



**UniFi<sup>®</sup> AC HD**

802.11ac Wave 2 Enterprise Wi-Fi Access Point

Model: UAP-AC-HD

Simultaneous Dual-Band 4x4 Multi-User MIMO

Four-Stream 802.11ac Wave 2 Technology

802.3at PoE+ Compatibility



## Scalable Enterprise Wi-Fi Management

UniFi® is the revolutionary Wi-Fi system that combines enterprise performance, unlimited scalability, and a central management controller. The UniFi AC HD AP has a refined industrial design and can be easily installed using the included mounting hardware.

Easily accessible through any standard web browser, the UniFi Controller software is a powerful software engine ideal for high-density client deployments requiring low latency and high uptime performance.

Use the UniFi Controller software to quickly configure and administer an enterprise Wi-Fi network – no special training required. RF map and performance features, real-time status, automatic UAP device detection, and advanced security options are all seamlessly integrated.

## Features

**Save money and save time** UniFi comes bundled with a non-dedicated software controller that can be deployed on an on-site PC, Mac, or Linux machine; in a private cloud; or using a public cloud service. You also have the option of deploying the compact UniFi Cloud Key with built-in software.

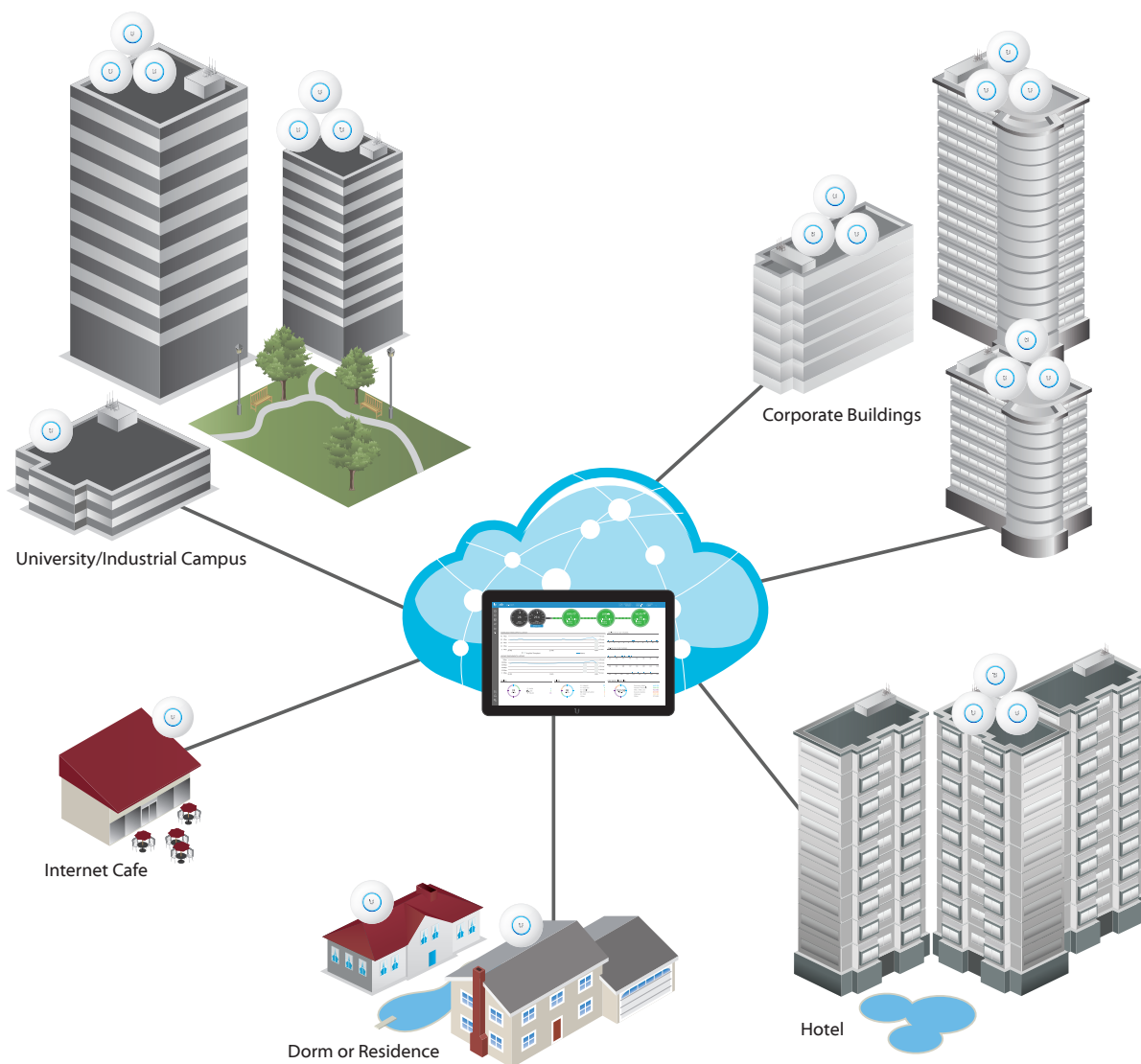
**Powerful Hardware** The UniFi AC HD AP features the latest in Wi-Fi 802.11ac Wave 2 MU-MIMO technology.

**Intuitive UniFi Controller Software** Configure and manage your APs with the easy-to-learn user interface.

**Expandable** Unlimited scalability: build wireless networks as big or small as needed. Start with one (or upgrade to a five-pack) and expand to thousands while maintaining a single unified management system.

## Extend Your Coverage

With the UniFi Controller software running in a NOC or in the cloud, administrators can manage multiple sites: multiple, distributed deployments and multi-tenancy for managed service providers. Below are some deployment examples.



# UniFi Controller

## Packed with Features

Use the UniFi Controller to provision thousands of UniFi APs, map out networks, quickly manage system traffic, and provision additional UniFi APs.

## View Your RF Environment

Use the RF environment functionality of the UniFi AC HD AP to detect and troubleshoot nearby interference, analyze radio frequencies, choose optimal AP placement, and configure settings.

## Powerful RF Performance Features

Advanced RF performance and configuration features include spectral analysis, airtime fairness, and band steering.

## Detailed Analytics

Use the configurable reporting and analytics to manage large user populations and expedite troubleshooting.

## Wireless Uplink

Wireless Uplink functionality enables wireless connectivity between APs for extended range. One wired UniFi AP uplink supports up to four wireless downlinks on a single operating band, allowing wireless adoption of devices in their default state and real-time changes to network topology.

## Guest Portal/Hotspot Support

Easy customization and options for Guest Portals include authentication, Hotspot setup, and the ability to use your own external portal server. Use UniFi's rate limiting for your Guest Portal/Hotspot package offerings. Apply different bandwidth rates (download/upload), limit total data usage, and limit duration of use.

All UniFi APs include Hotspot functionality:

- Built-in support for billing integration using major credit cards.
- Built-in support for voucher-based authentication.
- Built-in Hotspot Manager for voucher creation, guest management, and payment refund.
- Full customization and branding of Hotspot portal pages.

## Multi-Site Management

A single UniFi Controller running in the cloud can manage multiple sites: multiple, distributed deployments and multi-tenancy for managed service providers. Each site is logically separated and has its own configuration, maps, statistics, guest portal, and administrator read/write and read-only accounts.

## WLAN Groups

The UniFi Controller can manage flexible configurations of large deployments. Create multiple WLAN groups and assign them to an AP's radio. Each WLAN can be VLAN tagged. Dynamic VLAN tagging per Wi-Fi station (or RADIUS VLAN) is also supported.



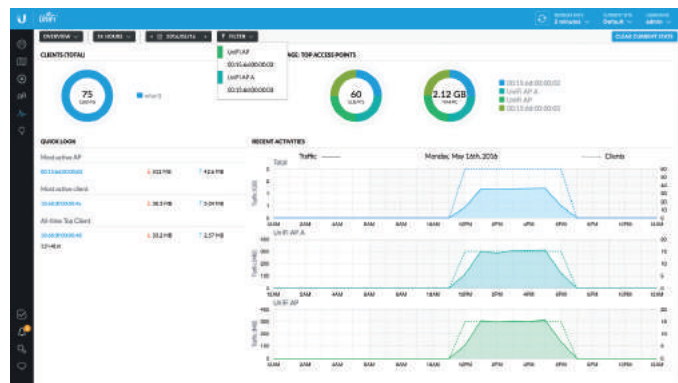
## Dashboard

UniFi provides a visual representation of your network's status and delivers basic information about each network segment.



## RF Map

Monitor UniFi APs and analyze the surrounding RF environment.



## Statistics

UniFi organizes and visualizes network traffic in clear and easy-to-read graphs.

# 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 AC 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% improvement\* 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

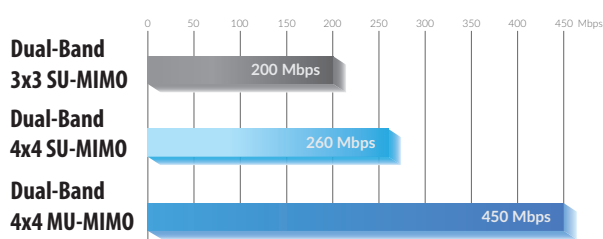
A 4x4 Wave 2 AP delivers up to 33% greater performance\* than a Wave 1 AP that is 3x3 in both radio bands.

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

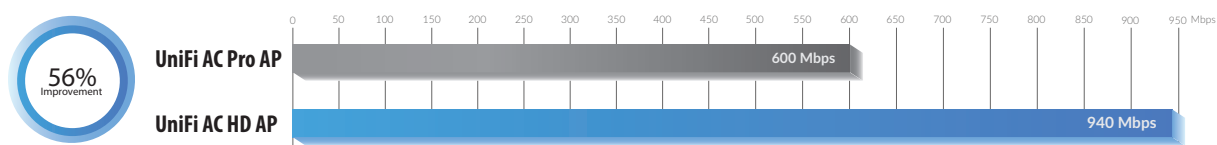
**Client Compatibility** For optimal performance, use MU-MIMO clients. SU-MIMO clients will also benefit and gain up to 10-20% greater performance when used with the UniFi AC HD AP.

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

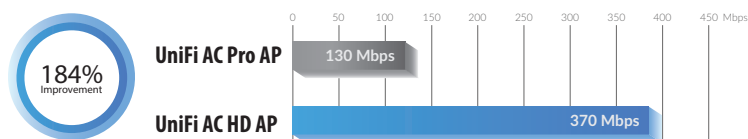
## 5-Client Aggregate Throughput



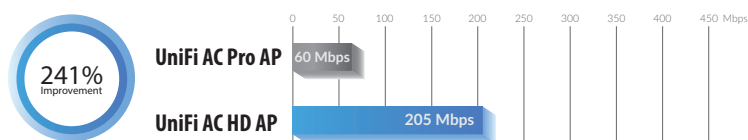
## Single-Client Aggregate Throughput



## 10-Client Aggregate Throughput



## 60-Client Aggregate Throughput





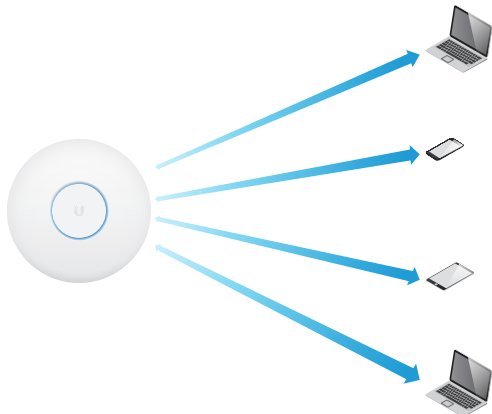
# Model Summary

## 802.11ac Wave 1 SU-MIMO

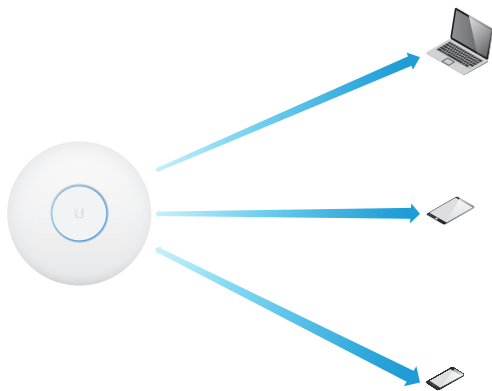


SU-MIMO: A Wave 1 AP communicates with one client at a time.

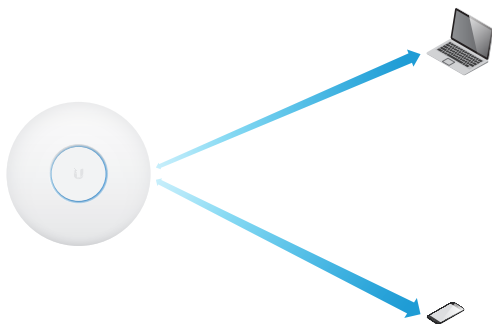
## 802.11ac Wave 2 MU-MIMO



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



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



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



|                         | UAP-AC-HD                   |
|-------------------------|-----------------------------|
| Environment             | Indoor or Outdoor (Covered) |
| Simultaneous Dual-Band  | ✓                           |
| 2.4 GHz Radio Rate      | 800 Mbps                    |
| 2.4 GHz MIMO            | 4x4                         |
| 5 GHz Radio Rate        | 1733 Mbps                   |
| 5 GHz MIMO              | 4x4                         |
| Secondary Ethernet Port | ✓                           |
| PoE Mode                | 802.3at PoE+                |
| Ceiling Mount           | ✓                           |
| Wall Mount              | ✓                           |
| Wireless Uplink         | ✓                           |



# Hardware Overview

Deploy the UniFi AC HD AP in high-density environments requiring maximum wireless performance. The UniFi AC HD AP features simultaneous, dual-band, 4x4 MU-MIMO technology and convenient 802.3at PoE+ compatibility. Available in single- and five-packs\*.

**Easy Mounting** Its sleek design seamlessly integrates into any environment (all accessories included) and is compatible with existing UAP-AC-PRO mounts.

**LED** Unique LED provisioning ring provides administrator location tracking and alerts for each device.

**Dual Gigabit Ethernet** The UniFi AC HD AP offers a secondary port available for bridging.

\* Five-packs do not ship with PoE adapters; we recommend powering the UniFi APs with the UniFi PoE Switch instead.

**Superior Processing Power** The UniFi AC 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)** Includes PoE functionality. Each single-pack includes a PoE adapter.

**PoE Standard** The UniFi AC HD AP is compatible with an 802.3at PoE+ 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+ and configurable 24V passive PoE.



# UAP-AC-HD Specifications

| UAP-AC-HD                 |                                                                  |
|---------------------------|------------------------------------------------------------------|
| Dimensions                | 220 x 220 x 48.1 mm (8.66 x 8.66 x 1.89")                        |
| Weight                    | 700 g (1.54 lb)                                                  |
| With Mounting Kits        | 830 g (1.83 lb)                                                  |
| Networking Interface      | (2) 10/100/1000 Ethernet Ports                                   |
| Buttons                   | Reset                                                            |
| Power Method              | Passive Power over Ethernet (48V), 802.3at PoE+ Supported        |
| Supported Voltage Range   | 44 to 57VDC                                                      |
| Power Supply              | 48V, 0.5A PoE Gigabit Adapter*                                   |
| Power Save                | Supported                                                        |
| Maximum Power Consumption | 17W                                                              |
| TX Power                  |                                                                  |
| 2.4 GHz                   | 6-25 dBm                                                         |
| 5 GHz                     | 6-25 dBm                                                         |
| Antennas                  |                                                                  |
| 2.4 GHz                   | (2) Dual-Port, Dual-Polarity Antennas, 3 dBi each                |
| 5 GHz                     | (2) Dual-Port, Dual-Polarity Antennas, 4 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)<br>802.11w/PMF |
| BSSID                     | Up to Four per Radio                                             |
| Mounting                  | Wall/Ceiling (Kits Included)                                     |
| Operating Temperature     | -10 to 70° C (14 to 158° F)                                      |
| Operating Humidity        | 5 to 95% Noncondensing                                           |
| Certifications            | CE, FCC, IC                                                      |

\* Only the single-pack of the UAP-AC-HD includes a PoE adapter.

| 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          | 500+                                      |

| Supported Data Rates (Mbps) |                                                             |
|-----------------------------|-------------------------------------------------------------|
| Standard                    | Data Rates                                                  |
| 802.11a                     | 6, 9, 12, 18, 24, 36, 48, 54 Mbps                           |
| 802.11n                     | 6.5 Mbps to 450 Mbps (MCS0 - MCS23, 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                           |

# System Example

