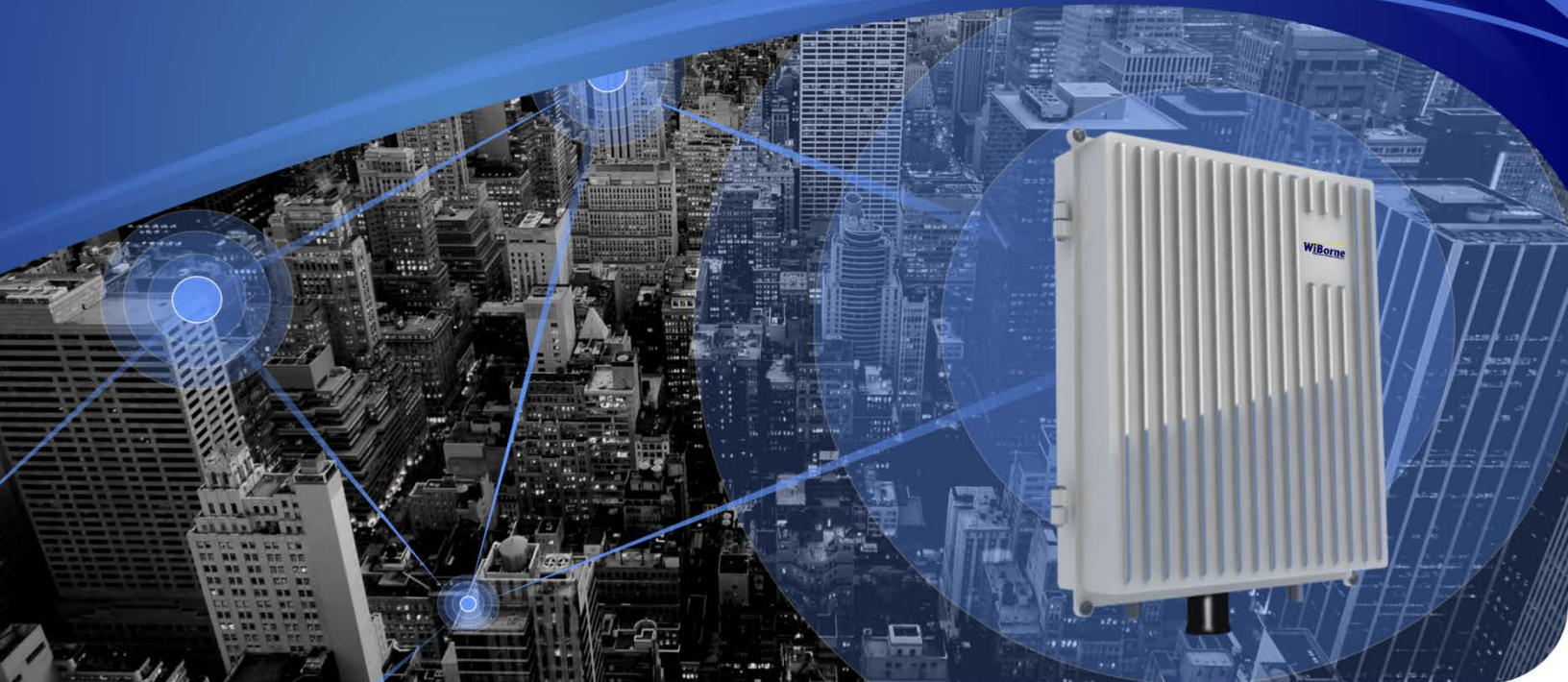


Long Range 802.11a/n/ac MIMO Wireless Bridge/Router WAP-520AC



WIBORNE

Carrier Class WAP-520AC 4.9-6.1 GHz max 1000mW dual chain MIMO High Power and Superior Performance Routing Base Single to Multiple Radio Unit

The WAP-520AC is specially designed for applications of point-to-point, point-to-multipoint as based AP to provide a superior performance solution for connecting many locations through wireless, yet flexible to customize for your deployment. It has up to five wireless interfaces for sectors or backhaul. The WAP-520AC delivers Internet service to your clients' network for extreme distance of 20 miles or more. You can use this package to provide high data rates and superior throughput for data-intensive yet up to hundreds of concurrent users for WiFi Citywide project. Multiple sites can share a single, high-speed connection to the Internet. The feature rich radio firmware allows you to apply the most advanced firewall, NAT, bandwidth shaping, cloaking modes, new AC standard with up to 866Mbit of throughput, and other technologies to create a smart and manageable network. You can secure wireless traffic with firewall, VLAN, encryption (WEP/WPA/WPA2) from base to individual clients. Layer 2 Mesh / WDS / Spanning Tree Bridging (STP) are available for all connected APs and clients in the same SSID group or Multiple SSIDs. QoS with video / gaming priority is available. MTBF is more than 100,000 hrs.

It provides support for both public bands with dual chain MIMO radio 4.9-6.1 GHz. While bundling with WiBorne's CPEs [CAP-5000AC](#), [HSG Access Controllers](#), or [EtherMUX E1/T1 MUX modems](#). This supports individual clients to backhaul network management systems for hundreds of base stations with thousands of wireless clients.

Optional features 3G technology, dual radio slots, 1 Gigabit LAN ports; present WAP-520AC a scalable device. With 802.11ac radio module, WAP-520AC support 300+ subs per sectorized base station with max 866Mbit of PtMP performance. USB slots allow you to add 3G wireless modem(s) for backup, mobile installation, or multi-WAN (multiplexing) connectivity. This enables new revenue generating converged services for IPv4/IPv6 data, voice (VoIP) and video streaming / conferencing / messaging.

- Single to dual Atheros max. 1000mW (30dBm) for 802.11ac
- Radio sensitivity up to -96dBm
- Highest and most consistent data throughput from 150 to 866 Mbit depends on terrain, antenna gain
- Time Division Duplex (TDD) with CSMA/CA, TDMA, TDM
- Integrated ESD on chip and lightning surge protection (10kA)
- Hub synchronization (multiple point-to-point)
- Swappable frequency among 4.9~6.1, or optional 2.4GHz
- Packet Aggregation for improved VoIP and gaming
- Long distances 20 miles or more are supported
- Channel width (spacing) for 20/40/80 MHz, optional 5/10 MHz
- Max. 2 radios ports for mesh technology
- The 2nd radio options for 2.3-2.7 or 4.9-6.1 GHz providing support for both public and licensed bands
- IP-67 / NEMA-6 certified 100% sealed strong mechanical structure, die cast all weather-proof hinged housing
- Optional 3G/4G modem connection for backup connectivity or for a mobile installation, or for backhaul connectivity
- Optional lighten protector: multi-strike capability (gas discharge)
- Firewall and NAT with stateful packet filtering
- QoS by IP/MAC/protocol/app/subnet/ports/packet classification & marking at L2~L4, 802.1p, DiffServ/TOS, HTB, PCQ, CIR, CBS, EBS, and PIR. WiMAX 802.16 QoS Classification for Pre-WiMAX, WMM for Video/Voice
- Layer 2 Mesh, Dynamic / Static WDS, Nstreme / bonding protocols, AP routing / transparent bridging.
- VRRP for High Availability
- Virtual Machine (VM) for 3rd party application software

- Bridge: spanning tree protocol (STP); multiple bridge interfaces; bridge firewalling, MAC NATing
- Client statistics (current signal level/quality, rate TX/RX, bytes TX/RX, radio rate) with graphical indication
- 64/128/152 bits WEP and WPA/WPA2 support.
- IPSec: DES, 3DES, AES-128/192/256, FIPS compliant
- Routing for RIP v1/v2, BGP, MPLS, VPLS, OSPF, VRRP, GRE4/GRE6, Static
- VLAN: 802.1q, multiple VLANs; VLAN bridging
- Software Utility/Console/Terminal/SSH/Telnet/CLI/SNMP/FTP
- Proxy: FTP & HTTP caching proxy server; HTTPS, DNS and HTTP, DNS entries, caching lists, access control lists
- Authentication: PPP, PPTP, PPPoE, L2TP, SSTP, OVPN, WPA, access control, MSCHAP v1/v2, RADIUS, MPPE encryption, Hotspot, Captive Portal
- DHCP server/client/relay, multiple DHCP networks
- Layer 2 connectivity: bridge, synchronous, asynchronous, ISDN, and SDSL
- UPnP, NTP, SNMP/MIB II, Cisco CDP, syslog/SNMP traps
- Monitoring and accounting for traffic, firewall logging, graphical bandwidth for each interface
- MiniPCI radio module swappable and country code selection.
- Watchdog for auto and remote reboot
- Tools: device discovery, bandwidth, link test, network monitoring, neighbor viewer, radio traffic statistics, site survey, signal status, neighbor discovery, ping, traceroute, bandwidth test, ping flood, packet sniffer, mac address spoofing, Dynamic DNS update tool, NTP
- BER (bits per rate) up to 10e-9 with very low latency, FEC
- Latency: <2 ms (RTT), availability 99.99%, depends on terrain
- Dynamic Multicast Filtering support for video surveillance

APPLICATIONS examples

MESH

POINT TO MULTIPPOINTS



Long-Range Outdoor MIMO High Power Bridge / Router WAP-520AC

Model No.	WAP-520AC
Standard	IEEE 802.11a/n/ac MIMO, 10/100/1000 Base-T IEEE 802.3 (CSMA/CD autosensing Ethernet). Optional 3G/4G or b/g/n
Wireless & Wired Security Functions	Secure with WPA, WPA2, 802.1x (EAP, MIC, TKIP and AES), 64/128/152 bits WEP, IPSec/VPN. WPA-PSK, WPA2-PSK, WPA-EAP, EPA-EAP2, EAP-TLS, AES-CCM, 802.11i TKIP, PEAP- MSCHAPv2, PEAP-TTLS, RADIUS client. Mac/IP, Mac Access Control Lists, Custom scan lists that prevent clients from scanning unwanted channels. Full firewall, NAT and Bandwidth Management support, Mac Authentication 802.1q VLAN support, 4096 VLANs; VLAN bridging client list, DHCP auto-auth configuration. Hide/stealth SSID setup, Multiple SSID, Multiple Access Points mode, Sniffer detects intrusion attempts (WIPS sensor).
Operation Functions	Static, dynamic (RIP v1/2, OSPFv2), or policy (source) routing, DHCP Server / Client Super A, G modes (Hardware compression, aggregation and bursting). Mesh-WDS / OLSR / RSTP, or Layer 2 Mesh routing. NV2 Protocol. Packet processing: 100,000 pps. Support up to 128 Virtual Access Points (SSIDs) for single interface, WDS settings, and even different MAC address. Cloaking to reduce interference, dynamic frequency selection (DFS/ACCS) mode for auto channel. Firmware upgradeable LED and audible alignment methods based on signal strength for antenna aiming Beacon real-time traffic monitor, AP association displays, with per-user, and system wide throughput and traffic reporting. Wireless site survey, and Spectrum analyzer. ACK Timing, RTS Fragmentation Threshold, Adaptive Noise Immunity (ANI) Adjustable transmit power up to 800mW (TPC/ATPC) dependent on radio module and frequency 802.11e QoS for Video and Voice Priority, protocol / port / IP / MAC filtering and shaping Layer 2 connectivity: bridge, synchronous, Asynchronous, ISDN, and SDSL, EoIP/IPv6 support.
Operation Modes	Point to Point, Point to Multipoint, Bridging, Routing, Ethernet to WLAN Bridge, AP Client with Routing function, dynamic WDS, L2 mesh, High performance learning bridge with STP. 3G/4G connectivity.
Management	SSH-based interface, Password, Web / text GUI, HTTP, Serial-based CLI, SNMP, Telnet, FTP, TFTP, Backup/Restore config-tool, Configuration tool for remote access / setup, User level access.
Power over Ethernet	8-30 VDC with overvoltage protection. High power PoE available for multiple radios. Gbit Ethernet port.
Interface	1 RJ45 (PoE) Bulkhead connector, 1 Reset button, 1 MiniPCI slots, 1 Gbit Ethernet port. Autosensing Base-T/TX, MicroSD slot, MiniPCIe for external device or 3G / 4G modems. 1x SFP cage available
Mounting	Pole or wall mount via 2pc clamps(included)
Enclosure	IP67 certified 100% sealed with die cast all weather-proof housing hinged housing
Weight	6 lbs (2.73 Kg)
Dimension (L x W x H)	H=12"/304.8mm W=9"/228mm D=3.5"/89mm
Temperature Range	Operating: -45°C to 75°C (-49°F to 167°F). -45°C to 75°C (-49°F to 167°F) for radio and board
Relative Humidity	0% to 99% non condensing
Surge Protector	Integrated ESD on radio module, extra lightning surge protection (10kA) for radio module
Antenna connectors	External antennas with up to 4 N connectors for 2x2 MIMO
Platform Characteristics	
Platforms	720MHz Atheros MIPS CPU
Memory	128MB DDR2 RAM
Radio Characteristics	
Radio Scheme	MIMO 802.11ac. 802.11a: OFDM; optional 802.11b: DSSS; 802.11g: DSSS/OFDM. FDD BPSK/QPSK/16QAM/64/128/256QAM. Access Method: Time Division Duplex (TDD) with CSMA/CA, TDMA
Frequency Range	4.920-6.100 GHz (optional addition frequency: 2.3-2.7 GHz with MIMO)
Data Rate	802.11ac MIMO for 6.5 – 886 Mbit
Channels (802.11a/n)	North America: non-overlapping 13 Channels (US, Canada) ETSI: 19 Channels (Most European Countries); TELEC: 8 Channels (Japan)
Throughput	Single radio from 60 to 866 Mbit
Output Power (radio)	Up to 1000mW
Receiver Sensitivity (without antenna)	54Mbit 27dBm/-80dBm, 6 Mbit 31dBm/-96dBm, MCS9 22dBm/-72dBm, MCS7 27dBm/-77dBm, MCS0 30dBm@-96dBm
Approvals	Radio module and Board CE & EMC FCC Part15, Section 15.247



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