Wi-Fi 6 Frequently Asked Questions

Technology Overview

Q What is Wi-Fi 6?

A The Wi-Fi Alliance has started a campaign to coin the term "Wi-Fi 6" when referring to the IEEE 802.11ax standard, indicating the sixth generation of Wi-Fi.

The emerging IEEE Wi-Fi 6 standard is the latest step in a journey of nonstop innovation. It builds on the strengths of 802.11ac while adding flexibility and scalability that lets new and existing networks power next-generation applications. IEEE Wi-Fi 6 couples the freedom and high speed of Gigabit Ethernet wireless with the reliability and predictability we find in licensed radio.

Q What will Wi-Fi 6 do for my network?

A Wi-Fi 6 delivers higher effective speeds and enables new business models and use cases, including:

- Support for new applications and outcomes such as enterprise-grade 4K and 8K video or augmented or virtual reality
- Seamless connectivity with an increase in throughput
- Increased network capacity to address the IoT explosion

Q How does Wi-Fi 6 differ from past Wi-Fi standards?

A Cisco, along with other vendors, has been working with the Institute of Electrical and Electronics Engineers (IEEE) on the Wi-Fi 6 standard. When ratified, Wi-Fi 6 will build on the success of 802.11ac, delivering a better experience in typical environments and more predictable performance for advanced applications such as 4K or 8K video, high-density, high-definition collaboration apps, all-wireless offices, and the Internet of Things (IoT). Wi-Fi 6 will drive Wi-Fi toward the future as the growth of wireless continues. You can get more information about the standard from our technical white paper.

Q Will Wi-Fi 6 be backward compatible with 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ac?

A In Wi-Fi 6, all devices must also support all the mandatory 802.11a, b, g, n, and ac modes of operation. This ensures that Wi-Fi 6 Access Points (APs) and clients are backward compatible with legacy APs and clients.

Q Will Wi-Fi 6 be allowed in all countries and regulatory domains?

A All countries and regulatory domains that allow 802.11n and 802.11ac will also allow Wi-Fi 6.

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Q **When will Wi-Fi 6 be ratified (when will the standard be finalized)?**

A The IEEE is currently scheduled to ratify the Wi-Fi 6 amendment in Q4 2019. The Wi-Fi Alliance has a similar timeline for an Wi-Fi 6 certification. The latest official estimate for ratification is always available at the 802 IEEE website in the "RevCom and Standards Board Final or Continuous Process Approval" column.

Q **Are my current mobile/client devices that use Wi-Fi 6 supported? When will mobile devices support Wi-Fi 6?**

A There aren't any mobile devices currently on the market that support Wi-Fi 6. Cisco expects that there will be some clients starting in early 2019. However, the market will not see large numbers of mobile devices supporting Wi-Fi 6 until well into the second half of 2019 and potentially even 2020. Keep in mind that you need both an Access Point that supports Wi-Fi 6 clients in order to realize the benefits of this new standard.

Q **What Cisco Access Points support Wi-Fi 6?**

A Cisco® Catalyst® 9100 enterprise-class Access Points support Wi-Fi 6 capabilities, extending the power of intent-based networking with hardware and software innovations. The Cisco Catalyst 9100 APs offer resiliency and security while enabling intelligence at the network edge.

Q **Can Wi-Fi 6 be used outdoors?**

A Yes. The EIRP regulations for Wi-Fi 6 and 802.11ac are the same in this regard, and the product's environmental requirements.

However, Wi-Fi 6 has added specific features such as longer Guard-Interval (GI) and sub-channelization (2MHz) that can be used to significantly improve outdoor resiliency and range.

Q **What are the max data rates supported?**

A The **orange** rows are configurations that support 1 Gbps or higher throughput. We can see that even low-end APs (i.e. with 2 SS) are expected to exceed 1Gbps data rates with Wi-Fi 6. The **green** text signifies optional spatial-streams where-as the **blue** text signify optional bandwidths for the STA and AP.

MCS Index	Modulation	# of Spatial Streams	Bandwidth (MHz)	PHY rate (Mbps)		MAC Throughput (Mbps)*	
				1600ns Gi	800ns Gi	1600ns Gi	800ns Gi
8	256	1	20	98	103	69	72
9	256	1	20	108	115	76	81
10	1024	1	20	122	129	85	90
11	1024	1	20	135	143	95	100
8	256	2	20	196	206	137	144
9	256	2	20	216	230	151	161
10	1024	2	20	244	258	171	181

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MCS Index	Modulation	# of Spatial Streams	Bandwidth (MHz)	PHY rate (Mbps)		MAC Throughput (Mbps)*	
				1600ns Gi	800ns Gi	1600ns Gi	800ns Gi
11	1024	2	20	270	286	189	200
8	256	4	20	392	412	274	288
9	256	4	20	432	460	302	322
10	1024	4	20	488	516	342	361
11	1024	4	20	540	572	378	400
8	**256**	**8**	**20**	**784**	**824**	**549**	**577**
9	**256**	**8**	**20**	**864**	**920**	**605**	**644**
10	**1024**	**8**	**20**	**976**	**1032**	**683**	**722**
11	**1024**	**8**	**20**	**1080**	**1144**	**756**	**801**
8	256	1	80	408	432	286	302
9	256	1	80	453	480	317	336
10	1024	1	80	510	540	357	378
11	1024	1	80	567	600	397	420
8	256	2	80	816	864	571	605
9	256	2	80	906	960	634	672
10	1024	2	80	1020	1080	714	756
11	1024	2	80	1134	1200	794	840
8	256	4	80	1632	1728	1142	1210
9	256	4	80	1812	1920	1268	1344
10	1024	4	80	2040	2160	1428	1512

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MCS Index	Modulation	# of Spatial Streams	Bandwidth (MHz)	PHY rate (Mbps)		MAC Throughput (Mbps)*	
				1600ns Gi	800ns Gi	1600ns Gi	800ns Gi
11	1024	4	80	2268	2400	1588	1680
8	256	8	80	3264	3456	2285	2419
9	256	8	80	3624	3840	2537	2688
10	1024	8	80	4080	4320	2856	3024
11	1024	8	80	4536	4800	3175	3360
8	256	1	160	817	865	572	606
9	256	1	160	907	961	635	673
10	1024	1	160	1021	1081	715	757
11	1024	1	160	1134	1201	794	841
8	256	2	160	1634	1730	1144	1211
9	256	2	160	1814	1922	1270	1345
10	1024	2	160	2042	2162	1429	1513
11	1024	2	160	2268	2402	1588	1681
8	256	4	160	3268	3460	2288	2422
9	256	4	160	3628	3844	2540	2691
10	1024	4	160	4084	4324	2859	3027
11	1024	4	160	4536	4804	3175	3363

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