NETGEAR WiFi 6
Total Cost of Ownership (TCO)

Technical White Paper

Introduction

NETGEAR's WiFi 6 provides many advantages compared to its legacy access points and its competitors. Below are a few charts explaining the NETGEAR WiFi 6 advantages in the different categories.

Competitor Comparison

Highlights

The NETGEAR WAX610 and WAX610Y offers the best TCO compared to its competitors. Most of the WAX series competitors offer a typical WiFi 6 access with cloud management, but a couple items stand out - A LAN port speed of 2.5G and the lack of 2.4GHz radio for 802.11ax frequency band. With WiFi 6, the theoretical bandwidth may reach speeds up to 1.8 Gbps or 2 Gbps of traffic. With a 1Gbps (2Gbps bi-directional) uplink to the internet, the WiFi network may be subject to traffic congestion at the uplink port of the Access Point. With a 2.5Gbps (5Gbps bidirectional), no such traffic congestion will occur. Our price point and leading SMB features, places the WAX series into a category of its own.

Competitive Analysis

Vendor	NETGEAR	Ubiquiti	Zyxel	CommScope/ Ruckus	Juniper Mist	HP/Aruba	Meraki	Extreme Networks
Model and Price	WAX610 $179.99	Unifi 6 Lite $99.00 Price is from the beta testing circle, AP is not publicly available for sale	WAX510D $294.35	R550 $639.00	AP43 $1,506.00	AP505 $620.00	MR36 $575.00	AP305C $409.99
Tx and Rx	2x2	2x2	2x2	2x2	4x4	2x2	2x2	2x2
LAN Port Speed	1 x 2.5G	1G	1G	1G	2.5G	1G	1G	1G
Throughput / Frequency	2.4GHz: 600 Mbps 5GHz: 1200 Mbps	2.4GHz: 300 Mbps 5GHz: 1200 Mbps Access Point does not include 2.4GHz in the 802.11ax frequency bands.	2.4GHz: 575Mbps 5GHz: 1200Mbps	2.4GHz: 574 Mbps 5GHz: 1200 Mbps	2.4GHz: 1148 Mbps 5GHz: 2400 Mbps	2.4GHz: 574 Mbps 5GHz: 1200 Mbps	2.4GHz: 573 Mbps 5GHz: 1201 Mbps	2.4GHz: 574 Mbps 5GHz: 1200 Mbps
WiFi Rating	AX1800	AX1500	AX1800	AX1800	AX3600	AX1800	AX1500	AX1800
Cloud Management	Insight, 1yr Included & Insight Premium $9.99 per year after the 1st year	UniFi, free with cloud key	Nebula, 1yr Free (1yr $35)	Ruckus Cloud, 1yr $95.00	Mist Cloud, 1yr $142.50	Aruba Central, 1yr $62.00	Meraki, 1yr $655.00	ExtremeIQ, Free with Public access*
TCO for 3yrs	$179.99 (w/1yr Insight Premium included) $199.97	Est. $99.00	$364.35	$924.00	$1,933.50	$806.00	$2,540.00	$743.42
Warranty	5 Year	1 Year	2 Years	1 Year	Limited Lifetime	Limited Lifetime	1 Year	Limited Lifetime

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Compared to WiFi 5

Highlights

WiFi 5 or 802.11ac introduced many new wireless enhancements (i.e. MU-MINO, OFDM, and etc.). With any technological enhancement comes a new and better technological enhancement. WiFi 6 brings many new technological enhancements compared to its predecessor - WiFi 5. WiFi 6 provides an increase in LAN speed, Uplink/Downlink OFDMA and MU-MIMO, additional use of 2.4 GHz frequency, increase in Modulation, and increase in throughput and efficiency.

WiFi 5 Comparison

	WiFi 5	WiFi 6	What is the advantage?
Maximum Theoretical Throughput in 2x2 Radio	1.3 Gbps	1.8 Gbps	Overall increase of throughput increases the overall speed in client devices.
OFDMA and MU-MIMO	Downlink Only	Uplink and Downlink	With the increase in Uplink OFDMA and MU-MIMO, it enables greater user capacity by sending transmissions parallel
Frequency	5Ghz for WiFi 5	2.4Ghz and 5Ghz for WiFi 6	The use of 2.4Ghz will increase speeds and perform better at penetrating solid objects
Modulation	256QAM	1024QAM	Higher Modulation provides scheme means higher data through-put and capacity.
BSS Coloring and TWT	None	Yes	Provides better battery life, power consumption and enables the WiFi network to transmit traffic effectively to multiple devices in congested areas.
Security	WPA/WPA2	WPA/WPA2/WPA3	With the introduction of WPA3, it provides the customer with a more secure and up-to-date end point security encryption.

Better TCO

Highlights

Total cost of ownership has always been in the minds of every PO contract. The WAX series provides the ideal TCO for any SMB customer. WiFi 6 brings an efficient use of airtime with a higher modulation with 1024QAM and being able to use the uplink capabilities on OFDMA and MU-MIMO. In result, the WiFi 6 access points are able to provide higher throughput and additional connectivity in an already crowded wireless channel. In a high-density environment, a WiFi 5 solution may require additional access points and re-configuration of radio power levels to support additional wireless clients and devices. With WiFi 6 and its breadth of efficient technologies provide the ideal access point in high-density environment without the requirement to purchase additional access points and re-configuration of radio power levels. The addition of WPA3 and other secure Wireless features brings the WAX series to become a SECURE WiFi Zone. WiFi 6 also includes a new feature that isn't available in WiFi 5 specification, Target Wake Time. TWT or target wake time is a negotiated agreement, based on expected traffic activity between the access point and clients, to specify a scheduled target wake-up time for battery powered wireless clients in power save mode. The major benefit with TWT is the improved battery life and reducing the power consumption for battery powered wireless devices. In addition, all these new functionalities can be configured on a single-pane of glass using NETGEAR Insight.

Better TCO

	WiFi 5	WiFi 6	Notes
Security	WPA/WPA2	WPA/WPA2/WPA3	With the introduction of WPA3, it provides the customer with a more secure and up-to-date end point security encryption.
High-Density Environment	Does not provide good wireless coverage in crowded environments.	Provides wireless coverage in crowded environments.	With WiFi 5, additional access maybe required in High-Density environments. In the same High-Density environment, WiFi 6 is designed for lower interference and improved concurrent usage for all WiFi devices with great quality.
Efficient Use of Airtime	OFDMA and MU-MIMO (Downlink Only), 256QAM	Uplink/Downlink with OFDMA and MU-MIMO, 1024QAM	Higher Modulation and being able to use the uplink on OFDMA and MU-MIMO provides an ideal tool for an efficient wireless connection (higher throughput and capacity) in congested and crowded areas.
Reduced Power Consumption	Not applicable	Target Wake Time or (TWT)	TWT allows the access point to wake up at negotiated times to improve battery life and reduce power consumption for Wi-Fi devices and IoTs.

Wireless Coverage

Highlights

The WAC and WAX total wireless coverage may be pretty similar to each other. But one item that stands out between the two is that WiFi 6 can operate more efficiently in congested or crowded environments. For example, in a single access point operating in a crowded environment, an IT administrator may need to add additional WiFi 5 or WAC series access points to their environment to meet the congested environment needs. With a single WiFi 6 access point, the IT administrator may not need to add additional access points to the environment due the new WiFi 6 features (OFDMA, MU-MIMO, 1024QAM Modulation, BSS Coloring, and frequency) and provide ample coverage, throughput, and efficiency to further decrease the amount access points required to support a high-density congested environment.

Wireless Coverage

	WiFi 5	WiFi 6	Notes
OFDMA and MU-MIMO	Downlink Only	Uplink and Downlink	With the increase in Uplink OFDMA and MU-MIMO, it enables greater user capacity by sending transmissions parallel
Modulation	256QAM	1024QAM	Higher Modulation provides scheme means higher data through-put and capacity.
BSS Coloring	None	Yes	This feature color-codes shared frequencies with a number and is passed between the device and the network. In result, it enables the WiFi network to more effectively – and concurrently – transmit data to multiple devices in congested areas.
Frequency	5Ghz for WiFi 5	2.4Ghz and 5Ghz for WiFi 6	The use of 2.4Ghz will increase speeds and perform better at penetrating solid objects

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Conclusion

Overall, an upgrade to a WiFi 6 access points would not only provide a future-proof solution, but a solution that can provide an answer for speed, coverage, and other wireless related issues. NETGEAR WiFi 6 access points provides an advantage from its competitors with a faster LAN port, and leading SMB security and wireless features. As total cost of ownership or TCO and wireless coverage becomes the main purchasing decision. The WAX and Oribi Pro series provide the ideal wireless solution that can work with other Insight cloud managed legacy access points (NETGEAR mesh technology) while providing fast and efficient wireless access to wireless clients in a congested high-density environment.

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