CLAIMS

~~What is claimed is:~~

1. A method of wireless ~~communications performed~~communication by an ~~apparatus of an~~ access point (AP), comprising:

selecting a packet duration for uplink (UL) transmissions from a station (STA);

transmitting a trigger frame soliciting UL data from the STA and indicating the selected packet duration;

receiving an UL packet of the selected packet duration from the STA; and

selectively adjusting the packet duration for subsequent UL transmissions from the STA based on one or more of an amount of data carried in the UL packet, an amount of padding inserted into the UL packet by the STA, or an amount of UL data queued in the STA~~.~~, wherein selectively adjusting the packet duration includes decreasing the packet duration when the amount of padding inserted into the UL packet by the STA is greater than a value while at least some UL data is queued in the STA.

2. The method of claim 1, further comprising:

transmitting an indication of the adjusted packet duration to the STA.

3. The method of claim 1, wherein the UL packet comprises a high-efficiency (HE) trigger-based (TB) physical layer convergence procedure (PLCP) protocol data unit (PPDU).

4. The method of claim 1, wherein the UL packet includes at least one medium access control (MAC) protocol data unit (MPDU).

5. The method of claim 1, wherein the UL packet includes an indication of the amount of UL data queued in the STA.

6. The method of claim 5, wherein the indication is carried in a Quality-of-Service (QoS) control field of the UL packet.

7. The method of claim 1, wherein selectively adjusting the packet duration ~~comprises decreasing the packet duration when the amount of padding inserted into the UL packet by the STA is greater than a value while at least some UL data is queued in the STA.~~

~~8. The method of claim 1, wherein selectively adjusting the packet duration comprises decreasing the packet duration when a size or duration of one or more aggregated frames carried in the UL packet is less than a value.~~

~~9. The method of claim 1, wherein selectively adjusting the packet duration~~further comprises decreasing the packet duration when the amount of data carried in the UL packet is less than the amount of UL data queued in the STA and at least a portion of one or more data fields contained in the UL packet do not carry queued UL data from the STA.

~~10~~8. The method of claim 1, wherein selectively adjusting the packet duration further comprises:

estimating a maximum amount of data that the STA is capable of embedding in the UL packet based at least in part on the amount of data carried in the UL packet; and

adjusting the packet duration based on the estimated maximum amount of data.

~~11~~9. The method of claim ~~10~~8, further comprising:

determining a weighted moving average of the estimated maximum amount of data that the STA is able to include in a given packet; and

selecting a minimum amount of data that the STA is to include in each UL packet based on the determined weighted moving average.

~~12~~10. The method of claim ~~11~~9, further comprising:

transmitting an indication of the selected minimum amount of data to the STA.

~~13~~11. The method of claim 1, further comprising:

periodically increasing the selected packet duration for a time period.

~~14~~12. The method of claim 1, wherein selecting the packet duration for UL transmissions is further based at least in part on estimating the amount of data that the STA has queued for UL transmissions.

~~15~~13. The method of claim 1, wherein the amount of UL data queued in the STA is based at least in part on UL queue size information provided by the STA prior to transmission of the trigger frame.

~~16~~14. The method of claim ~~15~~13, wherein the UL queue size information is contained in one or more of a buffer status report (BSR) or a Quality-of-Service (QoS) control field of a previously received UL packet from the STA.

15. A method of wireless communication performed by an access point (AP), comprising: selecting a packet duration for uplink (UL) transmissions from a station (STA); transmitting a trigger frame soliciting UL data from the STA and indicating the selected packet duration; receiving an UL packet of the selected packet duration from the STA; and selectively adjusting the packet duration for subsequent UL transmissions from the STA based on one or more of an amount of data carried in the UL packet, an amount of padding inserted into the UL packet by the STA, or an amount of UL data queued in the STA, wherein selectively adjusting the packet duration comprises decreasing the packet duration when a size or duration of one or more aggregated frames carried in the UL packet is less than a value.

~~17.~~16. An access point (AP), comprising:

at least one modem;

one or more processors coupled to the at least one modem;

a memory coupled to the at least one modem and to the one or more processors, the memory storing instructions that, when executed by the one or more processors, cause the AP to perform operations comprising:

selecting a packet duration for uplink (UL) transmissions from a station (STA);

transmitting a trigger frame soliciting UL data from the STA and indicating the selected packet duration;

receiving an UL packet of the selected packet duration from the STA; and

selectively adjusting the packet duration for subsequent UL transmissions from the STA based on one or more of an amount of data carried in the UL packet, an amount of padding inserted into the UL packet by the STA, or an amount of UL data queued in the STA~~.~~

~~18. The AP of claim 17~~, wherein ~~execution of the instructions causes the AP to perform operations further comprising:~~

~~transmitting an indication of the adjusted packet duration to the STA.~~

~~19. The AP of claim 17, wherein the UL packet includes an indication of the amount of UL data queued in the STA.~~

~~20. The AP of claim 19, wherein the indication is carried in a Quality-of-Service (QoS) control field of the UL packet.~~

~~21. The AP of claim 17, wherein execution of the instructions for~~selectively adjusting the packet duration ~~causes the AP to decrease~~includes decreasing the packet duration when the amount of padding inserted into the UL packet by the STA is greater than a value while at least some UL data is queued in the STA.

~~22~~17. The AP of claim ~~17~~16, wherein execution of the instructions causes the AP to perform operations further comprising: transmitting an indication of the adjusted packet duration to the STA.

18. The AP of claim 16, wherein the UL packet includes an indication of the amount of UL data queued in the STA.

19. The AP of claim 18, wherein the indication is carried in a Quality-of-Service (QoS) control field of the UL packet.

20. The AP of claim 16, wherein execution of the instructions for adjusting the packet duration ~~causes the AP to decrease the packet duration when a size or duration of one or more aggregated frames carried in the UL packet is less than a value.~~

~~23. The AP of claim 17, wherein execution of the instructions for adjusting the packet duration~~further causes the AP to decrease the packet duration when the amount of data carried in the UL packet is less than the amount of UL data queued in the STA and at least a portion of one or more data fields contained in the UL packet do not carry queued UL data from the STA.

~~24~~21. The AP of claim ~~17~~16, wherein execution of the instructions for adjusting the packet duration causes the AP to perform operations further comprising:

estimating a maximum amount of data that the STA is capable of embedding in the UL packet based at least in part on the amount of data carried in the UL packet; and

adjusting the packet duration based on the estimated maximum amount of data.

~~25~~22. The AP of claim ~~24~~21, wherein execution of the instructions causes the AP to perform operations further comprising:

determining a weighted moving average of the estimated maximum amount of data that the STA is able to include in a given packet; and

selecting a minimum amount of data that the STA is to include in each UL packet based on the determined weighted moving average.

~~26~~23. The AP of claim ~~25~~22, wherein execution of the instructions causes the AP to perform operations further comprising:

transmitting an indication of the selected minimum amount of data to the STA.

~~27~~24. The AP of claim ~~17~~16, wherein execution of the instructions causes the AP to perform operations further comprising:

periodically increasing the selected packet duration for a time period.

~~28~~25. The AP of claim ~~17~~16, wherein selecting the packet duration for UL transmissions is further based at least in part on estimating the amount of data that the STA has queued for UL transmissions.

~~29~~26. The AP of claim ~~17~~16, wherein the amount of UL data queued in the STA is based at least in part on UL queue size information provided by the STA prior to transmission of the trigger frame.

~~30~~27. The AP of claim ~~29~~26, wherein the UL queue size information is contained in one or more of a buffer status report (BSR) or a Quality-of-Service (QoS) control field of a previously received UL packet from the STA.

~~31. A non-transitory computer-readable medium~~

28. An access point (AP), comprising: at least one modem; one or more processors coupled to the at least one modem; a memory coupled to the at least one modem and to the one or more processors, the memory storing instructions that, when executed by the one or more processors ~~of an access point (AP),~~ cause the AP to perform operations comprising:

selecting a packet duration for uplink (UL) transmissions from a station (STA);

~~transmitting a trigger frame soliciting UL data from the STA and indicating the selected packet duration;~~

~~receiving an UL packet of the selected packet duration from the STA; and~~

~~selectively adjusting the packet duration for subsequent UL transmissions from the STA based on one or more of an amount of data carried in the UL packet, an amount of padding inserted into the UL packet by the STA, or an amount of UL data queued in the STA.~~

~~32. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions causes the AP to perform operations further comprising:~~

~~transmitting an indication of the adjusted packet duration to the STA.~~

~~33. The non-transitory computer-readable medium of claim 31, wherein the UL packet includes an indication of the amount of UL data queued in the STA.~~

34. The non-transitory computer-readable medium of claim 33, wherein the indication is carried in a Quality-of-Service (QoS) control field of the UL packet.

35. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions for adjusting the packet duration causes the AP to decrease the packet duration when the amount of padding inserted into the UL packet by the STA is greater than a value while at least some UL data is queued in the STA.

36. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions for adjusting the packet duration causes the AP to decrease the packet duration when a size or duration of one or more aggregated frames carried in the UL packet is less than a value.

37. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions for adjusting the packet duration causes the AP to decrease the packet duration when the amount of data carried in the UL packet is less than the amount of UL data queued in the STA and at least a portion of one or more data fields contained in the UL packet do not carry queued UL data from the STA.

38. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions for adjusting the packet duration causes the AP to perform operations further comprising:

estimating a maximum amount of data that the STA is capable of embedding in the UL packet based at least in part on the amount of data carried in the UL packet; and

adjusting the packet duration based on the estimated maximum amount of data.

39. The non-transitory computer-readable medium of claim 38, wherein execution of the instructions causes the AP to perform operations further comprising:

determining a weighted moving average of the estimated maximum amount of data that the STA is able to include in a given packet; and

~~selecting a minimum amount of data that the STA is to include in each UL packet based on the determined weighted moving average.~~

~~40. The non-transitory computer-readable medium of claim 39, wherein execution of the instructions causes the AP to perform operations further comprising:~~

~~transmitting an indication of the selected minimum amount of data to the STA.~~

~~41. The non-transitory computer-readable medium of claim 31, wherein execution of the instructions causes the AP to perform operations further comprising:~~

~~periodically increasing the selected packet duration for a time period.~~

~~42. The non-transitory computer-readable medium of claim 31, wherein selecting the packet duration for UL transmissions is based at least in part on estimating the amount of data that the STA has queued for UL transmissions.~~

~~43. The non-transitory computer-readable medium of claim 31, wherein the amount of UL data queued in the STA is based at least in part on UL queue size information provided by the STA prior to transmission of the trigger frame.~~

~~44. The non-transitory computer-readable medium of claim 43, wherein the UL queue size information is contained in one or more of a buffer status report (BSR) or a Quality-of-Service (QoS) control field of a previously received UL packet from the STA.~~

~~45. An apparatus of an access point (AP), comprising:~~

~~means for selecting a packet duration for uplink (UL) transmissions from a station (STA);~~

~~means for~~ transmitting a trigger frame soliciting UL data from the STA and indicating the selected packet duration;

~~means for~~ receiving an UL packet of the selected packet duration from the STA; and

~~means for~~ selectively adjusting the packet duration for subsequent UL transmissions from the STA based on one or more of an amount of data carried in the UL packet, an amount of padding inserted into the UL packet by the STA, or an amount of UL data queued in the STA~~.~~

~~46. The apparatus of claim 45, further comprising:~~

~~means for transmitting an indication of the adjusted packet duration to the STA.~~

~~47. The apparatus of claim 45~~, wherein ~~the UL packet includes an indication~~execution of the ~~amount of UL data queued in the STA.~~

~~48. The apparatus of claim 47, wherein the indication is carried in a Quality-of-Service (QoS) control field of the UL packet.~~

~~49. The apparatus of claim 45, wherein the means~~instructions for ~~selectively~~ adjusting the packet duration ~~is configured to decrease the packet duration when the amount of padding inserted into the UL packet by the STA is greater than a value while at least some UL data is queued in the STA.~~

~~50. The apparatus of claim 45, wherein the means for selectively adjusting the packet duration is configured~~causes the AP to decrease the packet duration when a size or duration of one or more aggregated frames carried in the UL packet is less than a value.

~~51. The apparatus of claim 45, wherein the means for selectively adjusting the packet duration is configured to decrease the packet duration when the amount of data carried in the UL packet is less than the amount of UL data queued in the STA and at least a portion of one or more data fields contained in the UL packet do not carry queued UL data from the STA.~~

~~52. The apparatus of claim 45, wherein the means for selectively adjusting the packet duration is configured to:~~

~~estimate a maximum amount of data that the STA is capable of embedding in the UL packet based at least in part on the amount of data carried in the UL packet; and~~

~~adjust the packet duration based on the estimated maximum amount of data.~~

~~53. The apparatus of claim 52, further comprising:~~

means for determining a weighted moving average of the estimated maximum amount of data that the STA is able to include in a given packet; and

means for selecting a minimum amount of data that the STA is to include in each UL packet based on the determined weighted moving average.

54. The apparatus of claim 53, further comprising:

means for transmitting an indication of the selected minimum amount of data to the STA.

55. The apparatus of claim 45, further comprising:

means for periodically increasing the selected packet duration for a time period.

56. The apparatus of claim 45, wherein selecting the packet duration for UL transmissions is based at least in part on estimating the amount of data that the STA has queued for UL transmissions.

57. The apparatus of claim 45, wherein the amount of UL data queued in the STA is based at least in part on UL queue size information provided by the STA prior to transmission of the trigger frame.

58. The apparatus of claim 57, wherein the UL queue size information is contained in one or more of a buffer status report (BSR) or a Quality-of-Service (QoS) control field of a previously received UL packet from the STA.