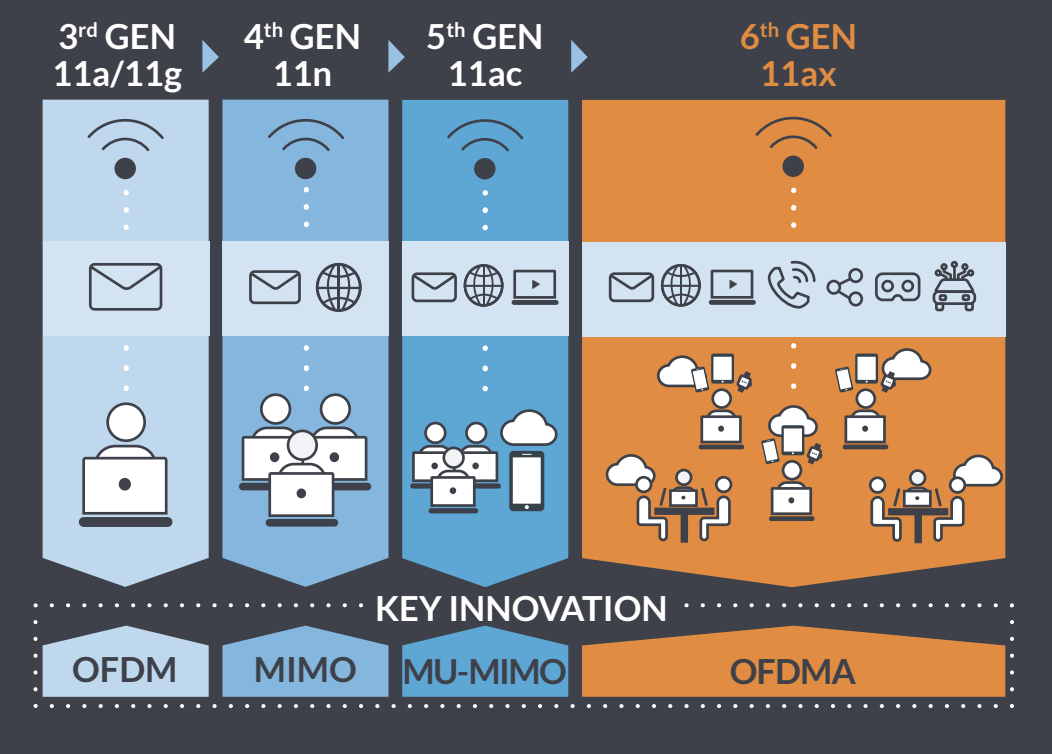
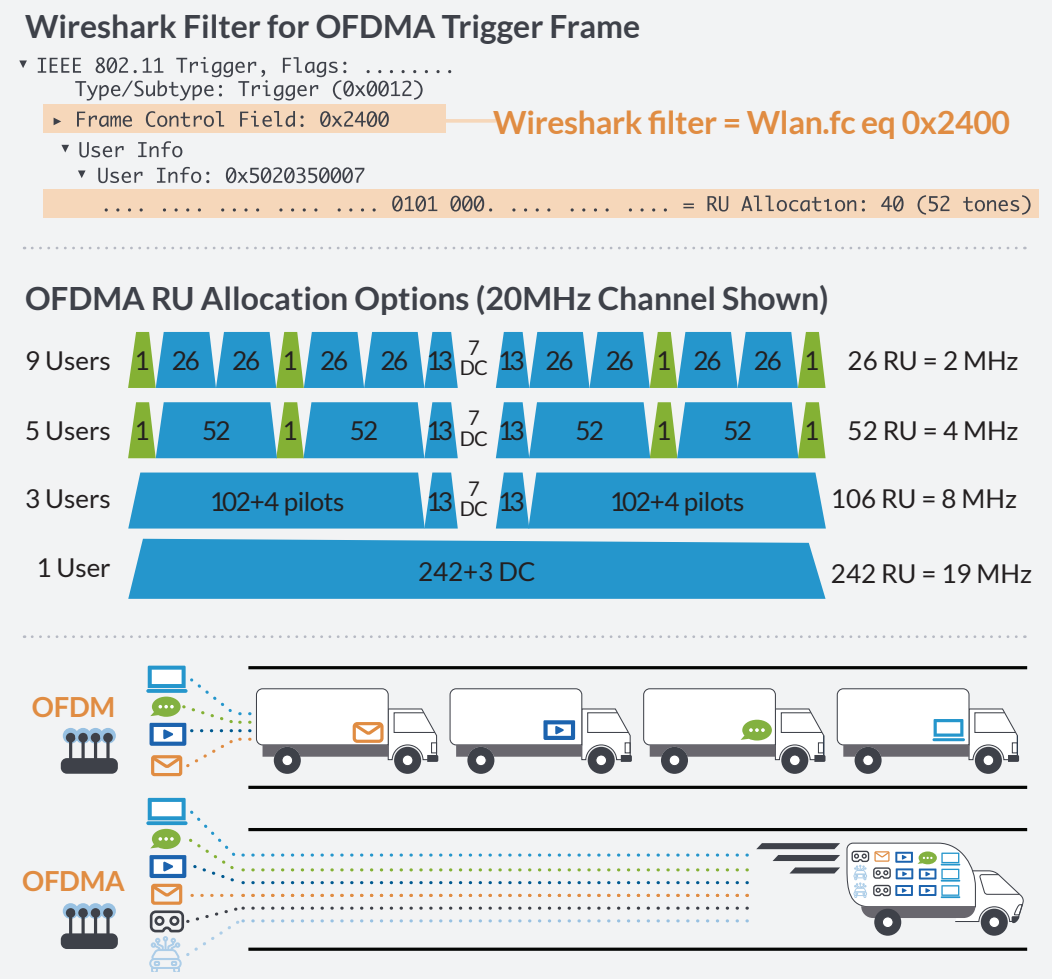


# Wi-Fi 6 Smart Guide

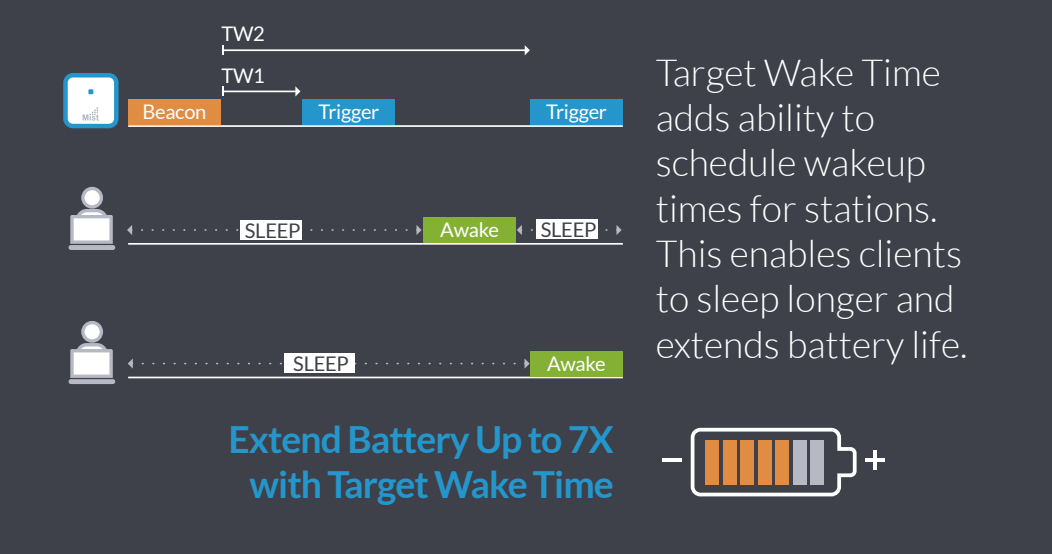
## Wi-Fi Evolves



## Improved Density with OFDMA Scheduling



## Supporting IoT Devices with TWT



## Comparing 802.11ac and 802.11ax

Feature	802.11ac	802.11ax	Benefit
OFDMA	N	Y	Improves RF efficiency by centralizing scheduling, reducing contention
1024-QAM	N (256-QAM)	Y	Improves data rate for clients near AP with high SNR
MU-MIMO	Y Downlink	Y Uplink + Downlink	Supports higher density; group size increased from 4 to 8 users
BSS Coloring	N	Y	Adds spatial reuse for better efficiency in dense networks
Target Wake Time (TWT)	N	Y	Reduces power usage and contention; important for low-power IoT devices
Spatial Streams	4	4-8	When combined with MU-MIMO, throughput is improved with more available streams
Transmission Fragmentation	Y Static	Y Dynamic	This enables improved scheduling efficiency and reduces overhead
Carrier Spacing	312.5 kHz	78.125 kHz	Boosts performance by reducing overhead/spacing

## 802.11ax Rate Set Per Stream Modulation and coding schemes for single spatial stream

MCS Index <sup>a</sup>	Modulation Type	Coding Rate	Data Rate (in Mb/s) <sup>b, d</sup>					
			20 MHz Channels		40 MHz Channels		80 MHz Channels	
			1600 ns GI <sup>c</sup>	800 ns GI	1600 ns GI	800 ns GI	1600 ns GI	800 ns GI
0	BPSK	1/2	8.1	8.6	16.3	17.2	34	36
1	QPSK	1/2	16.3	17.2	32.5	34.4	68.1	72.1
2	QPSK	3/4	24.4	25.8	48.8	51.6	102.1	108.1
3	16-QAM	1/2	32.5	34.4	65	68.8	136.1	144.1
4	16-QAM	3/4	48.8	51.6	97.5	103.2	204.2	216.2
5	64-QAM	2/3	65	68.8	130	137.6	272.2	288.2
6	64-QAM	3/4	73.1	77.4	146.3	154.9	306.3	324.3
7	64-QAM	5/6	81.3	86	162.5	172.1	340.3	360.3
8	256-QAM	3/4	97.5	103.2	195	206.5	408.3	432.4
9	256-QAM	5/6	108.3	114.7	216.7	229.4	453.7	480.4
10	1024-QAM	3/4	121.9	129	243.8	258.1	510.4	540.4
11	1024-QAM	5/6	135.4	143.4	270.8	286.8	567.1	600.5

Notes: a. MCS 9 is not applicable to all channel width/spatial stream combinations. b. A second stream doubles the theoretical data rate, a third one triples it, etc. c. GI stands for the guard interval. d. 3200 ns GI is also supported.

## Minimizes Co-Channel Interference with Coloring

BSS Coloring boosts RF efficiency by introducing the ability to have APs on the same channel overlap their RF coverage such that client/AP will only listen to APs of the same "color".

Element ID	Length	Element ID Extension	HE Operation Parameters	BSS Color Information	Basic HE-MCS & NSS Set	VHT Operation Information	Max Co-Located BSSID Indicator
1	1	1	3	1	2	0 or 3	0 or 1

BSS Color	Partial BSS Color	BSS Color Disabled
6	1	1

Value Range 1 - 63

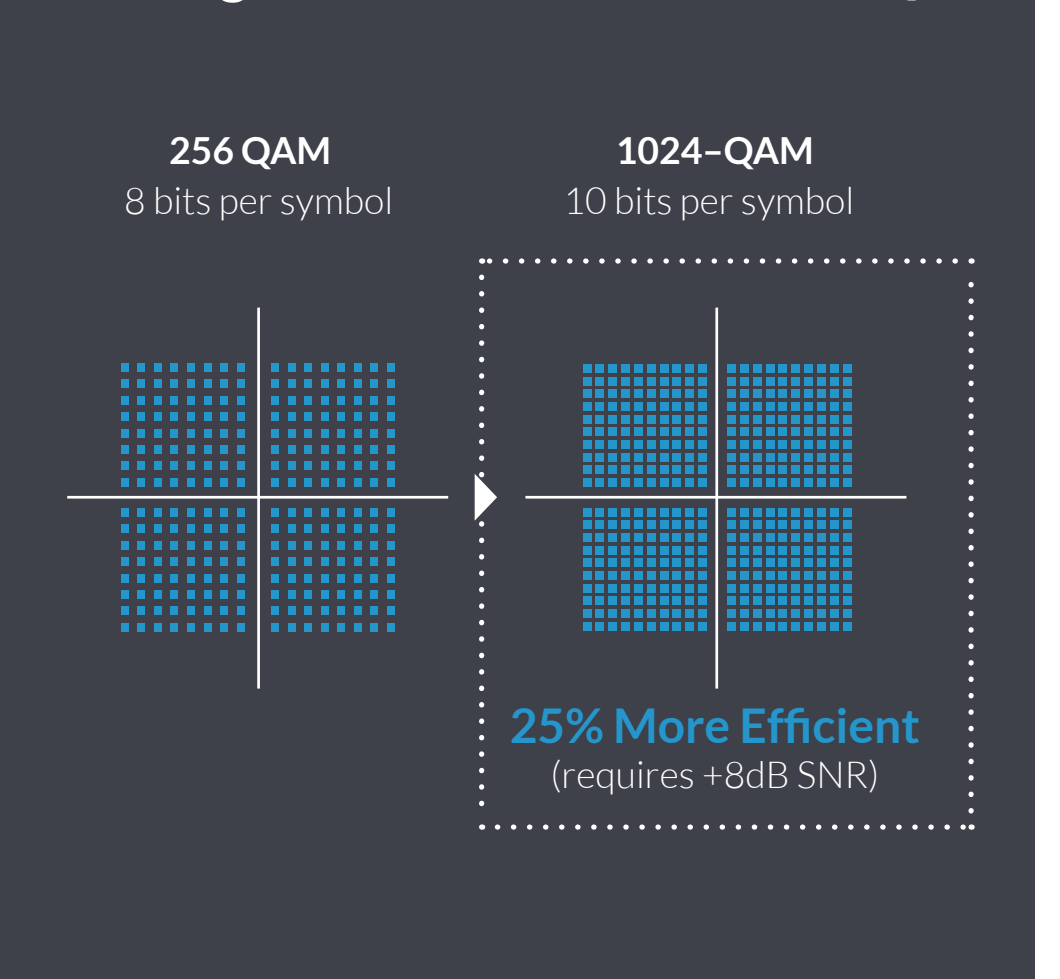
View BSS Color as a Column in Wireshark  
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 Column Type: Custom  
 Field: wlan.ext\_tag.bss\_color\_information  
 Occurrence: 0

## Innovation: "AI for AX"

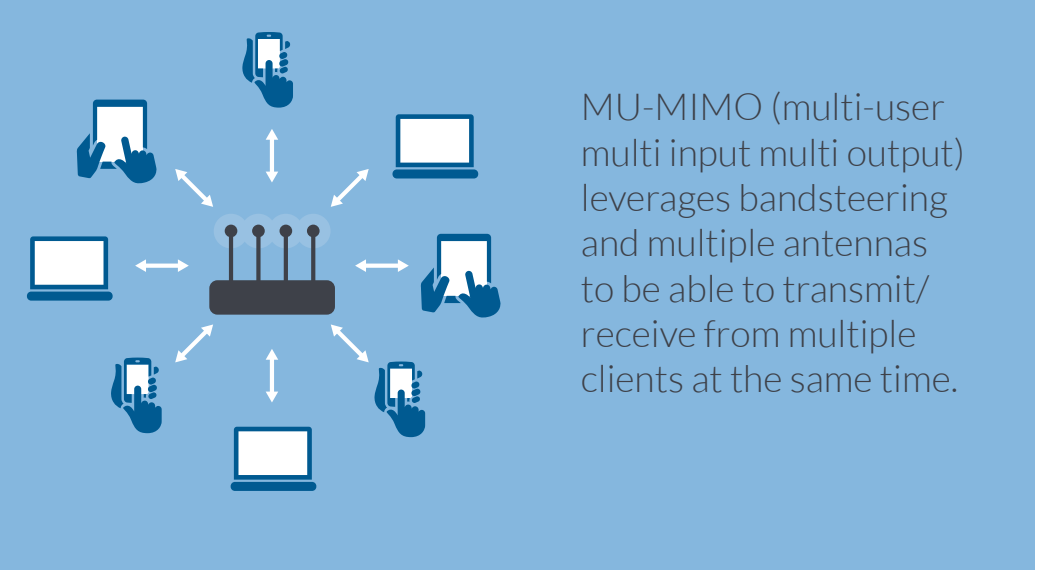
Due to the complexity of 802.11ax, it is even more critical that you leverage AI to automate and optimize your network. You should look to your vendor to optimize the following key areas with AI:

- Intelligent load balancing between radios/bands
- Service levels that monitor and enforce orthogonal frequency-division multiple access (OFDMA) subcarrier assignments
- Basic Service Set (BSS) coloring assignments for high-density Wi-Fi environments
- Sticky client prevention using AI-driven algorithms

## Boosting Performance with 1024-QAM



## Extending MU-MIMO for Upstream Traffic



Learn More: [www.mist.com/wi-fi-6](http://www.mist.com/wi-fi-6)