AIRMESH MSR2000 OUTDOOR WIRELESS MESH ROUTER

Delivers High-Performance Wireless Mesh Routing

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, two 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

ARUBA networks

WIRELESS RADIO SPECIFICATIONS (CONTINUED)

- Supported radio technologies:
- Supported modulation types:
- Association Rates

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)
- Fast convergence and failover
- 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
- 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:

MECHANICAL

- Dimensions:
- Weight (MSR2K23N0):
- Weight (MSR2K23N1 and MSR2K23N2):
  - **ENVIRONMENTAL**
- Operating:
- Storage and transportation temperature range: -30º C to 70º C (-22º F to 158º 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
  - MSR2000 PoE Powered: MSR2K23N0
  - MSR2000 AC Powered: MSR2K23N1
  - MSR2000 DC Powered: MSR2K23N2
- Safety
- EMC
- RF
- Certification
  - FCC
  - IC
  - CE
  - CB
  - cTUVus
  - RoHS
  - SRRC (China)

CERTIFICATIONS

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

Ordering Information	
Part Number	**Description**
MSR2K23N0-US (U.S. only MSR2K23N0-JP (Japan only MSR2K23N0-IL (Israel only) MSR2K23N0 (rest of world)	• Aruba MSR2000 Outdoor Wireless Mesh Router • Two 802.11a/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 (U.S. only) MSR2K23N1-JP (Japan only) MSR2K23N1-IL (Israel only) MSR2K23N1 (rest of world)	• Aruba MSR2000 Outdoor Wireless Mesh Router • Two 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz) • 100-240 VAC power input • 10/100/1000BASE-T Ethernet interface with 802.3af PoE power sourcing capability • One mounting kit with sun shield
MSR2K23N2-US (U.S. only) MSR2K23N2-JP (Japan only) MSR2K23N2-IL (Israel only) MSR2K23N2 (rest of world)	• Aruba MSR2000 Outdoor Wireless Mesh Router • Two 802.11a/b/g/n 320 mW radios (2.4 GHz, 5 GHz, 4.9 GHz) • 12-48 VDC power input • 10/100/1000BASE-T Ethernet interface with 802.3af PoE power sourcing capability • One mounting kit with sun shield
Accessories	
AINS2KKIT-00	MSR2K installation kit
ACONGESTD-00	Indoor USB console cable (1.5m)
PD-9001G-AC	PoE power injector, 802.3 at 30W
PD-9001GO	Outdoor single port GbE 802.3at POE Midspan Injector
CKIT-RJ45-P	Spare: weatherproof connector kit for (plastic) RJ45 connector (MSR2K23N0)
CBL-USB-P	Weatherproof USB cable assembly (5m) for plastic USB interface (MSR2K23N0)
ANT-2x2-STAGE	Kit of two indoor staging antennas

RF Performance Table

	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)	Max TX power per active TX chain (dBm)	RX Sensitivity (dBm)
	2.4 GHz		5 GHz	
802.11b				
1 Mbps	20	-96		
2 Mbps	20	-96		
5.5 Mbps	20	-94		
11 Mbps	20	-93		
802.11a/g				
6 Mbps	20	-96	22	-97
9 Mbps	20	-96	22	-96
12 Mbps	20	-96	22	-96
18 Mbps	20	-95	22	-94
24 Mbps	19	-92	22	-88
36 Mbps	18	-89	20	-86
48 Mbps	17	-85	19	-82
54 Mbps	17	-83	18	-80
802.11n HT20				
MCS0	22	-94	21	-97
MCS1	22	-93	20	-94
MCS2	22	-92	19	-91
MCS3	22	-89	18	-87
MCS4	21	-85	17	-86
MCS5	20	-81	16	-81
MCS6	19	-80	15	-79
MCS7	18	-78	15	-77
MCS8	22	-94	21	-97
MCS9	22	-93	20	-94
MCS10	22	-92	19	-91
MCS11	22	-89	18	-87
MCS12	21	-85	17	-86
MCS13	20	-81	16	-81
MCS14	19	-80	15	-79
MCS15	18	-78	15	-77
802.11n HT40				
MCS0	21	-92	19	-92
MCS1	21	-91	19	-90
MCS2	21	-89	18	-88
MCS3	20	-86	17	-85
MCS4	19	-83	16	-83
MCS5	18	-79	15	-79
MCS6	18	-77	14	-77
MCS7	17	-75	14	-73
MCS8	21	-92	19	-92
MCS9	21	-91	19	-90
MCS10	21	-89	18	-88
MCS11	20	-86	17	-85
MCS12	19	-83	16	-83
MCS13	18	-79	15	-79
MCS14	18	-77	14	-77
MCS15	17	-75	14	-73

Maximum capability of the hardware provided. Maximum transmit power will be limited by local regulatory settings.

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