CLAIMS

1. A method for copying data in an unmanaged flash memory storage device using a host flash controller, comprising: receiving, at the host flash controller, a copy command from a host processor coupled to the host flash controller, the host processor and the host flash controller being parts of a host device; in response to the copy command, transmitting, from the host flash controller, a read command to the unmanaged flash memory storage device via a bus, wherein the read command indicates particular data in the unmanaged flash memory storage device connected to a data port of the host device, the unmanaged flash memory storage device not having a controller that controls the unmanaged flash memory storage device as a whole; receiving, at the host flash controller, the particular data from the unmanaged flash memory storage device via the bus; storing the particular data in a data buffer included in the host flash controller; and transmitting, from the host flash controller to the unmanaged flash memory storage device, via the bus, a write command to write the particular data into the unmanaged flash memory storage device.

2. The method of claim 1, wherein the unmanaged flash memory storage device includes a plurality of NAND logic gates and/or a plurality of NOR logic gates.

3. The method of claim 1, wherein: the particular data is a data page, the data page including a plurality of data codewords; and the storing of the particular data in the data buffer includes storing each of the plurality of data codewords such that the data buffer simultaneously includes each of the plurality of data codewords.

4. The method of claim 1, wherein the copy command identifies a source start data page, a destination start data page, a length of the particular data, or any combination thereof.

5. The method of claim 1, further comprising: transmitting an acknowledgement from the host flash controller to the host processor in response to the receiving of the copy command.

6. The method of claim 1, wherein the read command indicates a read address of the

particular data.

7. The method of claim 1, wherein the write command include the particular data and indicates a write address.

8. The method of claim 1, further comprising: after transmitting of the write command, transmitting a copy complete notification to the host processor.

9. The method of claim 1, further comprising: incorporating the host processor, the host flash controller, and the bus into the host device; and incorporating a host random access memory into the host device, wherein the host random access memory is coupled to the host processor and the host flash controller.

10. The method of claim 1, further comprising incorporating the host flash controller into a device selected from a group consisting of a music player, a video player, an entertainment unit, a navigation device, a communications device, a mobile device, a mobile phone, a smartphone, a personal digital assistant, a fixed location terminal, a tablet computer, a computer, a wearable device, an Internet of things (IoT) device, a laptop computer, a server, and a device in an automotive vehicle.

11. A host flash controller, comprising: a flash memory controller data buffer; and a flash memory controller unit coupled to the flash memory controller data buffer, wherein the flash memory controller unit is configured to: receive, at the host flash controller, a copy command from a host processor coupled to the host flash controller, the host processor and the host flash controller being parts of a host device; in response to the copy command, transmit, from the host flash controller, a read command to an unmanaged flash memory storage device via a bus, wherein the read command indicates particular data in the unmanaged flash memory storage device connected to a data port of the host device, the unmanaged flash memory storage device not having a controller that controls the unmanaged flash memory storage device as a whole; receive, at the host flash controller, the particular data from the unmanaged flash memory storage device via the bus; store the particular data in a data buffer included in the host flash controller; and transmit, from the host flash controller to the unmanaged flash memory storage device, via the bus, a write command to write the particular data into the

unmanaged flash memory storage device.

12. The host flash controller of claim 11, wherein the unmanaged flash memory storage device includes a plurality of NAND logic gates and/or a plurality of NOR logic gates.

13. The host flash controller of claim 11, wherein: the particular data is a data page, the data page including a plurality of data codewords; and the flash memory controller unit is further configured to store each of the plurality of data codewords such that the data buffer simultaneously includes each of the plurality of data codewords.

14. The host flash controller of claim 11, wherein the copy command identifies a source start data page, a destination start data page, a length of the particular data, or any combination thereof.

15. The host flash controller of claim 11, wherein the flash memory controller unit is further configured to: transmit an acknowledgement from the host flash controller to the host processor in response to the receiving of the copy command.

16. The host flash controller of claim 11, wherein the read command indicates a read address of the particular data.

17. The host flash controller of claim 11, wherein the write command include the particular data and indicates a write address.

18. The host flash controller of claim 11, wherein the flash memory controller unit is further configured to: after transmitting of the write command, transmit a copy complete notification to the host processor.

19. The host flash controller of claim 11, wherein the host flash controller and the host processor are incorporated into the host device; and a host random access memory is also incorporated into the host device, wherein the host random access memory is coupled to the host processor and the host flash controller.

20. The host flash controller of claim 11, wherein the host flash controller is

incorporated into a device selected from a group consisting of a music player, a video player, an entertainment unit, a navigation device, a communications device, a mobile device, a mobile phone, a smartphone, a personal digital assistant, a fixed location terminal, a tablet computer, a computer, a wearable device, an Internet of things (IoT) device, a laptop computer, a server, and a device in an automotive vehicle.

21. A flash memory controller apparatus, comprising: means for receiving, at a host flash controller, a copy command from a host processor coupled to the host flash controller, the host processor and the host flash controller being parts of a host device; means for transmitting, from the host flash controller in response to the copy command, a read command to an unmanaged flash memory storage device via a bus, wherein the read command indicates particular data in the unmanaged flash memory storage device connected to a data port of the host device, the unmanaged flash memory storage device not having a controller that controls the unmanaged flash memory storage device as a whole; means for receiving, at the host flash controller, the particular data from the unmanaged flash memory storage device via the bus; means for storing the particular data in a data buffer included in the host flash controller; and means for transmitting, from the host flash controller to the unmanaged flash memory storage device, via the bus, a write command to write the particular data into the unmanaged flash memory storage device.

22. The flash memory controller apparatus of claim 21, wherein the unmanaged flash memory storage device includes a plurality of NAND logic gates and/or a plurality of NOR logic gates.

23. The flash memory controller apparatus of claim 21, wherein: the particular data is a data page, the data page including a plurality of data codewords; and means for storing the particular data in the data buffer includes means for storing each of the plurality of data codewords such that the data buffer simultaneously includes each of the plurality of data codewords.

24. The flash memory controller apparatus of claim 21, wherein the flash memory controller apparatus and the host processor are incorporated into the host device; and a host random access memory is also incorporated into the host device, wherein the host

random access memory is coupled to the host processor and the flash memory controller apparatus.

25. The flash memory controller apparatus of claim 21, wherein the host flash controller is incorporated into a device selected from a group consisting of a music player, a video player, an entertainment unit, a navigation device, a communications device, a mobile device, a mobile phone, a smartphone, a personal digital assistant, a fixed location terminal, a tablet computer, a computer, a wearable device, an Internet of things (IoT) device, a laptop computer, a server, and a device in an automotive vehicle.

26. An apparatus, comprising: a host processor; a host flash controller coupled to the host processor, the host processor and the host flash controller being parts of a host device; and an unmanaged flash memory storage device communicating with the host flash controller via a bus, the unmanaged flash memory storage device being connected to a data port of the host device and not having a controller that controls the unmanaged flash memory storage device as a whole; wherein the host flash controller comprises: a flash memory controller data buffer; and a flash memory controller unit coupled to the flash memory controller data buffer, wherein the flash memory controller unit is configured to: receive, at the host flash controller, a copy command from the host processor; in response to the copy command, transmit, from the host flash controller, a read command to the unmanaged flash memory storage device via the bus, wherein the read command indicates particular data in the unmanaged flash memory storage device; receive, at the host flash controller, the particular data from the unmanaged flash memory storage device via the bus; store the particular data in a data buffer included in the host flash controller; and transmit, from the host flash controller to the unmanaged flash memory storage device, via the bus, a write command to write the particular data into the unmanaged flash memory storage device.

27. The apparatus of claim 26, wherein the unmanaged flash memory storage device includes a plurality of NAND logic gates and/or a plurality of NOR logic gates.

28. The apparatus of claim 26, wherein: the particular data is a data page, the data page including a plurality of data codewords; and the flash memory controller unit is further configured to store each of the plurality of data codewords such that the data buffer

simultaneously includes each of the plurality of data codewords.

29. The apparatus of claim 26, further comprising: a host random access memory, wherein the host random access memory is coupled to the host processor and the host flash controller.

30. The apparatus of claim 26, wherein the apparatus is a device selected from a group consisting of a music player, a video player, an entertainment unit, a navigation device, a communications device, a mobile device, a mobile phone, a smartphone, a personal digital assistant, a fixed location terminal, a tablet computer, a computer, a wearable device, an Internet of things (IoT) device, a laptop computer, a server, and a device in an automotive vehicle.