Netronics®

NetPoint Pro®
6x2.4, 6x5.8, 3x2.4, 3x5.8

Wi-Fi base Stations Providing Superior Connectivity

NetPoint Pro 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 services with fewer base stations at lower costs.
The NetPoint Pro Wi-Fi base station is the ideal solution for metro and rural Wi-Fi infrastructure.
Based on Netronics innovative, spatially adaptive, beamforming technology NetPoint Pro 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.

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.

Superior Range

NetPoint Pro 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 and Indoor Penetration

NetPoint Pro 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.

NetPoint Pro 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

NetPoint Pro improved link gain and quality increases the throughput and the capacity of the network, boosting throughput for each user. Furthermore, Netronics 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

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

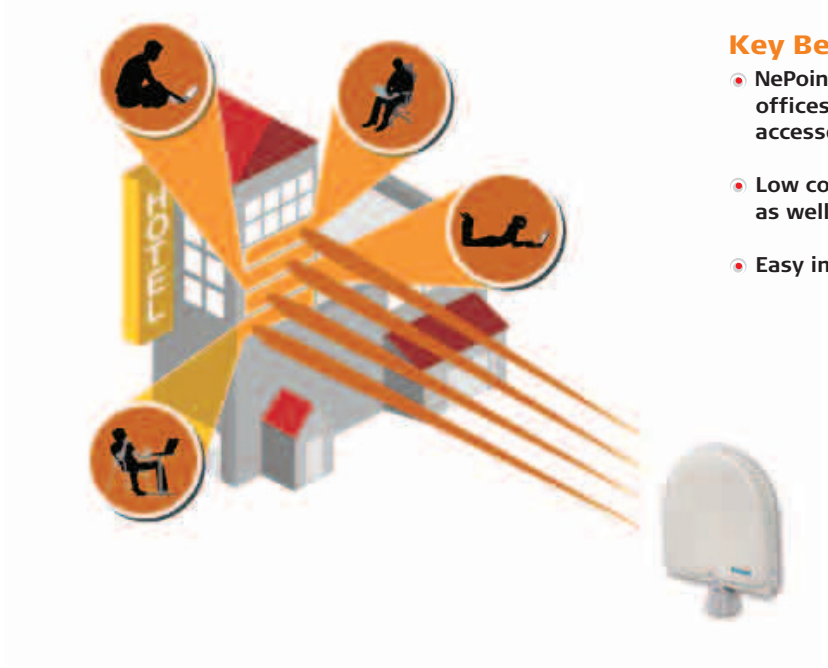
Cost Effective

NetPoint Pro 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.

Applications

The NetPoint Pro base station has been optimized to provide the best performance in a wide range of applications

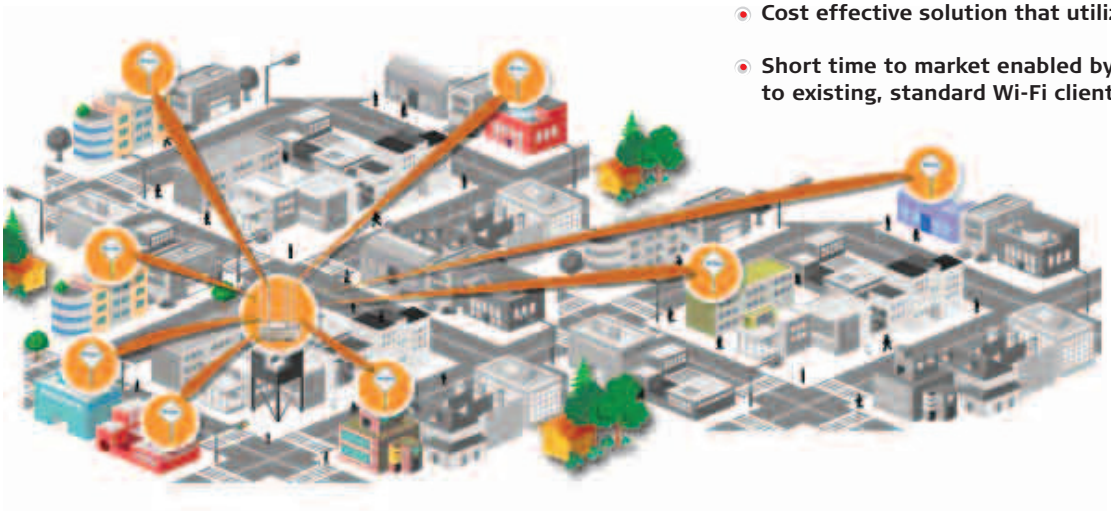
Building Coverage



Key Benefits

- NePoint Pro indoor penetration, ensures that rooms and offices throughout the building can be effectively accessed.
- Low cost of ownership for infrastructure deployment as well as maintenance.
- Easy installation requiring minimal alignments.

Business Connectivity



Key Benefits

- High capacity and superior radio performance in a wireless network using Netronics NetPoint Pro with Netronics beamforming and SDMA technology.
- Utilization of both near-line-of-sight for short distance and line-of-site for long distance connectivity.
- Easy installation requiring minimal alignments.
- Improved network coverage, which requires significantly fewer base stations and provides effective service to remote locations using Netronics NetPoint Pro.
- Cost effective solution that utilizes of-the-shelf Wi-Fi CPE's.
- Short time to market enabled by providing service to existing, standard Wi-Fi clients.

Rural Connectivity

Key Benefits

- Providing a broadband Wi-Fi solution for both internet and Voice-over-IP services creates a unique value proposition for the operator
- Low cost of ownership for infrastructure deployment as well as maintenance.
- Supporting long-hauls multiple points to point links of up to 20 km per CPE with the same NetPoint Pro.

Typical Deployment

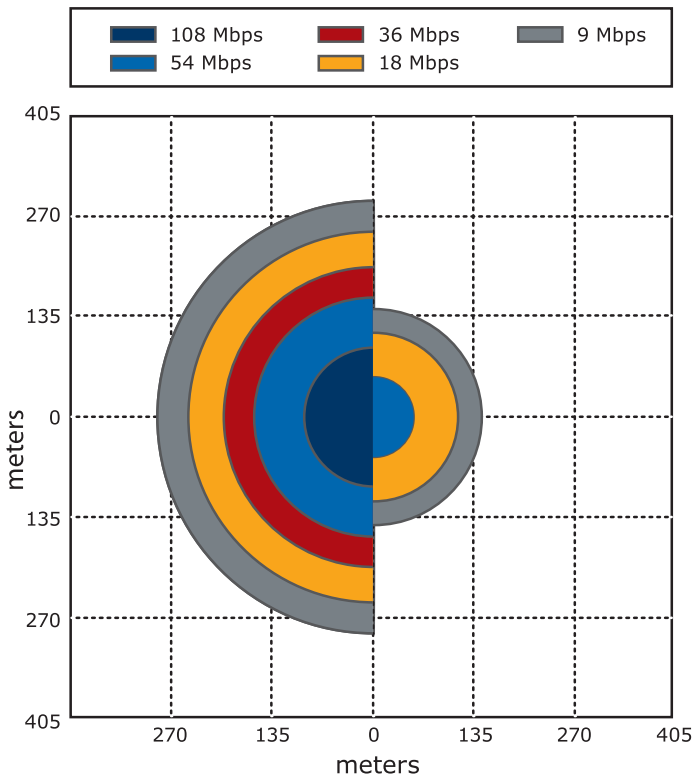
Beam Forming

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

The NetPoint Pro 6x2.4 (Or 6x5.8) base station uses six radio transceivers and six antennas, (Three radios and three 120 degree antennas for NetPoint 3x2.4 and 3x5.8) and employs advanced digital beamforming to optimally focus radio energy to and from network clients on a per-packet basis. The NetPoint Pro intelligence resides in customized ASICs and embedded software, which continually compensate for the changing outdoor conditions.

Netronics NetPoint Pro beamforming technology focuses the energy to and from the client, on a per 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, Netronics digital beamforming technology exploits multipath to its advantage by coherently combining the signals along the different propagation paths to the client.

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



SDMA

Netronics 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.

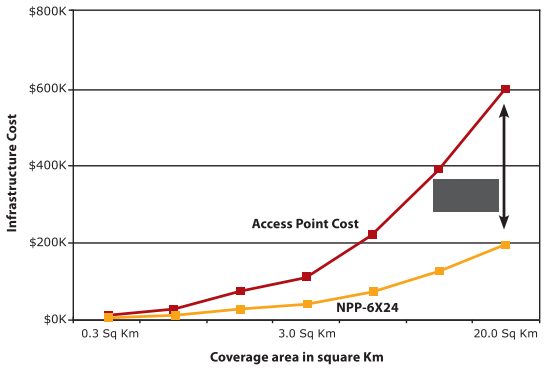
Self-Backhaul

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

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 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.

Product	Radios & Antennas	Antenna Type	Frequency
NetPoint Pro 6x2.4	6	Omni-directional	2.4 GHz
NetPoint Pro 3x2.4	3	Sectoral 120 Degrees	2.4 GHz
NetPoint Pro 6x5.8	6	Omni-directional	5.8 GHz
NetPoint Pro 3x5.8	3	Sectoral 120 Degrees	5.8 GHz



Netronics 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 station 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 RADIUS Server (EAP-TLS, PEAP, EAP-TTLS) . VPN pass-through
Management	. Web-based configuration and management tool SNMPv2 with standard and Netronics MIB support configuration save and restore . Network and clients statistics . HTTPS for Web-based management tools
Networking & 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 (33cm) Diameters, 5 in (12cm) Height . Antenna Array: 17 in (43) Height . Weight: 20 lbs (9kg)

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, 29 W (for DC input model only) . PoE: 56VDC, 35 W (only with Netronics PoE injector)
Power output	. Output power: PoE output (up to 30W) through Eth. ports
Modulation	. 802.11b: DSS (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	. 35.4dbm (from 6 antennas) . Total Directed Power 42.5 dbm
Antenna Array	. Six 7.5 dBi omni-directional antnnas

RX Sensitivity (typical)

	Rate	Sensitivity
802.11g	6Mbps 9Mbps 12Mpbs 18Mpbs 24Mbps 36Mbps 48Mbps 54Mpbs	-102.5dbm -100.5dbm -99.5dbm -98dbm -95dbm -92dbm -88dbm -86dbm
802.11b	**Rate** 1Mbps 2Mbps 5.5Mpbs 11Mpbs	**Sensitivity** -105.5dbm -103dbm -100.5dbm -96dbm

Note: The sensitivity values include spatially adaptive link gain improvement

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
Environmental	. Operating temperature range: -40° C to +65° C . Storage temperature range: -45° C to +85° C . Weather rating: IP65 . Wind survivability: 165 mph
Wireless	. IEEE 802.11b/g compliant . Frequency band: 2.4 GHz (NetPoint Pro 6x2.4 and 3x2.4) 5.8 GHz (NetPoint Pro 6x5.8 and 3x5.8)

Netronics®

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