RA320 AI-ENABLED ACCESS POINT

Designed for Deployments in Shopping Malls, Schools, Hotels, and Hospitals

Intelligence at the Edge

The RA320, serving as a service node in the Relay2 service delivery platform, is an entry-level access point that offers a cost-effective, high-performance, easy-to-manage wireless connectivity solution with edge-computing options for venues and offices. Combined with Aprecomm's AI Engine, it serves as the intelligent network node in the Relay2 edge-computing platform.

The RA320 supports Wave 2 technology and dual-radio, 2x2 MU-MIMO with two spatial streams and delivers data rates up to 1.3 Gbps aggregated data rate with 2.4 GHz and 5 GHz with 802.11ac (Wi-Fi 5).

Equipped with extra storage, RA320 offers businesses options to run lightweight business applications (or applets) and services at the edge of their networks without additional servers. This enables businesses, such as commercial enterprises, to enhance their guests' experiences at venues cost-effectively.

Pervasive Knowledge in the Cloud

Relay2 Cloud is not just another user interface to manage and configure access points: It is your virtual wireless expert, monitoring the wireless experience of your connected devices and helping you optimize it for your specific use case. This is done by harvesting and processing the available wealth of information generated by your wireless devices using the network. Based on this data, the Relay2 Cloud is correlating the various aspects of your network (wired/wireless) in real time, providing detailed and easy-to-understand insights, and providing information on how to improve network reliability and performance.

Relay2 Cloud learns about the behavior of every wireless client associated with it, deriving the best possible configuration to provide an unbeatable wireless customer experience. As the system is gaining more and more insights from active deployments, those learnings about optimal access-point configuration are made available to every customer subscribed to our services, further improving reliability and performance without further investment.

PRODUCT AT A GLANCE

- **Edge Computing and Storage** enabling edge applets and non-performance-critical content delivery

- **Real-Time Insights** with an artificial intelligence engine providing real insights of WLAN performance

- **Virtual Wireless Expert** to always understand your wireless network and keep improving it

- **Enterprise-Class 802.11ac Access Point** offering high-performance, scalable Wi-Fi connectivity and hotspot services

- **Open Container Engine with SDK and API** enabling easy third-party applications development and integration

- **Plug-and-Play Deployment, Cloud Managed** fast-service rollout, ease of access, and low OPEX

- **Multitenancy Management** supporting managed service providers (MSP) service practice

FEATURES

MANAGED VIRTUAL AP (MVAP)

Each physical RA320 can be virtualized into as many as 16 managed virtual AP (MVAP) instances, which enables multiple tenants to share a single common infrastructure. Each instance has its own management login, providing complete administrative control and visibility as well as security and segregation of networking and application resources. More than just a WLAN profile, tenants are able to manage and control an MVAP as if it was their own physical AP.

This Relay2 patent-pending capability allows venue operators and property owners to monetize their wireless infrastructure by selling MVAP to multiple groups or organizations, ranging from tenants to service providers.

Using MVAP eliminates the need to overbuild infrastructure, which reduces per-tenant costs and keeps the radio spectrum clean to yield far superior radio performance.

MVAP is ideal for providing hassle-free, secure Wi-Fi access to tenant businesses in incubation centers, shopping centers, multifamily residential buildings, and convention centers. Alternatively, MVAP can enable property owners to provide a neutral host solution to multiple carriers and hotspot operators offering public-access Wi-Fi. In both scenarios, MVAP customers are freed from maintaining a physical device while enjoying enterprise-class features and performance.

FEATURES

Edge-Computing Hardware

Supporting ARM processor and 4 GB storage, the RA320 provides extra storage compared to other enterprise AP vendors to deliver lightweight, valued-added services at the edge of the network.

Application Hosting and Management

The RA320 has been architected to directly host applets via containers. The RA320 can host multiple containers, with each providing isolated environments in which one or more applets can run. Containers enable third-party applets to be installed in a secure and isolated manner. Cloud management simplifies the deployment and maintenance of business-critical applets across many locations.

AI Insights

With its artificial intelligence, the RA320 will proactively monitor the network to understand the behavior and demands of the connected wireless devices and measure the real-time wireless experience of each such device. Combined with pervasive knowledge in the cloud, the RA320 will be able to self-diagnose the problems occurring in the fields. It also provides actionable, real-time insights to the IT administrators as to root causes in order to help improve the wireless experience.

Built-In Web Utility Services

To enable the creation of rich edge application services, Relay2 has incorporated a suite of built-in web utility services. These services include web caching, splash pages with Facebook authentication, web servers, HTML insertion, deep packet inspection (DPI), and client location data. Each may be used on a standalone basis or as a building block to more comprehensive service solutions. In both cases, these web utility services push valuable functionality to the edge of the network, where they can provide real-time, relevant, and rich capabilities.

Virtual Wireless Expert (VWE)

A virtual wireless expert (VWE), built using Aprecomm's Evolv™ AI engine, is available to you 24/7, along with our Relay2 dashboard. Minimal Wi-Fi expertise is needed to manage Relay2 access points, as we are shipping a VWE with our dashboard. IT admins can now communicate in simple English with our VWE, which can answer all your network-related queries. The VWE also provides users with suggestions to improve the wireless experience.

Edge Content Hosting

Equipped with up to 64 GB edge storage, the RA320 enables businesses to host and cache digital content at the edge of the network. By keeping digital content at the edge of the networks, closer to the user, businesses can deliver their content quickly and reliably, even at a loss of internet connectivity. It optimizes content viewers' experiences, saves network bandwidth, and eases IT administration operation support.
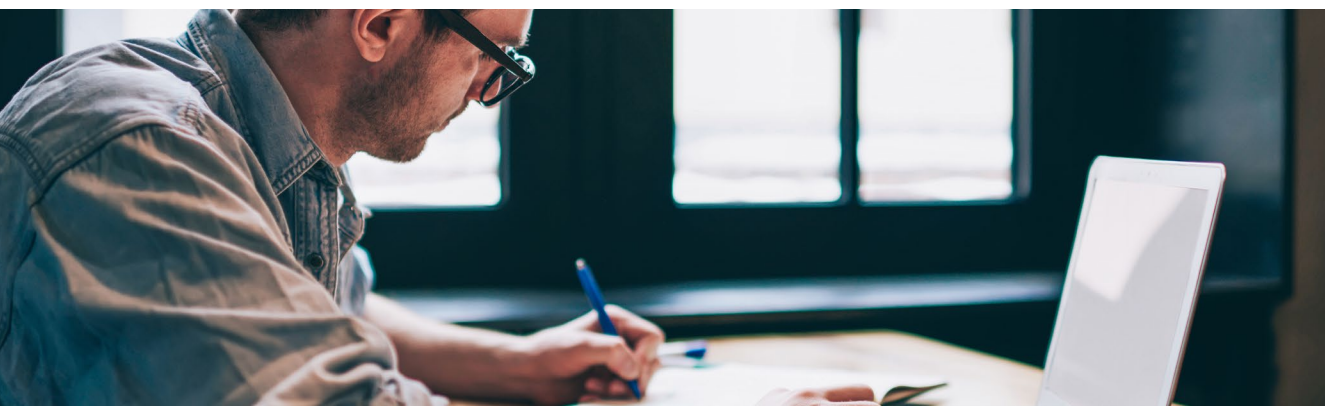
FEATURES

HIGH-PERFORMANCE WIRELESS

Rugged Outdoor Design

The RA320 is designed for deployments with moderate client density, such as shopping centers, resorts, retail locations, and public Wi-Fi access sectors. The dual-band radios deliver fast, reliable coverage in the environments for client devices that are mostly connecting to the internet for web surfing or to use internet applications.

Enterprise-Class WLAN Security Features

The RA320 features integrated, easy-to-use networking and security technologies to provide truly robust connectivity. Advanced security features include WPA2-Enterprise authentication with 802.1X and client isolation. Networking features include VLAN tagging and advanced QoS capabilities.

Client Traffic Control and Optimization

The RA320 includes integrated layer 3 and 4 packet inspection and client-traffic blocking, enabling better control of the WLAN. Integrated support of wireless multimedia (WMM) optimizes the performance of bandwidth-sensitive voice and video applications.

Autoconfiguration and Optimization

When first plugged in, the RA320 automatically connects to the Relay2 cloud controller, where it downloads its configuration and joins the appropriate network. The RA320 then self-optimizes, determining the ideal channel, transmit power, and client connection parameters.

TECHNICAL SPECIFICATIONS

Radios

- One 2.4 GHz 802.11b/g/n, one 5 GHz 802.11a/n/ac (WIFI5)
- Dual concurrent operation in 2.4 and 5 GHz bands
- Max rate: 300 Mbps in 2.4 GHz; 867 Mbps in 5 GHz
- Operating frequency range (country-specific restrictions apply): 2.400–2.483 GHz; 5.150–5.350 GHz; 5.725–5.825 GHz

802.11n/ac Capabilities

- 2 x 2 MIMO with two spatial streams
- Maximal ratio combining (MRC)
- 20 and 40 MHz channels (802.11n/ac), 80MHz (802.11ac)
- Aggregation of 90-byte packets with AES encryption
- Fast channel switching (1 ms)

Antennas

- Integrated internal omnidirectional antennas
- 2 dBi gain at 2.4 GHz, 3 dBi gain at 5 GHz

Virtual Wireless Expert

- Real-time wireless experience measurement and monitoring
- Natural language interface to answer your questions
- Band steering and client load balance using AI insights
- Auto channel selection using radio-pattern analysis

Interfaces

- 2x Gb Ethernet (RJ45) with one 802.3af PoE
- 1x USB 2.0/3.0 port (max. 0.5A)
- 1x DC power (5.5 mm x 2.1 mm, center positive)

Physical Characteristics

- Dimensions: 6.30" x 6. 30" x 1.77" (160 mm x 160 mm x 45 mm), not including desk-mount feet or mounting plate
- Weight: 9.52 oz (0.27 kg)

Edge-Computing Capabilities

- 4-core ARM Cortex A7 at 717 Mhz, 512 MB DDR memory, up to 64 GB eMMC (4 GB factory default)

LED Indicators

- 1x power status indicator
- 1x Ethernet connectivity indicator
- 1x 2.4 GHz indicator
- 1x 5 GHz indicator

Power

- Power over Ethernet (802.3af PoE)
- 12 V DC 1.25A
- Power consumption: 12.5 W max
- Power over Ethernet and DC adapter sold separately

Quality of Service

- Wireless multimedia (WMM)
- Unscheduled automatic power-saving delivery (U-APSD)
- Rate limiting per VLAN, per WLAN, per client

Environmental Conditions

- Operating temperature: 32ºF to 104ºF (0ºC to +40ºC)
- Storage temperature: -40ºF to 158ºF (-40ºC to +70ºC)
- Operating humidity: <90% noncondensing

Security

- WPA, WPA2-PSK, WPA2-Enterprise with 802.1X
- TKIP and AES encryption
- Guest isolation
- Rogue AP detection
- Blacklist and MAC address filtering
- Stateless ACL
- Client-to-client traffic blocking

WLAN Network

- IPv4 and VLAN tagging (802.1q)
- Client DHCP relay per VLAN and per WLAN
- Seamless client L2 roaming
- Wireless multicast optimization

Mounting

- All standard mounting hardware included
- Wall and pole mountable

Regulatory and Certification

- FCC (US), IC (Canada), NCC (Taiwan), TELEC (Japan)
- TA (China)

Warranty

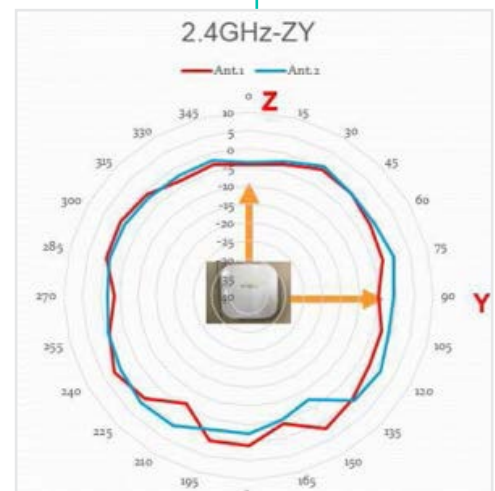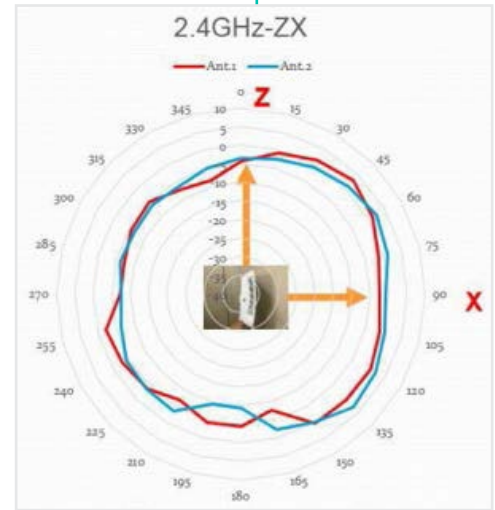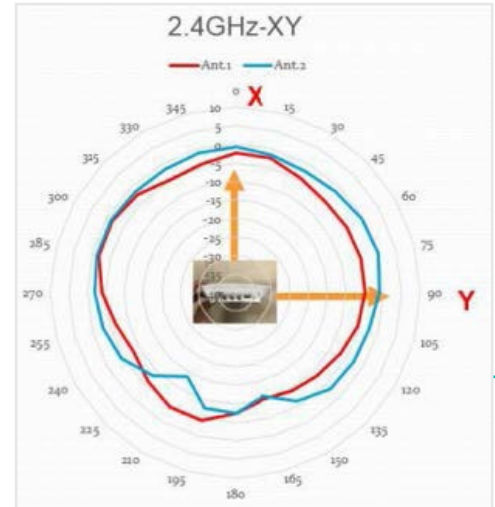- Limited lifetime hardware warranty

Ordering Information

- Product ID: RA320

2.4 GHz

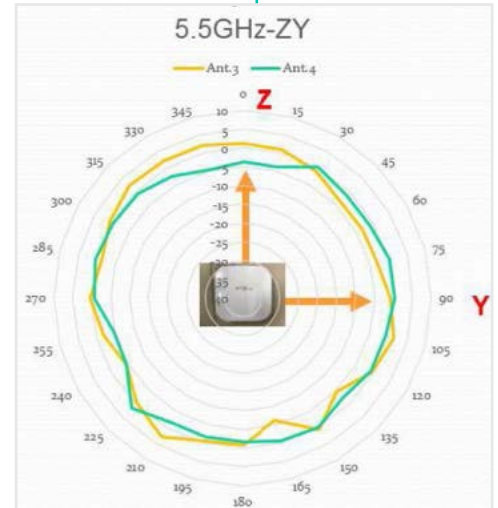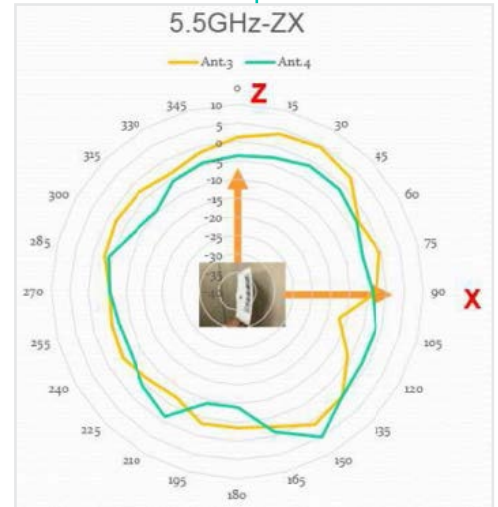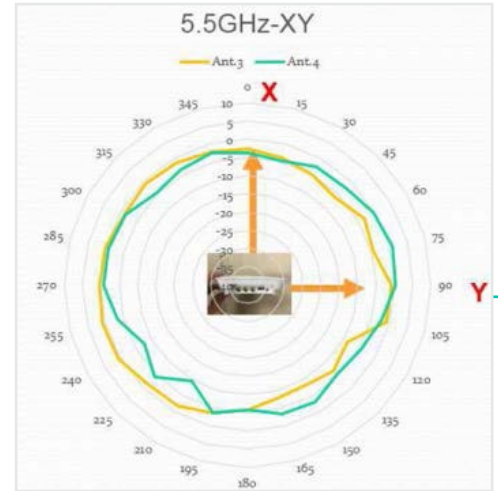| Mode	Data Rate	TX Power	RX Sensitivity
802.11b	1 Mbps 11 Mbps	20 dBm 20 dBm	-94 dBm -87 dBm
802.11g	6 Mbps 54 Mbps	20 dBm 17 dBm	-89 dBm -71 dBm
802.11n (HT20)	MCS 0/8 MCS 1/9 MCS 2/10 MCS 3/11 MCS 4/12 MCS 5/13 MCS 6/14 MCS 7/15	20 dBm 19 dBm 18 dBm 18 dBm 18 dBm 17 dBm 17 dBm 16 dBm	-89 dBm -86 dBm -83 dBm -80 dBm -77 dBm -73 dBm -71 dBm -68 dBm
802.11n (HT40)	MCS 0/8/16 MCS 1/9/17 MCS 2/10/18 MCS 3/11/19 MCS 4/12/20 MCS 5/13/21 MCS 6/14/22 MCS 7/15/23	19 dBm 18 dBm 18 dBm 18 dBm 18 dBm 17 dBm 17 dBm 16 dBm	-85 dBm -82 dBm -80 dBm -78 dBm -73 dBm -69 dBm -67 dBm -66 dBm

2.4GHz-XY

2.4GHz-ZX

2.4GHz-ZY

RF PERFORMANCE

5 GHz ANTENNA COVERAGE

5 GHz

Mode	Data Rate	TX Power	RX Sensitivity
802.11a	6 Mbps 54 Mbps	18 dBM 15 dBm	−85 dBm −70 dBm
802.11n (HT20)	MCS 0/8 MCS 1/9 MCS 2/10 MCS 3/11 MCS 4/12 MCS 5/13 MCS 6/14 MCS 7/15	18 dBm 17 dBm 16 dBm 16 dBm 15 dBm 15 dBm 15 dBm 14 dBm	−85 dBm −82 dBm −80 dBm −76 dBm −73 dBm −70 dBm −69 dBm −68 dBm
802.11n (HT40)	MCS 0/8 MCS 1/9 MCS 2/10 MCS 3/11 MCS 4/12 MCS 5/13 MCS 6/14 MCS 7/15	18 dBm 17 dBm 16 dBm 16 dBm 14 dBm 14 dBm 14 dBm 13 dBm	−83 dBm −82 dBm −81 dBm −76 dBm −74 dBm −69 dBm −67 dBm −65 dBm
802.11ac (HT20)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7 MCS 8	18 dBm 17 dBm 16 dBm 16 dBm 15 dBm 15 dBm 15 dBm 14 dBm 13 dBm	−85 dBm −82 dBm −80 dBm −76 dBm −73 dBm −70 dBm −69 dBm −68 dBm −64 dBm
802.11ac (HT40)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7 MCS 8 MCS 9	18 dBm 17 dBm 16 dBm 16 dBm 14 dBm 14 dBm 14 dBm 13 dBm 12 dBm 12 dBm	−83 dBm −82 dBm −81 dBm −76 dBm −74 dBm −69 dBm −67 dBm −65 dBm −62 dBm −60 dBm
802.11ac (HT80)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7 MCS 8 MCS 9	17 dBm 16 dBm 15 dBm 15 dBm 13 dBm 13 dBm 13 dBm 13 dBm 11 dBm 11 dBm	−80 dBm −78 dBm −76 dBm −73 dBm −70 dBm −67 dBm −64 dBm −63 dBm −59 dBm −57 dBm

5.5GHz-XY

5.5GHz-ZX

5.5GHz-ZY