services in Urban Deployments**

AS4030 is ideally suited to bringing broadband services to businesses and residential customers alike in densely populated urban deployments, creating an environment which compares favourably with wireline DSL equivalents for both reliability and delivered service quality.

- **Broadband Services in Rural Communities**

Many rural locations are not serviced by affordable high-speed wireline connections (ISDN, T1, DSL, cable and fibre), which would require running cables long distances through forests, mountains and other rough terrain. AS4030 offer a far more cost-effective solution for rural connectivity.

- **Broadband Business Parks, Campuses and Schools**

AS4030 provides an ideal means of providing university campuses and schools with high-speed Internet access. Thanks to AS4030, different building on the campus can be connected to each

other via high-capacity links for a fraction of the cost of wired broadband links.

- **Cost effective Leased Line Technology**

Today leased lines are often provided using PDH technology, which often requires multiple E1s/T1s to be provided between two points even though the customers may be paying for a fraction of the available capacity. With AS4030 the operator can deliver the bandwidth the customer requires and increase the bandwidth seamlessly as the requirements grow.

- **WISP/WASP Backhaul**

Wireless Internet Service/Application Providers use backhaul as a low-cost way to connect their access points to their points of presence. AS4030 can be used to offer WISPs/WASPs a high capacity, high reliability package.

- **802.11b/g Wi-Fi Backhaul**

Wi-Fi hotspots are being deployed in ever increasing numbers across the globe providing nomadic computing to the business community. Cost effective backhaul of Wi-Fi hotspots is an important challenge for the operators. AS4030, thanks to its NLOS capabilities and high capacity links, provides a cost effective solution, no matter how challenging the hotspot locations.

- **3G Backhaul**

AS4030 offers mobile operators some key benefits and cost savings over alternative technologies. NLOS operation, which is particularly useful in dense, urban settings will enable more cost effective deployment of pico cell backhaul, which would not be possible with alternative technologies.



## AS4030 Management System - AS8300

AS4030's management system, called AS8300, is a server based network management system (NMS) supporting its own SQL database management system. AS8300 runs on a PC based MS Windows NT/2000 platform. A remote application client can be used to access the server from remote locations.

AS8300 provides a high level of functionality for carrier-class operations. The server interfaces to the system nodes in the network through SNMP agent. It is easy to install and operate, with different clients providing customised GUI access to the information on the server. Clients can display maps, status, events, traps, etc. Real-time display of network status allows rapid problem solving and database driven tools help to manage growing networks.

In addition to AS8300, each AS4030 terminal comes equipped with in-band, web based management capability. Through this capability it is possible to access and configure a terminal without the need for AS4030. This feature is particularly useful during installation and commissioning.

## AS4030 Technical Specification

Radio Technology	
Radio Technology:	256 FFT OFDM - Orthogonal frequency Division Multiplexing
Frequency Bands:	3.4-3.6 GHz, 3.6-3.8 GHz
Duplex Mode:	FDD or TDD
Channel size:	3.5MHz / 7 MHz / 14 MHz
RF Dynamic Range:	>50dB
Spectral Efficiency:	5bps/Hz
Over The Air Rate:	Up to 70Mbps in 14MHz channel
Maximum Tx Power:	+23dBm
Rx Sensitivity:	-88dBm @ 7MHz channel (BER 10E-9)
Modulation:	Dynamic Adaptive Modulation auto selects: BPSK, QPSK, 16QAM, 64QAM
Coding Rates:	1/2, 2/3, 3/4
Over The Air Encryption:	DES and 3DES encryption
MAC:	IEEE802.16a compliant PMP 802.16a Packet Convergence Sub-layer mode Automatic Repeat request (ARQ) error correction
Range:	6.5km (4mi) NLOS > 70km (42mi) LOS with high-gain PtP antenna
Cross Polarisation:	-20dB (max.) ETSI EN 302 085 v1.1.2 TS1-TS5
IP Delay and Jitter:	One-way delay < 10ms; Jitter: +/- 5ms
IF Cable:	Maximum length up to 68m (225 ft) using RG-58 Maximum length up to 136m (500 ft) using LMR400

## AS4030 Technical Specification (continued)

### Networking

Protocols:	Transparent Bridging DHCP pass-through VLAN pass-through 802.3x Ethernet flow control 802.1q/p network traffic prioritisation	
Network Services:	Transparent to 802.3 services and applications	
Network Management:	Locally through serial console Web interface and SNMP CLI via Telnet and local console	
Backhaul connection:	10/100BaseT Ethernet (RJ 45)	
Optional TDM ports:	1 to 4 or 1 to 8 T1/E1 TDM ports	
	<b>E1 Specs</b>	<b>T1 Specs</b>
Standards:	ETS TBR 12/13, ITU-T Rec. G.703, G.704, G.706, G.732, G.821, G.823, G.826	AT&T TR-62411, ANSI T1.403, ITU-T Rec. G703, G.704, G.706, G.732, G.821, G.823, G.826
Framing:	Unframed, CRC4, FAS/NFAS	Unframed, D4 (SF), ESF
Data rate:	2048 kbps	1544 kbps
Line Code:	HDB3, AMI	AMI, B8ZS
Connector:	Balanced: RJ-48c, 8-pin	Balanced: RJ-48c, 8-pin
Line Impedance:	Balanced 120 Ohm	Balanced 100 Ohm
Jitter:	ITU-T G.823	AT&T TR-62411, ITU-T G.824
Clocking:	Adaptive, Loopback, Internal	Adaptive, Loopback, Internal
Line Protection:	ITU-T K-20, K-21	Bellcore GR 1089

### Mechanical and Electrical Specification

Power Requirements:	110/220/240 VAC (auto sensing single/dual), 50/60Hz, 40W max for ST and 70 max for BS sector radio
Dimensions (mm):	432mm x 305mm x 45mm (17"x12"x1.75")

### Environmental

Operating:	Indoor Terminal - 0°C to +55° (32°F to 132°F)
Temperature:	Outdoor Radio Unit - -40°C to +60°C
Wind loading:	Exceeds 220 kph (137 mph) - antenna specific

