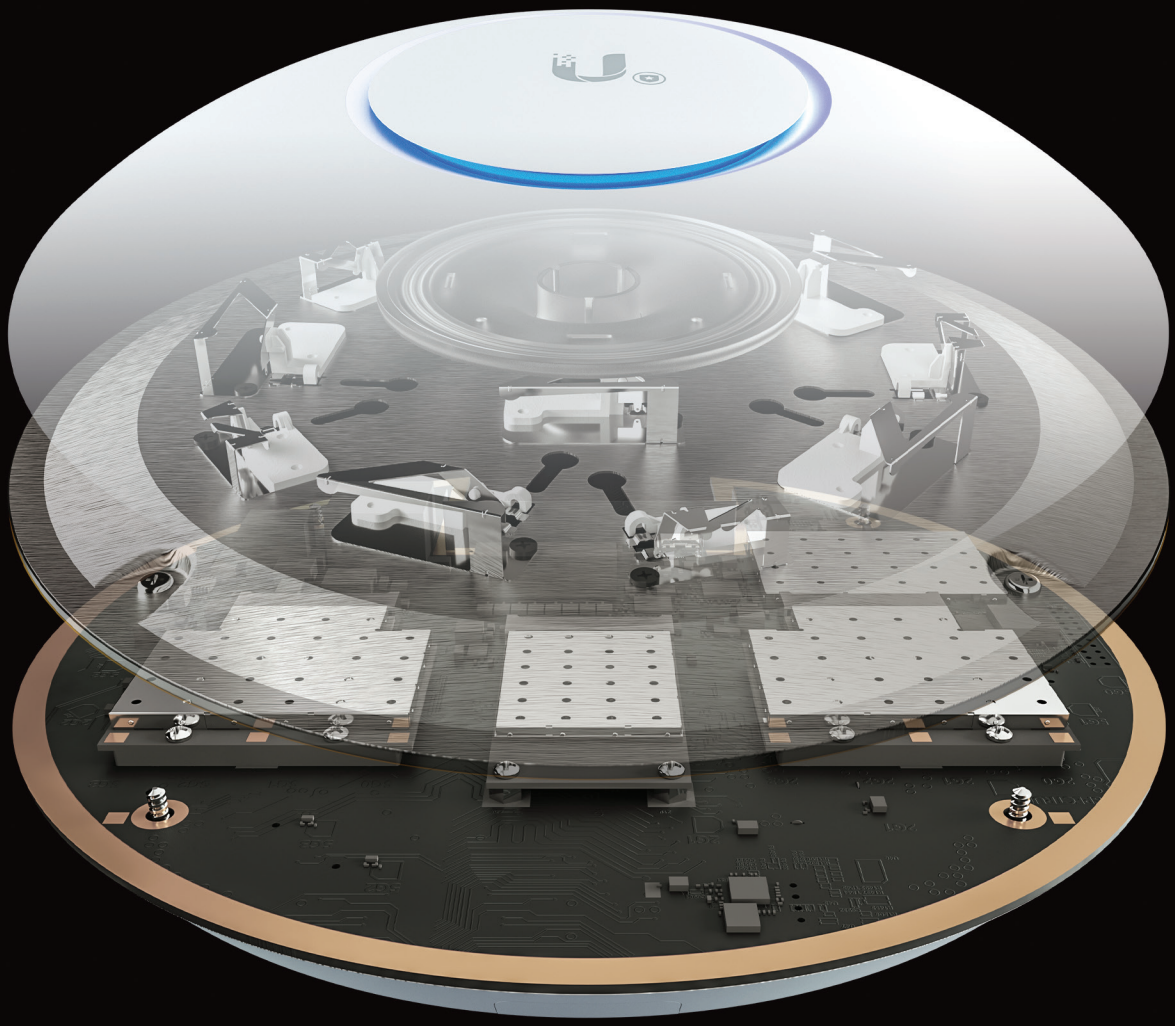
DATASHEET



UniFi® AC SHD

802.11ac Wave 2 Access Point
with Dedicated Security Radio

Model: UAP-AC-SHD

- Simultaneous Dual-Band 4x4 Multi-User MIMO
- Dedicated Security Radio with Persistent Threat Management
- Real-Time Spectrum and airTime™ Utilization Engine

UBIQUITI®
NETWORKS

UniFi®

Scalable Enterprise Wi-Fi Management

The UniFi® Ecosystem enables the system integrator to effectively and efficiently create wireless network designs of any size, from small to large, with the potential for unlimited scalability.

The built-in, dedicated security and monitoring radios of the UniFi AC SHD (Secure High Density) AP provides visibility into site performance, channel planning, and local interferers, allowing the integrator to properly evaluate performance and quickly respond to changing interference and security threat landscapes.

Easily accessible through any standard web browser and the UniFi mobile 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.

Features

Powerful Hardware The UniFi AC SHD AP features the latest in Wi-Fi 802.11ac Wave 2 MU-MIMO technology combined with dedicated security and Bluetooth radios.

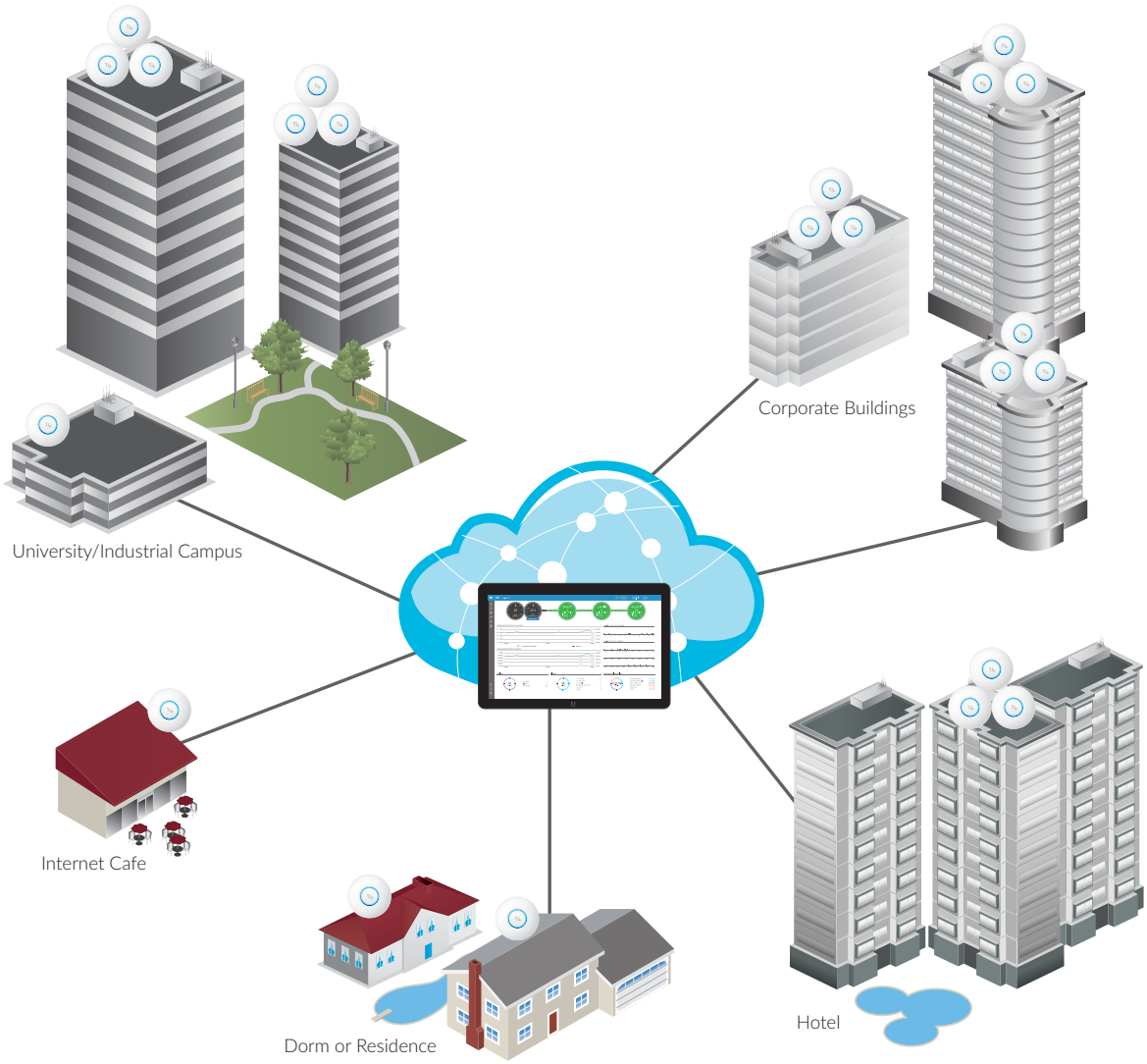
Intuitive UniFi Controller Software The system integrator can leverage the controller to easily configure and administer an enterprise Wi-Fi network.

Expandable The system integrator can start with one (or upgrade to a multi-pack) and expand to thousands while maintaining a single unified management system.

Save Money and Save Time UniFi comes bundled with a 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. For more information about UniFi Cloud or UniFi Elite service, visit: **unifi.ubnt.com**

Extend Your Coverage

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



UniFi Controller



Packed with Features

The UniFi Controller can provision thousands of UniFi APs, map out networks, quickly manage system traffic, and add more UniFi APs.

View Your RF Environment

Use the RF environment functionality of the UniFi AC SHD 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

The UniFi Controller provides configurable reporting and analytics to manage large user populations and expedite troubleshooting by the system integrator.

WLAN Groups

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.

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.

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 accounts.

Guest Portal/Hotspot Support

Use the UniFi Controller to quickly customize the configuration for Guest Portals, including authentication, Hotspot setup, and the option to use your own external portal server.

For your Guest Portal/Hotspot package offerings, take advantage of UniFi's rate limiting capabilities. 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, including the ability to generate voucher codes.
- Built-in Hotspot Manager for voucher creation, guest management, and payment refunds.
- Full customization and branding of Hotspot portal pages, including use of your own logo.



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 SHD 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 AC SHD AP is the first UniFi 802.11ac Wave 2 AP with a dedicated security radio. Combining the performance increases from MU-MIMO technology and the use of 4x4 spatial streams, the UniFi AC SHD 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 AC SHD 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 AC SHD AP.

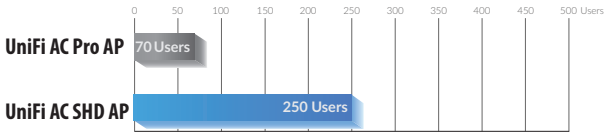
2.4 GHz versus 5 GHz Band

When you use the 2.4 GHz band in a high-density location, you encounter self-interference and channel saturation.

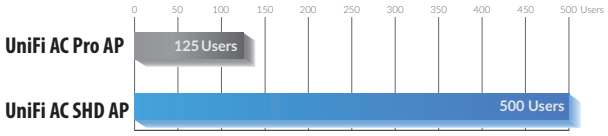
When you use the 5 GHz band, you can deploy smaller cells (coverage areas), so you can support more clients in any cell that deploys more than one AP.

With the advantages of MU-MIMO technology and 4x4 spatial streams, the UniFi AC SHD AP can support more than triple the number of users[2] than a typical Wave 1 AP can.

Recommended Maximum Number of Users



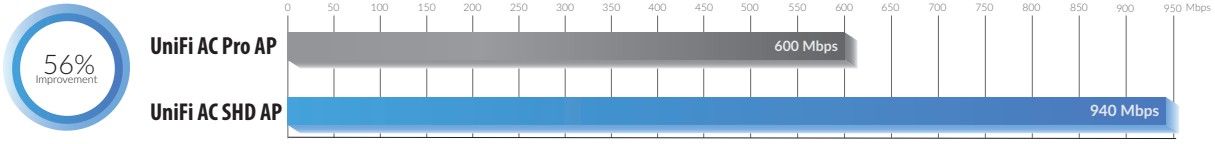
Theoretical Maximum Number of Users



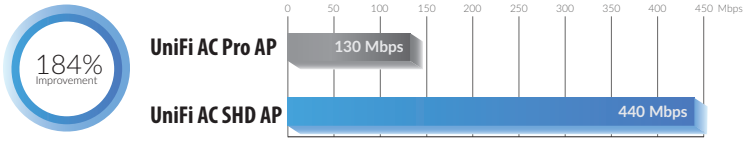
For more information, go to:
ubnt.link/UniFi-UAPs-High-Density

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

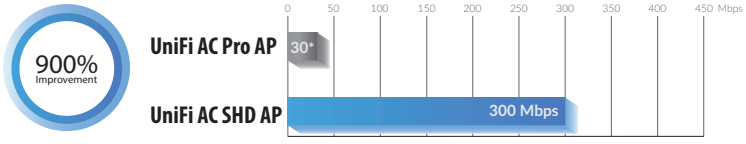
Single-Client Aggregate Throughput



10-Client Aggregate Throughput



100-Client Aggregate Throughput



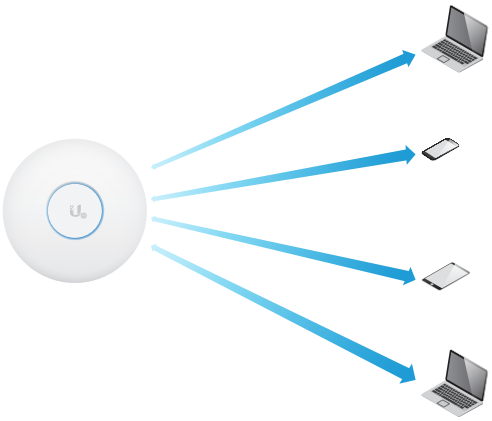
* Mbps

802.11ac Wave 1 SU-MIMO

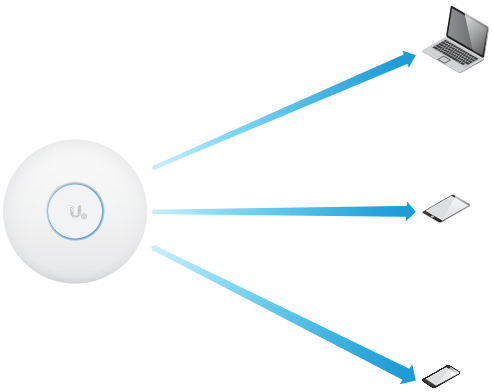


SU-MIMO: A Wave 1 AP communicates with one client at a time.

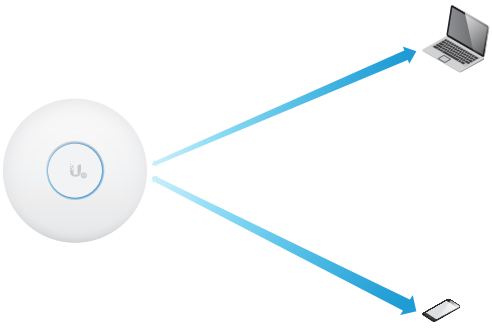
802.11ac Wave 2 MU-MIMO



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



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



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

Security Overview

The UniFi AC SHD AP delivers unprecedented wireless awareness and security, including tools for real-time spectrum monitoring, airtime utilization analytics, and intrusion detection/prevention.

Dedicated Spectral Security Radio Using a persistent spectral scan, the UniFi AC SHD AP constantly monitors the RF environment to check for both potential malicious activity and the best channel for network performance.



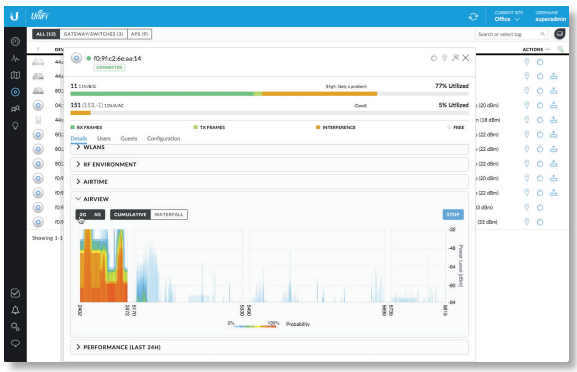
The dedicated security radio allows the UniFi AC SHD AP to scan for security threats, such as malicious frames and rogue access points, while maintaining throughput for client devices. At the same time, UniFi, in conjunction with the UniFi AC SHD AP, analyzes and displays the wireless spectrum and airtime utilization to allow the network admin to have unprecedented real-time visibility into the spectral and protocol usage in the network.

Threat Management The UniFi AC SHD AP's dedicated security radio provides persistent threat management to act as a Wireless Intrusion Prevention System (WIPS) and Wireless Intrusion Detection System (WIDS). Such a dedicated radio affords frequency agility – meaning all available Wi-Fi channels are monitored constantly for threats – not just the channels the AP is using.



Spectrum and Wi-Fi Packet Analysis The airView® tool offers real-time visibility into your RF spectrum. Because it uses the dedicated security radio, it analyzes all of your available RF channels without affecting performance or disrupting client activity. The airTime tool visualizes and analyzes how the APs use channels in real time. The breakdown is by frame type, clients, neighboring APs, protocols, and interference.

Spectrum view and Wi-Fi packet analysis can be done simultaneously, without affecting stations, for a total view of the RF environment and channel utilization.





Hardware Overview

Deploy the UniFi AC SHD AP in high-density environments requiring maximum wireless performance. The UniFi AC SHD 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 AC SHD AP offers a secondary port available for bridging.

Superior Processing Power The UniFi AC SHD 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 AC SHD AP is compatible with an 802.3at PoE+ compliant switch. We recommend powering your UniFi devices with a UniFi PoE Switch (sold separately).

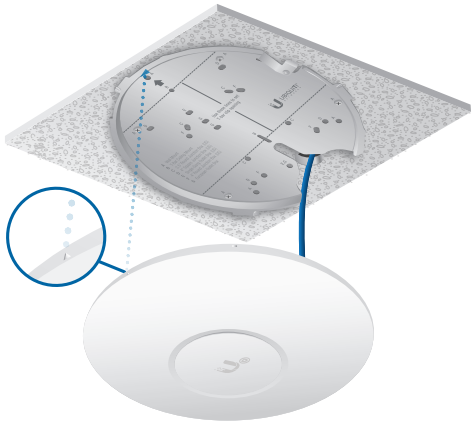
UniFi PoE Switch Available in 8*, 16, 24, and 48-port versions with multiple power output options, the UniFi PoE Switch conveniently offers auto-sensing IEEE 802.3af PoE/802.3at PoE+ and configurable 24V passive PoE.

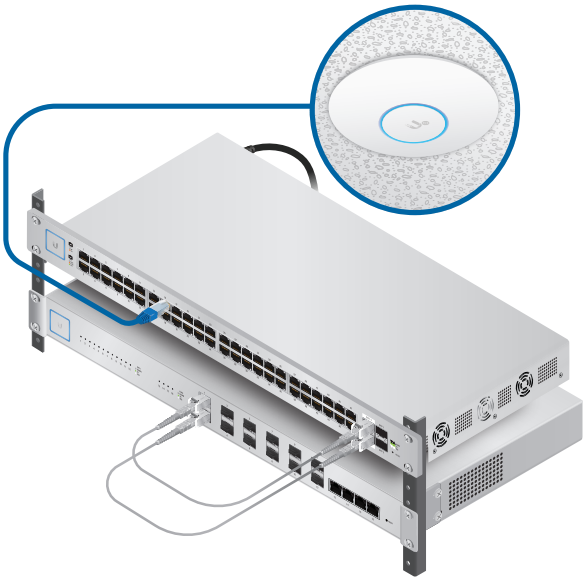
* The US-8 and US-8-60W do not support 802.3at PoE+.

Model Summary



	UAP-AC-SHD
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
Dedicated Security Radio	✓
Secondary Ethernet Port	✓
PoE Mode	802.3at PoE+
Ceiling Mount	✓
Wall Mount	✓
Wireless Uplink	✓
airTime	✓
airView	✓
WIPS	✓





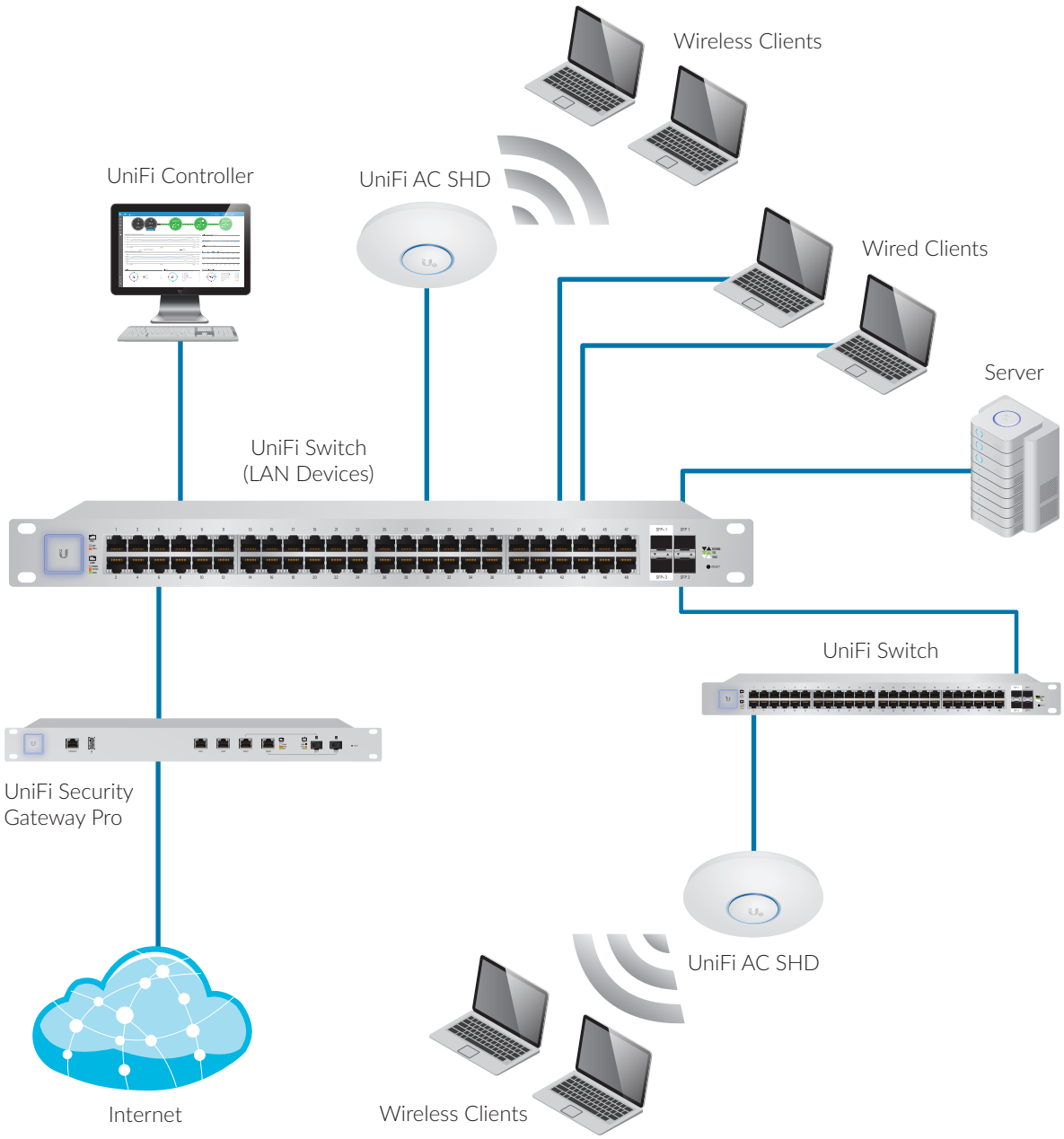
UAP-AC-SHD Specifications

UAP-AC-SHD	
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
Maximum Power Consumption	20W
Radios	2.4 GHz, 5 GHz, Security
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, 6 dBi each (2) Dual-Port, Dual-Polarity Antennas, 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	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	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



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