

CLAIMS

What is claimed is:CLAIMS

1. A method for wireless communication at a user equipment (UE), comprising:

receiving, from a ~~base station~~network device, an uplink grant for an uplink transmission from the UE to the ~~base station~~network device;

selecting, based at least in part on the uplink grant, ~~a packet transmission mode from a default transmission mode or~~ a packet-group transmission mode for the uplink transmission, wherein the packet-group transmission mode specifies ~~that a set of individual packets that are associated as a packet-group are included in a transmission payload~~packet-group include different sets of data indicative of the uplink transmission~~different portions of a video frame;~~

~~determining one or more packets of~~selecting, from a packet buffer that includes a plurality of packets, one or more packet-groups for inclusion in ~~the~~a transmission payload for the uplink transmission in accordance with the uplink grant and based at least in part on the ~~selected packet transmission mode~~packet-group transmission mode, wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

transmitting, to the ~~base station~~network device, the uplink transmission including the transmission payload in accordance with the packet-group transmission mode and the uplink grant.

2. The method of claim 1, wherein selecting the packet-group transmission mode is based at least in part on a packet transmission mode indicator included in the uplink grant, the method further comprising:

identifying that the packet transmission mode indicator specifies the packet-group transmission mode, wherein the plurality of packets are organized in ~~one or more~~ packet-groups.

3. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups such that all packets of at least one packet-group are included in the transmission payload.

4. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups based at least in part on a resource capacity indicated by the uplink grant.

5. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

identifying a resource capacity for the transmission payload; and

~~determining~~selecting the one or more ~~packets~~packet-groups such that the transmission payload comprises packets associated with a reduced quantity of packet-groups relative to a quantity of packet-groups that the resource capacity supports and based at least in part on the transmission payload satisfying a capacity condition.

6. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

identifying a resource capacity for the transmission payload; and

~~determining~~selecting the one or more ~~packets~~packet-groups such that the transmission payload comprises packets associated with a reduced quantity of partial packet-groups relative to a quantity of partial packet-groups that the resource capacity supports and based at least in part on the transmission payload satisfying a capacity condition.

7. The method of claim 2, further comprising:

receiving, from the ~~base station~~network device, an indication of a capacity condition, wherein the one or more ~~packets~~packet-groups are ~~determined~~selected based at least in part on satisfaction of the capacity condition.

8. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups based at least in part on a group selection criterion indicated by the uplink grant.

9. The method of claim 8, wherein the group selection criterion indicates a packet-group type criterion or a packet-group priority criterion.

10. The method of claim 2, wherein the uplink grant is for transmission of multiple transport blocks, the method further comprising:

mapping one or more packets of the one or more ~~packets~~packet-groups to the multiple transport blocks such that packets associated with a same packet-group are mapped to a same transport block.

11. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups based at least in part on a group quantity limitation indicated by the uplink grant, the group quantity limitation indicating a maximum quantity of groups to be included in the transmission payload.

12. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

selecting the one or more ~~packets~~packet-groups based at least in part on a transmission priority associated with the one or more packet-groups.

13. The method of claim 12, wherein the transmission priority is based at least in part on a delivery deadline associated with the one or more packet-groups.

14. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

selecting the one or more ~~packets~~packet-groups based at least in part on a modulation coding scheme associated with a transport block (TB) indicated by the uplink grant.

15. The method of claim 2, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining the one or more packets of~~selecting the one or more packet-groups based at least in part on a packet-group type, a packet-group priority, a packet delivery deadline, or a combination thereof.

16. The method of claim 2, wherein transmitting the uplink transmission further comprises:

transmitting the transmission payload for the uplink transmission such that the ~~one or more~~ plurality of packets are selected in a non-first-in first-out order.

17. The method of claim 2, wherein ~~determining~~ selecting the one or more ~~packets~~ packet-groups for inclusion in the transmission payload further comprises:

receiving, from the ~~base station~~ network device, an indication of a file delay budget or a file error rate; and

~~determining~~ selecting the one or more ~~packets~~ packet-groups based at least in part on the file delay budget or the file error rate.

18. The method of claim 2, wherein one or more packets of the one or more ~~packets~~ packet-groups are associated as a file.

19. The method of claim 18 wherein the one or more packets of the file are configured to be processed together.

20. The method of claim 2, wherein one or more packets of the one or more ~~packets~~ packet-groups are associated with a same delivery deadline.

~~21. The method of claim 1, wherein the default transmission mode is a first-in first-out transmission mode.~~

~~22~~ 21. A method of wireless communication at a ~~base station~~ network device, comprising:

transmitting, to a user equipment (UE), an uplink grant, including an indication of a file delay budget or a file delay error rate, for an uplink transmission from the UE to the ~~base station~~ network device, wherein the uplink grant specifies a packet ~~transmission mode from a default transmission mode or a packet-group-group~~ transmission mode for the uplink transmission, and wherein the packet-group transmission mode specifies that a set of individual packets ~~that are associated as a packet-group~~ are included in a ~~transmission payload~~ packet-group include different sets of the uplink transmission data indicative of different portions of a video frame; and

receiving the uplink transmission from the UE, the uplink transmission including ~~the~~ transmission payload including one or more ~~packets~~packet-groups in accordance with the uplink grant and the packet-group transmission mode.

2322. The method of claim 2221, wherein the uplink grant includes a packet transmission mode indicator specifying the packet-group transmission mode, and wherein receiving the uplink transmission comprises:

receiving ~~the~~ one or more packets organized into ~~the~~ one or more ~~groups~~in accordance with the packet-groups in accordance with the packet-group transmission mode.

2423. The method of claim 2322, further comprising:

processing the one or more packet-groups in groups in accordance with the packet-group transmission mode.

2524. The method of claim 2423, wherein processing the one or more packet-groups comprises:

passing packets of each of the one or more packet-groups to an upper layer as one or more protocol data units.

2625. The method of claim 2221, wherein transmitting the uplink grant further comprises:

transmitting an indication of a resource amount limiting a quantity of packets to be included in the uplink transmission.

2726. The method of claim 2221, wherein transmitting the uplink grant further comprises:

transmitting a group selection criterion in the uplink grant when the uplink grant specifies the packet-group transmission mode.

2827. The method of claim 2726, wherein the group selection criterion indicates a packet-group type criterion or a packet-group priority criterion.

2928. The method of claim 2827, wherein the packet-group priority criterion is based on a delivery deadline associated with ~~one or more~~ packet-groups.

~~30~~29. The method of claim ~~22~~21, wherein receiving the uplink transmission from the UE comprises:

receiving one or more packets of the one or more packet-groups mapped to multiple transport blocks such that packets associated with a same packet-group are mapped to a same transport block, wherein the uplink grant is for transmission of the multiple transport blocks.

~~31~~30. The method of claim ~~22~~21, wherein ~~transmitting the uplink grant for the uplink transmission further comprises:~~

~~transmitting an indication one or more packets of a file delay budget or a file delay error rate.~~

~~32.~~—The method of claim 22, wherein the one or more ~~packets~~packet-groups are associated as a file.

~~33.~~—The method of claim 22, wherein the default transmission mode is a ~~first in first out transmission mode.~~

~~34~~31. A method of wireless communication at a ~~base station~~network device, comprising:

identifying that a plurality of packets are scheduled for a downlink transmission to a user equipment (UE) via a packet-group transmission mode;

~~determining~~selecting, from a packet buffer, one or more packets of the plurality of packetspacket-groups for inclusion in a transmission payload for the downlink transmission in accordance with the packet-group transmission mode, wherein the packet-group transmission mode specifies that individual packets included in a packet-group include different sets of data indicative of different portions of a video frame, and wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

transmitting, to the UE, the downlink transmission including the transmission payload in accordance with the packet-group transmission mode.

~~35~~32. The method of claim ~~34~~31, wherein the plurality of packets are organized in ~~one or more~~ packet-groups.

3633. The method of claim 3431, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups such that all packets of at least one packet-group are included in the transmission payload.

3734. The method of claim 3431, wherein ~~determining~~selecting the one or more ~~packets~~packet-groups for inclusion in the transmission payload further comprises:

~~determining~~selecting the one or more ~~packets~~packet-groups based at least in part on a resource capacity allocated for the downlink transmission to the UE.

38.—An apparatus for wireless communication at a user equipment (UE), comprising:

~~means for receiving, from a base station, an uplink grant for an uplink transmission from the UE to the base station;~~

~~means for selecting, based at least in part on the uplink grant, a packet transmission mode from a default transmission mode or a packet-group transmission mode for the uplink transmission, wherein the packet-group transmission mode specifies that a set of packets that are associated as a packet-group are included in a transmission payload of the uplink transmission;~~

~~means for determining one or more packets of a plurality of packets for inclusion in the transmission payload for the uplink transmission in accordance with the uplink grant and based at least in part on the selected packet transmission mode; and~~

~~means for transmitting, to the base station, the uplink transmission in accordance with the packet transmission mode and the uplink grant.~~

39.—The apparatus of claim 38, wherein the means for selecting the packet transmission mode comprises means for selecting the packet transmission mode based at least in part on a packet transmission mode indicator included in the uplink grant, wherein the apparatus further comprises:

~~means for identifying that the packet transmission mode indicator specifies the packet-group transmission mode, wherein the plurality of packets are organized in one or more packet-groups.~~

40.—The apparatus of claim 39, wherein the means for determining the one or more packets for inclusion in the transmission payload further comprise:

~~means for determining the one or more packets such that all packets of at least one packet group are included in the transmission payload.~~

41.—The apparatus of claim 39, wherein the means for determining the one or more packets for inclusion in the transmission payload further comprise:

~~means for determining the one or more packets based at least in part on a resource capacity indicated by the uplink grant.~~

42.—The apparatus of claim 39, wherein the uplink grant is for transmission of multiple transport blocks, wherein the apparatus further comprises:

~~means for mapping the one or more packets to the multiple transport blocks such that packets associated with a same packet group are mapped to a same transport block.~~

43.—The apparatus of claim 39, wherein the one or more packets are associated as a file.

44.—An apparatus for wireless communication at a base station, comprising:

~~means for transmitting, to a user equipment (UE), an uplink grant for an uplink transmission from the UE to the base station, wherein the uplink grant specifies a packet transmission mode from a default transmission mode or a packet group transmission mode for the uplink transmission, wherein the packet group transmission mode specifies that a set of packets that are associated as a packet group are included in a transmission payload of the uplink transmission; and~~

~~means for receiving the uplink transmission from the UE, the uplink transmission including the transmission payload including one or more packets in accordance with the uplink grant and the packet transmission mode.~~

45.—The apparatus of claim 44, wherein the uplink grant includes a packet transmission mode indicator specifying the packet group transmission mode, the apparatus further comprising:

~~means for receiving the one or more packets organized into one or more groups in accordance with the packet group transmission mode.~~

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

~~means for processing the one or more groups in groups in accordance with the packet-group transmission mode.~~

47. — The apparatus of claim 46, wherein the means for processing the one or more groups further comprise:

~~means for passing packets of each of the one or more groups to an upper layer as one or more protocol data units.~~

48. — The apparatus of claim 44, wherein the one or more packets are associated as a file.

49. — An apparatus for wireless communication at a base station, comprising:

~~means for identifying that a plurality of packets are scheduled for a downlink transmission to a user equipment (UE) via a packet-group transmission mode;~~

~~means for determining one or more packets of the plurality of packets for inclusion in a transmission payload for the downlink transmission in accordance with the packet-group transmission mode; and~~

~~means for transmitting, to the UE, the downlink transmission in accordance with the packet-group transmission mode.~~

5035. An apparatus for wireless communication at a user equipment (UE), comprising:

a processor,

memory coupled with the processor; and

instructions stored in the memory and operable, when executed by the processor to cause the apparatus to:

receive, from a ~~base station~~network device, an uplink grant for an uplink transmission from the UE to the ~~base station~~network device;

select, based at least in part on the uplink grant, a ~~packet transmission mode from a default transmission mode or a packet-group transmission mode~~ for the uplink transmission, wherein the packet-group transmission mode specifies that a ~~set of~~individual packets that are associated as a packet-group are included in a transmission payload of the

~~uplink transmission~~ packet-group include different sets of data indicative of different portions of a video frame;

~~determine one or more packets of a~~ select, from a packet buffer that includes a plurality of packets, one or more packet-groups for inclusion in the transmission payload for the uplink transmission in accordance with the uplink grant and based at least in part on the ~~selected packet transmission mode~~ packet-group transmission mode, wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

transmit, to the ~~base station~~ network device, the uplink transmission including the transmission payload in accordance with the packet-group transmission mode and the uplink grant.

5136. The apparatus of claim 5035, wherein ~~the instructions operable to cause the apparatus to select~~ selecting the packet-group transmission mode ~~include instructions operable to cause the apparatus to select the packet transmission mode~~ is based at least in part on a packet transmission mode indicator included in the uplink grant, wherein the instructions are further operable, when executed by the processor, to cause the apparatus to:

identify that the packet transmission mode indicator specifies the packet-group transmission mode, wherein the plurality of packets are organized in ~~one or more packet-~~ groups.

5237. The apparatus of claim 5136, wherein the instructions ~~operable to cause the apparatus to determine~~ to select the one or more ~~packets~~ packet-groups for inclusion in the transmission payload ~~are further~~ are operable, when executed by the processor, to cause the apparatus to:

~~determine~~ select the one or more ~~packets~~ packet-groups such that all packets of at least one packet-group are included in the transmission payload.

5338. The apparatus of claim 5136, wherein the instructions ~~operable to cause the apparatus to determine~~ to select the one or more ~~packets~~ packet-groups for inclusion in the transmission payload ~~are further~~ are operable, when executed by the processor, to cause the apparatus to:

~~determine~~ select the one or more ~~packets~~ packet-groups based at least in part on a resource capacity indicated by the uplink grant.

5439. The apparatus of claim 5136, wherein the uplink grant is for transmission of multiple transport blocks, ~~wherein the instructions being further~~ are operable, when executed by the processor, to cause the apparatus to:

map one or more packets of the one or more packets ~~packet-groups~~ to the multiple transport blocks such that packets associated with a same packet-group are mapped to a same transport block.

5540. The apparatus of claim 5136, wherein one or more packets of the one or more packets ~~packet-groups~~ are associated as a file.

5641. An apparatus for wireless communication at a ~~base station~~ network device, comprising:

a processor,

memory coupled with the processor; and

instructions stored in the memory and operable, when executed by the processor to cause the apparatus to:

transmit, to a user equipment (UE), an uplink grant, including an indication of a file delay budget or a file delay error rate, for an uplink transmission from the UE to the ~~base station~~ network device, wherein the uplink grant specifies a packet ~~transmission mode from a default transmission mode or a packet-group transmission mode~~ for the uplink transmission, wherein ~~the packet-group transmission mode specifies that a set of individual packets that are associated as a packet-group are included in a transmission payload~~ packet-group include different sets of the uplink transmission data indicative of different portions of a video frame; and

receive the uplink transmission from the UE, the uplink transmission including ~~the~~ a transmission payload including one or more packets ~~packet-groups~~ in accordance with the uplink grant and the ~~packet-group~~ transmission mode.

5742. The apparatus of claim 5641, wherein the uplink grant includes a packet transmission mode indicator specifying the packet-group transmission mode, and comprises:

receive one or more packets organized into the one or more packet-groups in accordance with the packet-group transmission mode.

43. The apparatus of claim 42, wherein the instructions are further operable, when executed by the processor to cause the apparatus to:

process the one or more packet-groups in groups in accordance with the packet-group transmission mode.

44. The apparatus of claim 43, wherein the instructions to process the one or more packet-groups are operable, when executed by the processor to cause the apparatus to:

pass packets of each of the one or more packet-groups to an upper layer as one or more protocol data units.

45. The apparatus of claim 41, wherein one or more packets of the one or more packet-groups are associated as a file.

46. An apparatus for wireless communication at a network device, comprising:

a processor,

memory coupled with the processor; and

instructions stored in the memory and operable, when executed by the processor to cause the apparatus to:

identify that a plurality of packets are scheduled for a downlink transmission to a user equipment (UE) via a packet-group transmission mode;

select, from a packet buffer, one or more packet-groups for inclusion in a transmission payload for the downlink transmission in accordance with the packet-group transmission mode, wherein the packet-group transmission mode specifies that individual packets included in a packet-group include different sets of data indicative of different portions of a video frame, and wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

transmit, to the UE, the downlink transmission including the transmission payload in accordance with the packet-group transmission mode.

47. An apparatus for wireless communication at a user equipment (UE), comprising:

means for receiving, from a network device, an uplink grant for an uplink transmission from the UE to the network device;

means for selecting, based at least in part on the uplink grant, a packet-group transmission mode for the uplink transmission, wherein the packet-group transmission mode specifies that individual packets included in a packet-group include different sets of data indicative of different portions of a video frame;

means for selecting, from a packet buffer that includes a plurality of packets, one or more packet-groups for inclusion in a transmission payload for the uplink transmission in accordance with the uplink grant and based at least in part on the packet-group transmission mode, wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

means for transmitting, to the network device, the uplink transmission including the transmission payload in accordance with the packet-group transmission mode and the uplink grant.

48. The apparatus of claim 47, wherein selecting the packet-group transmission mode is based at least in part on a packet transmission mode indicator included in the uplink grant, further comprising:

means for identifying that the packet transmission mode indicator specifies the packet-group transmission mode, wherein the plurality of packets are organized in packet-groups.

49. The apparatus of claim 48, wherein the means for selecting the one or more packet-groups for inclusion in the transmission payload further comprises:

means for selecting the one or more packet-groups such that all packets of at least one packet-group are included in the transmission payload.

50. The apparatus of claim 48, wherein the means for selecting the one or more packet-groups for inclusion in the transmission payload further comprises:

means for selecting the one or more packet-groups based at least in part on a resource capacity indicated by the uplink grant.

51. The apparatus of claim 48, wherein the uplink grant is for transmission of multiple transport blocks, further comprising:

means for mapping one or more packets of the one or more packet-groups to the multiple transport blocks such that packets associated with a same packet-group are mapped to a same transport block.

52. The apparatus of claim 48, wherein one or more packets of the one or more packet-groups are associated as a file.

53. An apparatus for wireless communication at a network device, comprising:

means for transmitting, to a user equipment (UE), an uplink grant, including an indication of a file delay budget or a file delay error rate, for an uplink transmission from the UE to the network device, wherein the uplink grant specifies a packet-group transmission mode for the uplink transmission, and wherein the packet-group transmission mode specifies that individual packets included in a packet-group include different sets of data indicative of different portions of a video frame; and

means for receiving the uplink transmission from the UE, the uplink transmission including a transmission payload including one or more packet-groups in accordance with the uplink grant and the packet-group transmission mode.

54. The apparatus of claim 53, wherein the uplink grant includes a packet transmission mode indicator specifying the packet-group transmission mode, the instructions being further operable, when executed by the processor, to cause the apparatus to and comprises:

receive the means for receiving one or more packets organized into the one or more groups in accordance with the packet-groups in accordance with the packet-group transmission mode.

55. The apparatus of claim 57, the instructions being further operable, when executed by the processor, to cause the apparatus to comprising:

process means for processing the one or more packet-groups in groups in accordance with the packet-group transmission mode.

~~5956.~~ The apparatus of claim ~~5855~~, wherein the ~~instructions operable to cause the apparatus to process~~means for processing the one or more ~~groups are further operable, when executed by the processor, to cause the apparatus to~~packet-groups comprises:
passmeans for passing packets of each of the one or more packet-groups to an upper layer as one or more protocol data units.

~~6057.~~ The apparatus of claim ~~5653~~, wherein ~~the one or more packets are of the one or more packet-groups are~~ associated as a file.

~~6158.~~ A non-transitory computer-readable medium storing code for wireless communication at a user equipment (UE), the code comprising instructions executable by a processor to:

receive, from a ~~base station~~network device, an uplink grant for an uplink transmission from the UE to the ~~base station~~network device;

select, based at least in part on the uplink grant, a ~~packet-transmission mode from a default transmission mode or a packet-group transmission mode~~ for the uplink transmission, wherein the packet-group transmission mode specifies that ~~a set of individual packets that are associated as a packet-group are included in a transmission payload~~packet-group include different sets of data indicative of the uplink transmission;

~~determine one or more packets~~different portions of a video frame;

select, from a packet buffer that includes a plurality of packets, ~~one or more packet-groups~~ for inclusion in ~~the~~a transmission payload for the uplink transmission in accordance with the uplink grant and based at least in part on the ~~selected packet-transmission mode~~packet-group transmission mode, wherein a time of arrival of at least one packet of the selected one or more packet-groups at the packet buffer occurs after a time of arrival of one or more unselected packets in the packet buffer; and

transmit, to the ~~base station~~network device, the uplink transmission including the transmission payload in accordance with the packet-group transmission mode and the uplink grant.

6259. A non-transitory computer-readable medium storing code for wireless communication at a ~~base station~~network device, the code comprising instructions executable by a processor to:

transmit, to a user equipment (UE), an uplink grant, including an indication of a file delay budget or a file delay error rate, for an uplink transmission from the UE to the ~~base station~~network device, wherein the uplink grant specifies a packet-~~transmission mode~~ ~~from a default transmission mode or a packet-group transmission mode~~ for the uplink transmission, and wherein the packet-group transmission mode specifies that ~~a set of individual packets that are associated as a packet-group~~ are included in a ~~transmission payload~~ packet-group include different sets of the uplink transmission data indicative of different portions of a video frame; and

receive the uplink transmission from the UE, the uplink transmission including ~~the~~ a transmission payload including one or more ~~packets~~packet-groups in accordance with the uplink grant and the packet-group transmission mode.