CLAIMS

1. A self-sustained data center facility comprising:

a marine vessel;

a reconfigurable thermal containment system contained in the marine vessel;

a computer data center comprised in the thermal containment system, wherein the computer data center comprises

a plurality of racks which comprise a corresponding plurality of pallet jack slots and recessed wheels,

a plurality of rack-mounted computer systems, and

a plurality of corresponding water-based closed-loop cooling units coupled to each rack in the plurality of racks;

a first power source resident on the marine vessel;

a second grid-based power source comprising a plurality of power elements external and connected to the marine vessel;

wherein the reconfigurable thermal containment system is configured to pump water from an environment surrounding the data center facility through filtered water intake pipes, and the plurality of closed-loop cooling units absorb heat generated by the computer systems via a single or plurality of heat exchangers comprised in the thermal containment system;

a software management suite configured to:

continuously collect environmental data and reconfigurable thermal containment system data via a plurality of wireless sensors; and

continuously collect data from a plurality of applications comprised in one or more of the plurality of rack-mounted computer systems, the first and second power sources, virtual machines comprised in the one or more of the plurality of rack-mounted computer systems, and utility energy markets via a data collection layer;

based on the data collected by the plurality of wireless sensors and the data collection layer, automatically, and without manual intervention, enable dynamic data center facility operation actions for migrating application loads and power loads from the data center facility to another data center facility over a network; and

a predictive analytics engine comprised in the software management suite configured to dynamically control the thermal containment system based on the application and power load migration and data center facility operational states to sustain optimal data center facility efficiency.

2. The data center facility of claim 1 wherein the closed loop cooling units are further comprised in a water-based closed loop cooling system.

3. The data center facility of claim 1wherein the reconfigurable thermal containment system further comprises:

a single deployment of cooling input, wherein the cooling input is the surrounding water;

a single or plurality of filtered water exhaust pipes;

a single or plurality of water pumps, coolant heat exchange piping, and coolant distribution piping;