



# High Performance 802.11ac Wave 2 (Wi-Fi 5) Access Point



Ray's Vega is a tri-radio, cloud-managed 2x2:2 802.11ac Wave 2 access point with MU-MIMO support.

With a maximum concurrent data rate of 900 Mbps in the 5GHz band and 400 Mbps in the 2.4GHz band (for an aggregate peak data rate of 2.2 Gbps), this high performance Ray Access Point brings an always-on wireless network experience with the performance required for enterprises.

The combination of cloud management, 802.11ac Wave 2, full-time RF environment scanning, and advanced Radio Resource Management (RRM) delivers the throughput, reliability, and flexibility required by demanding business applications like voice and high-definition streaming video, today and tomorrow.

Vega delivers the ideal combination of performance, affordability, and 802.11ac features for high-density locations which demand fast data rates and density handling intelligence to support dozens of users with guaranteed throughput.

Vega is a perfect fit for environments like K-12 classrooms, university lecture halls, libraries, retail locations, and branch offices. It can easily support online digital learning deployments with 30+ students per classroom, or university lecture halls serving concurrent HD video streams to dozens of student devices.

Vega access points deliver high performance and superb user experience for mobile devices, Internet of Things (IoT) devices, and applications in dense office environments. A dedicated third radio provides a reliable link for Mesh applications.

## OVERVIEW

Ray has brought true innovation to the networking space with the world's first AI-driven wireless network with an element of extensibility through the Ray Wi-Fi Application store.

### Wi-Fi Driven By AI

The Ray Cloud uses AI and data science to analyse large amounts of rich metadata collected from Access Points to provide actionable insight. The AI Platform makes networking predictable, reliable and measurable with unprecedented visibility into the user experience. Time consuming manual IT tasks are replaced with AI-driven proactive automation and self-healing capabilities, lowering networking operational costs and saving substantial time and money.

### Ray Cloud

Microservices bring unparalleled agility, scale, resiliency. Ray makes it easy to add or remove new features by leveraging a microservices cloud architecture. New enhancements and bug fixes are delivered almost weekly without network disruption. Services scale up or down elastically when they're needed, eliminating the cost and complexity of monolithic hardware.

Plus, the Ray platform is inherently resilient as the failure of one service does not impact others.

### Ray Access Point

The Ray enterprise-grade access point family consists of the Wi-Fi AP ranging from 300 Mbps to 2200 Mbps. These access points are all built on a real-time microservices platform and are managed by the Ray Cloud.



# FEATURES AND BENEFITS

## Effortless, Cloud-based Setup & Updates

Ray cloud, download its configuration, and joins the network. It self-optimizes, determining the ideal channel, transmit power, and client connection parameters. And it self-heals in the event of a switch or cable failure by meshing with nearby access points, providing continued internet service. Firmware updates are retrieved and installed automatically, ensuring that the network is always up to date with new features, bug fixes, and security updates.

## Automatic RF Optimization / Automatic Cloud-based RF Optimization

Ray's sophisticated, automated RF optimization algorithms collect real-time, full-spectrum RF analysis data for threats and interference. This data is continuously fed back to the Ray cloud. The cloud then automatically tunes the Ray's channel selection and transmits power for optimal performance under the most challenging RF conditions. This ensures optimal performance under what could otherwise be challenging RF conditions.

Ray automatically assigns channel, width and power settings based on environment and client density.

It also provides airtime fairness and ensures that APs stay clear of all sources of RF interference to deliver reliable, highperformance WLANs. The Access Points can also be configured to provide dedicated air monitoring for spectrum analysis and wireless intrusion detection and determine the position of wireless stations.

## Dynamic Packet Capture

The Ray platform automatically captures packets and streams them to the cloud when major issues are detected. This saves IT time and effort and eliminates the need for truck rolls with sniffers.

## Insights

Ray cloud service includes a base analytics capability for analysing up to 15 days of data which enables you to simplify the process of extracting network insights from data and analytics across your enterprise to properly align your support resources or introduce enhanced premium services.

Drill down into the details of your network usage with highly granular traffic analytics. Extend your visibility into the physical world with built-in location analytics that enables you to view visitor numbers, dwell time, repeat visit rates, and track foot traffic trends.

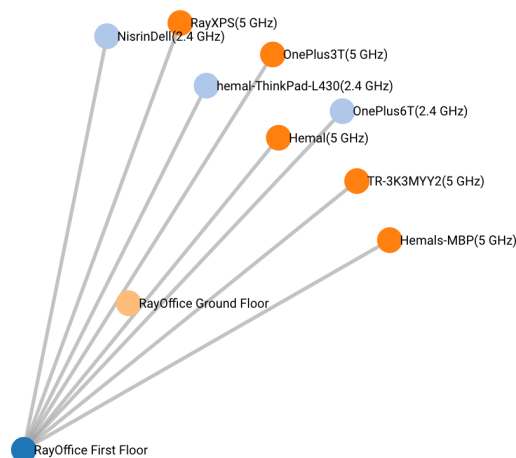


Whilst every attempt has been made to ensure the accuracy of the floor plan, all measurements, fixed installations and furnishings are for illustrative purposes only and should be used as such by any prospective purchaser.

Floor Plan & Wi-Fi RF Coverage

## Integrated Enterprise Security And Guest Access

The Ray Platform features integrated, easy-to-use security technologies to provide secure connectivity for employees and guests alike. Advanced security features such as AES hardware-based encryption and WPA2-Enterprise authentication with 802.1X provide wirelike security while still being easy to configure. One-click guest isolation provides secure, Internet-only access for visitors. Our Enterprise policy feature enables group or device based, granular access policy control.



Network Chart

## Application-aware Traffic Shaping

collect The Ray platform includes an integrated Layer 7 packet inspection, classification, and control engine, enabling you to set QoS policies based on traffic type and time. Prioritize your mission critical applications, while setting limits on recreational traffic, e.g., peer-to-peer and video streaming. Ray supports 250+ applications natively along with content categorization engines from a variety of industry leading security vendors.

## Ready For IoT

Ray cloud is built as an IoT platform to natively support a variety of Internet of Things (IoT) products. The IoT platform can consume data from various IoT devices and manage them centrally reducing the requirement to setup a separate IoT gateway at customer premise.

## Voice And Video Optimizations

Industry standard QoS features are easy to configure like Wireless Multi Media (WMM) Access Categories, 802.1p, and DSCP.

## Mesh Networking

The Ray platform offers the most innovative Mesh networking which is Self Configuring, Self Healing, Self Managing and Self Defending. The technology dynamically selects the best Wi-Fi link for each device based on application, band and context, giving each one the bandwidth it needs for optimal performance.

## Remote Working & Work From Home

Ray native VPN makes it easy to extend the corporate LAN to remote sites, without requiring all clients and devices to have client VPN software along with security.

## Open Cloud API

The Ray AI cloud platform is 100% programmable, using open APIs, for full automation and seamless integration with complementary products including our AI for IT partners across LAN, WAN, security, engagement and asset location.

# SPECIFICATIONS

AP	
<b>Wi-Fi Standards</b>	Indoor, Tri radio, 2 x 5GHz 802.11ac 2x2 MIMO and 2.4GHz 802.11n 2x2 MIMO
WI-FI	
<b>AP Type</b>	IEEE 802.11a/b/g/n/ac Wave 2
<b>Supported Rates</b>	<ul style="list-style-type: none"> <li>› 802.11b: 1, 2, 5.5, 11</li> <li>› 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54</li> <li>› 802.11n: 6.5 to 300 (MCS0 to MCS15)</li> <li>› 802.11ac: 6.5 to 433 (MCS0 to MCS9, NSS = 1 to 2)</li> <li>› 802.11n high-throughput (HT) support: HT20/40</li> <li>› 802.11ac very high throughput (VHT) support: VHT20/40/80</li> <li>› 802.11n/ac packet aggregation: A-MP-DU, A-MSDU</li> </ul>
<b>Radio</b>	<ul style="list-style-type: none"> <li>› 2.4 GHz 802.11b/g/n/ac client access radio</li> <li>› 5 GHz 802.11a/n/ac Wave 2 client access radio</li> </ul>
<b>Supported Channels</b>	<ul style="list-style-type: none"> <li>› 2.4GHz: 1-13</li> <li>› 5GHz: 36-64, 100-144, 149-165</li> </ul>
<b>MIMO</b>	<ul style="list-style-type: none"> <li>› 2x2 SU-MIMO</li> <li>› 2x2 MU-MIMO</li> </ul>
<b>Spatial Streams</b>	<ul style="list-style-type: none"> <li>› 2 SU-MIMO</li> <li>› 2 MU-MIMO</li> </ul>
<b>Radio Chains and Streams</b>	› 2x2:2
<b>Channelization</b>	› 20, 40, 80MHz
<b>Security</b>	<ul style="list-style-type: none"> <li>› WPA-PSK</li> <li>› WPA-TKIP</li> <li>› WPA2 AES</li> <li>› 802.11x</li> <li>› Personal PSK</li> </ul>
<b>Peak PHY Rates</b>	<ul style="list-style-type: none"> <li>› 2.4GHz: 300Mbps</li> <li>› 5GHz_(1): 867Mbps</li> <li>› 5GHz_(2): 867Mbps</li> </ul>
<b>SSID</b>	› Up to 31 per AP
<b>Client Capacity</b>	› Up to 256 clients per AP
<b>Supported Radio Technology</b>	<ul style="list-style-type: none"> <li>› 802.11b: Direct-sequence spread-spectrum (DSSS)</li> <li>› 802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)</li> </ul>
<b>Supported Modulation Types</b>	<ul style="list-style-type: none"> <li>› 802.11b: BPSK, QPSK, CCK</li> <li>› 802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM</li> </ul>
<b>Wi-Fi Security</b>	› WIDS
<b>Beamforming</b>	› Yes

RF	
<b>Antenna</b>	Integrated omni-directional antennae
<b>Antenna Gain (max)</b>	› 3 dBi gain
<b>Peak Transmit Power</b>	≤-25 DB
<b>Operating Bands</b>	<ul style="list-style-type: none"> <li>› 2.412-2.484 GHz</li> <li>› 5.150-5.250 GHz (UNII-1)</li> <li>› 5.250-5.350 GHz (UNII-2)</li> <li>› 5.470-5.600, 5.660-5.725 GHz (UNII-2e)</li> <li>› 5.725-5.825 GHz (UNII-3)</li> </ul>
RADIO MANAGEMENT	
<b>Antenna Optimization</b>	<ul style="list-style-type: none"> <li>› Spatial Multiplexing</li> <li>› Cyclic-Delay Diversity (CDD)</li> <li>› Low-Density Parity Check (LDPC) Codes</li> <li>› Maximal Ratio Combining (MRC)</li> <li>› Space Time Block Code (STBC)</li> </ul>
<b>Wi-Fi Channel Management</b>	› Intelligent Radio Resource Management
<b>Client Density Management</b>	<ul style="list-style-type: none"> <li>› Adaptive Band Balancing</li> <li>› Client Load Balancing</li> <li>› Airtime Fairness</li> <li>› Airtime-based WLAN Prioritization</li> </ul>
RF POWER	
<b>2.4GHz</b>	<ul style="list-style-type: none"> <li>› 802.11b 11M 23±2dBm 1M 25±2dBm</li> <li>› 802.11g 54M 22±2dBm 6M 24±2dBm</li> <li>› 802.11n HT20 MCS7 21±2dBm MCS0 23±2dBm</li> <li>› 802.11n HT40 MCS7 21±2dBm MCS0 23±2dBm</li> </ul>
<b>5GHz</b>	<ul style="list-style-type: none"> <li>› 802.11a 54M 19±2dBm 6M 21±2dBm</li> <li>› 802.11n HT20 MCS7 18±2dBm MCS0 20±2dBm</li> <li>› 802.11n HT40 MCS7 18±2dBm MCS0 20±2dBm</li> <li>› 802.11ac HT80 MCS9 17±2dBm MCS0 19±2dBm</li> </ul>

# SPECIFICATIONS

RECEIVE SENSITIVITY	
<b>2.4GHz</b>	<ul style="list-style-type: none"> <li>› 802.11b 11M -85dBm 1M -94dBm</li> <li>› 802.11g 54M -72dBm 6M -90dBm</li> <li>› 802.11n HT20 MCS7 -70dBm MCS0-88dBm</li> <li>› 802.11n HT40 MCS7 -68dBm MCS0-86dBm</li> </ul>
<b>5GHz</b>	<ul style="list-style-type: none"> <li>› 802.11a 54M -72dBm 6M -90dBm</li> <li>› 802.11n HT20 MCS7 -70dBm MCS0-88dBm</li> <li>› 802.11n HT40 MCS7 -68dBm MCS0-86dBm</li> <li>› 802.11ac HT80 MCS9 -58dBm MCS0-85dBm</li> </ul>
NETWORKING	
<b>Mesh</b>	SON based Mesh
<b>IP</b>	Pv4, IPv6
<b>VLAN</b>	<ul style="list-style-type: none"> <li>› 802.1Q (1 per BSSID or dynamic per use based on RADIUS)</li> <li>› VLAN Pooling</li> <li>› Port-based</li> </ul>
<b>802.1x</b>	› Authenticator & Supplicant
<b>MIMO</b>	<ul style="list-style-type: none"> <li>› 2x2 SU-MIMO</li> <li>› 2x2 MU-MIMO</li> </ul>
<b>Tunnel</b>	<ul style="list-style-type: none"> <li>› L2TP</li> <li>› GRE/EoGRE</li> <li>› Openvpn</li> <li>› L2TP/IPSEC</li> <li>› IKEv2</li> </ul>
<b>Policy Management Tools</b>	<ul style="list-style-type: none"> <li>› Application Recognition and Control</li> <li>› Access Control Lists</li> <li>› Device Fingerprinting</li> <li>› Rate Limiting</li> <li>› Integrated Layer 7 firewall with mobile device policy management</li> <li>› Flexible guest access with device isolation</li> </ul>
<b>Quality of Service</b>	<ul style="list-style-type: none"> <li>› WMM Access Categories with DSCP and 802.1p support</li> <li>› QoS-based scheduling</li> <li>› Directed Multicast</li> <li>› L2/L3/L4 ACLs</li> </ul>
<b>Mobility</b>	<ul style="list-style-type: none"> <li>› 802.11r for fast Layer 2 roaming</li> <li>› Centralized Layer 3 roaming</li> </ul>

PHYSICAL INTERFACES	
<b>Ethernet</b>	<ul style="list-style-type: none"> <li>› 1x 10/100/1000 BASE-T Ethernet (RJ45)</li> <li>› 1x 10/100/1000 BASE-T Ethernet (RJ45)</li> <li>› 1x DC power connector</li> <li>› Reset button: Factory reset (during device power up)</li> </ul>
PHYSICAL CHARACTERISTICS	
<b>Physical Size</b>	› 198mm * 198mm * 41.02mm
<b>Weight</b>	› 787g (1.7lb)
<b>Mounting</b>	› Wall, Drop ceiling
POWER	
<b>DC Input 12V DC, 2A</b>	› 15W
<b>802.3at</b>	› 12W
WARRANTY	
1 year warranty	

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