UniFi Controller

Introducing the new UniFi Controller software featuring a refreshed UI and support for the next generation of UniFi devices.

Improved User Experience

Redesigned to be more intuitive and easier to navigate, the new UI raises the bar for enterprise network management efficiency. Important network details are logically organized for a simplified, yet powerful, interface.

Packed with Features

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

Network Overview

A comprehensive overview of your Network Health is readily available in the new dashboard. Monitor your network's vitals and make on-the-fly adjustments as needed.

Detailed Analytics

Use the configurable reporting and analytics to monitor large user groups and expedite troubleshooting. Advanced search and sorting capabilities make network management more efficient.

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.
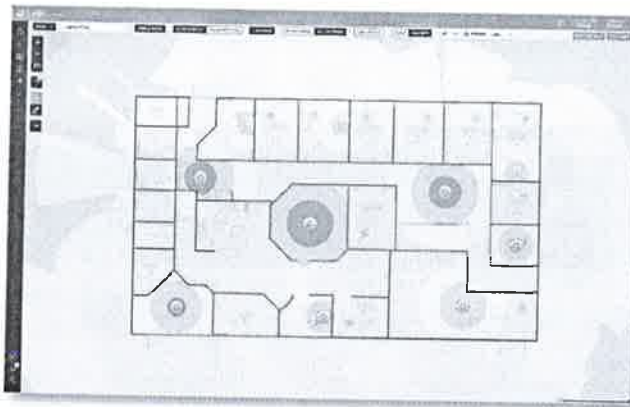
LAN/WLAN Groups

The UniFi Controller can manage flexible configurations of large deployments. Create multiple LAN and WLAN groups and assign them to the respective UniFi devices.
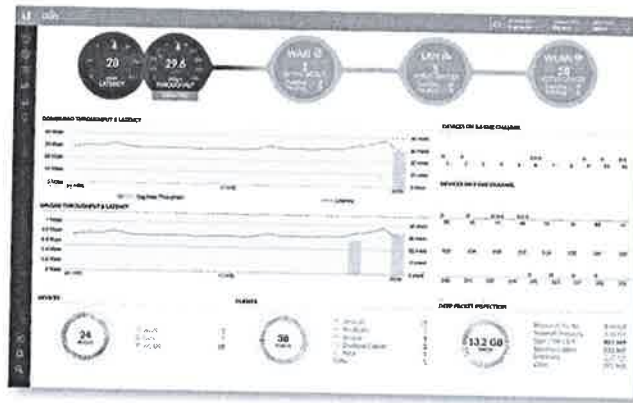
Dashboard

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

Maps

Upload a map of your location(s) or use Google Maps to represent the areas where your UniFi devices are located. Starting with v5.6.x, you can also use the predictive map feature to get a preview of coverage, so you can help avoid dead spots.

Device Configuration

The *Devices* screen displays a list of UniFi devices discovered by the UniFi Controller. You can access each managed device for device details and configuration.
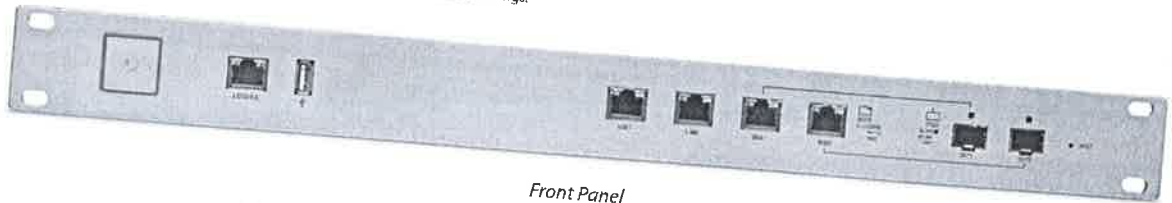
UniFi® | SECURITY GATEWAY PRO

Model: USG-PRO-4

The USG-PRO-4 offers optional SFP ports for fiber connectivity to support backhaul applications.

- (2) 10/100/1000 RJ45 LAN Ports
- (2) 1 Gbps RJ45/SFP Combination WAN Ports*
- (1) RJ45 Serial Console Port
- Rack-Mounting Capability

* The USG-PRO-4 WAN port, as a result of being a combination SFP/GigE port, is a pure 1 Gbps port – it is incapable of both 10 Mbps and 100 Mbps FDX/HDX settings.

- Layer 3 Forwarding Performance
  - Packet Size of 64 Bytes: 2,400,000 pps
  - Packet Size of 512 Bytes or Larger: 4 Gbps (Line Rate)

Front Panel

Back Panel

UniFi® | SECURITY GATEWAY

Model: USG

The USG features a compact form factor and fanless operation for discreet integration.

- (3) 10/100/1000 RJ45 Ports*
- (1) RJ45 Serial Console Port
- Quiet, Fanless Operation
- Wall-Mounting Capability
- Layer 3 Forwarding Performance
  - Packet Size of 64 Bytes: 1,000,000 pps
  - Packet Size of 512 Bytes or Larger: 3 Gbps (Line Rate)

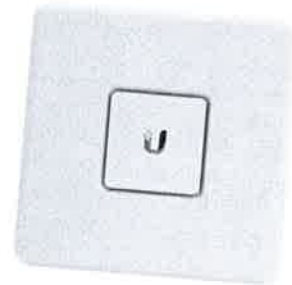* VOIP port is available for port remapping in UniFi v5.

Top Panel

Front Panel

UniFi® | SECURITY GATEWAY PRO

Specifications

UniFi USG-PRO-4	
Dimensions	484 x 44 x 164 mm (19.06 x 1.73 x 6.46")
Weight	2.3 kg (5.07 lb)
Max. Power Consumption	40W
Power Supply	Internal AC/DC Power Adapter, 60W (24V, 2.5A)
Power Input	110 - 240VAC

LEDs
  System
  Data Ports
	Status
	Speed/Link/Activity

Networking Interfaces
  Serial Console Port
  Data Ports
	(1) RJ45 Serial Port
	(2) 10/100/1000 RJ45 LAN Ports
	(2) 1 Gbps RJ45/SFP Combination WAN Ports

Layer 3 Forwarding Performance
  Packet Size: 64 Bytes
  Packet Size: 512 Bytes or Larger
	2,400,000 pps
	4 Gbps (Line Rate)

Processor	Dual-Core 1 GHz, MIPS64 with Hardware Acceleration for Packet Processing
System Memory	2 GB DDR3 RAM
On-Board Flash Storage	4 GB
Certifications	CE, FCC, IC
Rackmount	Yes
Operating Temperature	-10 to 45° C (14 to 113° F)
Operating Humidity	10 to 90% Noncondensing

Specifications

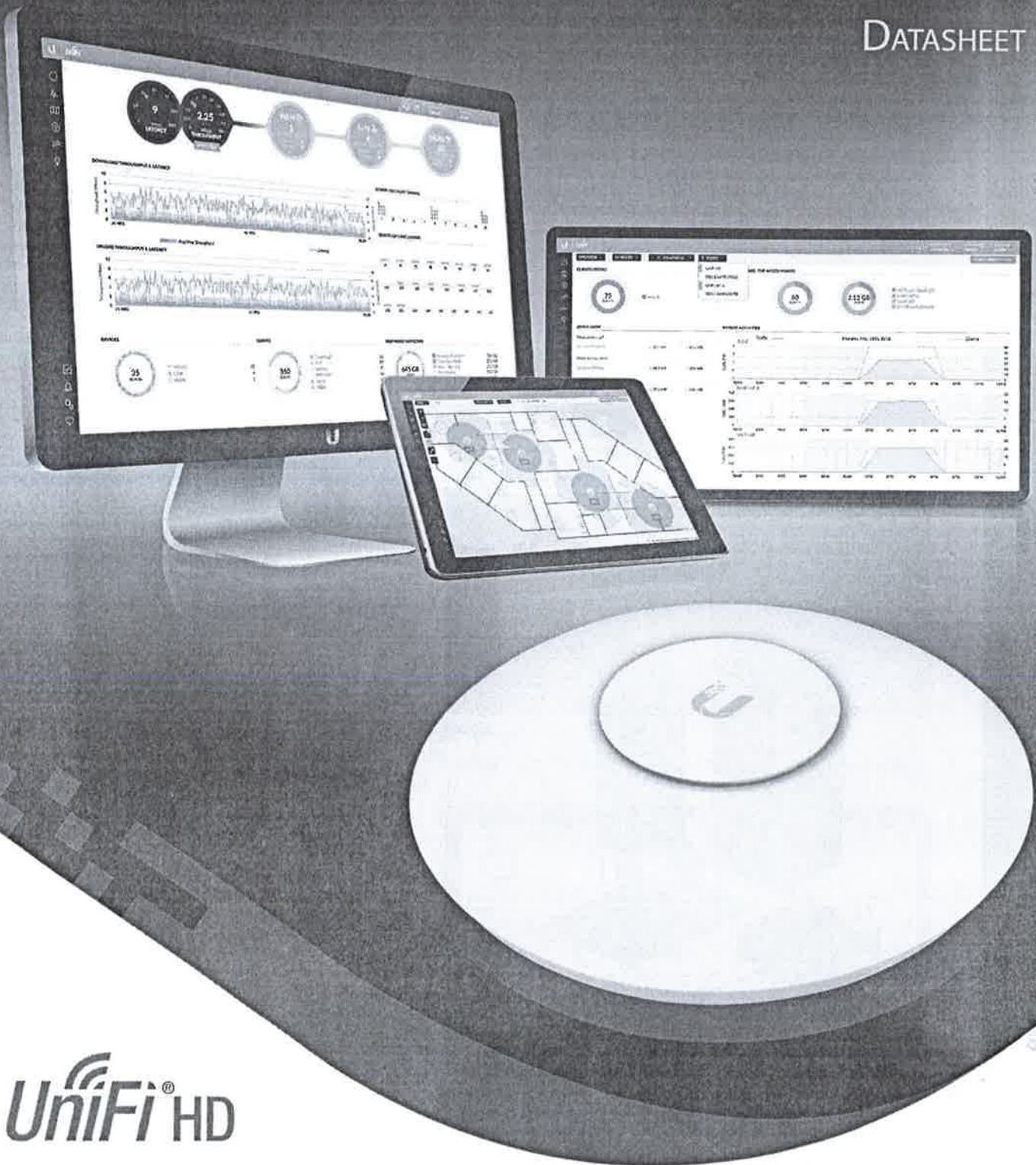|	UniFi USG
Dimensions	135 x 135 x 28.3 mm (5.32 x 5.32 x 1.11")
Weight	366 g (12.9 oz)
Max. Power Consumption	7W
Power Supply	12VDC, 1A Power Adapter (Included)
Power Input	9 to 24VDC, Supported Voltage Range
LEDs System Serial Console Port Data Ports	Status Power Speed/Link/Activity
Networking Interfaces Serial Console Port Data Ports	(1) RJ45 Serial Port (3) 10/100/1000 Ethernet Ports*
Layer 3 Forwarding Performance Packet Size: 64 Bytes Packet Size: 512 Bytes or Larger	1,000,000 pps 3 Gbps (Line Rate)
Processor	Dual-Core 500 MHz, MIPS64 with Hardware Acceleration for Packet Processing
System Memory	512 MB DDR2 RAM
On-Board Flash Storage	2 GB
Certifications	CE, FCC, IC
Wall-Mountable	Yes
Operating Temperature	-10 to 45° C (14 to 113° F)
Operating Humidity	10 to 90% Noncondensing

* VOIP port is available for port remapping in UniFi v5.

www.ubnt.com

UniFi® 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

UBIQUITI
N E T W O R K S

UniFi®

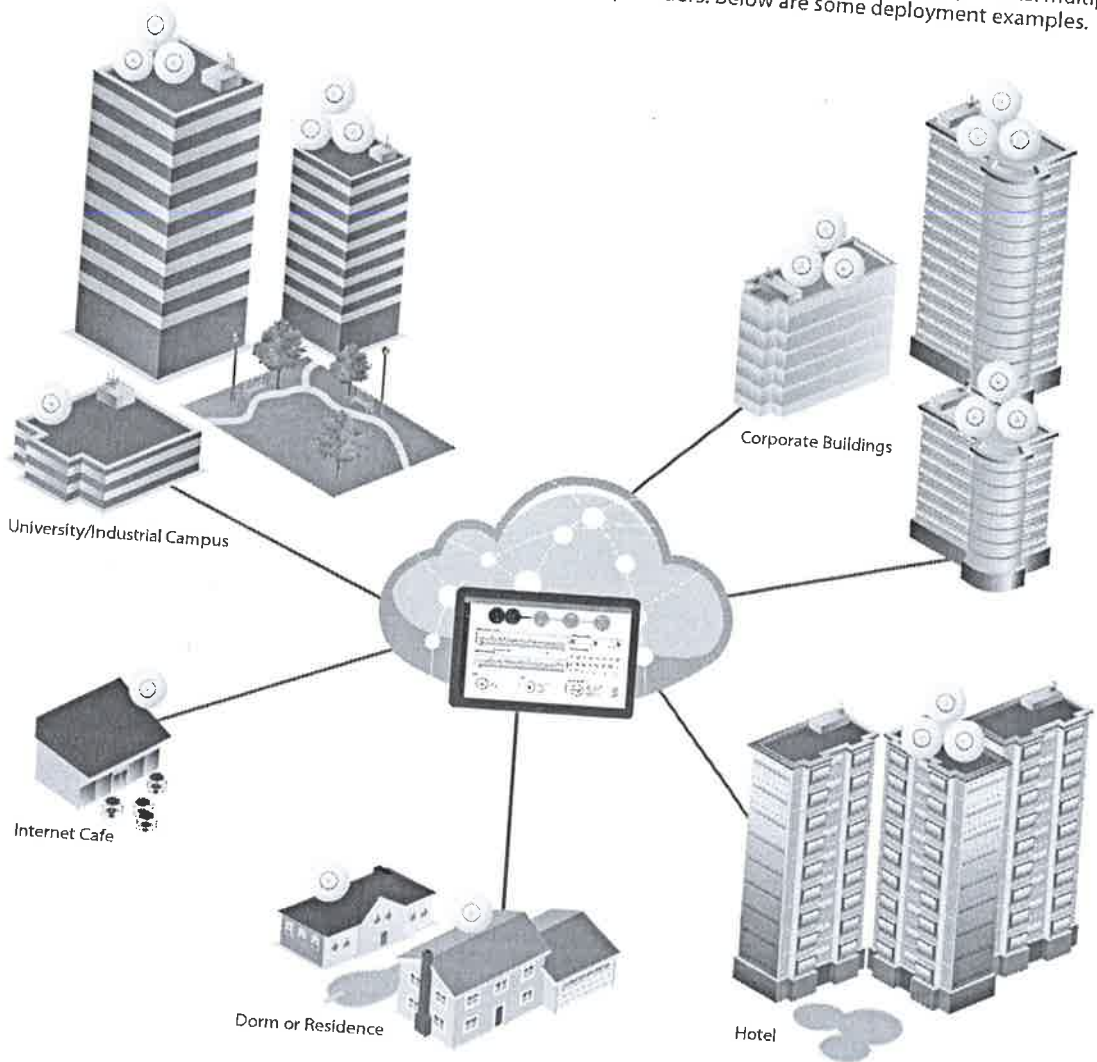## Scalable Enterprise Wi-Fi Management

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

Easily accessible through any standard web browser and the UniFi app (iOS or Android™), 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 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.

University/Industrial Campus

Corporate Buildings

Internet Cafe

Dorm or Residence

Hotel

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 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 refunds.
- 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.
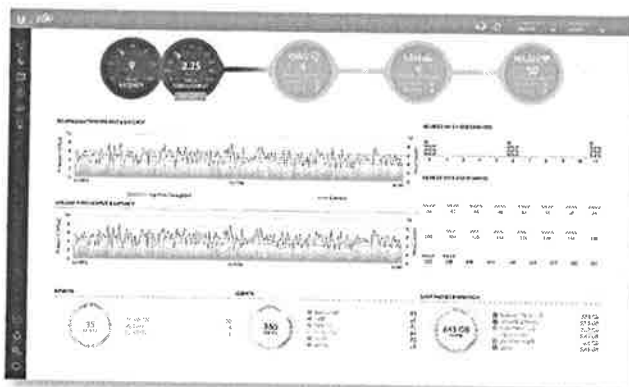
Dashboard

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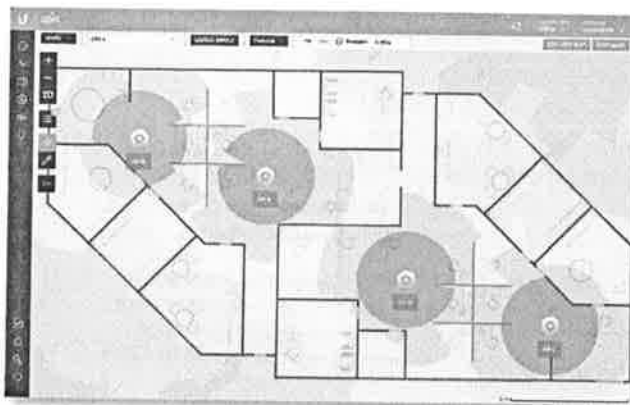
RF Map

Monitor UniFi APs and analyze the surrounding RF environment.

Statistics

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

UniFi App

Manage your UniFi devices from your smartphone or tablet.

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 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[1] 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[1] than a Wave 1 AP that is 3x3 in both radio bands.

Real-World Performance The UniFi 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 HD AP delivers up to 125% greater performance[1] 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 HD AP.

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

High-Density Scenarios

For high-density environments, such as a concert venue or outdoor fair where there are numerous clients in a relatively small space, we recommend the UniFi 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 HD AP can support more than triple the number of users[2] than a typical Wave 1 AP.
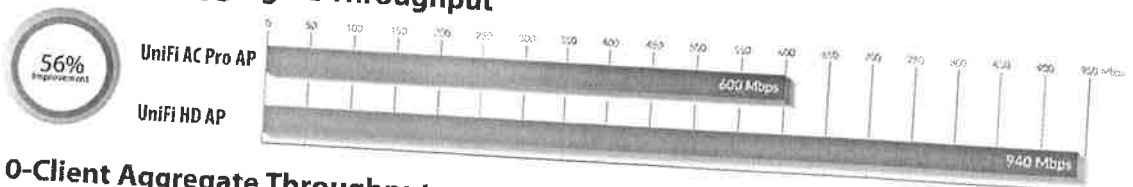
Recommended Maximum Number of Users

UniFi AC Pro AP	70	
UniFi HD AP		350
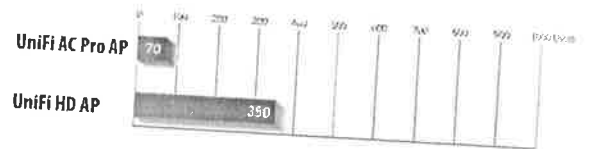
Theoretical Maximum Number of Users

UniFi AC Pro AP	125	
UniFi HD AP		1000
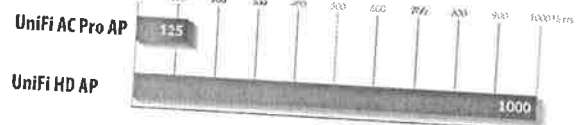
For more information, go to:
ubnt.link/UniFi-UAPs-High-Density

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

Single-Client Aggregate Throughput
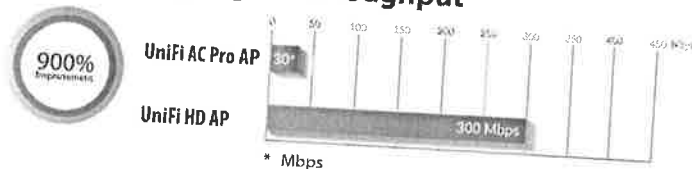
56% Improvement

UniFi AC Pro AP	600 Mbps
UniFi HD AP	940 Mbps

10-Client Aggregate Throughput

238% Improvement

UniFi AC Pro AP	130 Mbps
UniFi HD AP	440 Mbps

100-Client Aggregate Throughput

900% Improvement

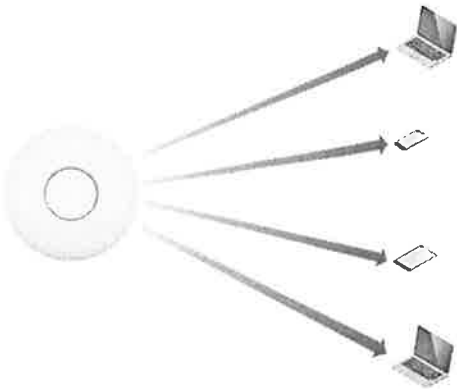|	
UniFi AC Pro AP	30*
UniFi HD AP	300 Mbps

* Mbps
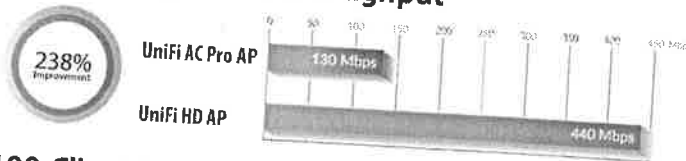
Model Summary
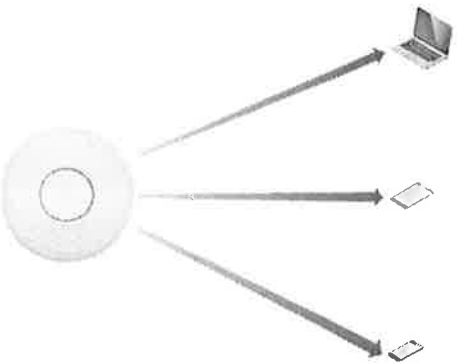
802.11ac Wave 1 SU-MIMO

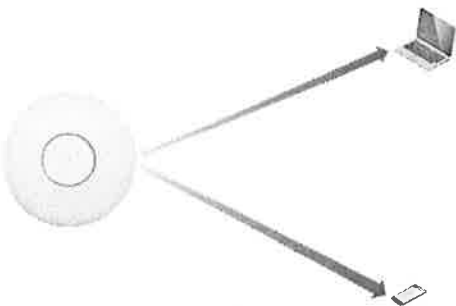*SU-MIMO: A Wave 1 AP communicates with one client at a time.*

802.11ac Wave 2 MU-MIMO

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

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

MU-MIMO with 3x3 and 1x1 clients: The UniFi 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	✓
DFS Certification	✓

Hardware Overview

Deploy the UniFi HD AP in high-density environments requiring maximum wireless performance. The UniFi 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 The unique LED provisioning ring provides administrator location tracking and alerts for each device.

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

Superior Processing Power The UniFi 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 HD AP can be powered by 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+.

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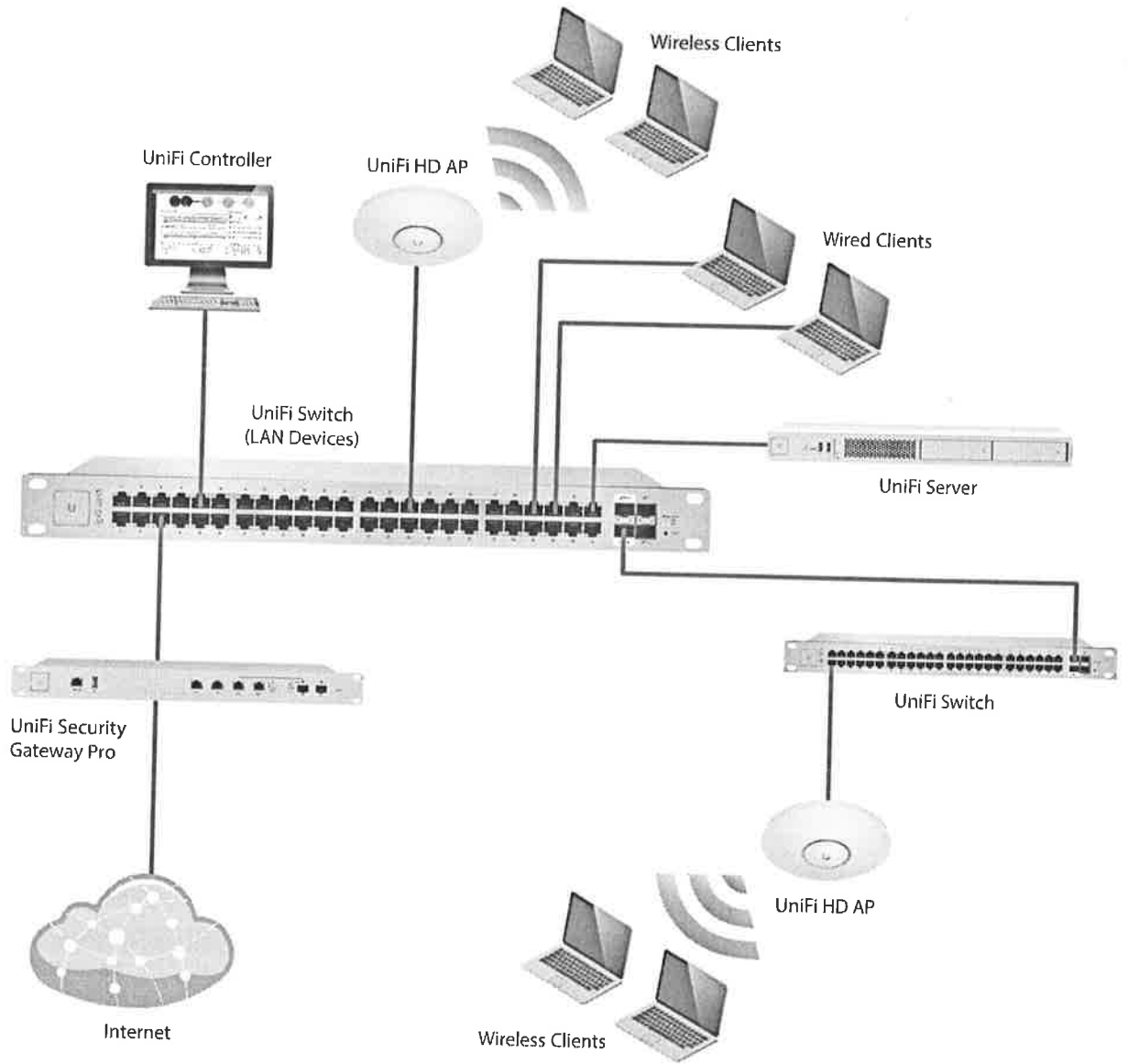
UAP-AC-HD Specifications

UAP-AC-HD	
Dimensions	220 x 220 x 48.1 mm (8.66 x 8.66 x 1.89")
Weight With Mounting Kits	700 g (1.54 lb) 830 g (1.83 lb)
Networking Interface	(2) 10/100/1000 Ethernet Ports
Buttons	Reset
Power Method	802.3at PoE+
Supported Voltage Range	44 to 57VDC
Power Supply	UniFi Switch (PoE)
Power Save	Supported
Beamforming	Supported
Maximum Power Consumption	17W

TX Power
  2.4 GHz
  5 GHz
	
	6-25 dBm
	6-25 dBm

Antennas
  2.4 GHz
  5 GHz
	
	(2) Dual-Port, Dual-Polarity Antennas, 3 dBi each
	(2) Dual-Port, Dual-Polarity Antennas, 4 dBi each

Wi-Fi Standards	802.11 a/b/g/n/r/k/v/ac/ac-wave2
Wireless Security	WEP, WPA-PSK, WPA-Enterprise (WPA/WPA2, TKIP/AES) 802.11w/PMF
BSSID	Up to 8 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

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	1000+

| 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) 58 Mbps to 1.7 Gbps (MCS0 - MCS9 NSS1/2, VHT 160)
802.11b	1, 2, 5.5, 11 Mbps
802.11g	6, 9, 12, 18, 24, 36, 48, 54 Mbps

System Example

UniFi Controller

UniFi HD AP

Wireless Clients

Wired Clients

UniFi Switch
(LAN Devices)

UniFi Server

UniFi Security
Gateway Pro

UniFi Switch

Internet

UniFi HD AP

Wireless Clients

UniFi Switch Compatibility

The UniFi switches are compatible with UniFi Access Points and UniFi G3 Video Cameras, as detailed below.

AP/Camera Model	US-8	US-8-60W	US-8-150W	US-16-150W	US-24-250W	US-24-500W	US-48-500W	US-48-750W
UVC-G3	‡	‡	✓	✓	✓	✓	✓	✓
UVC-G3-AF	✓	✓	✓	✓	✓	✓	✓	✓
UVC-G3-DOME	✓	✓	✓	✓	✓	✓	✓	✓
UAP	‡	‡	✓	✓	✓	✓	✓	✓
UAP-LR	‡	‡	✓	✓	✓	✓	✓	✓
UAP-PRO	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-LITE	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-LR	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-PRO	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-M	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-M-PRO	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-IW*	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-IW-PRO*	✓	✓	✓	✓	✓	✓	✓	✓
UAP-AC-HD	–	–	✓	✓	✓	✓	✓	✓

✓   Compatible with the UniFi switch

‡   Requires an Instant 802.3af Gigabit PoE Converter: INS-3AF-I-G   or INS-3AF-O-G

Note:

* For the UAP-AC-IW and UAP-AC-IW-PRO, PoE passthrough is supported by all of the switches listed above except for models US-8 and US-8-60W.

Related Product Datasheets

UniFi Switch 8, UniFi Switch 8-60W:

dl.ubnt.com/datasheets/unifi/UniFi_Switch_8_DS.pdf

UniFi PoE Switches:

dl.ubnt.com/datasheets/unifi/UniFi_PoE_Switch.pdf

www.ubnt.com

Architektura navrženého řešení