

# The Answer to **Wi-Fi Coverage in Education**

Wi-Fi Solution



*As far as Wi-Fi can go*

# The Answer to Wi-Fi Coverage in Education

## Benefits

- **Extended Coverage**  
Wi-Fi access with a radius of more than 250m indoors
- **High Capacity**  
The ability to serve up to 512 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
- **Powerful Interference Immunity**  
Immunity against noise and interference
- **Lower Operational Cost**  
Minimal installation and less equipment means less maintenance and may result 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

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

Education in the 21<sup>st</sup> 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 education, 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 educational 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 educational facilities, this 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 service 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 campus requires, as well as wasting valuable resources.

The Alvarion Base Station solution utilizes spatially adaptive Beamforming technology for optimal outdoor-to-indoor coverage, enabling a unique solution for kindergartens, schools and educational facilities. Using minimal equipment while offering maximized coverage, the Alvarion solution provides coverage over a wide area, including the entire educational



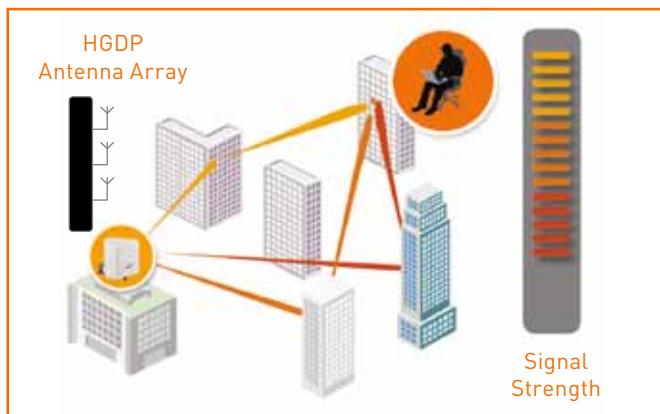
Wireless coverage on an educational campus

campus. By installing a few units outdoors, as opposed to tens of units indoors, Alvarion's solution reduces overall radiation and power consumption. With such a significant decrease in the quantity of the required equipment, the Alvarion 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.

Alvarion's solution is also ideal for any educational establishments who have been unable to provide Wi-Fi coverage. The reduced TCO enables schools in rural areas, as well as in underserved 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.

## Spatially Adaptive Beamforming

Alvarion 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.



Alvarion's Beamforming 802.11n in Urban NLOS

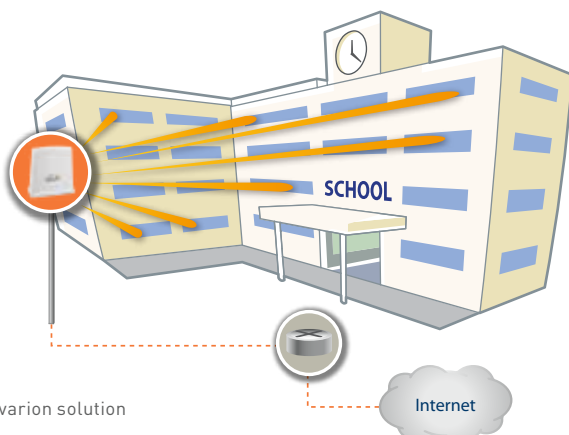
Moreover, while conventional Wi-Fi technology suffers from the destructive effect of multipath propagation, Alvarion's Beamforming technology leverages multipath to its advantage by coherently combining the signals along the different propagation paths to the client. This results in much better coverage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

## Wi-Fi Service Pro

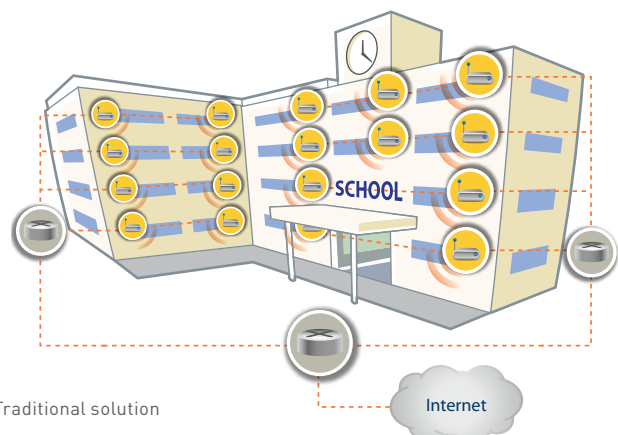
The Alvarion Wi-Fi Service Pro (WSP) is a solution that controls access to the school's network. It can be used to allow access to the internet for students, or to certain databases for specific members of staff: for example, a class teacher might have access to the database of all pupils in the class, 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.

## WCT Wi-Fi Coverage Tool

The Alvarion Wi-Fi 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.



Alvarion solution



Traditional solution

## WBSn Base Station Specifications

### International Corporate HQ

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Tel Aviv, Israel 69710

### Contact us at:

sales@alvarion.com

For local contact information  
in your area, please visit

[www.alvarion.com](http://www.alvarion.com)

### 802.11 a/b/g/n Radio

<b>Operating frequency</b>	2.400 – 2.483 and 4.900-5.900 GHz Subject to local regulation		
<b>Modulations</b>	802.11n: OFDM 3x3 MIMO with 3 data streams 802.11a/g: OFDM 802.11b: DSSS		
<b>Supported data rates</b>	802.11n: MCS0 - MCS23 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps		
<b>Bandwidth</b>	20 / 40 MHz, 5MHz steps		
<b>Capacity</b>	Up to 900 Mbps, and 512 users, pending on model		
<b>Receiver sensitivity</b>	802.11n: -96 dBm @ MSC 0 802.11g: -97 dBm @ 6 Mbps 802.11b: -102 dBm @ 1 Mbps		
<b>Maximum transmit power</b>	Tx power at antenna port at 2.4 GHz: 25 dBm Tx power at antenna port at 5 GHz: 26 dBm  43/48 dBm directed EIRP  Pending on model and subject to local regulation		
<b>Ports</b>	Ethernet: auto-sensing 10/100/1000 Base-T		
<b>Input power</b>	55VDC Power over Ethernet (only with Alvarion POE Injector), feed: 100-240 VAC at 47-63 Hz		
<b>Power consumption (nominal)*</b>	Up to 22 Watt, pending on model, lower in low power regulations as ETSI		
<b>Dimensions (H x L x W)</b>	<b>Sector</b>	<b>Omni</b>	<b>Combined Sector - Omni</b>
	38cm x 14cm x 39.5cm	38cm x 14cm x 9.5cm (excluding antennas)	38cm x 14cm x 43.5cm (excluding antennas)
<b>Weight</b>	2.8 kg single band 3.4 kg dual band	2.0 kg single band 2.6 kg dual band	3.6 kg

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

### Sector



WBSn-2400-S  
WBSn-2450-S

### Omni



WBSn-2400-0  
WBSn-2450-0

### Combined Sector-Omni



WBSn-2450-0S  
WBSn-2450-S0



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### About Alvarion

Alvarion Ltd. (NASDAQ:ALVR) provides optimized wireless broadband solutions addressing the connectivity, coverage and capacity challenges of telecom operators, smart cities, security, and enterprise customers. Our innovative solutions are based on multiple technologies across licensed and unlicensed spectrums. ([www.alvarion.com](http://www.alvarion.com))