

As far As Wi-Fi can go

WBS-2400
Wi-Fi Base Station



WBS-2400 - WI-FI BASE STATION

Wavion WBS-2400 is an advanced Wi-Fi base station that provides superior connectivity and greater range. It enables service providers, communities, and enterprises to deliver high quality service with fewer base stations at lower costs.

The WBS-2400 Wi-Fi base station is the ideal solution for metro and rural Wi-Fi infrastructure. Based on Wavion's patented, spatially adaptive, beamforming technology the WBS-2400 has the best performance in terms of throughput, range, indoor penetration and interference mitigation. This ensures that providers are able to offer cost effective, top quality service.

SUPERIOR RANGE

The WBS-2400 covers two to three times the area of conventional Wi-Fi Access Points. Superior range means the network can be scaled to reach a larger group of users, yielding higher subscriber revenues at lower cost in terms of equipment and operating expenses.

UNIFORM COVERAGE & INDOOR PENETRATION

The WBS-2400 provides users with a powerful and high quality signal that is not dependent on line-of-sight positioning, and is highly resistant to interference. This results in a much improved coverage with far fewer dead spots and helps eliminate disruptions caused by both fixed obstacles and changes in the environment.

The WBS-2400 also offers deeper indoor penetration than conventional access points. This reduces the need for separate outdoor CPEs and makes easy self-install service a reality, thus enabling operators to effectively address the broadband to residential market space.

HIGH THROUGHPUT

WBS-2400 improved link gain and quality increases the throughput and the capacity of the network, boosting throughput for each user. Furthermore, Wavion's advanced SDMA technology doubles the downlink throughput that each base station can provide on all frequency channels. Users bandwidth requirements can be adequately met - now and in the future as more users and bandwidth-intensive applications are added to the network.

INTERFERENCE MITIGATION

The WBS-2400 spatially adaptive, beamforming technology effectively filters the majority of interference factors. Further improvement is gained by the use of the WBS-2400 dynamic interference handling algorithms, which allow smooth operation in high noise environments. The WBS-2400 allows operators to offer high grade of service in areas with interference and high noise level.

COST EFFECTIVE

The WBS-2400 makes metro and rural Wi-Fi infra-structures significantly less costly to install, operate, and maintain. Providers can save on capital and operating expenses, accelerating return on investment and making metro and rural wireless services affordable for a broad range of municipalities and enterprises.



KEY FEATURES

- Self backhaul with extended range
- Enhanced interference resilience
- Higher quality coverage in urban areas
- Improved indoor penetration

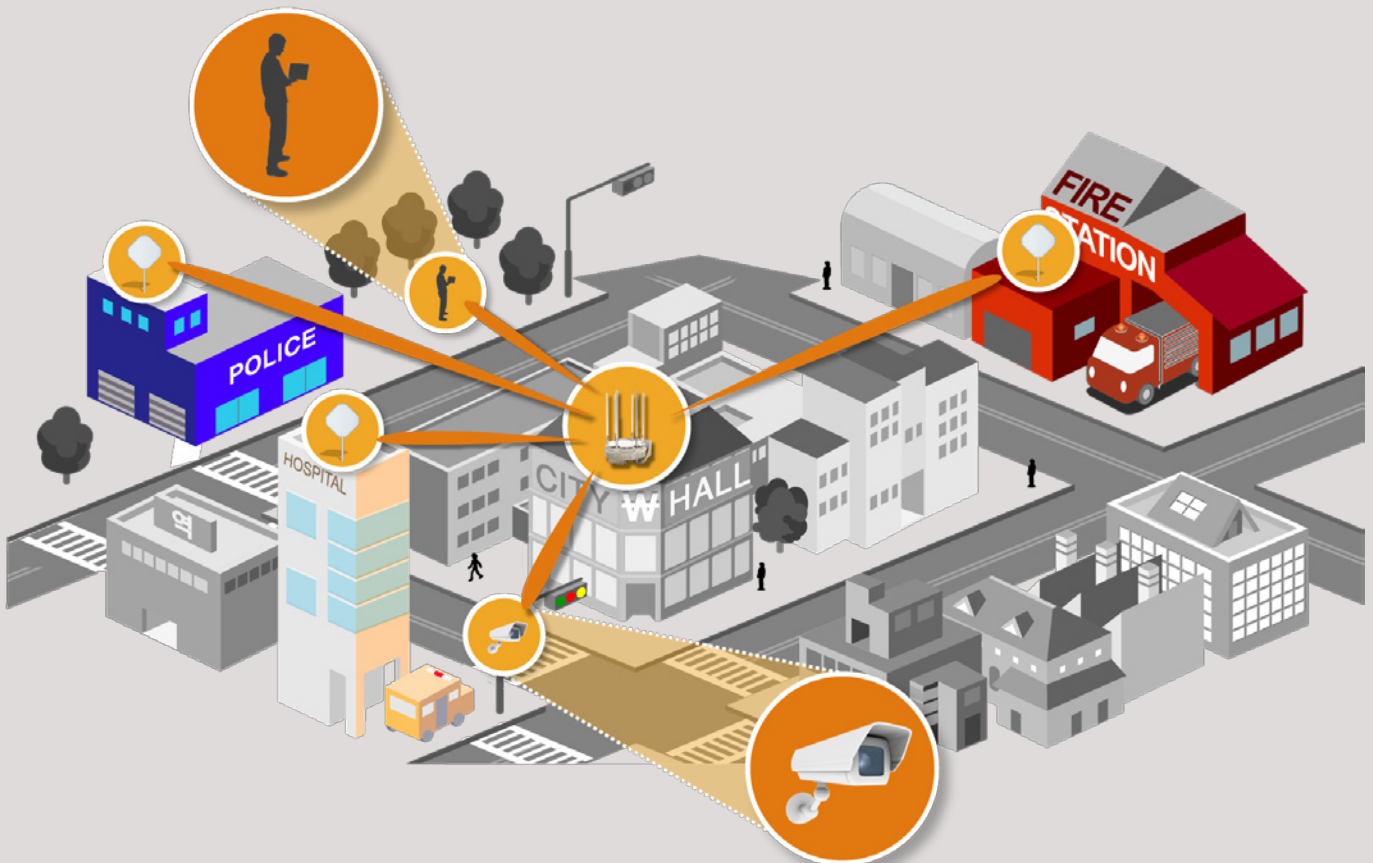
KEY BENEFITS

- Cost effective metro and rural Wi-Fi infra-structures with fewer base stations are facilitated by the extended range and uniform coverage
- High quality service level with fewer dead spots provided by the uniform coverage and enhanced non-line-of-sight operation
- Smooth operation in urban settings enabled by the high resilience to interference
- Smooth support for weaker clients such as PDA's and smart phones supported by the unique, spatially adaptive, beamforming technology

APPLICATIONS

The WBS-2400 base station has been optimized to provide the best performance in a wide range of applications

- **Business connectivity** – providing broadband access with high quality of service to business users.
- **Municipalities** – using the Wi-Fi network for multiple purposes including: automatic meter reading (AMR), traffic control, mobile worker access and connectivity to official facilities.
- **Public safety (video over Wi-Fi)** – leveraging the high quality Wi-Fi network to access cameras in remote locations.
- **Rural connectivity** – supporting multiple remote locations efficiently with a very low number of base stations.
- **Internet to schools and communities** – offering Internet access to schools and communities in developing countries as a tool for bridging the “technology gap”.
- **Residential access** – creating a cost effective solution with self-installed Wi-Fi CPE’s. In addition to offering broadband wireless service bundled with VoIP.
- **Building Coverage** – offering broadband Wi-Fi internet access with minimal infrastructure costs.



Typical WBS-2400 deployment

WAVION TECHNOLOGY

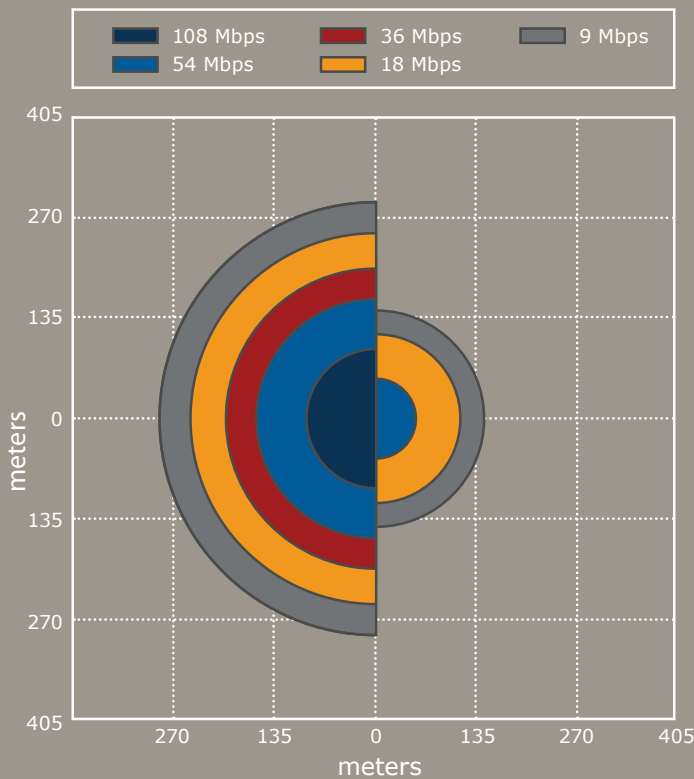
BEAMFORMING

Outdoor wireless operation, metro and rural Wi-Fi networks present more rigorous demands than conventional indoor applications. Wavion WBS-2400 base station is based on spatially adaptive, beamforming Wi-Fi technology that is optimized for outdoor and metro network infrastructures.

The Wavion WBS-2400 base station uses six radio transceivers and six antennas, and employs advanced digital beamforming to optimally focus radio energy to and from network clients on a per-packet basis. The WBS-2400 intelligence resides in customized ASICs and embedded software, which continually compensate for the changing outdoor conditions.

Wavion WBS-2400 beamforming technology focuses the energy to and from the client, on a per-packet basis. This focusing process increases significantly the link gain and the interference resiliency of the base station. Moreover, while conventional Wi-Fi technology suffers from the destructive effect of multipath propagation, Wavion's digital beamforming technology exploits multipath to its advantage by coherently combining the signals along the different propagation paths to the client.

Coverage: Wavion Beamforming and SDMA vs. Conventional Wi-Fi



SDMA

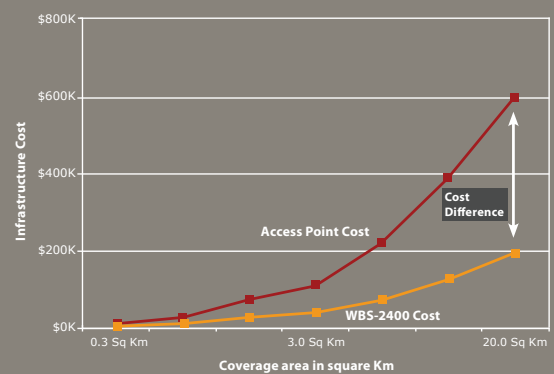
Wavion's SDMA technology has the ability to send two concurrent data streams from the base station to two different users. This doubles the downlink capacity of each base station.

SELF-BACKHAUL

Wavion WBS-2400 beamforming technology is also leveraged to create a strong and robust self-backhauling link with outstanding performance, even in non-line-of-sight environments. Wavion's Beamforming Self-Backhaul provides very high self-backhaul throughputs, with marginal effect on system capacity.

WAVION TECHNOLOGY ADVANTAGES

- Increasing the capacity of the network, with more users per node and increased throughput for each user.
- Extending the range of the node with two to three times the coverage of existing wireless networks.
- Delivering more uniform coverage than current solutions, with fewer non-line-of-sight dead spots-even indoors.
- Alleviating the latency and jitter that lower transmission quality by minimizing the number of hops between access point and backhaul.
- Improving the economics of wireless deployment by requiring fewer nodes and much less mounting hardware to cover the same area.



Wavion cost effective Wi-Fi infrastructure, offers uniform coverage with a third of the number of base stations typically required for such installation. The low number of base stations can be translated to over 50% savings in both the initial infrastructure investment (CAPEX) and ongoing maintenance costs (OPEX).

SPECIFICATIONS

Security

WEP (64 bit or 128 bit)

WPA, WPA2:

- Encryption: TKIP, CCMP
- Authentication: Pre-Shared Key or 802.1x with RADIUS Server (EAP-TLS, PEAP, EAP-TTLS)
- VPN pass-through

Management

- Web-based configuration and management tool SNMPv2 with standard and Wavion MIB support Configuration save and restore
- Network and clients statistics
- HTTPS for Web-based management tools

Networking and QoS

- 802.1q VLAN support with multiple SSIDs
- 802.1p QoS support
- WMM support

Physical specifications

Network Interface:

- 1 or 3 x Auto-sensing 10/100 Ethernet (model dependent)

Physical Dimensions (without mounting brackets):

- Base Section: 13 in (33 cm) Diameter, 5 in (12 cm) Height
- Antenna Array: 17 in (43 cm) Height
- Weight: 20 lbs (9 Kg)

Power

Power input:

- AC model: 100–240 VAC 50/60Hz, 44W (up to 81W with using PoE output) weather-proof power cable, with standard AC connector or street light NEMA photo-electric control power tap
- 48VDC, 35 W (for DC input model only)
- PoE: 55VDC, 35 W (only with Wavion PoE injector)

Power output

- Output power: PoE output (up to 30W) through Eth. ports

Environmental

- Operating temperature range: -40°C to +55°C (with optional sunshield up to +60°C)
- Storage temperature range: -45°C to +85°C
- Weather rating: IP65
- Wind survivability: 165 mph
- Shock & Vibration: ESTI 300-192-4 spec T41.E
- Transportation: ISTA2A

Wireless

- IEEE 802.11b/g compliant
- Frequency band: 2.402–2.483 GHz

Modulation

- 802.11b: DSSS (DBPSK, DQPSK, CCK)
- 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)

TX Power Maximum (802.11b/g):

- Maximum transmit power will vary by channel and data rate
- Max. power per antenna: 27dbm (FCC version)

Total EIRP:

- 34.5dbm (from 6 antennas)
- Total Directed Power 42.5 dBm

Antenna Array:

- Six 7.5 dBi omni-directional antennas

RX Sensitivity (typical):

802.11g

Rate	Sensitivity
6Mbps	-102.5dbm
9Mbps	-100.5dbm
12Mbps	-99.5dbm
18Mbps	-98dbm
24Mbps	-95dbm
36Mbps	-92dbm
48Mbps	-88dbm
54Mbps	-86dbm

802.11b:

Rate	Sensitivity
1Mbps	-105.5dbm
2Mbps	-103dbm
5.5Mbps	-100.5dbm
11Mbps	-96dbm

Note: The sensitivity values include spatially adaptive link gain improvements

Approvals

- RF: FCC CFR part 15, Class C
- Safety: TUVus, UL 60950-1:2003, CAN/CSA-C22.2 No. 60950-1-03
- EMC: 47 CFR Part 15, Sub Part B, Class B (USA) (pending)
- Serial CLI port

Indicators:

- Two Ethernet port LED indicators
- System Status LED indicator
- RF channel status indicator

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