



The Answer to Wi-Fi Coverage in Schools

Beamforming technology

- **Coverage**
Wi-Fi access with a radius of more than 250m indoors
- **Capacity**
The ability to serve over 200 users with each base station
- **Safe and environmentally friendly**
Fewer base stations per school means a significant reduction in power consumption as well as in the potential effects of radiation
- **Interference Immunity**
Immunity against noise and interference
- **Efficiency**
Minimal installation and less equipment means less maintenance and results in significantly reduced TCO
- **Comprehensive indoor and outdoor coverage**
All-encompassing continuous and uniform coverage, enabling constant portability and mobility, with fewer dead zones

Wi-Fi to Cover All Your Needs

Wavion offers complete Wi-Fi coverage for an entire school campus, simultaneously supporting several hundred students, and utilizing a minimum number of access points.

Education in the 21st century has grown to be far more interactive, with computer usage and online access having become an everyday requirement, rather than a nice-to-have option.

The increased availability of mobile computers in schools, and the online curriculum, have resulted in an augmented need for stable, consistent and safe Wi-Fi for every student in the school.

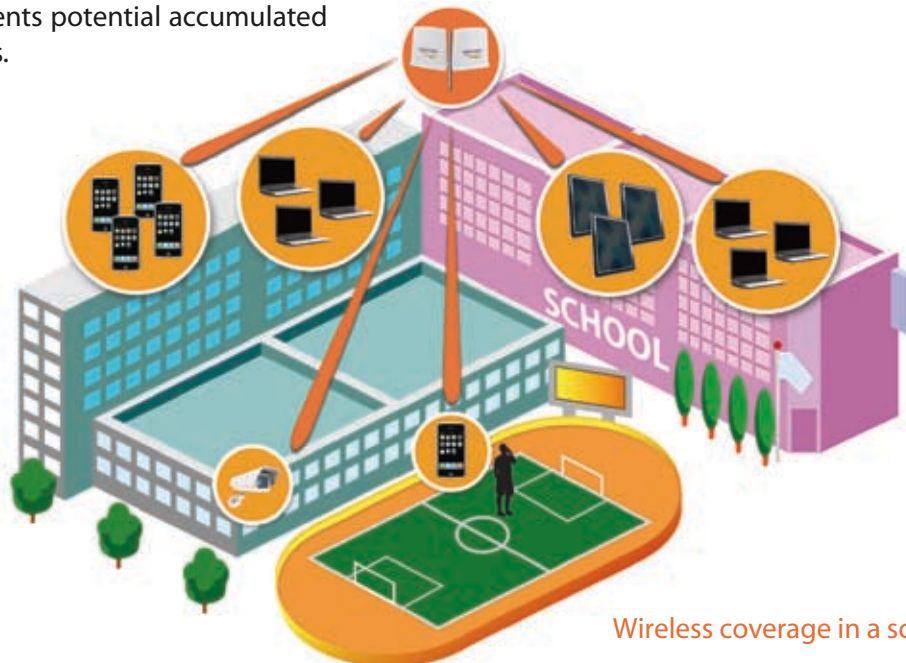
The traditional indoor Wi-Fi access point solution employed by many school establishments is costly, unwieldy, and grossly unsuited to the educational needs of students and teachers alike. These devices were originally developed for at-home use, with each unit typically only serving a few people.

In schools, this outdated mode of Wi-Fi access requires an access point per individual classroom, with a low capacity device-to-user ratio. The limited radius results in low coverage and limited Non-Line-of-Sight capabilities. Noise interference and unstable access results in wasted "teacher time," which is spent handling connectivity problems, rather than teaching. The close device-to-user proximity also presents potential accumulated radiation safety concerns.

Typically, the substantial number of access points means high installation and maintenance costs, while failing to deliver the level of service that the school requires, as well as wasting valuable resources.

The Wavion Base Station solution utilizes spatially adaptive Beamforming technology for best outdoor-to-indoor coverage, enabling a unique solution for kindergartens and schools. Using minimal equipment while offering maximized coverage, the Wavion solution provides coverage over a wide area, that includes the entire school campus. By installing a few units outdoors, as opposed to tens of units indoors, Wavion's solution reduces overall radiation and power consumption. With such a significant decrease in the quantity of the required equipment, the Wavion Base Station solution offers a far lower overall total cost of ownership (TCO), lowering both the time for initial installation as well as the long term costs and effort of maintenance.

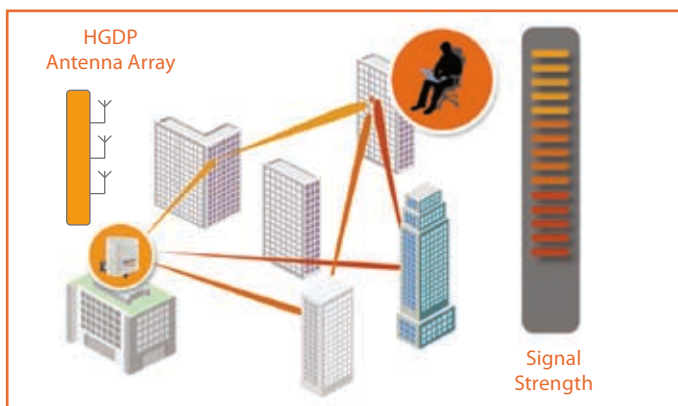
Wavion's solution is also ideal for educational establishments who until now have been unable to provide Wi-Fi coverage. The reduced TCO enables schools in rural areas, as well as in under-served regions, to experience new heights of education by enabling remote teaching access. Students are now able to study a much wider range of educational subjects, and are no longer limited by local shortages of specialist teachers.



Wireless coverage in a school

Spatially Adaptive Beamforming

Wavion spatially adaptive Beamforming technology focuses the energy to and from the client on a per-packet basis. This process significantly increases the link gain and the interference resiliency of the base station.



Wavion's Beamforming 802.11n in Urban NLOS

Moreover, while conventional Wi-Fi technology suffers from the destructive effect of multipath propagation, Wavion's Beamforming technology leverages multipath to its advantage by coherently combining the signals along the different propagation paths to the client. This results in much better coverage and capacity, enabling the deployment of a minimal number of base stations outdoors rather than the tens of indoor units used in traditional solutions. Wavion technology is interoperable with any standard, off-the-shelf broadband or Wi-Fi client.

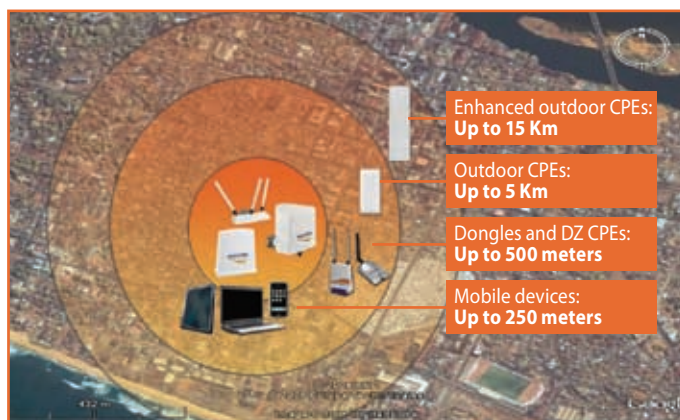
Wavion Service Pro

The Wavion Service Pro (WSP) is a solution that controls access to the school's network. It can be used to allow access to the internet for students, or to certain

databases for specific members of staff: for example, a class teacher might have access to the database of all pupils in the class, while the Headteacher might have access to all pupils from all classes across the grade. Included among the benefits of the WSP are security (for accurate user authentication) and efficiency by utilizing careful bandwidth management. It can also allow controlled access to the system using an individualized portal system, such as a personalized welcome screen upon logging in, that displays the school name, logo and messaging. The WSP is a scalable solution, that can fit any sized school.

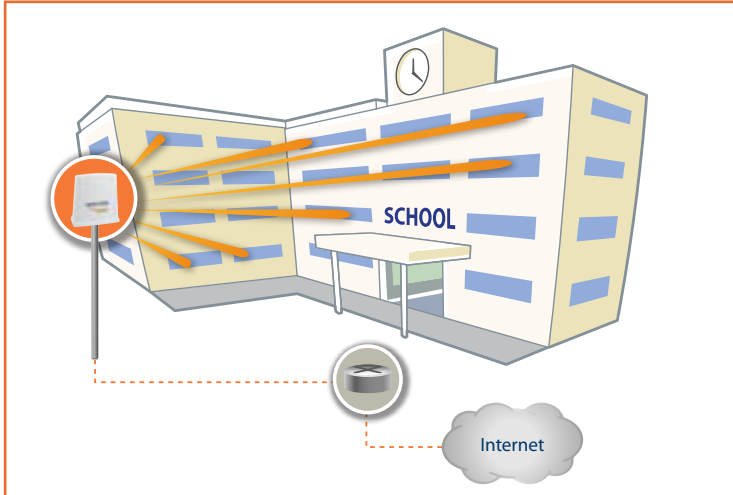
Wavion Coverage Tool

The Wavion Coverage Tool (WCT) enables you to survey a Wi-Fi site to determine the effectiveness of the coverage provided in the area of the installation. This is done by measuring the Wi-Fi throughput for each location and displaying it on a Google Earth map. The measurement can be accomplished by walking or driving with a laptop around the area.

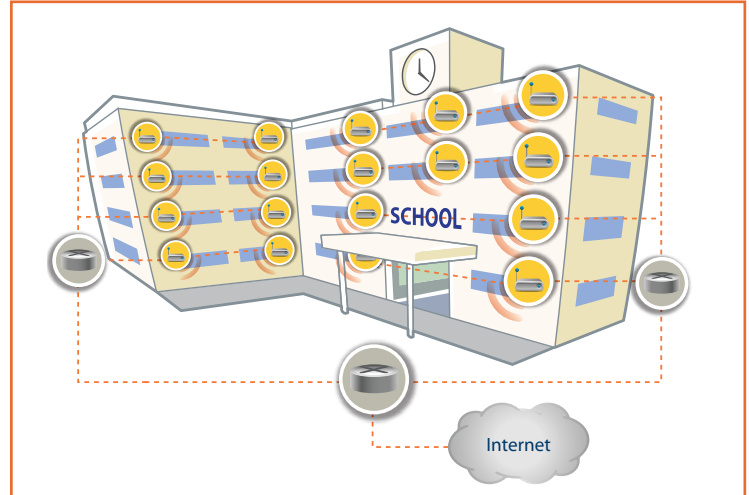


Extended coverage in 2.4 and 5 GHz

Sector	Omni	Combined Sector-Omni	Enhanced Omni
			
WBSn-2400-S WBSn-5000-S WBSn-2450-S	WBSn-2400-O WBSn-5000-O WBSn-2450-O	WBSn-2450-OS WBSn-2450-SO	WBSn-2400-E WBSn-2450-E



Wavion solution



Traditional solution

WBSn Base Station Specifications

		802.11 b/g/n Radio		
Operating frequency	2.400 – 2.483 GHz, 13 channels			
Modulations	802.11n: 3x3 MIMO with 3 data streams 802.11g: OFDM 802.11b: DSSS			
Supported data rates	802.11n: MCS0 - MCS23 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11b: 11, 5.5, 2, 1 Mbps			
Bandwidth	20 / 40 MHz, 5MHz steps			
Capacity	450 Mbps, 256 user to 768 users, depending on model			
Receiver sensitivity	802.11n: -96 dBm @ MSC 0 802.11g: -97 dBm @ 6 Mbps 802.11b: -102 dBm @ 1 Mbps			
Maximum transmit power	Sector	Omni	Enhanced Omni	
	Tx power at antenna port: 26 dBm, 1dB steps			
	48 dBm directed EIRP	43 dBm directed EIRP	48 dBm directed EIRP	
Ports	Ethernet: auto-sensing 10/100/1000 Base-T			
Input power	55VDC Power over Ethernet (only with Wavion POE Injector), feed: 100-240 VAC at 47-63 Hz			
	Sector	Omni	Enhanced Omni	
Power consumption (nom./max.)*	19/23 Watt	19/23 Watt	44/56 Watt	
Dimensions (H x L x W)	38cm x 14cm x 39.5cm	38cm x 14cm x 9.5cm (excluding antennas)	44.5cm x 41.5cm x 46cm	
Weight	2.4kg	1.4kg	7kg	

For a complete set of specifications, please refer to the Wavion WBSn data sheet.

* Power consumption can be lower when working with different regulations, such as ETSI.