

802.11ac Technology

Initial 802.11ac Wave 1 SU-MIMO (Single-User, Multiple Input, Multiple Output) technology allows an earlier-generation AP, such as the UniFi AC Pro AP, to communicate with only one client at a time.

802.11ac Wave 2 MU-MIMO (Multi-User, Multiple Input, Multiple Output) technology allows a Wave 2 AP, such as the UniFi IW HD AP, to communicate with multiple clients at the same time – significantly increasing multi-user throughput and overall user experience.

The following describes a 5-client scenario:

MU-MIMO Assuming the same conditions, a Wave 2 AP provides up to 75% improvement¹ overall over a Wave 1 AP. This improvement increases wireless performance and/or serves more clients at the same performance level.

4x4 Spatial Streams At any single time, a Wave 2 AP can communicate with the following MU-MIMO clients:

- four 1x1 clients
- two 2x2 clients
- one 2x2 client and two 1x1 clients
- one 3x3 client and one 1x1 client

A 4x4 Wave 2 AP delivers up to 33% greater performance¹ than a Wave 1 AP that is 3x3 in both radio bands.

Real-World Performance The UniFi IW HD AP is the first UniFi 802.11ac Wave 2 AP using the in-wall design. Combining the performance increases from MU-MIMO technology and the use of 4x4 spatial streams, the UniFi IW HD AP delivers up to 125% greater performance¹ than a typical Wave 1 AP.

Client Compatibility For optimal performance, use MU-MIMO clients. SU-MIMO clients will also benefit and gain up to 10-20% greater performance when used with the UniFi IW HD AP.

¹ Actual performance values may vary depending on environmental and installation conditions.

High-Density Scenarios

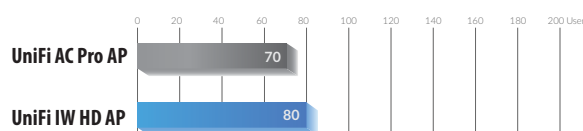
For high-density environments, such as hotel suites and meeting rooms where there are numerous clients in a relatively small space, we recommend the UniFi IW HD AP.

Both Wave 1 and Wave 2 APs offer 28 independent (non-overlapping) channels: three for the 2.4 GHz band and twenty-five for the 5 GHz band, including DFS channels.

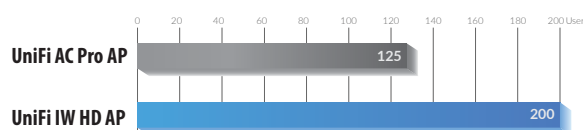
When you use the 2.4 GHz band in a high-density location, you encounter self-interference and channel saturation. When you use the 5 GHz band, you can deploy smaller cells (coverage areas), so you can support more clients in any cell that deploys more than one AP.

With the advantages of MU-MIMO technology and 4x4 spatial streams, the UniFi IW HD AP can support more than triple the number of users² than a typical Wave 1 AP.

Recommended Maximum Number of Users



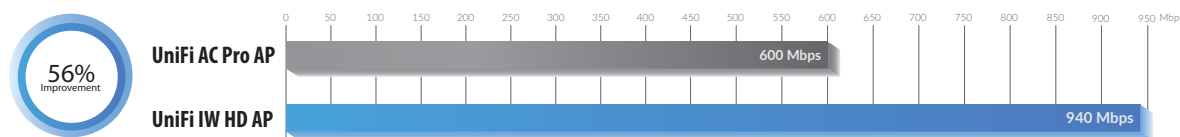
Theoretical Maximum Number of Users



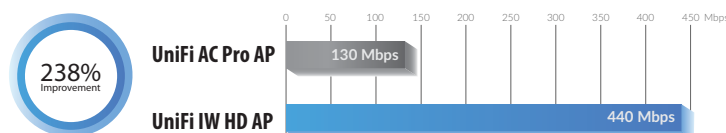
For more information, go to:
ubnt.link/UniFi-UAPs-High-Density

² Actual numbers may vary depending on environmental and installation conditions.

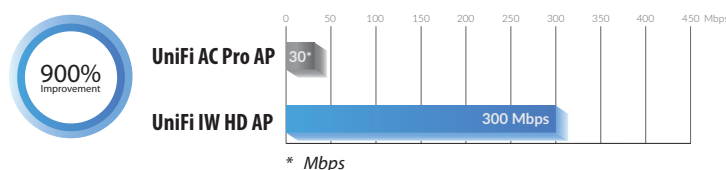
Single-Client Aggregate Throughput



10-Client Aggregate Throughput



100-Client Aggregate Throughput



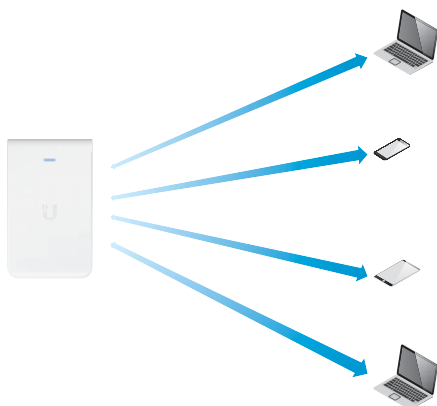
Model Summary

802.11ac Wave 1 SU-MIMO

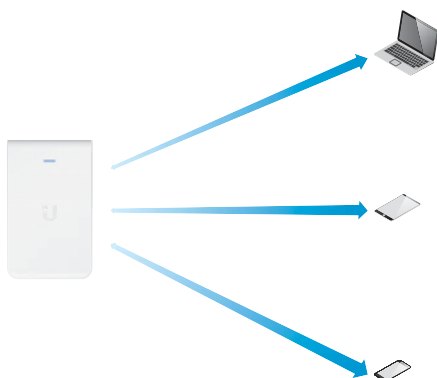


SU-MIMO: A Wave 1 AP communicates with one client at a time.

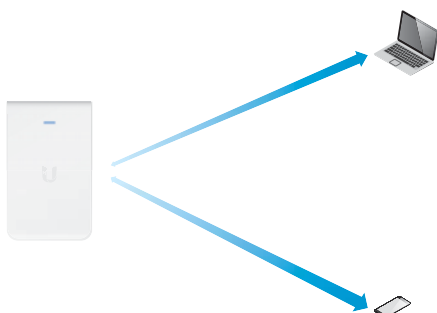
802.11ac Wave 2 MU-MIMO



MU-MIMO with 1x1 clients: The UniFi IW HD AP communicates with four 1x1 clients at a time.



MU-MIMO with 2x2 and 1x1 clients: The UniFi IW HD AP communicates with one 2x2 client and two 1x1 clients at a time.



MU-MIMO with 3x3 and 1x1 clients: The UniFi IW HD AP communicates with one 3x3 client and one 1x1 client at a time.



	UAP-IW-HD
Environment	Indoor
Simultaneous Dual-Band	✓
2.4 GHz Radio Rate	300 Mbps
2.4 GHz MIMO	2x2
5 GHz Radio Rate	1733 Mbps
5 GHz MIMO	4x4
Secondary Ethernet Port	✓ (4 Additional Ports)
PoE Mode	802.3af PoE 802.3at PoE+
PoE Passthrough	✓*
Wall Mount	✓
Wireless Uplink	✓
DFS Certification	✓

* Requires PoE 802.3at PoE+ switch.

Hardware Overview

The sleek and elegant UniFi In-Wall HD AP transforms an Ethernet wall connection into a simultaneous, dual-band 802.11ac Wi-Fi Access Point with 4x4 MIMO technology. Available in single- and 25-packs.

Easy Mounting The back plate offers multiple mounting holes for use with a variety of 1-gang electrical wall boxes.



LED The unique provisioning LED provides administrator location tracking and alerts for each device.

Secondary Gigabit Ethernet Four ports are available for bridging – one of which offers PoE passthrough when the AP is powered by an 802.3at PoE+ switch.

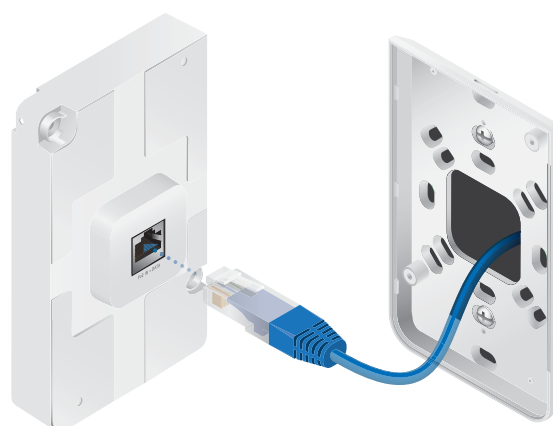
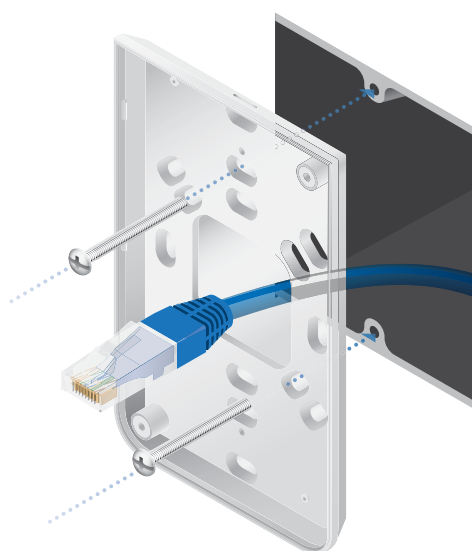


Superior Processing Power The UniFi IW HD AP is capable of complex operations (guest control, filtering, and other resource-intensive tasks) that may slow down a lesser-equipped AP.

Power over Ethernet (PoE) Standard The UniFi IW HD AP can be conveniently powered by an 802.3af or 802.at compliant switch. We recommend powering your UniFi devices with a UniFi PoE Switch (sold separately).

UniFi PoE Switch Available in 8*, 16, 24, and 48-port versions with multiple power output options, the UniFi PoE Switch conveniently offers auto-sensing IEEE 802.3af PoE/802.3at PoE+.

* The US-8 and US-8-60W do not support 802.3at PoE+.



Connecting the Ethernet Cable to the UniFi In-Wall HD AP

UAP-IW-HD Specifications

UAP-IW-HD	
Dimensions	139.7 x 86.7 x 25.75 mm (5.5 x 3.41 x 1.01")
Weight	210 g (7.41 oz)
Networking Interface	(5) 10/100/1000 Ethernet Ports
Buttons	Reset
Power Method	802.3af PoE 802.3at PoE+
Supported Voltage Range	44 to 57VDC
Power Supply	UniFi Switch (PoE)
PoE Out	48V Passthrough (Pins +1, 2; -3, 6)
Power Save	Supported
Beamforming	Supported
Maximum Power Consumption with PoE Passthrough	11W 23W*
TX Power	
2.4 GHz	23 dBm
5 GHz	26 dBm
Antennas	
Dual-Band	(2) Single-Port, Single-Polarity Dual-Band Antennas, 2.4 GHz: 1.8 dBi Each, 5 GHz: 3.4 dBi Each
Single-Band	(2) Single-Port, Dual-Polarity, Single-Band Antennas, 5 GHz: 6 dBi Each
Wi-Fi Standards	802.11 a/b/g/n/ac/ac-wave2
Wireless Security	WEP, WPA-PSK, WPA-Enterprise (WPA/WPA2, TKIP/AES) 802.11w/PMF
BSSID	Up to 8 per Radio
Mounting	1-Gang Electrical Wall Box (Not Included)
Operating Temperature	-10 to 60° C (14 to 140° F)
Operating Humidity	5 to 95% Noncondensing
Certifications	CE, FCC, IC

* Requires 802.3at PoE+ switch.

Advanced Traffic Management	
VLAN	802.1Q
Advanced QoS	Per-User Rate Limiting
Guest Traffic Isolation	Supported
WMM	Voice, Video, Best Effort, and Background
Concurrent Clients	200+

Supported Data Rates (Mbps)	
Standard	Data Rates
802.11a	6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n	6.5 Mbps to 300 Mbps (MCS0 - MCS15, HT 20/40)
802.11ac	6.5 Mbps to 1.7 Gbps (MCS0 - MCS9 NSS1/2/3/4, VHT 20/40/80)
802.11b	1, 2, 5.5, 11 Mbps
802.11g	6, 9, 12, 18, 24, 36, 48, 54 Mbps