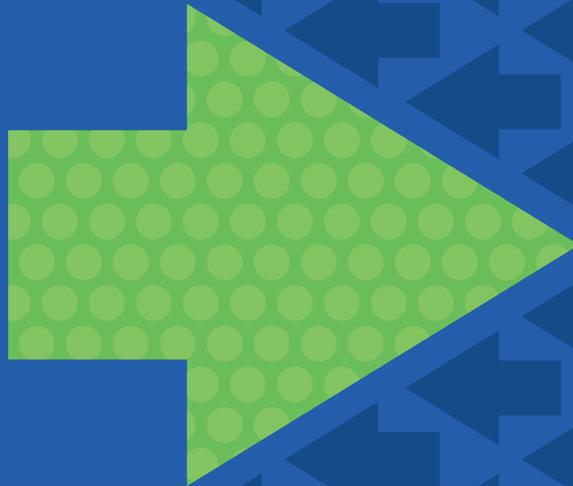


Transform Your Data Center

with Kubernetes as a service on
SUSE OpenStack Cloud



Application containers are one of the hottest trends in data center and enterprise IT innovation, and with good reason. By unshackling applications from the underlying infrastructure, containers enable organizations to ramp up capacity for a variety of workloads in a fraction of a second and scale at will. Organizations can also pack hundreds or even thousands of containerized workloads onto each server, which can drive down capital and operational costs.

As with other data center trends, the devil is in the details for organizations that want to reap the full benefits of containers. Specifically, enterprises need to assess which infrastructure platform can best meet today's needs for container workload development and deployment, while also providing the agility, scalability and cost-effectiveness necessary to meet future demands. As you'll see, SUSE OpenStack Cloud provides a dynamic solution that can answer all these needs.

Containers enter the mainstream

The proliferation of mobile devices and rising customer demands are driving the need to continually accelerate the development and deployment of new applications—which containers do exceptionally well. Container technologies are already available on every major public and private cloud platform and the market for application containers is forecasted to grow to around \$5 billion by 2023¹. The appetite for using containers is growing so fast that Gartner predicts more than half of global organizations will be running containerized applications in production by 2020².

A container is a lightweight software package that includes everything needed to run it, including its own minimal operating system, run-time resources and dependencies. Compared to virtual machines (VMs), containers are more resource-efficient because they do not require hypervisors. Containers can also be automated, are easy to orchestrate and can be provisioned quickly. In addition, containers require less memory space and can help organizations avoid the high costs and hassles associated with server or VM sprawl.

To be clear, containers are not the answer for every type of workload. Some applications—especially monolithic applications that do not need to be deployed or scaled

quickly—still run best on bare metal or virtualized machines. Containers are better suited for developing microservice applications that can be broken down into small and highly portable components. By simplifying complex applications into basic, building blocks that can be quickly and easily linked together as needed, enterprises can respond faster to changing business demands, customer needs and market conditions.

Although containers will never be, and are not designed to be, the single solution for all enterprise workloads, they are a smart way to accelerate the development, deployment and scaling of cloud-native workloads. Containers can also play a key role in shifting to DevOps methodologies and CI/CD (continuous integration/continuous deployment) strategies to accelerate innovation. The question becomes: which platform can best support the move toward containerization?

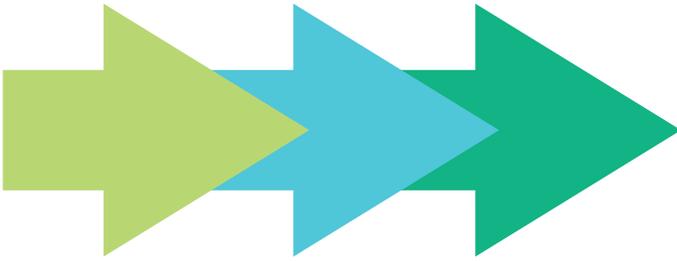
Delivering Kubernetes as a service on SUSE OpenStack Cloud

SUSE OpenStack Cloud is an open-source, private cloud platform that provides all the capabilities needed for running container-based applications, as well as supporting bare metal and virtualized workloads. The latest enterprise-class features, along with easy integration and management, make SUSE OpenStack Cloud an ideal solution for organizations wanting to spur innovation and respond faster to ever-changing market demands. SUSE was the first to release a truly enterprise-grade OpenStack cloud distribution, helping organizations avoid the dangers of vendor lock-in and its associated high costs and limited flexibility.

SUSE OpenStack Cloud provides full support for Kubernetes, which has quickly become the outstanding choice for deploying and managing containerized workloads. Many organizations favor the Kubernetes framework because it is

¹ Marketsandmarkets.com report Tc6274, May 2018

² Gartner: 6 Best Practices for Creating a Container Platform Strategy



highly portable and can provide a smooth migration path for legacy applications. Kubernetes has a flexible plug-in architecture that can be designed to be self-healing and auto-scaling, and can provide a convenient pathway to a hybrid cloud implementation. While these impressive features have fueled its popularity with developers and administrators, a Kubernetes cluster has been traditionally difficult to deploy and currently does not support multitenancy—the ability to provide dedicated and isolated environments for different groups of users.

These challenges are resolved by integrating SUSE CaaS Platform to deliver powerful Kubernetes as a service capability on SUSE OpenStack Cloud. SUSE CaaS Platform is installed using ready to run images and OpenStack Heat templates, making it fast and easy to get Kubernetes up and running. The platform then provides all the automation and management tools needed to deploy, run, manage, scale and load-balance container-based applications.

Multiple CaaS Platforms can easily be setup to provide exclusive, isolated and secure Kubernetes environments for different teams and groups. This delivers the multi-tenancy capabilities often needed for separate projects or development, testing and production functions.

Integrating and using SUSE CaaS Platform also removes another major headache. The Kubernetes project currently has a rapid development cycle, with new releases expected four times a year for the foreseeable future. This rapid cycle can be time-consuming, disruptive and expensive for any operations team tasked with manually updating Kubernetes environments. SUSE CaaS Platform solves this issue with an administration node, which uses the advanced features of Salt to manage the entire lifecycle, keeping both the platform and Kubernetes evergreen with automated release updates and full support.

For organizations wishing to use the generic OpenStack container service, OpenStack Magnum remains fully supported within SUSE OpenStack Cloud. This support gives organizations the flexibility to choose their own container management stack, but also comes with the added operating overhead of using community provided images and having to self-support, maintain and regularly update the entire environment.

BENEFITS OF SUSE CAAS PLATFORM

SUSE CaaS Platform combines a certified Kubernetes distribution with SUSE MicroOS, a minimalist Linux operating system designed specifically for hosting containers. Built with the enterprise platform operator in mind, it delivers powerful automation and management tools needed to deploy, run, manage and scale container-based applications.

Each SUSE CaaS Platform cluster consists of several types of node. These include an administration node, using Salt to manage the deployment and administration of the cluster; Kubernetes master nodes used to monitor and control worker nodes; and Kubernetes worker nodes to run application containers. It simplifies the platform operator's experience by providing:

- **A complete container execution environment, including a purpose-built container host operating system, container runtime and container image registries.**
- **Application scaling up and down to accommodate changing loads.**
- **Non-disruptive rollout/rollback of new applications or updates to enable frequent changes without downtime.**
- **Health monitoring and management to support application self-healing and improve application availability.**
- **End-to-end security, implemented holistically across the full stack.**
- **Enterprise hardening including comprehensive interoperability testing, and a world-class platform support, maintenance and technical support.**

Taking application delivery and productivity to the next level

With the data center constantly evolving, organizations of all types are under pressure to identify the platforms, tools and technologies to quickly deliver new solutions and services, to help the organization meet whatever challenges are on the horizon. When it comes to rolling out containerized or cloud-native applications faster and at scale, the focus must shift to improved process and workflow efficiency.

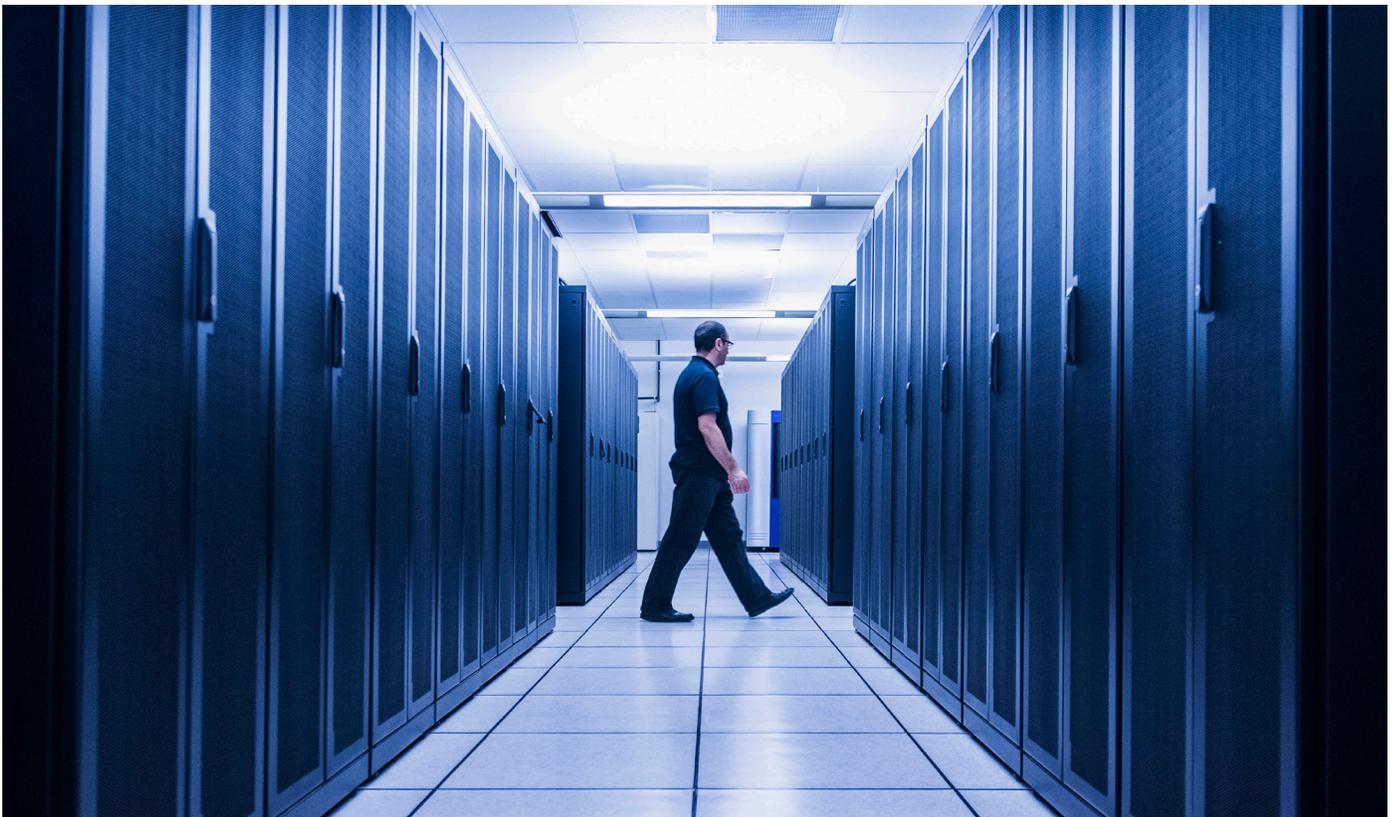
Advanced application delivery solutions (often referred to as Platform as a Service or PaaS) add ready-made, standardized workflows into your Kubernetes environment. Designed to raise the bar for automation and process efficiency, PaaS delivers an outstanding experience for your developers and is a great way to enhance your DevOps initiatives. While some developers may prefer the flexibility of mixing and matching their own tools, others will appreciate the advanced capabilities of these more structured solutions, which will allow them to focus on their workloads without worrying about libraries, tools or other components.

SUSE Cloud Application Platform is an excellent example as it brings advanced Cloud Foundry productivity features into a modern Kubernetes infrastructure. Dovetailing perfectly with SUSE CaaS Platform and running on SUSE OpenStack Cloud, it provides development and DevOps teams with the industry's best tools for delivering cloud-native applications fast, efficiently and at scale.

Summary

Containers are an increasingly vital part of the data center, providing organizations with a fast, scalable and cost effective way to support cloud-native and other microservice applications. SUSE OpenStack Cloud, a dynamic open source private cloud platform, gives organizations the flexibility they need to meet requirements today and into the future—whether that means running containerized, bare metal or virtualized workloads.

With the widest hardware certification, the most comprehensive workload support and the best interoperability on the market, SUSE OpenStack Cloud is the right solution for enterprise data centers, now and in the future.





**Contact SUSE to discuss your
infrastructure requirements and
how we can help your organization
deploy containers and other data
center solutions:**

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