



Summary

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Description

Bridging the Gap There is a continuous need to house and operate low-power, legacy and low-density compute, network, and storage IT equipment. However, data centers must also possess the agility to accommodate the rapid and exponential growth of data and the need for minimal latency. At the same time, more efficient power and water consumption must be combined with other sustainable carbon-footprint reductions in response to worldwide drivers. These requirements for sustainable efficiencies are simply not attainable with traditional data centers. ServerDomes bridges the gap by accommodating current requirements while effectively addressing these near and long-term future drivers. **An Optimal Design Based on Biomimicry** It has been proven again and again that it is difficult to improve on the efficiencies and elegance of nature's designs. In fact, ServerDomes' inventor looked to nature and leveraged biomimicry whenever possible to develop a data ecosystem with a fully integrated design. This approach accommodates all current data center needs while simultaneously addressing future drivers that include agility, scalability, adaptability, efficiency, and sustainability. Biomimicry helps us move beyond current understandings of sustainability which typically focus on mitigating negatives. Instead, the inventor sought solutions that are restorative, visionary, and deliver positive impacts. Utilizing nature's best biological models to solve human problems, ServerDome emulates natural forms, processes, and ecosystems to create a more sustainable, efficient, and healthier technology. For example, the ServerDomes design is based upon laws of nature where symmetries are at the core of modern physics from general relativity to quantum field theory. Known as Noether's theorem, each symmetry of a physical system gives rise to a conserved quantity. Symmetry denotes qualities based upon a correspondence or agreement among the parts of a whole and implies either quantitative equality of parts or a unified system of subordinate parts. The ServerDome manifests symmetry internally and externally forming the foundation of its advantages. The ServerDomes' high-power density and ability to disperse the associated heat load within a small footprint utilizes a mechanism similar to the circulatory convection cell that allows termite mounds to maintain steady temperatures in extreme climates. The geodesic dome was inspired by the simplicity and structural uniformity of things like snowflakes, seed pods, flowers and crystals. The Dome emulates those simple, strong, and noticeably spherical arrangements to produce an incredibly effective canopy. The dome is a manifestation of the phrase "less is more." A minimal amount of building materials is geometrically arranged to ensure a design both strong and lightweight. Even the internal components, such as the modular, scalable interconnected equipment pods, mimic the nature of the Mangrove plant and forest with massively interconnected root systems that power the interaction of separate ecosystems.