CLAIMS

1. A rack section of a data center rack system, comprising:

an aisle comprising an aisle guidance track in a straight configuration to define an aisle axis;

a plurality of rack stations adjacent to the aisle; and

a plurality of racks,

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 it is configured to:

receive a rack of the plurality of racks from the aisle guidance track;

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; and

position the rack in the respective rack station at a spacing from adjacent racks to permit cooling air to flow between the rack and any adjacent racks of the plurality of racks,

wherein the aisle guidance track and each station guidance track comprises a physical structure configured to physically interface with a rack of the plurality of racks,

wherein each rack of the plurality of racks comprises a guidance mechanism configured to engage the aisle guidance track and a respective station guidance track,

wherein at least one of each rack station or each rack comprises an anchoring mechanism configured to anchor the respective rack at the respective rack station, and

wherein each station axis represents a direction of orientation of a respective rack once the respective rack is positioned within the respective rack station.

2. The rack section 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 rack section of claim 1 or 2, 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,

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, and

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.

4 . The rack section of any of claims 1 to 3, further comprising a cooling system configured to supply cooling air to the plurality of rack stations.

5. The rack section of any of claims 1 to 4,

wherein a minimum distance of the spacing 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 (2.54 centimeters).

6. The rack section of any of claims 1 to 5,

wherein a minimum distance of a spacing 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 (76.32 centimeters).

7. The rack section of any of claims 1 to 6, wherein the rack angle is between about 45 degrees and about 65 degrees.

8. The rack section of any of claims 1 to 7, wherein the aisle guidance track and each station guidance track comprise at least one of depressions in a floor or raised tracks on the floor.

9. The rack section of any one of claims 1 to 8, each rack of the plurality of racks comprising:

a frame defining a rack volume; and

an anchoring mechanism coupled to the frame and configured to anchor the rack at the rack station,

wherein the guidance mechanism and the anchoring mechanism are each coupled to the frame.

10. The rack section of claim 9,

wherein each rack of the plurality of racks further comprises a connection panel coupled to the frame and configured to receive the respective connector,

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,

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, and

wherein each rear door further comprises at least one fan configured to discharge air through the heat exchanger into the rack volume.

11. A data center rack system, comprising:

one or more rack sections according to claim 1.

12. The data center rack system of claim 11, wherein each rack section has an y-dimension parallel to the aisle axis less than or equal to about 20 feet (6.096 meters) and a x-dimension perpendicular to the aisle axis less than or equal to about 12 feet (3.6576 meters).

13. The data center rack system of claim 11 or 12, wherein each rack station of the plurality of rack stations is configured to position a rack having a width between about 20 inches (0.508 meters) and about 32 inches (0.8128 meters) and a length between about 40 inches (1.016 meters) and about 60 inches (1.524 meters).

14. The data center rack system of any of claims 11 to 13, wherein each of the first and second pluralities of rack stations comprise ten rack stations.

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

transporting a rack of a plurality of racks along an aisle comprising an aisle guidance track in a straight configuration to define 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 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 a station axis;

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; and

positioning the rack in the respective rack station at a spacing from adjacent rack stations to permit cooling air to flow between the rack and any adjacent racks,

wherein the aisle guidance track and each station guidance track comprises a physical structure configured to physically interface with a rack of the plurality of racks,

wherein each rack of the plurality of racks comprises a guidance mechanism configured to engage the aisle guidance track and a respective station guidance track,

wherein at least one of each rack station or each rack comprises an anchoring mechanism configured to anchor the respective rack at the respective rack station, and

wherein each station axis represents a direction of orientation of a respective rack once the respective rack is positioned within the respective rack station.