

WHITEPAPER

Cloud Management in the Enterprise

Enterprises are increasing their adoption of cloud technology. Today, more than 90 percent of enterprises have deployed or are planning to deploy a cloud solution - and, as enterprise cloud deployments grow, requirements for manageability grow too.

Public cloud/service provider features are now becoming very relevant to large enterprises because they have massive user bases, many different departments, sub-companies and different geographic regions. They need internal tracking and billing mechanisms, and they need control over which resources each user can access.

OnApp's cloud platform was designed to meet the needs of multi-cloud service providers using multiple administrators, multiple data centers, and heterogeneous infrastructure. Now, OnApp Enterprise is available for companies that demand the most granular management features.

This paper discusses the requirements for enterprise cloud management and how OnApp Enterprise meets or exceeds them.

Enterprise Cloud Management Requirements

A cloud is a collection of shared resources, and fundamentally, running a cloud requires managing user access to those resources. There are several aspects of management to consider.



Infrastructure management – A cloud must leverage new as well as existing server, storage, and networking resources. The goal of a private cloud management system is to maximize flexibility in integrating and managing these resources. For example, cloud administrators need to be able to use existing as well as new servers and storage systems, and they shouldn't be constrained in terms of which servers and storage systems they can use to support the cloud.



User management – Cloud administrators need the ability to manage users individually as well as in groups, dedicating specific resources to specific users and groups as needed. Groups can be development teams, business units, departments, or even sub-companies, and users may belong to more than one group.



Server/CPU management – Each node in a cloud cluster is shared by multiple applications and users. Server and CPU management allows administrators to control how many users can access a server or even a specific CPU core in a server, and to dictate what levels of computing service each user gets.



Networking management – An effective management system should allow cloud administrators to control networking resources on a per-user basis, determining how much bandwidth each user or application gets, or which levels of QoS each user or application gets.



Storage management – Most enterprises tier storage depending on the needs of the data being stored. Different users require different levels of storage performance, such as slow spinning disk storage (SATA or SAS) or fast flash storage (SSD or NVMe), and applications such as Data Recovery or Backup must have dedicated storage resources. A cloud administrator should be able to optimize the use of storage resources across the enterprise to best meet the needs of each user, group, or application.



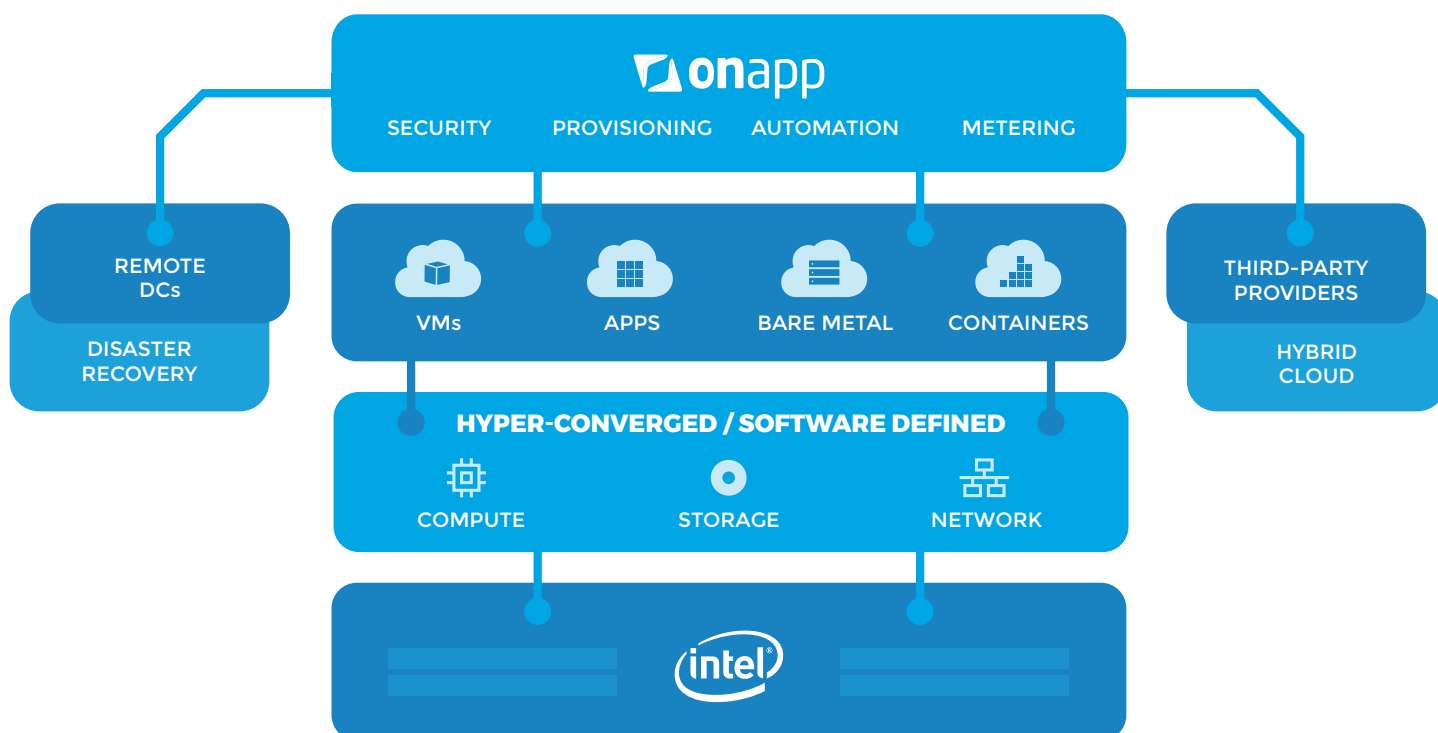
Billing management – Large organizations need to be able to charge back departments for cloud resource usage. This is a fundamental capability for tracking total cost of ownership (TCO) for the cloud platform and associated infrastructure.



Multi-cloud management – Most organizations use multiple clouds, incorporating both public and private cloud resources into their cloud deployments. An effective cloud management system allows for workload mobility and access control across multiple clouds through a single user interface. A large company might have a large datacenter in North America, with regional data centers in other countries. Users need access to local resources, but also the ability to “burst up” into other data centers and sets of resources.

OnApp Enterprise Cloud Management Features

OnApp Enterprise is a complete, turnkey private and hybrid cloud management platform. Based on ten years of development and more than 10,000 worldwide deployments among cloud service providers (CSPs), OnApp Enterprise leverages OnApp's extensive experience in meeting the demanding management requirements of public cloud providers, and now brings ease of use, flexibility, low TCO, and management control to the enterprise. Here's how OnApp Enterprise supports comprehensive cloud management.



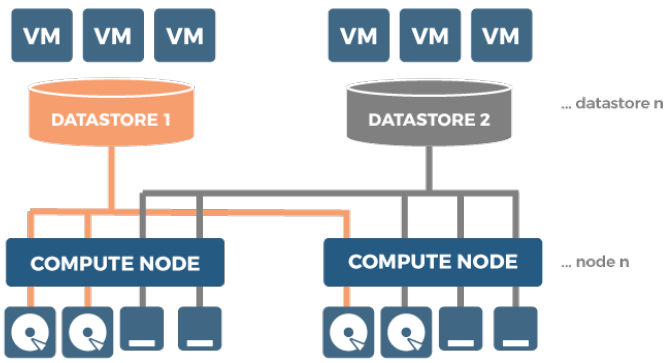
Infrastructure management – OnApp was designed to support the heterogeneous infrastructure common among CSPs. Enterprises benefit because they can mix and match servers and storage devices rather than having to adhere to specific configurations. While OnApp is available on a hyper-converged Intel platform, it also runs on any commodity server, networking and storage infrastructure so enterprises can maximize their existing hardware investments if they wish.

User, Server/CPU, and Network management – Because it was initially designed for CSPs, OnApp Enterprise gives enterprises an unprecedented level of user management via Role-Based Access Control (RBAC). The CSP business model is predicated on providing diverse sets of users with controlled and secure access to compute infrastructure resources. OnApp's RBAC and security features enable cloud administrators to offer self-service access to resources, securely, and within whatever constraints they want to set. Cloud administrators can assign specific access privileges to any user or group of users, and every single feature can be enabled or disabled, viewed or not viewed, for any number of user roles, to ensure security and governance of the entire IT infrastructure.

Building a private cloud lets enterprises bring the same self-serve access to IT resources that they get from the public cloud, but with the ability to lock down their IT infrastructure in whatever ways they require. For example, junior support people can view VMs and edit them, but not destroy them; finance users can view costs but not edit anything; other users can spin up VM instances from predefined packages only; or power users can customize the resources they need, but within constraints set by IT - so that one developer's test code doesn't eat up all the bandwidth or CPU capacity available in a zone, and impact the performance of other, more critical applications.

Moreover, OnApp Enterprise allows administrators to control server or CPU core access or network bandwidth, on a per-user basis. Administrators can add or upgrade CPUs or network interface cards on the fly without having to reconfigure the cloud. This functionality allows administrators to optimize the use of server and network resources.

Billing management – Enterprises need to be able to assign costs to individuals and departments. OnApp's CSP-class billing engine delivers fine-grained control of showback/chargeback by user, group, department, or sub-company.



ONAPP SDS

ANY NUMBER OF STORAGE TIERS ASSYMETRICAL NODES FOR EASY SCALING

Multi-cloud management – Most organizations divide their resources among on-premise and public clouds, and large enterprises may host clouds in several different geographic locations. OnApp provides workload mobility and user management across multiple public and on-premise clouds under a single user interface, greatly simplifying multi-cloud operations. With OnApp Enterprise, administrators have oversight and control of all infrastructure in every cloud under one interface – they don't have to log into multiple control panels.

This unified interface eliminates management silos and allows more efficient infrastructure utilization. For example, suppose Bob runs the New York datacenter, and Jane runs the Chicago datacenter. When Bob runs out of capacity he just buys more servers, not knowing that Jane has 50 percent of her capacity sitting idle.

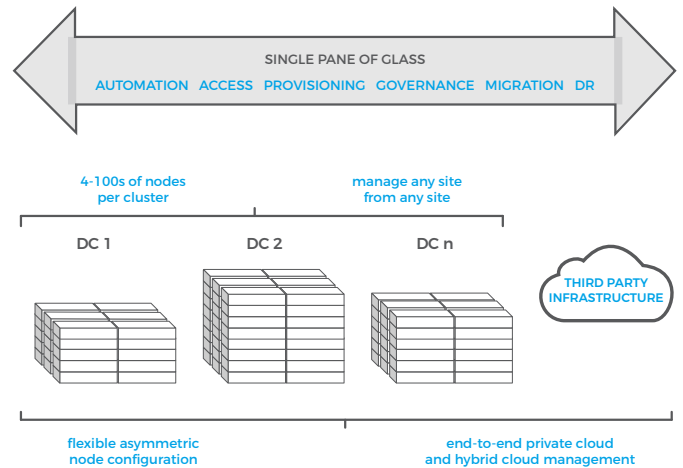
With OnApp, everyone is aware of the extra capacity in Jane's datacenter and can use it to scale. Cost control is another advantage: instead of spinning up new instances on Amazon Web Services, administrators and users can access cloud resources on infrastructure the company already owns, thereby removing the need for that AWS expense.

Conclusion

As enterprises expand their use of cloud technology, they need greater management capabilities to maximize infrastructure investments and ensure that all users get access to the compute and storage resources they need without over-provisioning or starving applications. OnApp Enterprise brings public-cloud, web-scale cloud management technology to the enterprise for the first time.

Storage management – OnApp Enterprise's built-in software-defined storage platform allows cloud administrators to assemble a storage pool and assign specific resources from among SAS, SSD, and SAN-based disks. OnApp has designed storage technology to be able to accommodate non-symmetric infrastructure, to grow and scale on the types of storage available.

For example, a company might have SSD drives, SAS drives, and SATA drives, and each has a different price per terabyte. The OnApp platform can accommodate different types of storage so cloud administrators can decide which data/users get high-performance storage and which data/users get lower-performing storage. OnApp also delivers flexibility in scaling storage – administrators can add or upgrade disks on existing nodes rather than having to add a whole new node.



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