WIRELESS MESH NETWORKS
DATA SHEET
Aruba MSR2000™

ARUBA AIRMESH MSR2000 OUTDOOR WIRELESS MESH ROUTER

The Aruba AirMesh MSR2000 delivers high-performance wireless mesh routing to outdoor environments where wired connectivity is impractical or unavailable.

Ruggedized and hardened to withstand extreme environmental conditions, the MSR2000 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 MSR2000 unique. Together, they provide unparalleled capacity, reliability, low latency and seamless handoffs for voice, HD-quality video and other real-time applications.

Flexible, High-capacity Architecture

The MSR2000 consists of two independent 802.11n radios for flexible outdoor wireless mesh deployments using the 2.4-GHz, 5-GHz and 4.9-GHz band.

Each radio may be configured to operate as a Wi-Fi access point (AP) or as a point-to-point, point-to-multipoint and full mesh backhaul. This dual-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 MSR2000 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

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

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

- Two 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
- 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
  - 0802.11n packet aggregation: A-MPDU, A-MSDU

ANTENNA

- Four N-type 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, SMNP, 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 (MSR2K23EN1 only)
  - 12-48 VDC (MSR2K23EN2 only)
  - 802.3at PoE+ input required (MSR2K23EN0 only)
- Power consumption: 15 watts

INTERFACES

- One 10/100/1000BASE-T Ethernet interfaces (RJ45)
- 802.3af PoE (MSR2K23N1 and MSR2K23N2 only)
- USB console interface
- Four N-type antenna connectors

MOUNTING

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

MECHANICAL

- Dimensions/weight (unit)
  - 260 mm x 240 mm x 105 mm (10.2” x 9.4” x 4.1”)
  - 3.25 kg (7 lb)
- Dimensions/weight (shipping)
  - 330 mm x 320 mm x 300 mm (12.9” x 12.6” x 11.8”)
  - 7.5 kg (16.6 lb)

ENVIRONMENTAL

- Operating:
  - Temperature: -30° C to 55° C (-22° F to 131° F)
  - Humidity: 5% to 95% non-condensing
- 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

- Safety
  - EN 60950-1
  - IEC60950-1
  - UL 60950-1
  - CAN/CSA-C22.2 No.60950-1
- EMC
  - EN301 48
  - EN55022
  - EN61000
  - FCC Part 15
  - RSS-Gen
- RF
  - CFR47 FCC Part 15
  - RSS-21
  - EN 300 328
  - EN 301 893
- Certification
  - FCC
  - IC
  - CE
  - CB
  - cTUVus
  - RoHS
  - SRRC (China)

ORDERING INFORMATION

- MSR2K23N0-US (U.S. only)/MSR2K23N0-JP (Japan only)/MSR2K23N0-IL (Israel only)/ MSR2K23N0 (rest of world)
  - Aruba MSR2000 Outdoor Wireless Mesh Router
  - Two 802.11 a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)
  - Power input via 802.3at (PoE+) Ethernet interface
  - One mounting kit with sun shield
- MSR2K23N1-US (US only)/MSR2K23N1-JP (Japan only)/MSR2K23N1-IL (Israel only) MSR2K23N1 (rest of world)
  - Aruba MSR2000 Outdoor Wireless Mesh Router
  - Two 802.11 a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)
  - 100-240 VAC power input, 4.5m power cord included
  - 10/100/1000BASE-T Ethernet interface with 802.3af POE power sourcing capability
  - One mounting kit with sun shield
- MSR2K23N2-US (US only)/MSR2K23N2-JP (Japan only)/MSR2K23N2-IL (Israel only)/ MSR2K23N2 (rest of world)
  - Aruba MSR2000 Outdoor Wireless Mesh Router
  - Two 802.11 a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz)
  - 12-48 VDC power input, 4.5m power cord included
  - 10/100/1000BASE-T Ethernet interface with 802.3af POE power sourcing capability
  - One mounting kit with sun shield

ACCESSORIES

Part number	Description
AINS2KKIT-00	MSR2K installation kit
APWRTCL02-US	2m light pole power cord (U.S. only)
ACONGEUSB-00	1.5m USB-DB9 console cable
AETHGEL05-00	5m shielded Ethernet cable with RJ-45 connectors

ARUBA networks

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