



## 802.11ac Wave 2 Wi-Fi MeshPoint

The Fastest Way to Extend Wi-Fi Coverage and Increase Throughput

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802.11ac Wave 2, 4x4 MU-MIMO Technology

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Automatically Discovered for Adoption by UniFi Network Controller

Model: UAP-BeaconHD



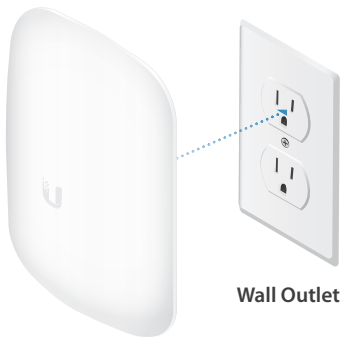
## The Easiest Way to Extend Wi-Fi

### Model: UAP-BeaconHD

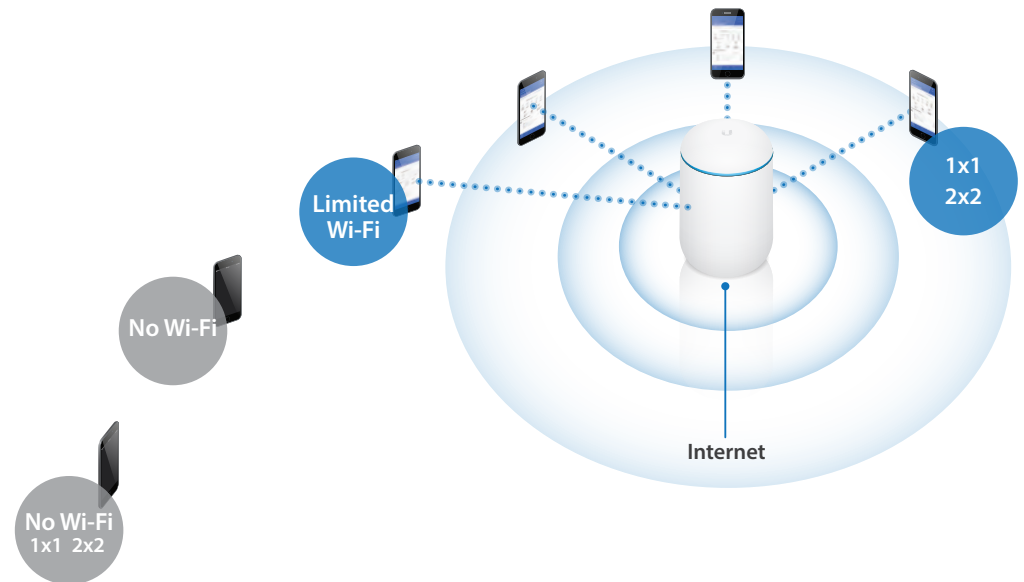
The UniFi AP Beacon HD is the fastest way to extend Wi-Fi coverage and increase throughput in your home or office. It uses full 4x4 MU-MIMO capabilities to deliver true 300+ Mbps performance over a wireless mesh hop.

The UniFi AP Beacon HD works with any nearby UniFi AP or UniFi Dream Machine (UDM) and is automatically discovered for adoption by the UniFi Controller. After adoption, enhanced performance is immediately available.

Sleek and stylish, the UniFi AP Beacon HD fits a standard US AC wall outlet to blend into any environment.

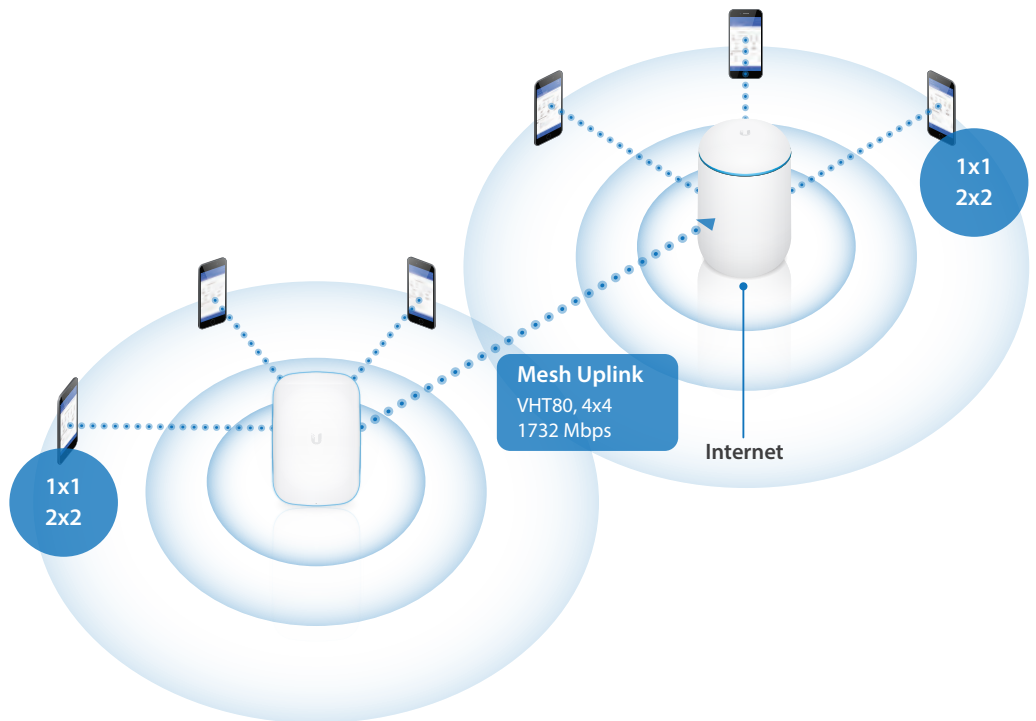


### Application Diagram with the UDM Only



Client devices connect to the UDM, unless they are out of range.

### Application Diagram with the UDM and UniFi AP Beacon HD



Client devices connect to the UDM or UniFi AP Beacon HD. The UniFi AP Beacon HD has a mesh uplink to the UDM.

## High-Capacity Mesh Uplinks

The UniFi AP Beacon HD creates a bi-directional, high-capacity, 4x4 MU-MIMO mesh uplink to a nearby UniFi AP and provides improved radio data rates and faster network connections to nearby Wi-Fi devices.

Compared to a standard Wi-Fi device, the UniFi AP Beacon HD's uplink results in a Wi-Fi coverage range that is more than 4x larger in open space.

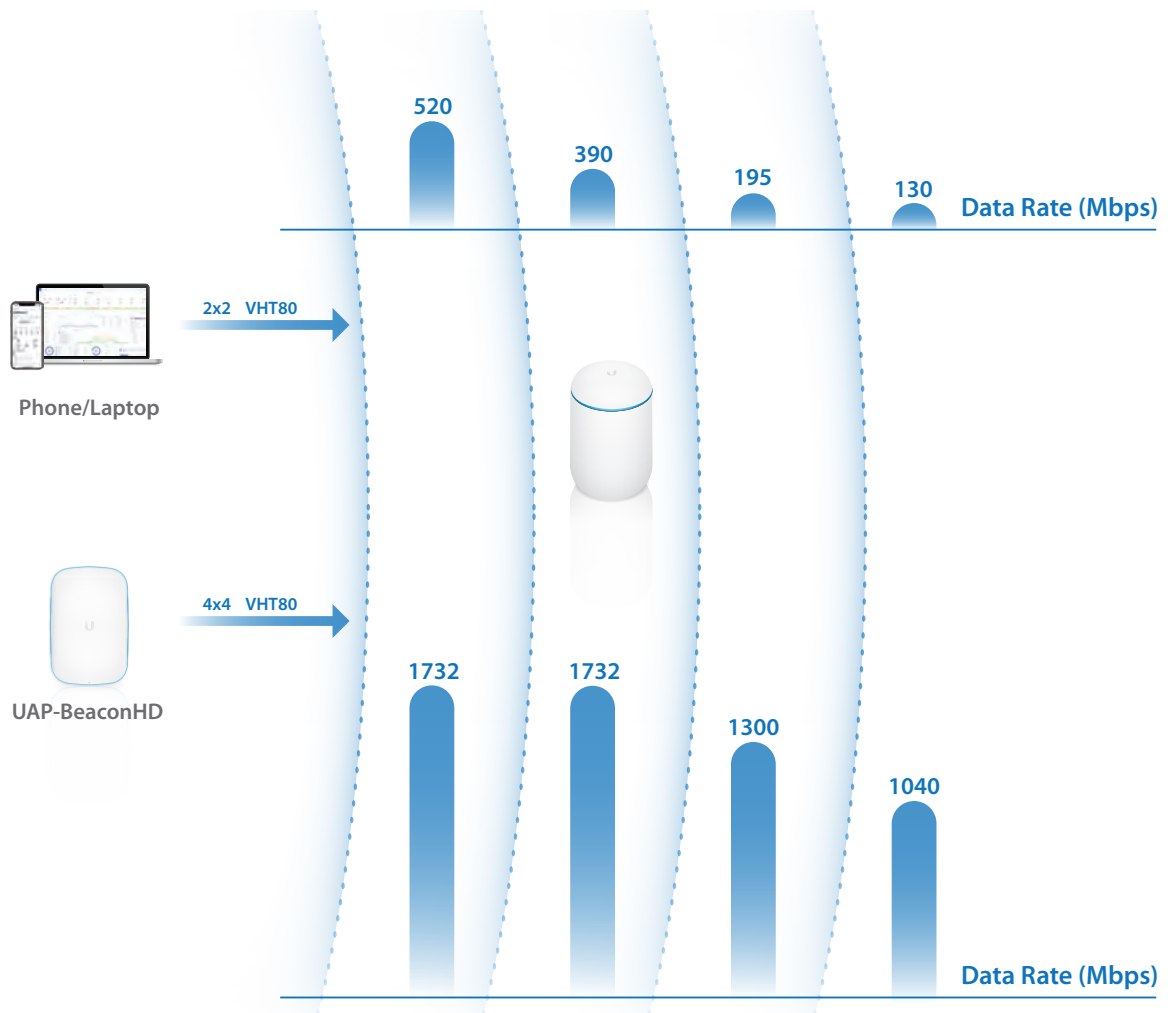
Its combination of a powerful uplink and enhanced signal levels for Wi-Fi devices saves airtime and increases channel efficiency.

The UniFi AP Beacon HD is a meshpoint designed for use with any UniFi AP\* supporting mesh uplinks, including the UDM. We recommend you use a maximum of two UniFi AP Beacon HD devices with one AP, but there is no specific upper limit. The UniFi AP Beacon HD creates another AP on the same channel that behaves like any other Wi-Fi AP, offering a performance boost for devices further away from the main AP.

While coverage-focused deployments may benefit the most from more UniFi AP Beacon HD devices, networks with the greatest capacity requirements may benefit from using additional APs instead of UniFi AP Beacon HD devices.

\* 5 GHz required.

### 5 GHz Mesh Uplink Performance



The 5 GHz 4x4 mesh uplink to the host AP – in this case, the UDM – uses two 4x4 radios and higher power than a phone or laptop. The mesh uplink uses high data rates that allow quick transmissions and minimize airtime usage.

## Practical Performance Boost

Low signal levels and the resulting low data rates dramatically reduce Wi-Fi channel capacity. The UniFi AP Beacon HD provides a quick way to enhance Wi-Fi performance at home and in the office.

Home use requires extremely high throughput (4x4 MIMO streams) for video streaming; low-latency gaming; and local video, photo, and file transfers. The UniFi AP Beacon HD delivers this with improved signal levels, higher data rates, and more spectrum with supported DFS channels.

The UniFi AP Beacon HD is also ideal for enterprise use: it fits into high-density remote corporate offices, retail stores, warehouses, and hospitality locales. Adding Wi-Fi coverage has never been easier: just plug the UniFi AP Beacon HD into a wall outlet in an area with low signal levels and adopt it with a single click in the UniFi Network Controller.



UDM on Floor 1, UniFi AP Beacon HD on Floor 3

## Eliminates Deadspots

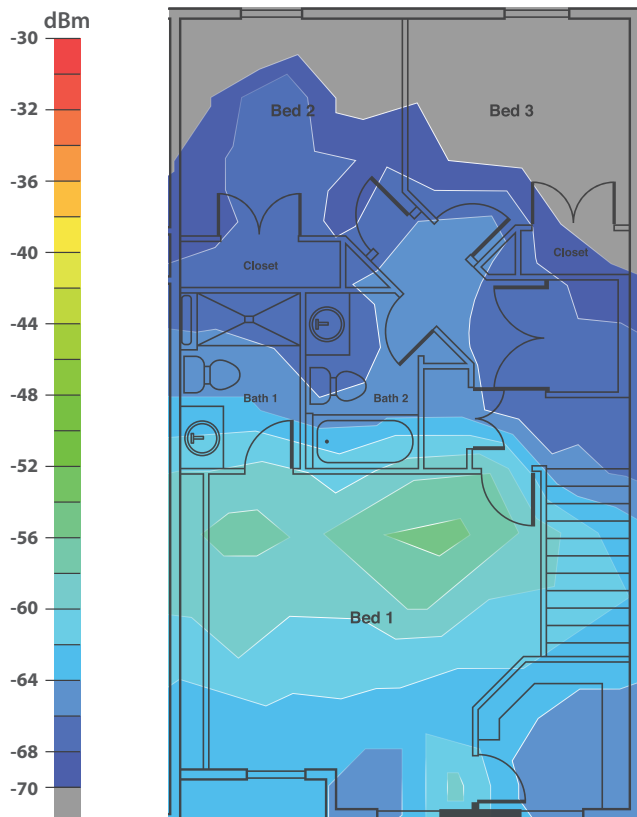
The signal strength heatmaps depict wireless performance in a three-story townhouse. A UniFi Dream Machine, model UDM, is on the first floor.

When all client devices on the third floor connect only to the UDM on the first floor, there are low signal strength levels and even deadspots on the upper floors.

The heatmap showing the UniFi AP Beacon HD illustrates the impact of adding it to the third floor. It increases signal strength levels and eliminates deadspots on the upper floors.

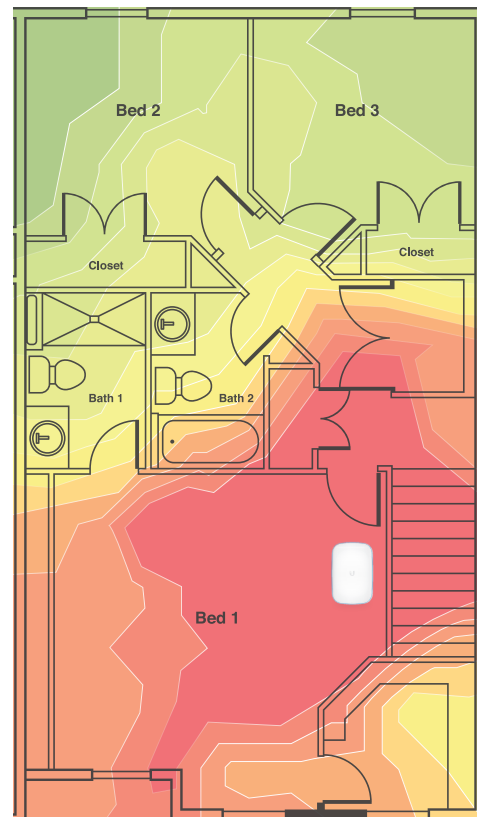
When signal strength levels increase, client devices can use higher data rates, leading to improved throughput numbers, an increase in overall channel capacity, and a more satisfying user experience.

Wireless Performance without UniFi AP Beacon HD



Floor 3 Heatmap (UDM on Floor 1)

Wireless Performance with UniFi AP Beacon HD



Floor 3 Heatmap (UniFi AP Beacon HD on Floor 3)



## 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 UAP-BeaconHD, to communicate with multiple clients at the same time – significantly increasing multi-user throughput and overall user experience. The following describes a 4-client scenario:

**MU-MIMO** Assuming the same conditions, a Wave 2 AP provides up to 75% improvement<sup>1</sup> 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<sup>1</sup> than a Wave 1 AP that is 3x3 in both radio bands.

<sup>1</sup> Actual performance values may vary depending on environmental and installation conditions.

## Model Summary



	UAP-BeaconHD
Environment	Indoor
Simultaneous Dual-Band	✓
2.4 GHz Radio Rate	300 Mbps
2.4 GHz MIMO	2x2 (20/40 MHz)
5 GHz Radio Rate	1733 Mbps
5 GHz MU-MIMO	4x4 (20/40/80 MHz)
DFS Certification	✓
Supported APs	Dual-Band UniFi APs <sup>2</sup> UWB-XG

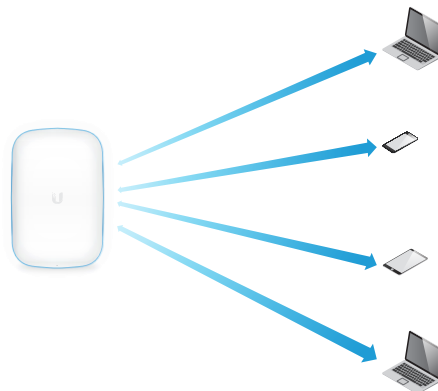
<sup>2</sup> Except UAP-AC.

### 802.11ac Wave 1 SU-MIMO

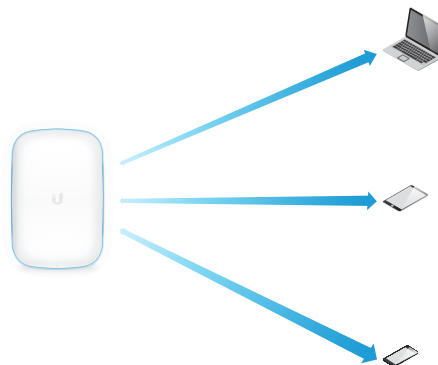


SU-MIMO: A Wave 1 AP communicates with one client at a time.

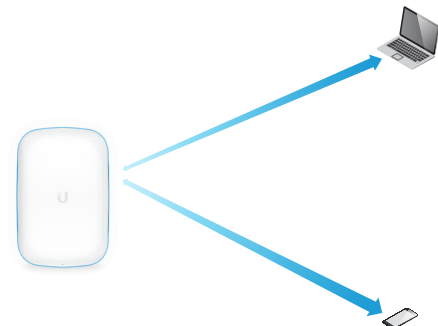
### 802.11ac Wave 2 MU-MIMO



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



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



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





## Scalable UniFi Network Controller

### Management Capabilities

The UniFi Network Controller can provision UniFi devices, map out networks, and quickly manage system traffic. Important network details are logically organized for a simplified, yet powerful, interface.

### Network Overview

From a single pane of glass, view network topology and configuration, real-time statistics, and debugging metrics. Monitor your network's vitals and make on-the-fly adjustments as needed.

### Deep Packet Inspection

Ubiquiti's proprietary Deep Packet Inspection (DPI) engine includes the latest application identification signatures to track which applications (and IP addresses) are using the most bandwidth.

### Detailed Analytics

The UniFi Network Controller provides configurable reporting and analytics to manage large user populations and expedite troubleshooting. Advanced search and sorting capabilities make network management more efficient.

### Multi-Site Management

A single 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 accounts.

### RF Environment

Detect and troubleshoot nearby interference, analyze radio frequencies, and choose optimal AP placement. The auto-optimize feature configures the UniFi AP Beacon HD with best practice settings, and the included radio AI capability optimizes channel selection using a genetic algorithm.

### Advanced RF Performance

RF performance and configuration features include spectral analysis, airtime fairness, band steering, and cell-size tuning.

### LAN/WLAN Groups

Create multiple LAN and WLAN groups and assign them to the respective UniFi devices and VLAN tags.

### Predictive Maps

Upload a map or use Google Maps to represent the areas where your UniFi devices are located. Use the predictive map feature\* to get a preview of coverage, and to help you avoid dead spots.

### Wireless Uplink

Wireless Uplink functionality enables wireless connectivity between APs for extended range, wireless adoption of APs in their default state, and real-time changes to network topology.

### Guest Portal/Hotspot

Configure custom settings, including authentication, Hotspot setup, and the option to use your own external portal server.

\* version 5.6 or higher



UAP-BeaconHD	
Dimensions	169.7 x 112.15 x 32.2 mm (6.68 x 4.42 x 1.27")
Weight	260 g (9.17 oz)
Networking Interface	Wi-Fi
Buttons	Reset
LED	System Status
Processor	880 MHz MIPS 1004KEc
System Memory	128 MB SDRAM
Maximum Power Consumption	11.5W
Power Method	AC
Power Supply	AC
Supported Voltage Range	100 - 240VAC, 0.3A Max., 50/60 Hz
Power Save	Supported
Beamforming	Supported
Operating Frequency	2.4 GHz 5 GHz
TX Power* (EIRP) 2.4 GHz 5 GHz	24.8 dBm 30 dBm
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
Operating Temperature	-10 to 60° C (14 to 140° F)
Operating Humidity	5 to 95% Noncondensing
Certifications	FCC, IC



\* Including antenna gain. Maximum TX power level may be limited by user's country-specific regulations.

Antenna Gain of 4 Single-Polarity Antennas		
(2) Dual-Band		(2) Single-Band
2.4 GHz	5 GHz	5 GHz
5 dBi	6 dBi	6 dBi



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



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 Wave 2	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

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