

concerns through being local to the point of use.

It is a business practice that is similar to obtaining cellular coverage in different countries provided by a local provider that is a different one from the one that a customer has an agreement with for their cellular service. The future of the federated cloud may see something akin to a power utility grid where various energy providers can "upload" their power to a grid or network.

Cloud Cooling

The diversity in cloud models brings about different challenges for the associated infrastructure. With enterprise data centers or private cloud, the growth model may be known for the company managing the data center infrastructure. However, some other models of public, hybrid, or community cloud often create unpredictable growth requirements because the services are driven by many different businesses operating in this cloud environment outside the control or visibility of the ones managing the data center.

As has been mentioned throughout this column of articles, the use of the services in the cloud can be highly variable, resulting in more variable load swings within

the data center. This results in the need for extremely scalable infrastructure.

Closing Comments

Cloud computing is a rapidly evolving industry. The clouds' need to be flexible and adaptable is driven by technology advancements and highly variable business needs that are expected to be unlimited and on-demand but with little to no risk, guarantee, or commitment on the part of the customer.

In recent times, cloud has drawn more attention due to the shifting business models from private based to public or hybrid based models. The shift to providing everything as a service has enabled more rapid advancements and growth of data center services.

As a result, the data center facilities that house cloud computing infrastructure are subject to highly volatile power and cooling loads in terms of their magnitude and profile. This compounds the challenge for data center designs to not only maintain their 7 × 24 availability, but to do so for loads that can significantly fluctuate, while still attempting to be energy efficient and not capital or operating cost prohibitive. ■

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