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## White Paper

SUSE OpenStack Cloud  
SUSE Linux Enterprise Server

# Manage Multi-Cloud Environments with Appcara and SUSE

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# A Comparison with Leading Cloud Management Solutions

**Enterprise IT has changed swiftly in the last decade. The migration from centralized business systems running across monolithic architecture, to a decentralized cloud environment has been a game changer.**

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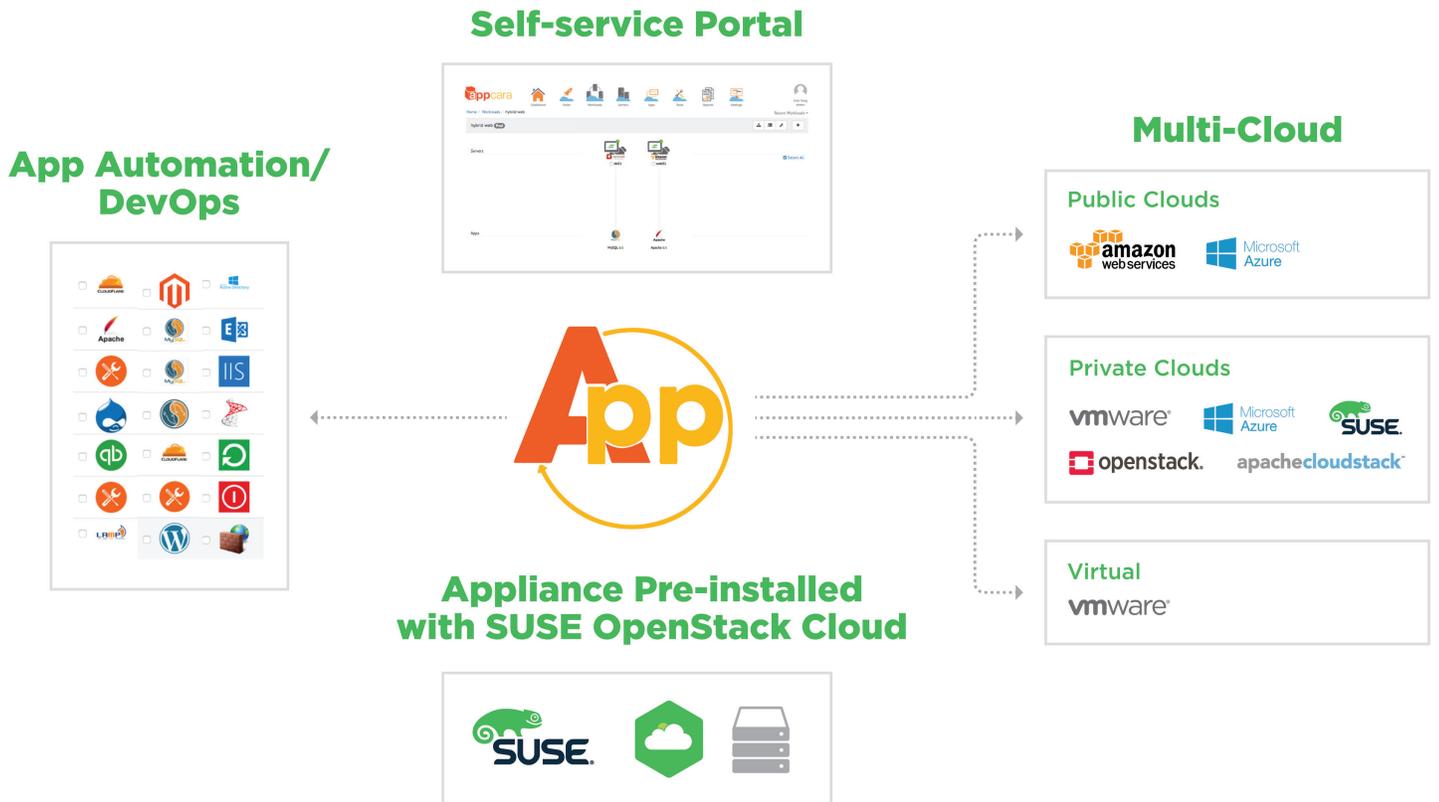
Enterprise IT teams now have a much more dynamic and agile platform for developing, deploying, maintaining and managing crucial business systems. However, making the shift to a full multi-cloud environment is far from straightforward.

Making the right decisions with regard to the technology stack that will be deployed to provide a multi-cloud platform is crucial, yet fraught with pitfalls. Should the business stick with an established and proven solution, even though newer products offer more functionality? Or should it investigate leading-edge technology, and go for something newer that has yet to become mainstream? Both options come with inherent risks: older technology may be restrictive down the line, and if the new technology fails to break into the mainstream, the ongoing cost of ownership could spiral in the medium- to long-term.

Within this comparative study, we will confront this very question by comparing the combined solution of App360 from Appcara and SUSE® OpenStack Cloud with legacy solutions in the market. This documents presents a high-level comparison performed by engineers at SUSE and Appcara Inc.

## **SUSE OpenStack Cloud**

The App360 appliance is pre-installed with SUSE OpenStack Cloud. SUSE OpenStack Cloud is based on the open source OpenStack project, and packaged with SUSE Linux Enterprise Server. The technology offers automated resource provisioning capabilities that businesses need to implement an Infrastructure as a Service (IaaS) private cloud. The deployment and configuration of high availability services is automated to ensure enterprise-level stability and performance. SUSE OpenStack Cloud delivers the world-class technical support, standardized maintenance processes and full control necessary to develop highly available clusters and meet enterprise-grade SLA requirements.



## Competitive Analysis

Below we will take a look at nine separate areas of functionality and identify areas where the combination of App360+SUSE OpenStack Cloud provides superior features and functionality over legacy solutions.

1. **Virtual and Cloud Support**—While other solutions may incorporate proprietary OpenStack-driven private cloud repositories, App360 can incorporate OpenStack from SUSE and other vendors, as well as non-Linux based private cloud services such as VMware vCloud Director, CloudStack, and Microsoft WAP. The self-service app packaging and auto-deployment capabilities of App360 empowers users to provision resources from these cloud solutions with ease. Users can simply download Playbooks from the self-service portal Galaxy site, customize for specific requirements and save into the app store for point-and-click deployments. Multiple apps can be packaged to run on different servers. These packaged services are also portable across dissimilar cloud deployments.

2. **User Experience: Dashboard**—Some solutions provide visualization of key metrics, but the information is not highly informative and intuitive. DevOps users demand a rich dashboard with graphics and data to keep on top of the development and IT processes. App360 understands this requirement and offers a rich dashboard experience to meet these needs. It offers the same detailed metrics, but it also adds more utility by giving a spending breakdown against each metric. Furthermore, App360 incorporates an almost real-time “Trending” visualization to make emerging infrastructure trends instantly recognizable.
3. **User Experience: Service Catalog Summary**—Many legacy solutions provide only a high level interface for managing the service catalog. While this may be acceptable for simple deployments, for more complex deployments this approach prevents users from identifying services efficiently. App360 works at a more granular level, offering a much friendlier way to name services, allowing the user group multiple services into a single “Playbook”.
4. **User Experience: Service Catalog Details**—The simplified approach to service catalog management leads to a lack of flexibility, providing only a static interface and allowing only the management of pre-defined cloud targets. App360 offers a very flexible interface, which enables the management of multiple services. And the App360 interface is both intelligent and highly configurable.
5. **User Experience: Workload/Service Details**—The static, list-like interface used by other solutions for interrogating service/workload details provides no assistance when managing complex infrastructure hierarchies. App360 comes at the problem of visualizing service/workload details in a completely different way and provides a graphical representation of services, looking very much like a flow diagram. Each service workload is shown in real-time. Furthermore, each service “icon” can be clicked to action a full drill down into the service and view more detailed information about the service and its workload.
6. **User Experience: Deployment Flow**—For key cloud management use cases relevant to the DevOps audience, some legacy solutions require additional tools which are not natively integrated into a common user interface. This means that the deployment flow needs to be managed using an entirely different tool, which is a less-than-optimal approach to handling DevOps-driven cloud management tasks. App360 incorporates this functionality into its unified user interface and extends this dashboard to offer integrated navigation, in an object aware and intelligent manner. In this category, the App360+SUSE OpenStack Cloud solution is a clear leader, making management of the deployment flow much easier.
7. **Multi-Cloud Consistency**—Some of the solutions in market today are technology stacks that have evolved over time. Upon close inspection, it’s clear that certain functionality was never part of the original design and has been added over time making the solution inconsistent for multi-cloud deployments. App360 was designed from the ground up to make multi-cloud deployments very simple to action and manage. This provides a level of consistency that is imperative when building infrastructures with complex resource and service hierarchies.
8. **Self-Service App Packaging**—When the tool suite is not integrated or only loosely integrated, automating application packaging is challenging unless the additional HEAT product is used. Further, these solutions are cumbersome to package, and can take weeks to complete while dealing with complex deployment issues. In contrast, App360+SUSE OpenStack Cloud incorporates self-service app packaging as a native functionality and offers a much lower learning curve.
9. **Ease of Deployment, Management, and Administration**—Many legacy solutions suffer from the fact that they are difficult to deploy. Indeed, in many cases fully setting up these platforms and solving the frequent deployment issues faced can take several weeks. Furthermore, ongoing low-level management and administration of these platforms is often extremely complex. The App360+SUSE OpenStack Cloud platform can be deployed within a few hours and is far simpler to maintain and administer. This means that App360+SUSE OpenStack Cloud saves money in the deployment phase, and has a lower cost of ownership associated with ongoing administration.

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## Benefits of App360+SUSE OpenStack Cloud

App360+SUSE OpenStack Cloud as an enterprise multi-cloud platform offers some distinct benefits over older, legacy platforms. It has been designed from the ground up to fulfill three very basic needs: provide a DevOps-ready cloud management platform, streamline application ownership by automating IT functions, and enable truly intelligent operations management. The key benefits of deploying App360+SUSE OpenStack Cloud include:

- **Cutting Edge Multi-Cloud Functionality**—App360+SUSE OpenStack Cloud has been designed and developed from the ground up to deliver a consistent, high-performance and reliable platform for creating multi-cloud applications and services. This means that the solution does not suffer from legacy development limitations that have accrued over time as functionality and utility has been bolted onto older technology.
- **A Single Integrated Platform**—The App360 + SUSE OpenStack Cloud platform has been designed from its inception to offer an entirely unified solution for deploying multi-cloud hosted applications. The App360 dashboard provides access to every maintenance function through a single access point, providing a highly intelligent way to manage cloud services and applications.
- **Broad Access to Multiple Public and Private Cloud Platforms**—App360+SUSE OpenStack Cloud offers unprecedented support for different private cloud providers including SUSE OpenStack Cloud as well as other OpenStack solutions, and also non-Linux based private cloud services such as VMware vCloud Director, CloudStack, and Microsoft WAP. Furthermore, App360 integrates with public cloud offerings such as of Amazon Web Services (AWS) and Microsoft Azure. App360+SUSE OpenStack Cloud provides an incredibly powerful platform for setting up complex multi-cloud solutions that encompass the hybrid cloud approach to application deployment.
- **Rapid Setup and Deployment**—A full App360+SUSE OpenStack Cloud deployment is very easy to accomplish. Where other solutions can take several days or even weeks to get up and running—with multiple implementation problems to overcome before the deployment is complete—App360 is much simpler. This leads to a very short implementation time, and also lowers the cost of platform setup.
- **Advanced Real-Time Resource and Workload Management**—Because the App360 dashboard integrates the management of every aspect of the platform, monitoring service workload and managing resources is simplified. The service/workload functionality of App360 has been designed to make monitoring and managing service/application resources as intuitive as possible, by using a graphical approach, showing relationships between services and resources, while visualizing resource usage in real-time. The utility is further enhanced by making each visualized service/workload clickable, leading to a more detailed drill-down view.
- **Reduced Maintenance and Administrative Responsibilities and Costs**—Deploying and then managing App360+SUSE OpenStack Cloud is simple. This means a lower learning curve than competing products, and easier maintenance. These combine to reduce the cost of ownership across the lifecycle of the platform. Administrative responsibilities such as the traditional approval and provisioning processes for new app deployment are automated and in control of end-users as per organizational governance policies.
- **Real-Time Visualization of Service Costs**—The top level App360 dashboard presents detailed information about service/app/resource workloads in real-time. App360 adds additional utility by calculating current running costs and visualizing them within the same dashboard. Further, the main App360 dashboard includes notifications of emerging service/workload trends. This facilitates the rapid identification of potential service/workload problems, both on a resource allocation and a cost basis.
- **Rapid Resolution of Service/Workload Problems**—The App360 dashboard makes highlighting emerging resource usage issues very simple. And once an issue has been identified, App360 integrates all management and administration functions into a single unified interface, where they can be corrected quickly. This includes identifying problems with both private and public cloud services, since App360+SUSE OpenStack Cloud is a true multi-cloud platform that enables the creation of hybrid cloud infrastructure natively.

- **Designed to Enable True DevOps**—The App360+SUSE OpenStack Cloud platform has been developed to facilitate a full range of modern DevOps methodologies seamlessly. These agile development techniques such as Continuous Integration (CI), Continuous Testing (CT), and Continuous Delivery (CD) need an equally agile platform to support them. The App360 solution empowers DevOps teams to leverage these agile development methods to the fullest.
- **Automated Application Delivery**—With fully integrated App360 features to perform self-service app packaging, developers can push out new application builds to end users very easily.
- **Pioneering Functionality**—App360 is the first multi-cloud platform that has been designed from its inception to deliver the breadth of tools necessary to setup and manage multi-cloud or hybrid cloud infrastructure. By incorporating automated IT functions, as well as embracing modern DevOps methods, App360+SUSE OpenStack Cloud clearly sits ahead of the curve when it comes to developing, deploying, managing and administering cloud-based enterprise applications. While other platforms deliver similar functionality, none combine as many features into a single unified solution.

## Use Cases of App360

Now let's take a look at some examples of how App360+SUSE OpenStack Cloud has been leveraged in the real-world to overcome specific multi-cloud problems and deploy advanced applications.

The Bank of Communications in China faced a specific problem with its DevOps lifecycle. It had deployed a big data analytics suite which delivered many potential benefits by providing deep business intelligence. While this solution was able to unlock many key business insights, the bank needed to undertake a significant amount of custom development to fully leverage this new technology.

Unfortunately, the legacy technology stack that BankComm had been using, was not compatible with agile and fast-paced DevOps processes. It was taking the internal team more than a week to set up new Hadoop instances for development, testing or deployment purposes. Furthermore, managing and administering the legacy architecture required a very specialized skill set, which in turn was increasing the cost of ownership. The solution was to start fresh with a new type of infrastructure, more capable of empowering the DevOps team to work faster, and begin to unlock more of the business intelligence within the growing big data repository.

The App360 platform was deployed as a solution to this problem, effectively giving the DevOps lifecycle a turbo boost. Where previously new application instances took a week or more to setup, they could now be deployed almost instantly, with a few clicks. App360 has in effect, completely changed the way that DevOps is carried out within the bank.

In another example, the company Peplink faced a twofold problem. The team was facing increasing challenges in service provisioning, and costs were beginning to spiral out of control. These problems were caused by the legacy VMware cloud and virtualization technology that Peplink was using, technology that had effectively come to the end of its lifecycle.

As application and service complexity had grown, the VMware environment had slowly become unmanageable. To build their multi-cloud setup, the company had to deploy 10 separate vSphere server clusters, each managed through a separate dashboard, making resource management and provisioning a logistics nightmare. Furthermore, because of the legacy licensing model of the vSphere platform, the cost of ownership of the platform was becoming extremely expensive.

Peplink decided to replace its legacy platform with a full App360+SUSE OpenStack Cloud deployment. This neatly solved both problems. The complicated multi-cloud setup that required multiple dashboards to manage were now unified within a single dashboard, incorporating all management and administration functions. In addition, the monolithic licensing policy of the VMware solution was replaced with a more cost-effective and open licensing model, vastly reducing the cost of ownership across the entire platform.

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These two use cases demonstrate how App360+SUSE OpenStack Cloud can empower DevOps teams to work in a more agile manner, streamlining the management of the cloud environment and lowering the overall cost of ownership.

## **Conclusion**

Enterprise cloud technology is a cost-effective and efficient way to develop and deploy business applications. However, early adopters of cloud technology have increasingly faced challenges with incorporating leading edge technology into their existing solution. This has led to a less effective DevOps lifecycle and an increasing cost of ownership.

App360 effectively gives a fresh start to enterprises who want to move to a multi-cloud or hybrid cloud application deployment model. Where older platforms have effectively bolted together a number of separate technologies to produce a solution, App360+SUSE OpenStack Cloud is fully unified. App360+SUSE OpenStack Cloud is managed through a single dashboard, is fully able to support agile DevOps teams, and provides the ability to automate IT tasks. All of this is provided in an elegant package that recaptures the low cost of ownership for which the cloud model was originally adopted.



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