

# AIRMESH MSR4000 OUTDOOR WIRELESS MESH ROUTER

Delivers High-Performance Wireless Mesh Routing



The Aruba® AirMesh MSR4000 delivers high-performance wireless mesh routing with the high capacity of the wired enterprise network infrastructure to outdoor environments.

Ruggedized and hardened to withstand extreme environmental conditions, the MSR4000 is ideal for deployment in metropolitan and industrial areas, oilfields, mines, and shipping ports.

A multi-radio, multi-frequency architecture and adaptive Layer 3 routing using the Aruba MeshOS™ operating system make the MSR4000 unique. Together, they provide unparalleled capacity, reliability, low latency and seamless handoffs for voice, HD-quality video and other real-time applications across long-distance outdoor wireless mesh networks.

## FLEXIBLE, HIGH-CAPACITY ARCHITECTURE

The MSR4000 consists of four independent 802.11a/b/g/n radios for flexible outdoor wireless mesh deployments using the 2.4-GHz, 5-GHz and 4.9-GHz band. Each radio is capable of providing a maximum aggregate transmit power of 25 dBm and a data rate of up to 300 Mbps.

Each radio may be configured to operate as a Wi-Fi access point (AP) or as a point-to-point, point-to-multipoint or full mesh backhaul. A quad-radio architecture separates client access and mesh backbone data while optimizing radio resources for both types of traffic to ensure high throughput and low latency.

## INTELLIGENT WIRELESS MESH ROUTING

Integrated with Aruba MeshOS, Adaptive Wireless Routing™ (AWR™) technology automatically optimizes traffic routes between wireless mesh routers and creates a truly adaptive mesh infrastructure.

With AWR, the mesh infrastructure adjusts dynamically to traffic levels and RF signal strength to ensure high availability and optimal performance across multiple network hops.

Aruba's MobileMatrix™, another key MeshOS Layer 3 technology, allows Wi-Fi clients to move between wireless mesh routers in less than 50 milliseconds, maintaining a seamless connection for latency-sensitive applications, such as video and voice.

## HD-QUALITY VIDEO

For HD-quality video from mobile and fixed surveillance cameras, monitors and recording systems, the Active Video Transport™ (AVT™) technology in MeshOS provides traffic management and load balancing across the mesh.

AVT uses deep packet inspection, MAC protocol optimization, in-network retransmission protocol and adaptive video jitter removal to deliver enhanced video at up to 30 frames per second.

## REDUCED CAPITAL AND OPERATING COSTS

In addition to reducing capital and operating expenses by simplifying deployment, the MSR4000 eliminates the high cost of installing copper or fiber-optic cabling, as well as monthly fees for leased lines, digital subscriber line (DSL) and metro Ethernet services.

## APPLICATION

- Four-radio outdoor wireless mesh router designed for high-performance, latency-sensitive applications

## NETWORK MANAGEMENT

- Managed via CLI, Web GUI, MeshConfig or AirWave\* (\*available second half of 2011)

## OPERATING MODE

- Each radio may be configured to operate in the following modes:
  - 802.11a/b/g/n access point for client access
  - 802.11a/b/g/n mesh router for backhaul

## RADIOS

- Four multifunction radios capable of 2.4-GHz, 5-GHz or 4.9-GHz operation
- Radios implement 2x2 MIMO with two spatial streams, providing up to 300 Mbps data rate per radio
- Dual receiver chain maximal ratio combining (MRC) for improved receiver performance

## WIRELESS RADIO SPECIFICATIONS

- AP type: outdoor, four radio, dual band plus 4.9-GHz public safety band
- Supported frequency bands (country-specific restrictions apply)
  - 2.400 to 2.483 GHz
  - 4.900 to 5.100 GHz
  - 5.150 to 5.250 GHz
  - 5.250 to 5.350 GHz
  - 5.470 to 5.725 GHz
  - 5.725 to 5.850 GHz
- Maximum aggregate transmit power per radio: Up to 25 dBm
- Available channels: Dependent on configured regulatory domain
- Maximum transmit power: 25 dBm (325 mW) limited by local regulatory requirements
- Supported radio technologies:
  - 802.11b: Direct-sequence spread-spectrum (DSSS)
  - 802.11a/g/n: Orthogonal frequency division multiplexing (OFDM)
  - 802.11n: 2x2 MIMO with two spatial streams
- Supported modulation types:
  - 802.11b: BPSK, QPSK, CCK
  - 802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM
- Association Rates
  - 802.11b: 1, 2, 5.5, 11
  - 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - 802.11n: MCS0 - MCS15 (6.5 Mbps to 300 Mbps)
  - 802.11n high-throughput (HT) support: HT 20/40
  - 802.11n packet aggregation: A-MPDU, A-MSDU

## ANTENNA

- Eight N-type (female) interfaces for external antenna support
- Feeder cable may be used for external antenna deployments

## ARUBA MESHOS

Aruba MeshOS is a feature-rich operating system that is used across all MSR wireless mesh routers

## Routing Features

- Adaptive Wireless Routing (AWR)
  - Layer 3 optimal route selection
  - Fast convergence and failover
  - Multiple concurrent gateways
- OSPF enables integration with existing routing topologies

## Networking

- NAT/PAT
- DHCP server, relay, client
- 4,000 VLANs
- Support for HTTP, HTTPS, SSH, Telnet, SNMP, NTP and ICMP

## Security

- End-to-end WPA/WPA2, TKIP (128 bit), PSK, AES (128 bit)
- Authentication: 802.1X (RADIUS), EAP methods
- MAC and IP address filtering
- Access Control List (ACL)
- Digital certificates

## Traffic Management

- Wi-Fi Multimedia (WMM), 802.11e
- IEEE 802.1p prioritization
- DSCP/DiffServ
- Bandwidth control

## RF Management

- Automatic channel selection
- RF interference detection and avoidance
- 16 BSSIDs
- Adaptive baud rate control

## ADVANCED FEATURES

- Virtual Private LAN over Mesh (VPLN) provides native Layer 2 over Layer 3 interface to external networks
- Active Video Transport (AVT) technology performs deep packet inspection, adaptive jitter removal and corrects transmission packet loss
- MobileMatrix technology allows users to roam between mesh routers while maintaining their application sessions

## POWER

- Power
  - 100~240 VAC 50/60 Hz (MSR4000 AC models)
  - High power PoE (60 watts) input required (MSR4000 PoE powered models)
- Power consumption: 36 watts max (excludes power consumed by any PoE device connected to and powered by the MSR4000 AC versions)

## INTERFACES

- 10/100/1000BASE-T Ethernet network interface (RJ45)
- 802.3af PoE-PSE power output on Ethernet interface (on AC models only)
- USB console interface
- Eight N-type antenna connectors

## MOUNTING

- Mounting kit:
  - Mast mounting
  - Wall mounting
  - Solar shield included

## MECHANICAL

- Dimensions:
  - Unit: 325mm x 290mm x 135mm (13" x 11.5" x 5")
  - Shipping box: 415mm x 352mm x 428mm (16.3" x 13.9" x 16.9")
- Weight (MSR4K43N0):
  - Unit: 5.5kg (12.1lb)
  - Shipping box: 11.75kg (25.9lb)
- Weight (MSR4K43N3):
  - Unit: 6.5kg (14.3lb)
  - Shipping box: 12.75kg (28.1lb)

## ENVIRONMENTAL

- Operating:
  - Temperature: -30° C to 60° C (-22° F to 140° F) for PoE powered model; -40° C to 55° C (-40° F to 131° F) for AC powered model
- Storage and transportation temperature range: -30° C to 70° C (-22° F to 158° F)
- Weather rating: IP66
- Wind survivability: Up to 165 mph
- Shock and vibration: ETSI 300-19-2-4 spec T41.E class 4M3
- Transportation: ISTA 2A

**REGULATORY**

- Regulatory Model Numbers
  - MSR4000 PoE Powered: MSR4K43N0
  - MSR4000 AC Powered: MSR4K43N3
- FCC/Industry of Canada
- CE Marked
- R&TTE Directive 1995/5/EC
- Low Voltage Directive 72/23/EEC
- EN 300 328
- EN 301 489
- EN 301 893
- UL/IEC/EN 60950
- CB Scheme Safety, cTUVus

- Japan MIC/VCCI
- Korea KCC
- Brazil ANATEL
- Mexico NOM/COFETEL
- China SRRC/CCC
- IEC 60529 IP66, NEMA 4X
- AS/NZS 4260, 4771, 3548

**CERTIFICATIONS**

- Wi-Fi certified: 802.11a/b/g/n

**WARRANTY**

- 1 year parts/labor

**Ordering Information**

Part Number	Description
MSR4K43N0	<ul style="list-style-type: none"> <li>• Aruba MSR4000 Outdoor Wireless Mesh Router</li> <li>• Four 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)</li> <li>• 10/100/1000BASE-T Ethernet interface (RJ45)</li> <li>• Power input via (high-power PoE) Ethernet interface</li> <li>• One mounting kit with sun shield</li> </ul>
MSR4K43N3	<ul style="list-style-type: none"> <li>• Aruba MSR4000 Outdoor Wireless Mesh Router</li> <li>• Four 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)</li> <li>• AC power input</li> <li>• 10/100/1000BASE-T Ethernet interfaces (RJ45) with 802.3af PoE power sourcing capability</li> <li>• One mounting kit with sun shield</li> </ul>
MSR4KP	<ul style="list-style-type: none"> <li>• Aruba MSR4000 Outdoor Wireless Mesh Router</li> <li>• Four 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)</li> <li>• 10/100/1000BASE-T Ethernet interface (RJ45)</li> <li>• Power input via (high-power PoE) Ethernet interface</li> <li>• One mounting kit with sun shield</li> <li>• New boot loader</li> </ul>
MSR4KAC	<ul style="list-style-type: none"> <li>• Aruba MSR4000 Outdoor Wireless Mesh Router</li> <li>• Four 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)</li> <li>• AC power input</li> <li>• 10/100/1000BASE-T Ethernet interfaces (RJ45) with 802.3af PoE power sourcing capability</li> <li>• One mounting kit with sun shield</li> <li>• New boot loader</li> </ul>



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