Atheros XSPAN® Technology

Expanding performance. Expanding possibilities.

Atheros offers the most innovative and complete portfolio of 802.11n wireless LAN chipset solutions. The new AR9001 family of chipsets, the second-generation of Atheros' XSPAN 802.11n technology, builds upon the company's first-generation XSPAN products – with enhanced performance, higher integration, smaller form factors and lower overall cost – to meet the needs of the rapidly growing 802.11n market. Like the first-generation XSPAN products, all AR9001 chipsets are compliant to the latest IEEE 802.11n specification.

Atheros' AR9001 chipsets feature:

- **Leading Integration** that delivers end product cost and form factors to drive broad market adoption of 802.11n products;
- **Single- and Dual-Band, and Multiple MIMO Configurations** that enable OEMs to tailor product price/performance for specific application and market segment requirements;
- **Rich Media & Peripheral Interfaces** that anticipate the requirements for advanced media networking applications and allow end-product feature differentiation;
- **Simple Setup via Atheros' JumpStart for Wireless,** the company's simple network configuration software which supports both the PIN and push-button setup methods complying to the Wi-Fi Protected Setup specification;
- **Worldwide 5 GHz Full-Spectrum Support** for state-of-the-art regulatory requirements with Atheros' Dynamic Frequency Selection (DFS).

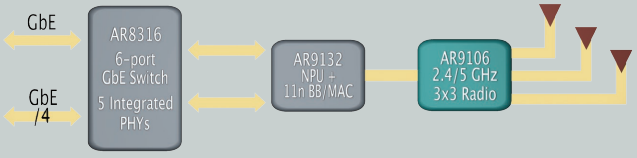
Product Overview

Both the AR9001AP-2NX and AR9001AP-3NX solutions incorporate all of the key components needed to build the most cost-effective, dual-band configurable AP/routers for home, carrier/gateway and enterprise applications. These solutions feature the industry's first 802.11n System-on-Chip (SoC), with the high-performance combination of Atheros' 400 MHz wireless network processor (WNPU) and Atheros' market-proven MAC/Baseband. This powerful SoC, which readily supports advanced 11n applications while delivering processing headroom, is paired with Atheros' second-generation, enhanced dual-configurable 2x2 and 3x3 single-chip radios, featuring XSPAN and XSPAN with SST™ performance.

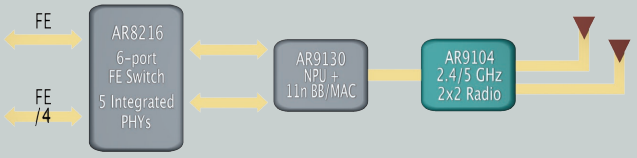
These dual-band configurable designs offer customers as well as end-users the ability to select operation of end-products for either the 2.4 or 5 GHz bands of 802.11n

- AR9001AP-2NX: 2x2 MIMO, Fast Ethernet LAN/WAN
- AR9001AP-3NX: 3x3 MIMO, Gigabit Ethernet LAN/WAN

AR9001AP-3NX Architecture

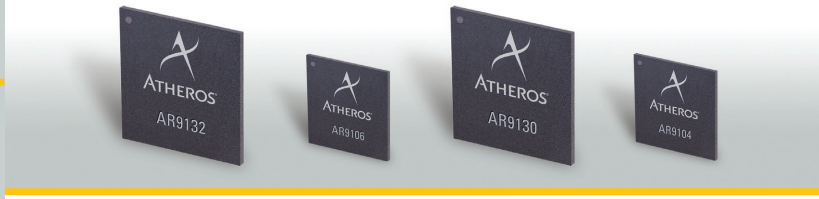


AR9001AP-2NX Architecture



AR9001AP-3NX
AR9001AP-2NX

The industry's highest performance, ***dual-configurable*** *802.11n AP/router solution*



Solution Highlights

- Next-generation, high-performance 802.11n compliant wireless access point and router chipset solutions including:

  AR9001AP-2NX
  - AR9130: 400 MHz Wireless Network Processing Unit (WNPU), 802.11n MAC/Baseband, Fast Ethernet MACs, 2x2 MIMO
  - AR9104: Dual-band 2x2 MIMO 802.11n Radio

  AR9001AP-3NX
  - AR9132: 400 MHz Wireless Network Processing Unit (WNPU), 802.11n MAC/Baseband, Gigabit Ethernet MACs, 3x3 MIMO
  - AR9106: Dual-band 3x3 MIMO 802.11n Radio

- Full support for Dynamic Frequency Selection (DFS) enabling uncompromised operation in the broad range of 5 GHz channels
- Atheros XSPAN with SST technology – providing the industry's highest TCP/IP throughput at enhanced range
- Support for 2x2 or 3x3 MIMO with spatial multiplexing
- Enables bandwidth of 300 Mbps PHY/link rate – six times the bandwidth of 802.11g or 802.11a
- Dual-band WLAN radios operate at 2.4 GHz and 5 GHz
- Compliant with IEEE 802.11a, 802.11b, 802.11g, 802.11d, 802.11e, 802.11h, 802.11i, 802.11n
- Lead-free RoHS compliant

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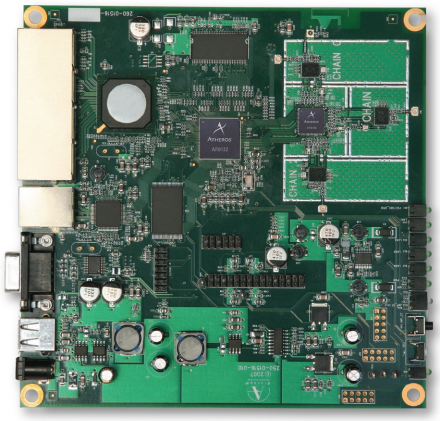
Reference Design Highlights

- Based on the AR9001AP-3NX chipset, supports 2x2, 2x3, or 3x3 MIMO, GbE WAN and LAN connectivity, and access to all WNPU system interfaces
- Two I^2S ports: audio streaming
- SLIC: VoIP
- UART, GPIOs
- USB: support for host, device, or OTG modes
- Configurable for 2x2 MIMO operation for AR9001AP-2NX evaluation
- Enables fastest development and evaluation of software, hardware, and other implementation options



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AR9130/AR9132 802.11n Wireless System-on-a-Chip (SoC) for 2.4/5 GHz WLANs

- AR9130
  - Dual Fast Ethernet MACs
  - 2x2 MIMO
- AR9132
  - Dual Gigabit Ethernet MACs
  - 3x3 MIMO
- 400 MHz MIPS32® 24K™ processor
  - 64 KB I-cache, 32 KB D-cache
- 400 MHz DDR memory interface
- Interfaces:
  - USB 2.0: host, device, OTG modes
  - Dual I^2S
  - SLIC (PCM)
  - Serial & parallel flash
  - UART

AR9104/AR9106 MIMO Radios

- AR9104
  - Dual-band 2x2 MIMO radio/antenna configuration
- AR9106
  - Dual-band 3x3 MIMO radio/antenna configuration
- Eliminates all IF filters and most RF filters; no external voltage controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- Support for 5, 10, 20 and 40 MHz channels. Rx filter supports blocking specifications for half and quarter rate channels.

ATHEROS®
There is Here.™

AR9001AP-3NX and AR9001AP-2NX Specifications

Frequency Band	2.4 and 5 GHz
Network Standard	802.11a, 802.11b, 802.11g, 802.11n
Modulation Technology	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4, 5/6
Hardware Encryption	AES, TKIP, WEP
Quality of Service	802.11e
Peripheral Interface	Fast/Gigabit Ethernet, USB 2.0, I^2S, SLIC, UART, GPIOs, LEDs
Memory Interface	DDR, Serial/Parallel Flash
Supported Data Rates	
IEEE 802.11a	6 - 54 Mbps
IEEE 802.11b	1 - 11 Mbps
IEEE 802.11g	6 - 54 Mbps
IEEE 802.11n	6.5 - 300 Mbps (per band)

Contact your local Atheros representative and ask about the AR9001 series of semiconductor products or other solutions from Atheros:

Atheros Communications, Inc.
t +1 408.773.5200
f +1 408.773.9940

Atheros Hong Kong Limited
t +852 8206.1131
f +852 8206.1301

Atheros Communications KK-Japan
t +81 3.5501.4100
f +81 3.5501.4129

Atheros (Shanghai) Co., Ltd.
t +86 21.5108.3626
f +86 21.5027.0100

Atheros Communications Intl, LLC-Taiwan
t +886 2.8751.6385
f +886 2.8751.6397

Atheros Korea
t +82 31.786.0428

For more information on Atheros and Atheros wireless technology please visit www.atheros.com

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