In short, the WMM Settings is to specify parameters on multiple data queues for better performance of differentiated wireless traffic like Voice-over-IP (VoIP), other types of audio, video, and streaming media as well as traditional IP data over the AP.

For example, the FTP data packets is likely to be set for maximum throughput since the critical consideration for FTP is the ability to transmit relatively large amounts of data in one go. Interactive feedback is a nice-to-have in this situation but certainly less critical. VoIP data packets are set for minimum delay because that is a critical factor in quality and performance for that type of data.
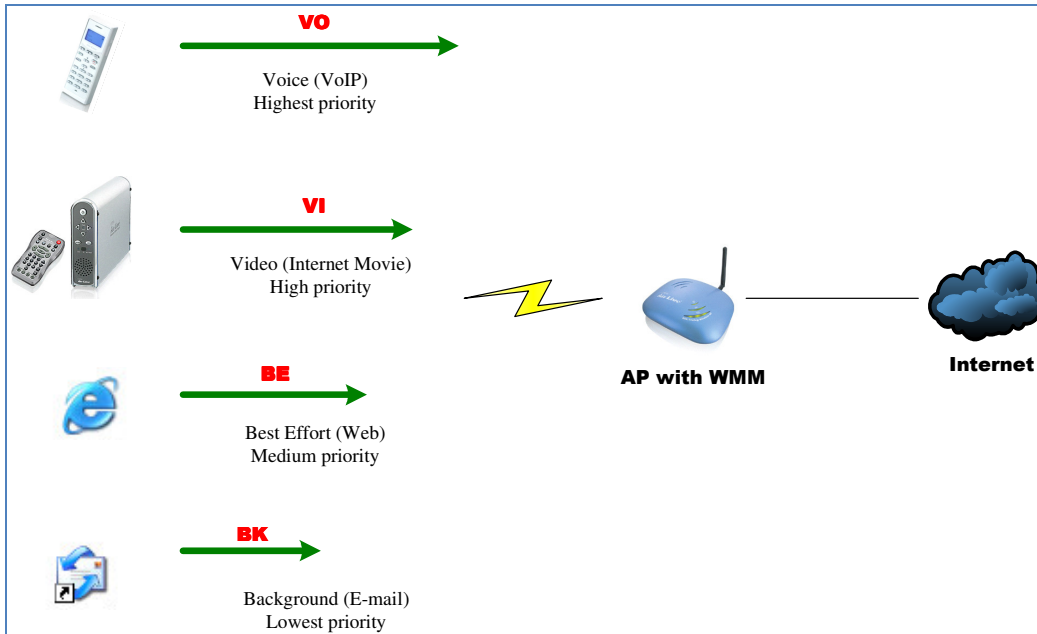
A different type of data is associated with each queue. The queue and associated priorities and parameters for transmission are as follows:

Data 0 (Best Effort, BE): Medium priority queue, medium throughput and delay. Most traditional IP data is sent to this queue.
Data 1 (Background, BK): Lowest priority queue, high throughput. Bulk data that requires maximum throughput and is not time-sensitive is sent to this queue (FTP data, for example):
Data 2 (Video, VI): High priority queue, minimum delay. Time-sensitive data such as Video and other streaming media are automatically sent to this queue.
Data 3 (Voice, VO): Highest priority queue, minimum delay.
Time-sensitive data such as Voice over IP (VoIP) is automatically sent to this queue.

VO

Voice (VoIP)
Highest priority

VI

Video (Internet Movie)
High priority

BE

Best Effort (Web)
Medium priority

BK

Background (E-mail)
Lowest priority

AP with WMM

Internet

QoS Settings

☑ **Enable WMM**

WMM Parameters of Access Point

AC TYPE	ECWMin	ECWMax	AIFS	TxopLimit-11b(µs)	TxopLimit-11ag(µs)	ACM	Ack-policy
AC_BE(0)	4	6	3	0	0	☐	☐
AC_BK(1)	4	10	7	0	0	☐	☐
AC_VI(2)	3	4	1	6016	3008	☐	☐
AC_VO(3)	2	3	1	3264	1504	☐	☐

WMM Parameters of Station

AC TYPE	ECWMin	ECWMax	AIFS	TxopLimit-11b(µs)	TxopLimit-11ag(µs)	ACM
AC_BE(0)	4	10	3	0	0	☐
AC_BK(1)	4	10	7	0	0	☐
AC_VI(2)	3	4	2	6016	3008	☐
AC_VO(3)	2	3	2	3264	1504	☐

APPLY

Packets in a higher priority queue will be transmitted before packets in a lower priority queue.

Random Backoff and Minimum / Maximum Contention Windows

If an access point detects that the medium is in use (busy), it uses the DCF random backoff timer to determine the amount of time to wait before attempting to access a given channel again. Each access point waits some random period of time between retries. The wait time (initially a random value within a range specified as the **Minimum Contention Window**) increases exponentially up to a specified limit (**Maximum Contention Window**).

The random delay avoids most of the collisions that would occur if multiple APs got access to the medium at the same time and tried to transmit data simultaneously. The more active users you have on a network, the more significant the performance gains of the backoff timer will be in reducing the number of collisions and retransmissions.
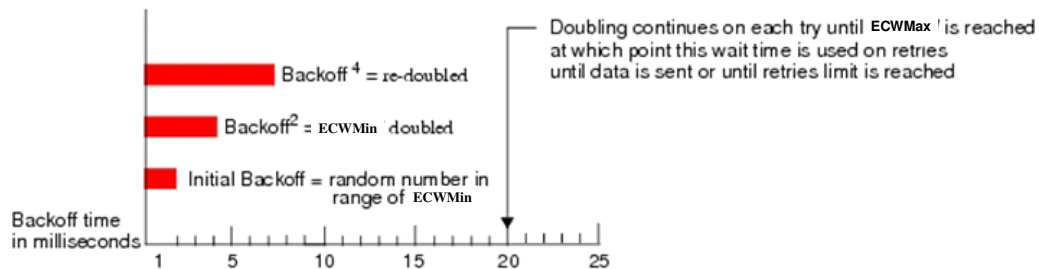

The random backoff used by the access point is a configurable parameter. To describe the random delay, a "**Minimum Contention Window**" (**ECWMin**) and a "**Maximum Contention Window**" (**ECWMax**) is defined.

- The value specified for the Minimum Contention Window is the upper limit of a range for the initial random backoff wait time. The number used in the random backoff is initially a random number between 0 and the number defined for the Minimum Contention Window.
- If the first random backoff time ends before successful transmission of the data frame, the access point increments a retry counter, and doubles the value of the random backoff window. The value specified in the Maximum Contention Window is the upper limit for this doubling of the random backoff. This doubling continues until either the data frame is sent or the Maximum Contention Window size is reached.

AP with WMM

Transmitting

Waiting

Waiting

Voice package with smaller ECMin Value (Short Wait Time):

AP with WMM

Transmit Complete

Voice package with smaller ECMin Value (Short Wait Time)

Waiting

Transmitting
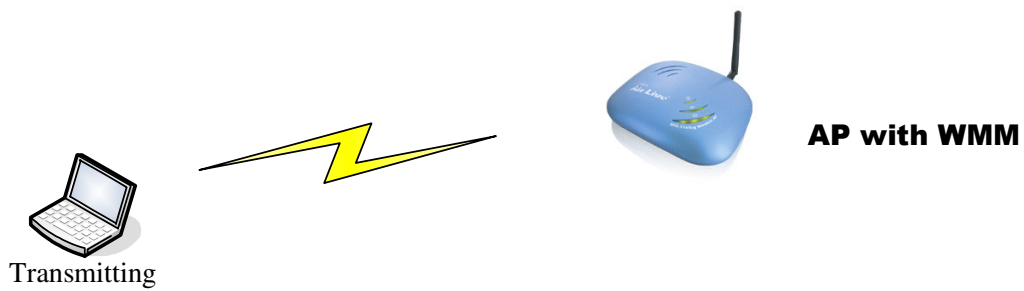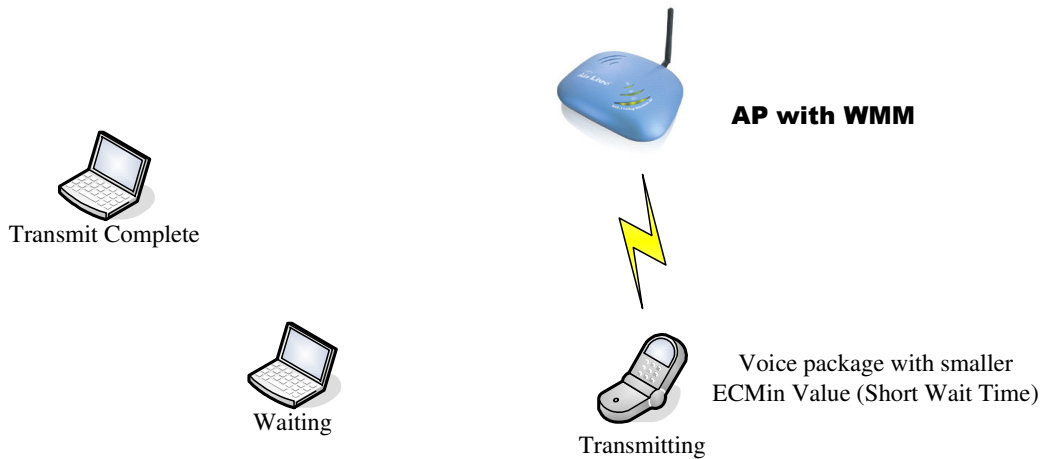
AIFS

The Arbitration Inter-Frame Spacing (AIFs) specifies a wait time (in milliseconds) for data frames. 802.11e uses interframe spaces to regulate which frames get access to available channels and to coordinate wait times for transmission of different types of data. The AIFs ensures that multiple access points do not try sending data at the same time but instead wait until a channel is free.

Valid values for AIFs are 1 through 255.

Transmission Opportunity

The Transmission Opportunity (TXOP) is an interval of time when a WMM client station has the right to initiate transmissions onto the wireless medium.

This value specifies (in milliseconds) the Transmission Opportunity (TXOP) for client stations; that is, the interval of time when a WMM client station has the right to initiate transmissions on the wireless network.

Importance Notice

We recommend that you use the default settings on the QoS Settings page. Changing these values can lead to unexpected blockages of traffic on your wireless LAN, and the blockages might be difficult to diagnose. If you change these values and find that you need to reset them to defaults, please reload to factory default settings.