

1. A computer system, comprising:

a chassis configured for mounting in a rack;

one or more hard disk drives coupled to the chassis; and

one or more air passages under at least one of the hard disk drives, wherein at least one of the air passages comprises one or more air inlets and one or more air outlets, wherein at least one of the inlets is configured to direct at least a portion of the air downwardly into at least one of the passages, wherein the at least one passage is configured to allow air to move from the at least one air inlet to at least one of the air outlets.

2. The computer system of claim 1, further comprising one or more air moving devices configured to move air through at least one of the one or more air passages.

3. The computer system of claim 1, wherein the chassis comprises one or more chassis air inlets and one or more chassis air outlets, wherein at least one of the one or more air inlets of the one or more air passages is in fluid communication with one or more chassis air inlets and at least one of the air outlets of the one or more passages is in fluid communication with at least one of the chassis air outlets.

4. The computer system of claim 1, wherein at least two of the hard disk drives are arranged side by side in the chassis.

5. The computer system of claim 1, wherein at least one of the one or more air passages under the hard disk drives is configured to receive a mixture of air from a power supply unit and at least one circuit board assembly upstream from the at least one passage.

6. The computer system of claim 1, further comprising a tray, wherein at least two of the one or more hard disk drives are mounted on the tray, wherein the tray is configured to space at least one of the hard disk drives from the bottom of the chassis to define at least one of the air passages.

7. The computer system of claim 1, further comprising at least one air directing element configured to direct air under the one or more hard disk drives.

8. The computer system of claim 1, further comprising at least one vane configured to alter air flow upstream from at least one of the air passages under the one or more hard disk drives.

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9. A tray for holding one or more data storage devices in a rack-mountable chassis for a rack-mounted computer system, comprising:

one or more support portions configured to support at least a portion of at least one of the one or more data storage devices; and

10 one or more spacing portions configured to establish at least one air passage below at least one of the data storage devices in the chassis when the tray is installed in the rack-mountable chassis.

15 10. The tray of claim 9, wherein at least a portion of the tray is configured to couple with a chassis to form a box section structure for supporting at least one of the data storage devices.

20 11. The tray of claim 9, further comprising one or more clamping bars, wherein at least one of the clamping bars is configured to at least partially hold down at least one of the data storage devices.

12. The tray of claim 11, wherein at least one of the one or more clamping bars is resiliently biased to hold down at least one of the data storage devices.

25 13. The tray of claim 11, wherein at least one of the one or more clamping bars is operable as a handle for carrying a computer system when the tray is installed in the computer system.

30 14. A method, comprising:
directing air into one or more passages under one or more hard disk drives in rack-mountable chassis for a computer system;
allowing at least a portion of the heat from heat producing components on at least one of the hard disk drives to transfer to air in at least one of the passages; and
removing at least a portion of the air from at least one of the passages.

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15. The method of claim 14, further comprising moving at least a portion of the air over at least one heat producing component on at least one circuit board assembly in the computer system before moving the air into the one or more passages under the hard disk drives.

5 16. The method of claim 14, wherein at least one of the hard disk drives is at least partially in an enclosure for the computer system, wherein moving air into one or more passages under one or more hard disk drives of a computer system comprises moving air into the enclosure.

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What is claimed is:

1. A computer system, comprising: a chassis configured for mounting in a rack and comprising one or more chassis air inlets on one end of the chassis and one or more chassis air outlets on the other end of the chassis; one or more circuit board assemblies coupled to the chassis; one or more hard disk drives coupled to the chassis; and one or more air passages under at least one of the hard disk drives, wherein at least one of the air passages comprises one or more air inlets and one or more air outlets, wherein at least one of the inlets is configured to direct at least a portion of the air downwardly into at least one of the passages, wherein the at least one passage is configured to allow air to move from the at least one air inlet to at least one of the air outlets, wherein at least one of the one or more air passages under the hard disk drives is at least partially downstream from one or more circuit board assemblies on the chassis, wherein the air passages are located such that at least a portion of the air in the computer system flows in through the chassis air inlets on the one end of the chassis, above and over at least one of the one or more circuit board assemblies on the chassis, into at least one of the air passages under the at least one hard disk drive, and out through the chassis air exits on the other end of the chassis.
2. The computer system of claim 1, further comprising one or more air moving devices configured to move air through at least one of the one or more air passages.
3. The computer system of claim 2, wherein at least one of the air moving devices is external to the computer system.
4. The computer system of claim 2, wherein at least one of the air moving devices is in the computer system.
5. The computer system of claim 1, wherein the computer system is a server having a height of about 1 U.
6. The computer system of claim 1, wherein at least two of the hard disk drives arranged side by side in the chassis.
7. The computer system of claim 1, wherein the computer system is rack-mounted, wherein the one or more hard disk drives are arranged in one or more rows of hard disk drives, wherein at least one of the rows comprises 4 hard disk drives.
8. The computer system of claim 1, wherein at least one of the one or more air passages under the hard disk drives is at least partially downstream from one or more power supply units on the chassis.
9. The computer system of claim 1, wherein at least one of the one or more air passages under the hard disk drives is configured to receive a mixture of air from a power supply unit and at least one circuit board assembly upstream from the at least one passage.

10. The computer system of claim 1, further comprising a tray, wherein at least two of the one or more hard disk drives are mounted on the tray, wherein the tray is configured to space at least one of the hard disk drives from the bottom of the chassis to define at least one of the air passages.

11. The computer system of claim 1, further comprising at least one air directing element configured to direct air under the one or more hard disk drives.

12. The computer system of claim 1, further comprising at least one vane configured to alter air flow upstream from at least one of the air passages under the one or more hard disk drives.

13. A tray for holding two or more data storage devices in a rack-mountable chassis for a rack-mounted computer system, comprising: one or more support portions configured to support at least a portion of at least one of the one or more data storage devices; one or more spacing portions configured to establish at least one air passage below at least one of the data storage devices in the chassis when the tray is installed in the rack-mountable chassis; and one or more clamping bars, wherein each of at least one of the one or more clamping bars is configured to at least partially hold down at least two of the data storage devices.

14. The tray of claim 13, wherein at least one of the data storage devices is a hard disk drive.

15. The tray of claim 13, further comprising at least one opening between at least one of the data storage devices and at least one of the passages.

16. The tray of claim 13, wherein at least a portion of the tray is configured to couple with a chassis to form a box section structure for supporting at least one of the data storage devices.

17. The tray of claim 13, wherein at least one of the one or more clamping bars is resiliently biased to hold down at least one of the data storage devices.

18. The tray of claim 13, wherein at least one of the one or more clamping bars is operable as a handle for carrying a computer system when the tray is installed in the computer system.

19. A method, comprising: moving air through one or more air inlets on one end of a rack-mountable chassis for a computer system, and above and over heat producing components on one or more circuit board assemblies in the rack-mountable chassis; directing, at a point downstream from at least one of the one or more circuit board assemblies, at least a portion of the air that has been moved over the one or more circuit board assemblies into one or more passages under one or more hard disk drives in the rack-mountable chassis for the computer system; allowing at least a portion of the heat from heat producing components on

at least one of the hard disk drives to transfer to air in at least one of the passages; and removing at least a portion of the air from at least one of the passages.

20. The method of claim 19, wherein at least one of the hard disk drives is at least partially in an enclosure for the computer system, wherein moving air into one or more passages under one or more hard disk drives of a computer system comprises moving air into the enclosure.

21. The method of claim 19, wherein moving air into the one or more passages under the one or more hard disk drives of the computer system comprises directing air downwardly into at least one of the passages.

22. The method of claim 19, wherein directing air into the one or more passages under the one or more hard disk drives of the computer system comprises blocking at least a portion of the air in an enclosure from flowing over at least one of the hard disk drives.