Relay2

AI enabled by Aprecomm

RA820E
AI Enabled Access Point
for Businesses to Deliver Innovative Services and Applications Beyond Connectivity

INTELLIGENCE AT THE EDGE

The RA820E is an innovative, rugged outdoor access point which, combined with Aprecomm's AI Engine, serves as an intelligent network node in the Relay2 Edge Computing Platform.

Combining high performance, industry standard 802.11ac wireless access with a powerful processor, dedicated memory, and solid-state storage, business-critical applications and services are brought to life on the RA820E. Value-added applications and compute-intensive services are able to run locally, allowing for business solutions never before possible, all while greatly increasing performance and cost savings at the edge.

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 the connected devices helping you optimizing 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 and provide detailed and easy to understand insights and will provide information how to improve the network reliability and performance.

Relay2 Cloud learns about the behavior of every wireless client associated with it, deriving the best possible configuration to provide unbeatable wireless Customer Experience. As the system is gaining more and more insights from active deployments, those learnings about optimal Access Point configurations are made available to every customer subscribed to our services further improving reliability and performance without further investments.

PRODUCT AT A GLANCE

- **Rugged Outdoor Design** – built to withstand harsh weather condition
- **Enterprise-Class 802.11ac Access Point** – offering high-performance, scalable WiFi connectivity and hotspot services
- **Powerful Edge Computing, Memory, and Storage** – enabling edge applications and content hosting and delivery
- **Real Time Insights** – Artificial Intelligence Engine providing Real Insights of WLAN performance
- **Virtual Wireless Expert –** Wireless Expert will always understand your wireless network and keep improving it
- **Built-in Web Utilities and Contextual Intelligence** – simplifying service delivery and enhancing business intelligences
- **Open Platform with SDK and API** – enabling 3rd party applications integration
- **Plug-n-Play Deployment** – fast service roll-out
- **Multi-Tenancy Management** – supporting managed service practice

FEATURES

SERVICE DELIVERY

EDGE COMPUTING HARDWARE

Supporting a 2-core processor with 1GB DDR memory and 8GB solid-state drive (with the ability to scale up to 2GB of DDR memory, and a 128GB solid-state drive), the RA820E has been specifically designed to provide the processing, memory, and storage power needed to deliver valued-added applications and services at the edge of the network.

APPLICATION HOSTING

The RA820E has been architected to directly host a broad variety of applications via containers. The RA820E can host multiple containers, which each provides isolated environments in which one or more applications can run. Containers enable 3rd party applications to be installed in a secure and isolated manner.

A.I. INSIGHTS

RA820E with its Artificial Intelligence will proactively monitor Network to understand behavior of the connected wireless devices, their demands and measure real time wireless experience of each such device. Combined with Pervasive Knowledge in the cloud, RA250 will be able to Self-Diagnose the problems occurring in the field. They also provide actionable insights in Real time to the IT Administrators to Root Cause and improve Wireless Experience.

APPLICATION MANAGEMENT

Applications are installed, managed, and monitored via the Relay2 Cloud Controller. Cloud management simplifies the deployment and maintenance of business-critical applications across many locations.

VIRTUAL WIRELESS EXPERT (VWE)

Virtual Wireless Expert (VWE), built using Aprecomm's Evolv^{TM} AI Engine available for your 24x7 along with our Relay2 Dashboard. Minimal Wi-Fi Expertise is needed to manage our Relay2 Access Points as we are shipping a Virtual Expert with our Dashboard. IT Admins can now communicate in simple English with our VWE which can answer all your Network related Queries. VWE also provide users with suggestions to improve Wireless Experience.

EDGE CONTENT HOSTING

Equipping with edge storage up to 128GB, RA820E enables businesses to host and cache digital and web content at the edge of the networks. By making digital content at edge of the networks, closer to the users, business can deliver their business-matter content fast and reliable, even at loss of Internet connectivity. It optimizes content viewers experiences, reduces network bandwidth load, and eases IT administration operation support.

HIGH PERFORMANCE WIRELESS

RUGGED OUTDOOR DESIGN

The RA820E is built to withstand harsh weather conditions and dust, and is IP67-rated. Despite rugged design, RA820E is easy to deploy.

HIGH DENSITY CAPACITY

The RA820E is designed for deployments in client-dense environments such as shopping centers, resorts, sporting venues, and convention centers. The dual-band SR-AP delivers fast reliable coverage in challenging environments for client devices that routinely use bandwidth-intensive applications.

ENTERPRISE-CLASS WLAN

The RA820E features integrated, easy-to-use networking and security technologies to provide truly robust connectivity. Advanced security features include AES encryption, WPA2-Enterprise authentication

with 802.1X, and client isolation. Networking features include VLAN tagging and advanced QoS capabilities.

CLIENT TRAFFIC CONTROL AND OPTIMIZATION

The RA820E includes integrated layer 3 and 4 packet inspection and client traffic blocking, enabling better control of the WLAN. Integrated support of Wireless Multi Media (WMM) optimizes the performance of bandwidth-sensitive voice and video applications.

AUTO CONFIGURATION & OPTIMIZATION

When first plugged in, the RA820E automatically connects to the Relay2 Cloud Controller where it downloads its configuration, and joins the appropriate network. The RA820E then self-optimizes, determining the ideal channel, transmit power, and client connection parameters.

MANAGED VIRTUAL AP

Each physical RA820E can be virtualized into as many as 8 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 a MVAP as if it was his own physical AP.

This Relay2 patent-pending capability allows venue operators and property owners to monetize their wireless infrastructure by selling each AP 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 spectrum clean to yield far superior radio performance.

MVAP is ideal for providing hassle-free, secure WiFi access to tenant businesses in a shopping center or temporary access to event organizers and exhibitors at convention centers. Alternatively, MVAP can enable property owners to provide a neutral host solution to multiple carriers and hotspot operators offering public access WiFi. In both scenarios, MVAP customers are freed from maintaining a physical device, while enjoying enterprise-class features and

TECHNICAL SPECIFICATIONS

Radios

One 2.4 GHz 802.11b/g/n, one 5 GHz 802.11a/n/ac

Dual concurrent operation in 2.4 & 5GHz bands

Max rate: 300Mbps in 2.4GHz; 867Mbps in 5GHz

Operating frequency rage (country specific restrictions apply):
2.400 – 2.483GHz; 5.150 – 5.250GHz; 5.725 – 5.825GHz

802.11n/ac Capabilities

2 x 2 MIMO with 2 spatial streams

Maximal ratio combining (MRC)

20 and 40MHz channels (802.11n/ac), 80MHz (802.11ac)

Aggregation of 90-byte packets with AES encryption

Fast channel switching (1ms)

Maximum Clients: 252

Antenna

External omni-directional antennas

Gain: 5dBi gain for 2.4GHz and 7 dBi for 5GHz

N-type male connector

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

Mounting

All standard mounting hardware included

Wall and Pole mountable

Power

Power over Ethernet (802.3at PoE+ compatible)

Interfaces

1x Gig Ethernet (RJ45) with 802.3at PoE+

4x N-Type Female Connector

1x USB 2.0 (max. 0.5A)

1x serial console

Physical Characteristics

Dimensions: 218mm x 250mm x 54mm (without antennas)

Weight: 1854g (without antennas)

LED Indicators

1x Power status indicator

1x Ethernet connectivity indicator

1x 2.4GHz indicator, 1x 5GHz indicator

Service Delivery

2-core processor, 1GB DDR memory, & 8GB solid-state drive (extensible up to 2GB DDR, & 128GB SSD)

Built-in web utility services: web caching, web server, HTML insertion, client analytics

Quality of Service

Wireless multi media (WMM)

Advanced power save (U-APSD)

Rate limiting per VLAN, per WLAN, per client

Wireless Optimization

Band steering

Client load balancing

Auto channel switching

5GHz dynamic channel selection

Environmental Conditions

UV resistant, waterproof, IP67

Operating temp.: -35º C to +60º C

Operating humidity: Up to 95%

Security

WPA, WPA2-PSK, WPA2-Enterprise with 802.1X

TKIP and AES encryption

Guest isolation

Rogue AP detection

Black list 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

Regulatory

TELEC 205-180318, WIFI Alliance WFA75928 (802.11ac)

FCC* (US) IC* (Canada), TA* (China), NCC* (Taiwan), TA* (Indonesia)
* Regulatory Certification In-progress

Warranty

Limited lifetime hardware warranty

Ordering Information

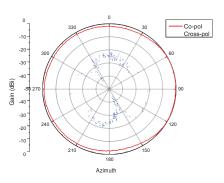RA820E: 2x2 802.11ac outdoor SR-AP with external antennas

RADIO & ANTENNA

2.4GHz

RF PERFORMANCE

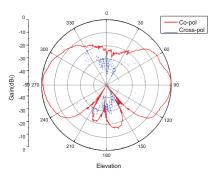| Mode	Data Rate	TX Power	RX Sensitivity
802.11b	1 Mbps 11 Mbps	21 dBm 21 dBm	-91 dBm -88 dBm
802.11g	6 Mbps 54 Mbps	23 dBm 17 dBm	-91 dBm -76 dBm
802.11n (HT20)	MCS 0/8/16 MCS 1/9/17 MCS 2/10/18 MCS 3/11/19 MCS 4/12/20 MCS 5/13/21 MCS 6/14/22 MCS 7/15/23	21 dBm 20 dBm 19 dBm 18 dBm 17 dBm 17 dBm 17 dBm 17 dBm	-91 dBm -88 dBm -85 dBm -82 dBm -79 dBm -74 dBm -73 dBm -72 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	21 dBm 20 dBm 19 dBm 18 dBm 17 dBm 17 dBm 17 dBm 17 dBm	-88 dBm -85 dBm -82 dBm -79 dBm -76 dBm -72 dBm -70 dBm -70 dBm

ANTENNA COVERAGE

Azimuth Plane

Elevation Plane

5 GHz

RF PERFORMANCE

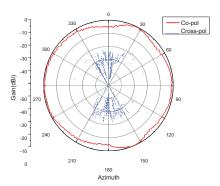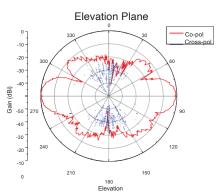| Mode	Data Rate	TX Power	RX Sensitivity
802.11a	6 Mbps 54 Mbps	23 dBm 19 dBm	-92 dBm -76 dBm
802.11a/n (HT20)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7	22 dBm 22 dBm 22 dBm 22 dBm 22 dBm 21 dBm 20 dBm 19 dBm	-92 dBm -90 dBm -86 dBm -83 dBm -80 dBm -76 dBm -75 dBm -73 dBm
802.11n (HT40)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7	22 dBm 22 dBm 22 dBm 22 dBm 22 dBm 21 dBm 20 dBm 19 dBm	-88 dBm -85 dBm -83 dBm -80 dBm -77 dBm -75 dBm -74 dBm -72 dBm
802.11ac (HT80)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7 MCS 8 MCS 9	22 dBm 22 dBm 22 dBm 22 dBm 22 dBm 21 dBm 20 dBm 19 dBm 17 dBm 15 dBm	-86 dBm -84 dBm -82 dBm -78 dBm -76 dBm -75 dBm -74 dBm -72 dBm -64 dBm -62 dBm

ANTENNA COVERAGE

Azimuth Plane

Elevation Plane