

E-PAPER

nebulon **smart**Infrastructure

bringing the benefits of the public cloud experience to
on-premises applications

On-premises challenges

Application owners often remain dependent on skilled IT professionals to deploy their applications on-premises, particularly with respect to data operations. As an example, they often have to provide operations teams detailed specifications of their required data, performance and resilience characteristics and then wait for those teams to determine what can be provided and when. The time to put the entire infrastructure together to support a new application can be measured in days, if not weeks, much to the frustration of application owners.

And that frustration extends to the ongoing management of the infrastructure. Applications owners find themselves with a difficult choice. They must provide frequent planned downtime windows in which IT specialists can update operating systems, firmware, and BIOS, which disrupt business operations. Alternatively, they can risk even more impactful unplanned business disruptions if appropriate security patches and updates are not implemented in a timely manner.

Yet over the last few years, the public cloud has shown that there is a better experience to be had.

Benefits of the public cloud experience

As the public cloud gains prevalence for an ever-broader set of application deployments, application owners have become enamored by the benefits that have ensued. The public cloud provides them with self-service application infrastructure. Under their own control, and without dependency on skilled IT professionals, application owners can eliminate the delays in getting applications deployed. The resulting immediate time-to-value is extremely attractive to businesses.

The other benefit is that the public cloud providers handle infrastructure management behind-the-scenes. Application owners no longer have to worry about frequent and disruptive scheduled downtime windows. They also have the security of knowing that the entire infrastructure, including operating systems and firmware is being updated, as appropriate, to provide continual business resilience.

Self-service application infrastructure and infrastructure management-as-a-service have become widely appreciated benefits of the public cloud experience.

Remainers and Returners changing on-premises expectations

Within many organizations, there are a significant number of applications that must remain on-premises for either cost, regulatory compliance, intellectual property protection or service level agreement requirements. Edge deployments at remote locations also require in-house deployment. Yet many application owners have witnessed the benefits of the public cloud experience through other application implementations. They remain frustrated that they cannot obtain the same self-service and infrastructure management benefits on-premises, whether these applications are deployed at the core or, increasingly, at the edge.

These Remainers are joined by those returning applications from the public cloud to on-premises data centers, often for reasons associated with cost savings as applications scale. With the Returners having become used to the public cloud experience, they are seeking to match those benefits as they return on-premises.

Yet the on-premises experience has not changed significantly. This is primarily due to the limitations of existing storage solutions available to IT.

Existing storage architectures inhibit IT delivering public cloud benefits on-premises

Three-tier external storage architectures and software-defined hyperconverged infrastructure (HCI) are the dominant approaches used for on-premises deployments. However, neither approach has made it possible for IT organizations to deliver the benefits of the public cloud experience to all applications deployed either at the core or the edge. The question is why?

One reason is that existing three-tier architectures use external storage solutions with a traditional enterprise-control plane to manage individual storage and infrastructure elements, even if the approach is assisted by cloud-based analytics. Another is that seamless infrastructure management is challenged by complex three-tier architectures using external storage. And finally, existing software-defined HCI approaches cannot provide deep infrastructure management in an integrated behind-the-scenes manner since they are dependent on a running operating system and cannot operate as a separate fault domain controlling all of the server media drives themselves.

In addition, external storage architectures are often expensive. Yet HCI implementations are inefficient and costly because of the application server resources – memory, CPU and network – consumed by the software defined storage solution. HCI also has hypervisor-specific restrictions for the types of applications that can be supported natively, a difficulty for IT organizations hoping to provide a consistent approach more broadly.

A new server-based storage approach is required to deliver the benefits of the public cloud experience to on-premises applications.

The new approach: Smart Infrastructure

Inspiration for solving the on-premises challenges comes from smart home technology. Using a cloud-control plane to access IoT endpoints embedded within home infrastructure whether thermostats, video door bells, or entertainment systems – has shown the way to deliver self-service home automation and behind-the-scenes infrastructure management on-premises, whether in your main home or a holiday cottage. Nebulon is building Smart Infrastructure for on-premises deployments using a cloud-control plane that accesses IoT endpoints embedded in clustered application servers.

CONSUMER



cloud-controlled, IoT endpoints in consumer devices
supports any application: thermostat, camera, smoke detector
anywhere: home, office, vacation home

ENTERPRISE



cloud-controlled, IoT endpoints in infrastructure
supports any application: containers, virtualization, bare-metal
anywhere: core, hosted edge

Nebulon smartInfrastructure delivers the benefits of the public cloud experience for any on-premises application – whether containerized, virtualized or bare-metal – to any location, core to edge. Through server-embedded, infrastructure software delivered as-a-service, application, business and infrastructure owners can intelligently provide self-service application infrastructure, infrastructure management and full enterprise-class shared and local data services.

Nebulon offers application owners many benefits similar to the public cloud experience. The self-service application infrastructure allows organizations to go from a rack of network-connected bare metal servers with internal storage to a full application stack deployment in minutes, providing immediate time-to-value. The cloud-control plane enables zero-touch, remote fleet management of all deployed smartInfrastructure, and this reduces operational costs by up to 75% with minimal disruption and enhanced resilience. Nebulon's server-based implementation has no software-defined data services component, freeing up application server resources and reducing the number of servers that need to be purchased by up to 33%. It is also up to 50% less costly than expensive 3-tier external storage architectures. And finally, by supporting common operating systems through their standard storage drivers, Nebulon allows IT organizations to deploy any type of application – containerized, virtualized or bare-metal – allowing a consistent approach today as well as future-proofing IT investments.

An additional benefit is that Nebulon smartInfrastructure is purchased through the existing contracts customers have with leading off-the-shelf server vendors from companies like Supermicro, HPE and Lenovo. No new vendor is required. With Nebulon smartCore and smartEdge solutions from leading server vendors, organizations can deploy the same infrastructure approach at any location.

Nebulon is democratizing the public cloud experience. With Nebulon smartInfrastructure it is allowing application owners to intelligently deploy, manage and maintain on-premises applications at scale, as simply and rapidly as in the public cloud.

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