# UniFi® XG

## Quad-Radio 802.11ac Wave 2 Access Point with Dedicated Security Radio

Model: UAP-XG

- Simultaneous Tri-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 radio of the UniFi XG 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 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 XG 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.



Corporate Buildings

University/Industrial Campus

Internet Cafe

Dorm or Residence

Hotel
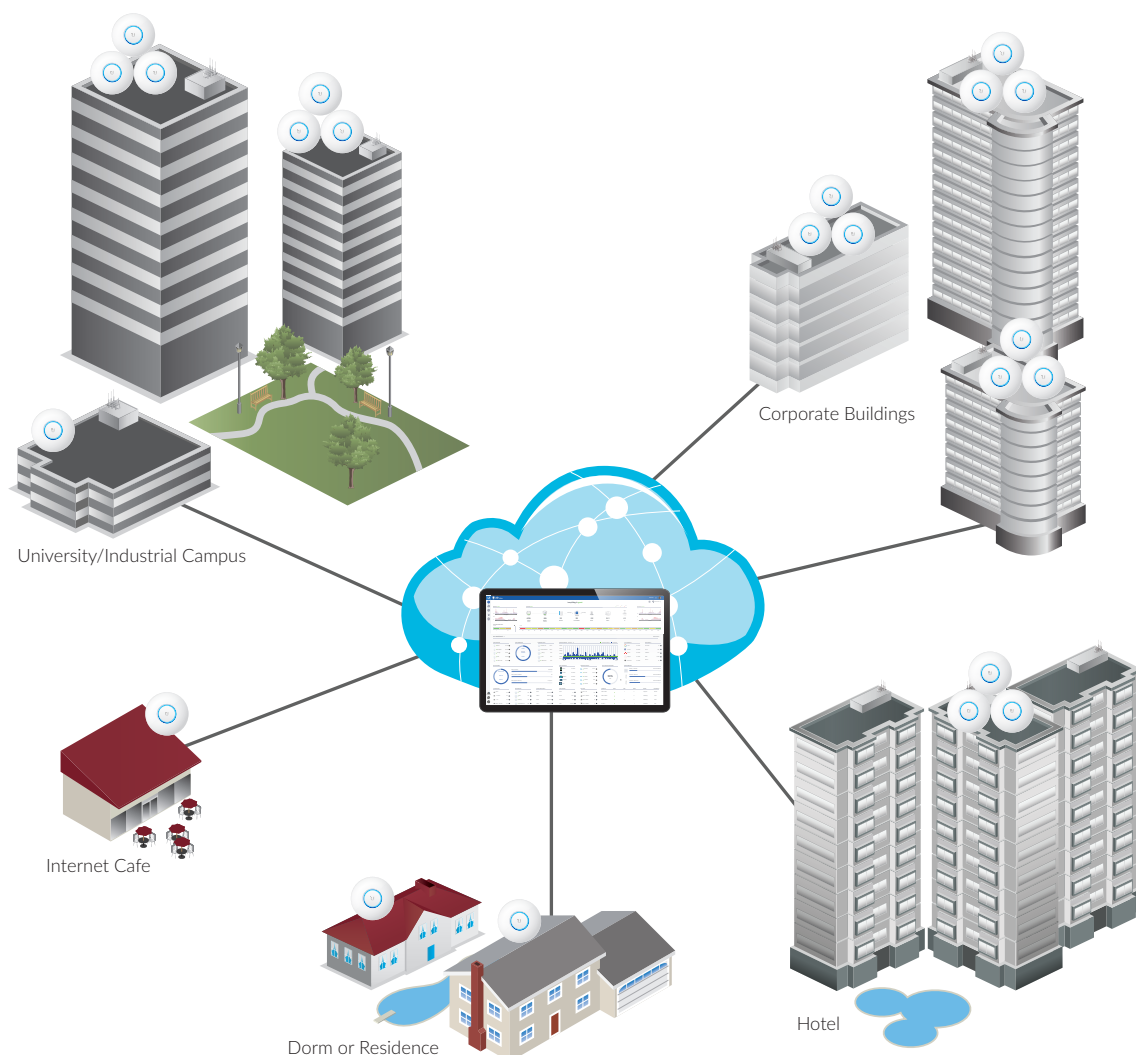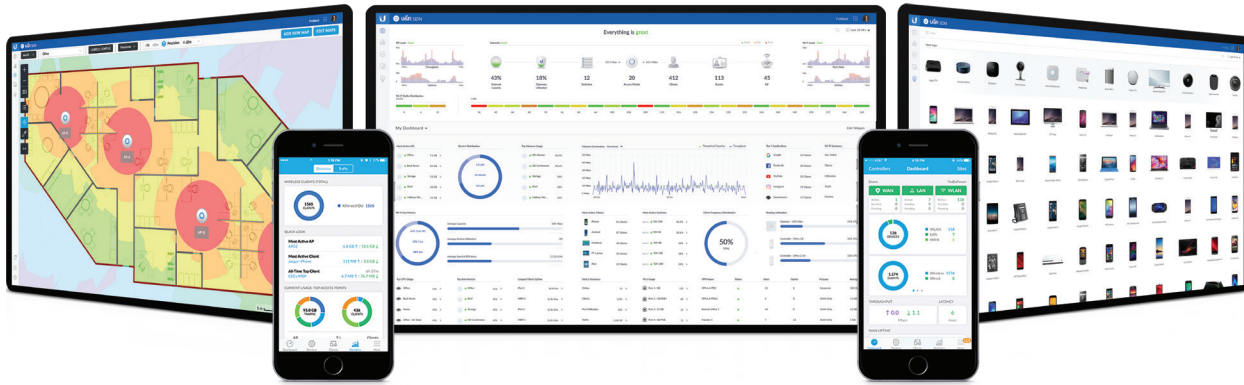
# UniFi Controller

## 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 XG 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 XG AP, to communicate with multiple clients at the same time – significantly increasing multi-user throughput and overall user experience.

**MU-MIMO**  Assuming the same conditions, a Wave 2 radio provides up to 75% improvement[1] beyond a Wave 1 radio. 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 radio 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

**Real-World Performance**  Combining twice the number of 5 GHz radios and four times the associations per radio, the UniFi XG AP delivers an order of magnitude more performance[1] than a typical 802.11ac 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 XG AP.

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

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

# Application Scenarios

For very high-density environments, such as a large auditorium or concert hall containing numerous clients in a relatively small space, we recommend the UniFi XG AP.

Wave 1 and Wave 2 APs offer 28 independent (non-overlapping) channels: three for the 2.4 GHz band and twenty-five for 5 GHz, 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 XG AP can support more than triple the number of users[2] per radio than a typical Wave 1 AP.

## Recommended Maximum Users Per Radio

| | |
|---|---|
| UniFi AC Pro AP | 70 Users |
| UniFi XG AP | 250 Users |
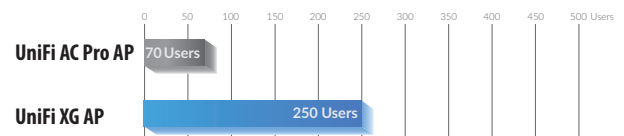
The UniFi XG AP has three client radios, so it can support up to 750 users as its recommended maximum.

## Theoretical Maximum Users Per Radio
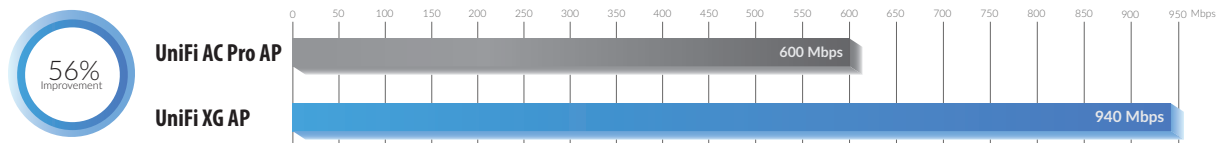
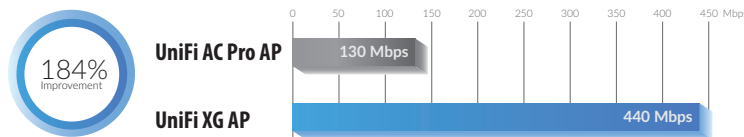| | |
|---|---|
| UniFi AC Pro AP | 125 Users |
| UniFi XG AP | 500 Users |
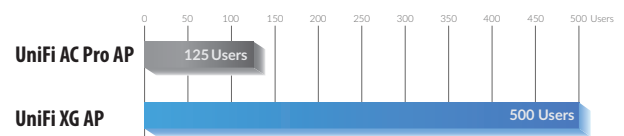
The UniFi XG AP has three client radios, so it can support up to 1500 users as its theoretical maximum.

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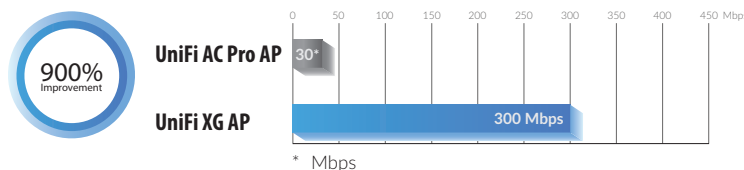**ubnt.link/UniFi-UAPs-High-Density**

## Single-Client Aggregate Throughput

**56%** Improvement

| | |
|---|---|
| UniFi AC Pro AP | 600 Mbps |
| UniFi XG AP | 940 Mbps |

## 10-Client Aggregate Throughput

**184%** Improvement

| | |
|---|---|
| UniFi AC Pro AP | 130 Mbps |
| UniFi XG AP | 440 Mbps |

## 100-Client Aggregate Throughput

**900%** Improvement

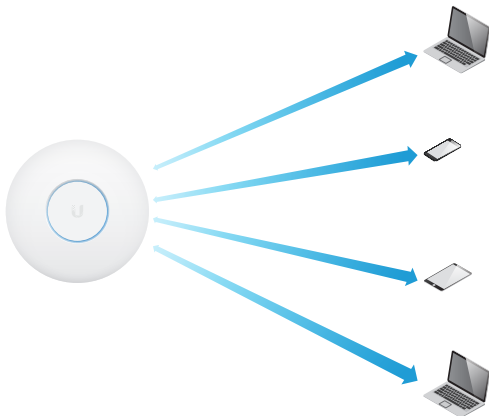| | |
|---|---|
| UniFi AC Pro AP | 30* |
| UniFi XG AP | 300 Mbps |

*  Mbps
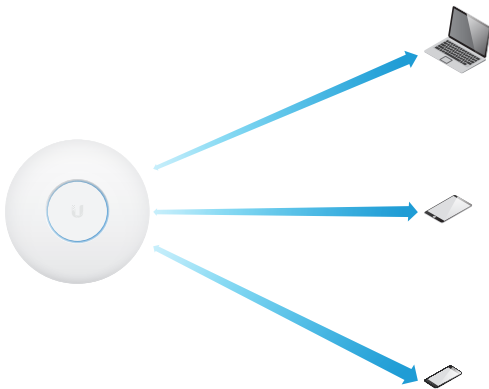
# Client Support

## 802.11ac Wave 1 SU-MIMO

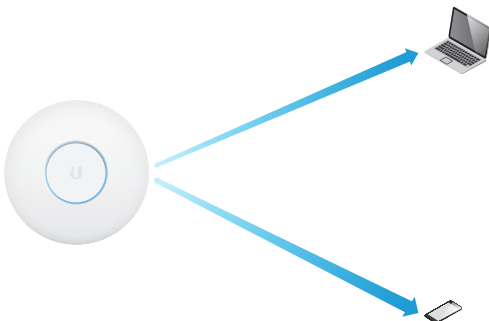*SU-MIMO: A Wave 1 AP communicates with one client at a time.*

## 802.11ac Wave 2 MU-MIMO

*MU-MIMO with 1x1 clients: Each client radio of the UniFi XG AP communicates with four 1x1 clients at a time.*

*MU-MIMO with 2x2 and 1x1 clients: Each client radio of the the UniFi XG AP communicates with one 2x2 client and two 1x1 clients at a time.*

*MU-MIMO with 3x3 and 1x1 clients: Each client radio of the the UniFi XG AP communicates with one 3x3 client and one 1x1 client at a time.*

# Security Overview

The UniFi XG 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 XG 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 XG 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 XG AP, analyzes the wireless spectrum and airtime utilization to automatically select the best channel to optimize performance across your installation.

**Threat Management**  The UniFi XG 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.
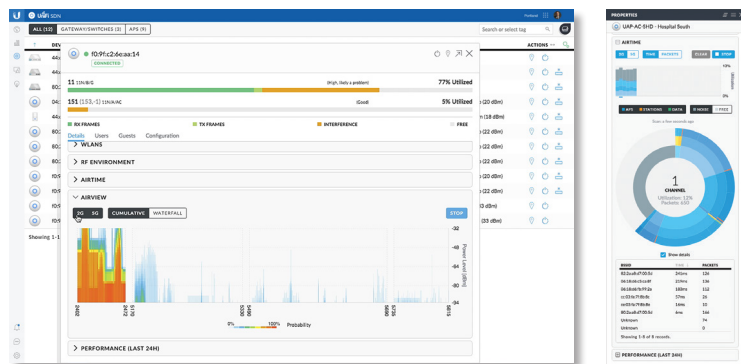
# Hardware Overview

Deploy the UniFi XG AP in very high-density environments requiring maximum wireless performance. The UniFi XG AP features simultaneous, dual-band, 4x4 MU-MIMO technology and convenient 802.3bt PoE compatibility. Available in single- and five-packs.

**Quad-Radio Capabilities**  Three client radios deliver unparalleled Wi-Fi performance while a dedicated security radio provides persistent threat management.

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

**10G and 1G Ethernet Connectivity**  Designed to be a 10G Ethernet backhaul, the primary port carries both data and PoE, while the secondary Gigabit Ethernet port is for bridging and also supports PoE input.

**Power over Ethernet (PoE) Standard**  The UniFi XG AP can be powered by an 802.3bt PoE compliant switch.

**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.
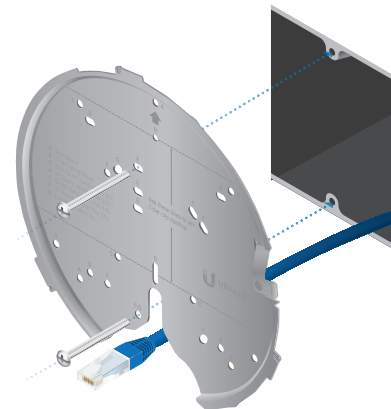
## Model Summary

| | UAP-XG |
|---|---|
| Environment | Indoor or Outdoor (Covered) |
| Simultaneous Dual-Band | ✓ |
| 2.4 GHz Radio Rate | 800 Mbps |
| 2.4 GHz MIMO | 4x4 |
| 5 GHz Radio Rate | (2) 1733 Mbps |
| 5 GHz MIMO | (2) 4x4 |
| Dedicated Security Radio | ✓ |
| Secondary Ethernet Port | ✓ |
| PoE Mode | 802.3bt PoE |
| Ceiling Mount | ✓ |
| Wall Mount | ✓ |
| Junction Box Mount | ✓ |
| Wireless Uplink | ✓ |
| airTime | ✓ |
| airView | ✓ |
| WIPS | ✓ |
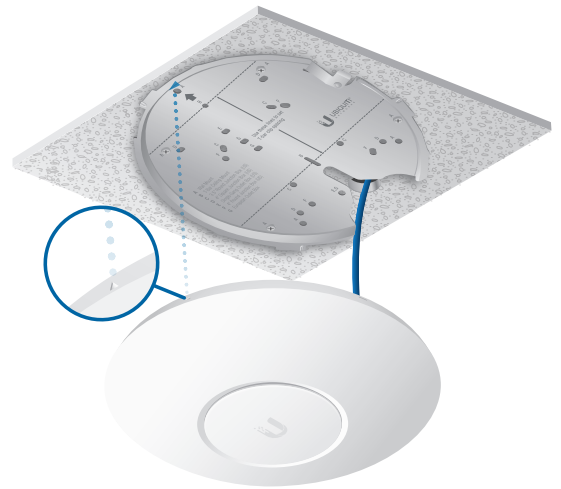
*Ceiling Mount Option*

*Junction or Outlet Box Mount Option*

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# UAP-XG Specifications

| UAP-XG | |
|---|---|
| Dimensions | 228 x 228 x 50 mm (8.98 x 8.98 x 1.97") |
| Weight<br>  With Mounting Kits | 1.20 kg (2.65 lb)<br>1.35 kg (2.98 lb) |
| Networking Interface | (1) 10/100/1000 Ethernet Port<br>(1) 1/10 Gbps ICM Ethernet Port |
| Buttons | Reset |
| Power Method | 802.3bt PoE |
| Supported Voltage Range | 44 to 57VDC |
| Power Supply | PoE Injector 50VDC, 1.2A Gigabit |
| Power Save | Supported |
| Beamforming | Supported |
| Maximum Power Consumption | 31W |
| Radios | 2.4 GHz, (2) 5 GHz, Security |
| Maximum TX Power<br>  2.4 GHz<br>  5 GHz | <br>25 dBm<br>25 dBm |
| Antennas<br>  2.4 GHz<br>  5 GHz | <br>(2) Dual-Port, Dual-Polarity Antennas, 6 dBi each<br>(2) Dual-Port, Dual-Polarity Antennas, 8 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), 802.11 w/PMF |
| BSSID | Up to 8 per Radio |
| Mounting | Wall/Ceiling/Junction Box (Kits Included) |
| Operating Temperature | -10 to 60° C (14 to 140° 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 | 1500 |

| Supported Data Rates (Mbps) | |
|---|---|
| Standard | Data Rates |
| 802.11ac | 6.5 Mbps to 1.7 Gbps (MCS0 - MCS9 NSS1/2/3/4, VHT 20/40/80)<br>58 Mbps to 1.7 Gbps (MCS0 - MCS9 NSS1/2, VHT 160) |
| 802.11n | 6.5 Mbps to 450 Mbps (MCS0 - MCS23, HT 20/40) |
| 802.11a | 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| 802.11g | 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| 802.11b | 1, 2, 5.5, 11 Mbps |

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