

Claims:

1. A system for providing computing capacity, comprising:
a base module comprising an electrical power bus; and
two or more fin modules coupled to the base module, wherein at least one of the fin modules comprises one or more fins and two or more computer systems coupled to at least one of the fins, wherein at least one of the fins to which the two or more computer systems are coupled is configured to extend from the base module such that the fin has a primarily vertical orientation,
wherein the electrical power bus is configured to supply power to at least one computer system of at least one of the fin modules.
2. The system of claim 1, wherein the at least one fin module comprising the two or more computer systems is configured to be a field replaceable unit.
3. The system of claim 2, wherein the at least one fin module comprising the two or more computer systems comprises an enclosure that houses the two or more computer systems such that the two or more computer systems in the enclosure are inaccessible to field service personnel.
4. The system of claim 1, wherein at least one of the fins of at least one of the fin modules is configured to conduct heat away from at least one computer system coupled to the fin.
5. The system of claim 1, wherein at least one of the fins of at least one of the fin modules is coupled to the base module in a substantially vertical orientation.
6. The system of claim 1, wherein the base module comprises a spine, wherein at least one of the fins of at least one of the fin modules extends at least partially laterally from the spine of the base module.

7. The system of claim 1, wherein at least one of the fin modules is a special function module.

8. The system of claim 1, wherein at least one of fin modules is configured to serve as a seed for initializing operation of computer systems in two or more of the fin modules of the system.

9. The system of claim 1, wherein each of at least two of the computer systems each comprise a motherboard, wherein at least two of the motherboards for the computer systems are spaced apart from one another on one side of one of the fins of the fin module.

10. The system of claim 1, wherein the base module comprises a data bus, wherein in the data bus is configured to transfer data between at least one of the fin modules and at least one other fin module or at least one component external to the system.

11. The system of claim 1, further comprising one or more fans configured to move air over at least one fin on at least one of the fin modules.

12. The system of claim 1, wherein the base module and the fin modules are in a form in accordance with at least one standard for shipping containers.

13. The system of claim 1, further comprising at least one additional base module and at least one additional fin module coupled to the at least one additional base module, wherein the base module and the at least one additional base module are configured to couple with one another.

14. The system of claim 1, further comprising at least one additional base module and at least one additional fin module coupled to the at least one additional base module, wherein the base module and the at least one additional base module are configured to couple with one another such that the combined modules have a form in accordance with at least one standard for shipping containers.

15. The system of claim 1, further comprising at least one frame around at least a portion of the fin modules.

16. The system of claim 15, wherein the frame is configured to allow one or more of the fin modules to be removed from the base module as a field replaceable unit.

17. The system of claim 1, further comprising at least one fin module installer/extraction device configured to remove at least one of the fin modules from the base module.

18. A system for providing computing capacity, comprising:

a base module; and

two or more fin modules coupled to the base module, wherein at least one of the fin modules comprises one or more fins and two or more computer systems coupled to at least one of the fins, wherein at least one of the fins to which the two or more computer systems are coupled is configured to extend from the base module such that the fin has a primarily vertical orientation,

wherein the at least one fin module comprising the two or more computer systems is configured to be a field replaceable unit.

19. The system of claim 18, wherein one or more fins of at least one of the fin modules form at least a partial enclosure for at least one of the computer systems.

20. The system of claim 19, wherein at least one of the fin modules comprises a first fin member and a second fin member, wherein the at least one of the computer systems is between the first fin member and the second fin member, wherein the first fin member and the second fin member combine to at least partially enclose the at least one computer system.

21. A method of providing computing capacity, comprising:

installing two or more fin modules on a base module to form a unit, wherein the fin modules are configured to extend from the base module such that at least one of the fin modules has a primarily vertical orientation, wherein at least one of the fin modules comprises two or more computer systems;
transporting the unit, with the fin modules installed on the base module, to a data center;
placing the unit at a location at a data center; and
operating at least one of the computer systems to perform computing operations at the data center.

22. The method of claim 21, wherein the unit has a form in accordance with at least one standard for shipping containers.

23. The method of claim 21, further comprising:
coupling at least one fin module to the at least one additional base module to form an additional unit; and
coupling at least one additional base module to the base module to form a combined unit.

24. The method of claim 23, wherein the combined unit is in accordance with a standard for shipping containers, wherein transporting unit comprises transporting the combined unit to the data center, the method further comprising decoupling the at least one additional unit from the unit at the data center before placing the unit or the additional unit into operation at the data center.

25. The method of claim 21, further comprising supplying power to at least one the computer systems in at least one of the fin modules through the base module.

26. The method of claim 21, further comprising:
monitoring a level of available capacity in the computer systems for one or more of the fin modules; and
removing and replacing a fin module when the level of available capacity for the fin module drops below a predetermined level.

27. The method of claim 21, further comprising:
monitoring a level of available capacity in the computer systems in the unit; and
removing and replacing the unit when the level of available capacity for the unit drops
below a predetermined level.

28. The method of claim 21, wherein at least one fin of at least one of the fin modules
is configured to draw heat away from one or more heat producing components in at least one of
the computer systems, the method further comprising forcing air across the at least one fin to
remove heat from the at least one fin.

29. A system for providing computing capacity, comprising:
a base module; and
two or more fin modules coupled to the base module, wherein at least one of the fin
modules comprises one or more fins and two or more computer systems coupled
to at least one of the one or more fins, wherein at least one of the one or more fins
is configured to form an enclosure for at least one of the two or more computer
systems to protect the at least one computer system from environmental
conditions,
wherein the system is configured to operate in an outdoor environment.

30. The system of claim 29, wherein the system is configured to operate continuously
without forced air cooling.

31. The system of claim 29, wherein the at least one fin module is configured to be a
field replaceable unit.

32. The system of claim 31, wherein the enclosure houses the two or more computer
systems such that the two or more computer systems in the enclosure are inaccessible to field
service personnel.

33. The system of claim 29, wherein the enclosure is a sealed enclosure, wherein the sealed enclosure houses the at least one of the two or more computer systems.

34. The system of claim 33, further comprising at least one inert fluid in the sealed enclosure.

35. The system of claim 29, wherein at least one of the one or more fins of at least one of the fin modules is configured to conduct heat away from at least one of the two or more computer systems coupled to the at least one fin.

36. The system of claim 29, wherein at least one of the two or more fin modules comprises a first fin member and a second fin member, wherein at least one of the two or more computer systems is between the first fin member and the second fin member, wherein the first fin member and the second fin member combine to at least partially enclose the at least one of the two or more computer systems.

37. The system of claim 29, wherein the base module comprises an electrical power bus, wherein the electrical power bus is configured to supply power to at least one computer system of at least one of the two or more fin modules.

38. The system of claim 37, wherein the base module comprises a sealed enclosure, wherein the sealed enclosure houses the electrical power bus.

39. The system of claim 29, wherein the base module comprises an electrical power bus, further comprising at least one blind-mate power connector configured to electrically couple at least one of the two or more computer systems in at least one of the two or more fin modules to the base module.

40. The system of claim 29, wherein at least one of the two or more fin modules further comprises at least one sealed connector, wherein the at least one sealed connector is

configured provide a data connection or a power connection to at least one of the two or more computer systems in the at least one fin module.

41. A system for providing computing capacity, comprising:
a base module; and

two or more fin modules coupled to the base module, wherein at least one of the two or more fin modules comprises one or more fins and two or more computer systems coupled to at least one of the one or more fins, wherein at least one of the one or more fins is configured to form an enclosure for at least one of the two or more computer systems to protect the at least one computer system from environmental conditions,

wherein the at least one fin module comprising the two or more computer systems is configured to be a field replaceable unit.

42. The system of claim 41, wherein the system is configured to operate continuously without forced air cooling.

43. The system of claim 41, further comprising at least one shelter over at least a portion of the two or more fin modules and at least a portion of the base module.

44. A method of providing computing capacity, comprising:

installing one or more fin modules comprising one or more computer systems on a base module to form a unit, wherein at least one of the one or more fin modules is configured to protect the one or more computer systems such that the one or more computer systems can be operated in an outdoor environment; and
operating at least one of the one or more computer systems to perform computing operations with the unit in an outdoor location.

45. The method of claim 44, further comprising:

transporting the unit, with the one or more fin modules installed on the base module, to the outdoor location; and

placing the unit, with the one or more fin modules installed on the base module, at the outdoor location.

46. The method of claim 45, wherein the unit has a form in accordance with at least one standard for shipping containers.

47. The method of claim 44, further comprising supplying power to at least one of the one or more computer systems in at least one of the one or more fin modules through the base module.

48. The method of claim 44, further comprising:
removing and replacing a fin module in response to a level of available capacity for the fin module dropping below a predetermined level.

49. The method of claim 44, further comprising:
removing and replacing the unit in response to a level of available capacity for the unit dropping below a predetermined level.

CLAIMS :

1. A system for providing computing capacity, comprising:
a base module comprising an electrical power bus; and
two or more fin modules coupled to the base module, wherein at least one of the fin modules comprises one or more fin members and two or more computer systems coupled to at least one of the fin members, wherein at least one of the fin members to which the two or more computer systems are coupled is configured to extend from the base module such that the fin has a ~~primarily~~ vertical orientation,
wherein the electrical power bus is configured to supply power to at least one computer system of at least one of the fin modules,
wherein the base module and the coupled fin modules form a combined unit in a form in accordance with at least one standard for shipping containers.
2. The system of claim 1, wherein the at least one fin module comprising the two or more computer systems is configured to be a field replaceable unit.
3. The system of claim 2, wherein the at least one fin module comprising the two or more computer systems comprises an enclosure that houses the two or more computer systems such that the two or more computer systems in the enclosure are inaccessible to field service personnel.
4. The system of claim 1, wherein at least one of the fin members of at least one of the fin modules is coupled to the base module in a vertical orientation.
5. The system of claim 1, wherein the base module comprises a spine, wherein at least one of the fin members of at least one of the fin modules extends at least partially laterally from the spine of the base module.

6. The system of claim 1, wherein at least one of the fin modules is a specialized function module configured to provide a particular service to one or more other fin modules of the two or more fin modules.

7. The system of claim 1, wherein at least one of fin modules is configured to serve as a seed for initializing operation of computer systems in two or more of the fin modules of the system.

8. The system of claim 1, wherein each of at least two of the computer systems each comprise a motherboard, wherein at least two of the motherboards for the computer systems are spaced apart from one another on one side of one of the fin members of the fin module.

9. The system of claim 1, wherein the base module comprises a data bus, wherein in the data bus is configured to transfer data between at least one of the fin modules and at least one other fin module or at least one component external to the system.

10. The system of claim 1, further comprising at least one additional base module and at least one additional fin module coupled to the at least one additional base module, wherein the base module and the at least one additional base module are configured to couple with one another.

11. The system of claim 1, further comprising at least one additional base module and at least one additional fin module coupled to the at least one additional base module, wherein the base module and the at least one additional base module are configured to couple with one another such that the combined modules have a form in accordance with at least one standard for shipping containers.

12. The system of claim 1, further comprising at least one frame around at least a portion of the fin modules.

13. The system of claim 12, wherein the frame is configured to allow one or more of the fin modules to be removed from the base module as a field replaceable unit.

14. The system of claim 1, further comprising at least one fin module installer/extraction device configured to remove at least one of the fin modules from the base module.

15. A system for providing computing capacity, comprising:
a base module; and

two or more fin modules coupled to the base module, wherein at least one of the fin modules comprises one or more fin members and two or more computer systems coupled to at least one of the fin members, wherein at least one of the fin members to which the two or more computer systems are coupled is configured to extend from the base module such that the fin has a primarily vertical orientation,

wherein the at least one fin module comprising the two or more computer systems is configured to be a field replaceable unit,

wherein the base module and the coupled fin modules form a combined unit in a form in accordance with at least one standard for shipping containers.

16. The system of claim 15, wherein one or more fin members of at least one of the fin modules form at least a partial enclosure for at least one of the computer systems.

17. The system of claim 16, wherein at least one of the fin modules comprises a first fin member and a second fin member, wherein the at least one of the computer systems is between the first fin member and the second fin member, wherein the first fin member and the second fin member combine to at least partially enclose the at least one computer system.

18. A method of providing computing capacity, comprising:

installing two or more fin modules on a base module to form a unit, wherein the fin modules are configured to extend from the base module such that at least one of the fin modules has a vertical orientation, wherein at least one of the fin modules comprises one or more fin members and two or more computer systems coupled to at least one of the fin members, wherein the base module

and the fin modules form a combined unit in a form in accordance with at least one standard for shipping containers;
transporting the unit, with the fin modules installed on the base module, to a data center;
placing the unit at a location at a data center; and
operating at least one of the computer systems to perform computing operations at the data center.

19. The method of claim 18, wherein the unit has a form in accordance with at least one standard for shipping containers.

20. The method of claim 18, further comprising:
coupling at least one fin module to the at least one additional base module to form an additional unit; and
coupling at least one additional base module to the base module to form a combined unit.

21. The method of claim 20, wherein transporting unit comprises transporting the combined unit to the data center, the method further comprising decoupling the at least one additional unit from the unit at the data center before placing the unit or the additional unit into operation at the data center.

22. The method of claim 18, further comprising supplying power to at least one the computer systems in at least one of the fin modules through the base module.

23. The method of claim 18, further comprising:
monitoring a level of available capacity in the computer systems for one or more of the fin modules; and
removing and replacing a fin module when the level of available capacity for the fin module drops below a predetermined level.

24. The method of claim 18, further comprising:
monitoring a level of available capacity in the computer systems in the unit; and

removing and replacing the unit when the level of available capacity for the unit drops below a predetermined level.