

WHAT IS CLAIMED IS:

1. A data center rack system, comprising:
an aisle comprising an aisle guidance track defining an aisle axis; and
a plurality of rack stations adjacent to the aisle,
wherein each rack station of the plurality of rack stations comprises a station guidance track defining a station axis and configured to:
receive a rack from the aisle guidance track; and
position the rack in the respective rack station at a rack angle formed between the aisle axis and the station axis that is less than 90 degrees.
2. The data center rack system of claim 1, wherein each rack station of the plurality of rack stations further comprises an anchoring mechanism configured to anchor the rack at the rack station.
3. The data center rack system of claim 1, wherein each rack station of the plurality of rack stations further comprises a connector configured to couple to a computing device in the rack positioned in the respective rack station of the plurality of rack stations and supply electrical power to the computing device.
4. The data center rack system of claim 3, wherein the connector is further configured to supply cooling fluid to the rack positioned in the respective rack station of the plurality of rack stations.
5. The data center rack system of claim 4, wherein the connector further comprises a control valve assembly configured to receive a temperature signal from a rack positioned in the respective rack station and control a flow of the cooling fluid to the respective rack station based on the temperature signal.
6. The data center rack system of claim 1, further comprising a cooling system configured to supply cooling air to the plurality of rack stations.
7. The data center rack system of claim 1,

wherein the plurality of rack stations comprises a first plurality of rack stations on a first side of the aisle and a second plurality of rack stations on a second side of the aisle, and

wherein a minimum distance between adjacent rack stations of the first plurality of rack stations and between adjacent rack stations of the second plurality of rack stations is at least one inch.

8. The data center rack system of claim 1, wherein the plurality of rack stations comprises a first plurality of rack stations on a first side of the aisle and a second plurality of rack stations on a second side of the aisle, and wherein a minimum distance between each rack station of the first plurality of rack stations and each rack station of the second plurality of rack stations is at least 30 inches.

9. The data center rack system of claim 1, wherein the aisle guidance track is configured to:

receive the rack from the station guidance track; and
position the rack along the aisle axis.

10. The data center rack system of claim 1, wherein the aisle guidance track and each station guidance track of the plurality of rack stations comprises two tracks having a separation distance of 30 inches.

11. The data center rack system of claim 1, wherein the rack angle is between about 45 degrees and about 65 degrees.

12. The data center rack system of claim 1, wherein the connector is configured to couple to a top of the rack.

13. The data center rack system of claim 1, wherein the data center rack system has an y-dimension parallel to the aisle axis less than or equal to about 20 feet and a x-dimension perpendicular to the aisle axis less than or equal to about 12 feet.

14. The data center rack system of claim 1, wherein each rack station of the plurality of rack stations is configured to position a rack having a width between about 20 inches and about 32 inches and a length between about 40 inches and about 60 inches.
15. The data center rack system of claim 1, wherein the aisle guidance track and each station guidance track comprise depressions in a floor.
16. The data center rack system of claim 1, wherein the aisle guidance track and each station guidance track comprise raised tracks on a floor.
17. The data center rack system of claim 1, wherein each rack station of the plurality of rack stations further comprises an anchoring mechanism configured to anchor the rack at the rack station.
18. The data center rack system of claim 17, wherein the anchoring mechanism comprises a depression in a floor configured to receive a wheel of the corresponding rack.
19. The data center rack system of claim 1, further comprising a plurality of racks, each rack of the plurality of racks comprising:
 - a frame defining a rack volume;
 - a guidance mechanism coupled to the frame and configured to engage the aisle guidance track and a respective station guidance track; and
 - an anchoring mechanism coupled to the frame and configured to anchor the rack at the rack station.
20. The data center rack system of claim 19, wherein the guidance mechanism comprises a set of wheels.
21. The data center rack system of claim 19, wherein each rack of the plurality of racks further comprises a connection panel coupled to the frame and configured to receive the respective connector.
22. The data center rack system of claim 19,

wherein the connector is further configured to supply cooling fluid to the respective rack positioned in the respective rack station of the plurality of rack stations, and

wherein each rack of the plurality of racks comprises a rear door configured to open away from the aisle, each rear door comprising a heat exchanger configured to receive the cooling fluid.

23. The data center rack system of claim 22, wherein each rear door further comprises at least one fan configured to discharge air through the heat exchanger into the rack volume.

24. A data center rack system, comprising:
one or more rack sections, wherein each rack section comprises:
an aisle comprising an aisle guidance track defining an aisle axis; and
a plurality of rack stations adjacent to the aisle, wherein the plurality of rack stations comprises a first plurality of rack stations on a first side of the aisle and a second plurality of rack stations on a second side of the aisle,
wherein each rack station of the plurality of rack stations comprises a station guidance track defining a station axis and configured to:
receive a rack from the aisle guidance track; and
position the rack in the respective rack station at a rack angle formed between the aisle axis and the station axis that is less than 90 degrees.

25. The data center rack system of claim 24, wherein each rack section has an y-dimension parallel to the aisle axis less than or equal to about 20 feet and a x-dimension perpendicular to the aisle axis less than or equal to about 12 feet.

26. The data center rack system of claim 24, wherein each rack station of the plurality of rack stations is configured to position a rack having a width between about 20 inches and about 32 inches and a length between about 40 inches and about 60 inches.

27. The data center rack system of claims 24, wherein each of the first and second pluralities of rack stations comprise ten rack stations.

28. A method for providing cooling to a rack of a data center rack system, the method comprising:

receiving, by a controller, a temperature measurement for a rack of a plurality of racks, wherein each rack of the plurality of racks is positioned in a respective rack station at a rack angle formed between an aisle axis of an aisle and a station axis of the respective rack station that is less than 90 degrees;

determining, by the controller, whether the temperature measurement is greater than a threshold; and

in response to determining that the temperature measurement is greater than the threshold, increasing, by the controller, at least one of:

a flow rate of cooling air from a forced air cooling system to the plurality of racks; or

a flow rate of cooling liquid from a liquid cooling system to the rack of the plurality of racks.

29. The method of claim 28, further comprising:

determining, by the controller, whether the flow rate of the cooling air to the plurality of racks is at or greater than a threshold;

in response to determining that the flow rate is less than a threshold, increasing, by the controller, the flow rate of the cooling air from the forced air cooling system to the plurality of racks; and

in response to determining that the flow rate is at or greater than the threshold, increasing, by the controller, the flow rate of cooling liquid from the liquid cooling system to the rack of the plurality of racks.

30. The method of claim 28,

wherein the aisle comprising an aisle guidance track defining the aisle axis,

wherein a plurality of rack stations is adjacent to the aisle,

wherein the plurality of rack stations comprises a first plurality of rack stations on a first side of the aisle and a second plurality of rack stations on a second side of the aisle, and

wherein each rack station of the plurality of rack stations comprises a station guidance track defining the station axis and configured to:

receive a rack from the aisle guidance track; and
position the rack in the respective rack station at the rack angle formed
between the aisle axis and the station axis that is less than 90 degrees.

31. A method for positioning a rack in a data center rack system, the method
comprising:

transporting a rack along an aisle comprising an aisle guidance track defining an
aisle axis;

receiving the rack from the aisle guidance track into a station guidance track of a
rack station of a plurality of rack stations adjacent to the aisle, wherein each rack station
of the plurality of rack stations comprises a station guidance track defining a station axis;
and

positioning the rack in the respective rack station at a rack angle formed between
the aisle axis and the station axis that is less than 90 degrees.