Dual-Radio 802.11ac Wave 2 4x4:4 UHD Outdoor Access Point

Everest Networks provides the industry's leading Wi-Fi solutions addressing today's most pressing ultra-high density (UHD) challenges, such as high user engagement, high network capacity, fast throughput, and low total cost of ownership (TCO). Our solutions leverage the Everest Wi-Fi platform, designed and built specifically for UHD venues such as stadiums, arenas, convention centers, shopping malls, transport hubs, auditoriums, campuses, and smart cities.

AN INDUSTRY LEADER

A complementary component of the Everest platform is the AP1002We, a ruggedized IP-67, medium-performance access point (AP) providing mid-range coverage. Primarily employed for medium-density and hotspot areas, the AP1002We is a multi-gigabit 802.11ac AP featuring dual 802.11ac Wave 2 radios, proprietary internal directional antennas, and 4x4:4 MIMO and MU-MIMO capabilities.

BUILT FROM THE GROUND UP

At its core, the AP1002We employs two independent 802.11ac 4x4:4 Wave 2 MIMO radios, one operating in the 5-GHz band and another in the 2.4-GHz band. In addition, the AP1002We utilizes a proprietary multi-antenna system with directional, optimized, and down-ward or outward patterns when ceiling- or wall-mounted, respectively. Along with polarization and spatial diversity, the multi-antenna system provides coverage patterns which are 90°-wide directional for reliable and consistent RF signal at mid-range for improved spatial reuse mechanisms and an enhanced 4-stream MIMO and MU-MIMO functionalities. In conjunction, the IP67-rated enclosure and extended operating temperature range allows the AP1002We to perform exceptionally well in diverse and harsh conditions. Consequently, the AP1002We supplements the Everest Wi-Fi platform in attaining an industry-leading highest user engagements and capacity combined with an unsurpassed level of deployment flexibility and installation simplicity, speed, and low TCO.

The AP1002We also provides additional capabilities such as advanced radio resource management, active multi-radio client load balancing, and assisted roaming, which are fully supported and managed by Everest's WLAN controller wireless management system. Through Everest's WLAN controller's simple and clear user interface, the AP1002We can be easily and quickly configured, managed, monitored, and assessed with minimal user interaction, providing operational efficiency and system scalability (up to 1,000 APs) without compromise.

UNIQUE BENEFITS

- Concurrent **dual-radio** 802.11ac Wave 2 4x4:4 → PHY rate up to **2.53** Gbps
- Up to **500** associated devices per AP
- Up to **99+** active devices per AP
- **2 Gbps** backhaul provided by 2 x 1G PoE+ Ethernet ports
- Integrated and internal antennas
- Proprietary directional antenna:
  - 2.4 GHz: fixed pattern → 90° x 90°
  - 5 GHz: fixed pattern → 90° x 90°
- Simultaneous polarization and spatial diversity for efficient MIMO and MU-MIMO
- 4x4:4 spatial streams per radio for:
  - 4x4 SU-MIMO devices per radio
  - Up to 3 concurrent MU-MIMO 5 GHz devices
  - 8x parallel streams per AP
- IP67 rated for outdoor and industrial indoor environments

FEATURES & BENEFITS

CONCURRENT DUAL-RADIO FOR UP TO 2.53 GBPS

The AP1002W*e* leverages the combined power of two 802.11ac Wave 2 radios both operating in 4x4:4 MIMO mode, for a total of 8 parallel spatial streams. One radio is dedicated to the 2.4-GHz band providing MIMO functionality while the other radio is dedicated for the 5-GHz band providing MU-MIMO functionality. In addition, the AP1002W*e* enables concurrent dual-radio operation without impacting the radio's performance for an aggregate PHY throughput of 2.53 Gbps. Finally, dual 1 Gbps Ethernet ports provide up to 2 Gbps of wired backhaul, ideal for mesh networks.

800Mbps
2.4GHz

1733Mbps
5GHz
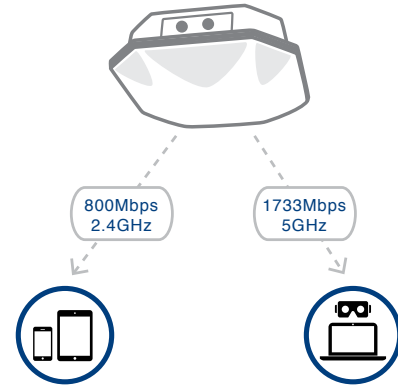
PATENTED ANTENNA TECHNOLOGY

The AP1002W*e* has a proprietary and fully-integrated antenna system featuring polarization and pattern diversity for enhanced MIMO and MU-MIMO operation. The 4-spatial stream 90°-beam profile provides a focused RF signal in a defined coverage area to minimize AP-to-AP interference and maximize channel re-use. Finally, the directional antennas are fully integrated into the AP reducing RF signal loss and thus effectively increasing Tx and Rx power and maximizing data rates. The AP1002W*e*'s internal antennas also reduce installation times, costs, and errors while hardening the APs long-term solution reliability.

Dual-radio
802.11ac
4x4:4
EVEREST
AP1002W*e*
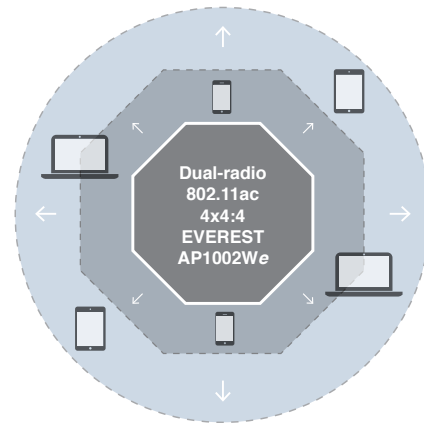
ACTIVE CLIENT ROAMING & LOAD BALANCING

Our patent-pending load balancing algorithms performs traffic management to optimize client associations, throughput, and roaming. Based on 802.11k and 802.11v protocols, the algorithm dynamically balances users between intra- and inter-AP radios to maximize radio, client and network performance and capacity.

AUTO DISCOVERY

Upon power-up, the AP1002W*e* is auto-discovered by Everest's WLAN controller which performs AP verification and authorization before commencing data transfer. Once authorized, updated firmware and AP configuration are downloaded in a secured and controlled tunnel for an efficient and fast bring-up and operation.

RUGGED INDUSTRIAL DESIGN

The AP1002W*e* is IP67-rated, designed and tested for salt spray, vibration, extreme thermal conditions, shock, and dust. This allows the AP1004W*e* to operate in the toughest environments. A compliment of mounting brackets and accessories ensures that these APs are not only aesthetically pleasing, but also quick to deploy.

EVEREST
N E T W O R K S

SPECIFICATIONS

Performance and Capacity

Associated Devices

Up to 500

Active Devices

Up to 99+

Peak PHY Rates

5 GHz: 1.733 Gbps (aggregate)

2.4 GHz: 800 Mbps

Total: 2.533 Gbps

Backhaul

2 Gbps (2x 1 Gbps Ethernet ports)

Advanced Radio Technology

Radios Per AP

5 GHz: 1x 802.11ac Wave 2

2.4 GHz: 1x 802.11n

MIMO

4x4 (SU-MIMO and MU-MIMO)

MIMO Streams (per radio)

SU-MIMO (2.4/5 GHz):
- 4 streams for 4x4 devices
- Max.: 433.3 Mbps per stream
- Max.: 1,733 Mbps (5 GHz)

MU-MIMO (5 GHz):
- 3 streams for 3 concurrent devices

Features

TPC, DFS, TxBF, SGI

MRC, MLD, CDD, STBC, LDPC

Max Tx Power (varies by country code, band, MCS)

2.4 GHz: 24 dBm

5 GHz: 24 dBm

Rx Sensitivity

802.11n (MCS0, HT20): -93 dBm

802.11ac (MCS0, VHT20): -93 dBm

Antenna Characteristics

Antenna Characteristics

Band-optimized

Internal and integrated

Directional and downward

Polarization, spatial

Antenna Patterns

2.4 GHz: 90˚ x 90˚

5 GHz: 90˚ x 90˚

Max Physical Antenna Gain

2.4 GHz: 6 dBi

5 GHz: 6.5 dBi

WiFi Specifications

Supported Standards

IEEE 802.11a/b/g/n/ac

Supported Rates

802.11b: 1 - 11 Mbps

802.11a/g: 1 - 54 Mbps

802.11n: 6.5 - 600 Mbps (MCS0-31, 1 - 4 SS)

802.11ac Wave 2: 6.5 to 1.733 Gbps (MCS0-9, 1 - 4SS)

802.11n-2.4 GHz: 6.5 - 800 Mbps (MCS0-9, 1 - 4SS)

802.11 HT: HT20/40

802.11 VHT: VHT20/40/80

Supported Channels (availability based on country code)

2.4 to 2.472 GHz: 1 - 13 (FCC/IC)

2.4 to 2.4835 GHz: 1 - 14 (ETSI)

5.15 - 5.25 GHz: 36 - 48 (FCC: U-NII-1/IC/ETSI)

5.25 - 5.35 GHz: 52 - 64 (FCC: U-NII-2A/IC/ETSI)

5.47 - 5.725 GHz: 100 - 140 (FCC: U-NII-2C/IC/ETSI)

5.725 - 5.850 GHz: 149 - 165 (FCC: U-NII-3/IC)

Channelization

20/40/80 MHz

Security

Wi-Fi Protected Access (WPA)

IEEE 802.11i (WPA2, RSN)

Transport Layer Security (TLS)

Datagram Transport Layer Security

IEEE 802.1X

Encryption: AES, CBC, CCM CCMP128,256

Power

Max Input Power (per port)

POE+: 25.5 W @ 42.5 - 57 VDC

POE: 12.95 W @ 37 - 56 VDC

4PPoE+: 22 W @ 42.5 - 56 VDC

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Max Power Consumption

22 W (~1.25 BTUs/min)

Physical Interfaces
Ethernet

2x 10/100/1000 Mbps

Auto-sensing

802.3 10 Base-T

802.3u 100 Base-Tx

802.3ab 1000 Base-T

PoE 802.3at (Type I) [802.3af]

PoE+ 802.3at (Type II) [802.3at]

LLDP

Physical Characteristics
Dimensions

261 mm x 261 mm x 97 mm

10.3 in x 10.3 in x 3.9 in

Weight

2.6 Kg (5.7 lbs)

Environmental

Operating temperature: -40°C to 55°C (-40°F to 131°F)

Storage temperature: -40°C to 85°C (-40°F to 185°F).Below -20°C: up to 20 min. for minimum internal operating temperature of -20°C

Operating humidity: 0% to 100% condensing/non-condensing

Operating altitude: 3000 m

Shock and vibrations: ETSI 300-19-2-4 spec T41.E 4M3

Surge immunity: 1 kV

Lightning protection: - 4 kV (with optional external primary protection)

Air vent valve for balancing humidity and pressure

UV resistant

Ice pellets: up to 25 mm (radial)

Corrosion: 10 - year protection

IP67 rated (water, dust, smoke)

Management
Wireless and Traffic: Standards

802.11e QoS

802.11k RRM

802.11r Fast BSS transition (FT)

802.11v Wireless Network Management

802.11ae Prioritization of Management Frames

Wireless and Traffic: Features

Airtime fairness

Client load balancing

Dynamic radio management based on per: client, radio, and AP metrics

Interfaces

Everest's WLAN controller: WMS and AC

Certification and Compliance
Wi-Fi Alliance

Wi-Fi Certified n, ac

Wi-Fi Protected Access (WPA2)

Protected Management Frames

Voice-Enterprise

WMM® (Wi-Fi Multimedia™)

Regulatory and Safety

Emissions (EMI/EMC):
- FCC Part 15, Class B
- ICES-003 issue 6, Class B
- VCCI (CISPER 32)

Radio:
- FCC Part 15c, part 15e (US)
- RSS-247 (Canada)
- ARIB STD-T66, ARBI STD-77 (Japan)

Safety:
- UL60950-1/ IEC60950-1
- UL60950-22/ IEC60950-22

Shock and vibrations:
- IEC 68-2-27
- IEC 68-2-06

Reliability
MTBF

347,106 hours (calculated)

MTTR

30 minutes