Bringing OpenStack to the Enterprise

An enterprise-class solution ensures you get the required performance, reliability, and security.
INTRODUCTION

Organizations today frequently need to quickly get systems into place and running to support a wide variety of initiatives such as new analytics efforts, incorporation of big data into existing workflows, launching a new eCommerce site, or running sophisticated modeling and simulation algorithms.

These activities might require adding a Hadoop cluster, a back-end database, an HPC compute cluster environment, or some other solution. To meet these demands, many organizations are turning to OpenStack for its ability to provision and control large pools of compute, storage, and networking resource.

However, while OpenStack has a lot to offer, it can be hard to set up and manage. Some vendors are addressing this issue by offering administrative and management solutions and services that work with the OpenStack software to make it easier to use. This helps reduce the IT staff time needed to support the systems that are deployed using OpenStack.
GETTING THE BEST OF BOTH WORLDS

While OpenStack offers many attractive features for today’s compute environments, more is often needed.

An ideal solution to help with today’s compute requirements would combine the benefits of open source with additional systems management features and services to reduce total cost of ownership (TCO) and assure production workloads have enterprise-class capabilities. Such a combination should aim to make OpenStack easier to install, configure, deploy, and manage.

This approach of complementing open source OpenStack with management software and services would offer benefits on several fronts to both IT and to the people and groups that require the computing capabilities to do their work.

To start, OpenStack lets you set up private or public clouds by controlling large pools of compute, storage, and networking resources throughout a datacenter. Users manage the resources through a web-based dashboard, through command-line tools, or through the OpenStack API. In a typical deployment scenario, organizations use OpenStack to create an Infrastructure-as-a-Service (IaaS) cloud where administrators use the dashboard to manage the environment and users provision resources through a web interface.

Hundreds of the world’s largest organizations rely on OpenStack to run their businesses every day, reducing costs and helping them keep pace with changing market conditions. Being open source, there is a developer community behind OpenStack assuring that there will be innovations over time and any problems will be addressed by the community.

However, in production settings there is a need for enhanced features and services when using OpenStack. This can be achieved by selecting a complete OpenStack solution from a technology partner that provides management services and features. In that way, you get the best of both words with the benefits of an open source development community backed by a partner that offers an enterprise-class solution that ensures your deployment delivers the required performance, reliability, and security.
But in most situations, organizations do not have these resources. IT budgets are tight and IT staff members are being asked to increasingly deploy more and more systems in faster times and keep these systems running at high performance levels.

Something has to give. Cloud deployments offer many benefits in that resources can be quickly provisioned and made available. But setting up a cloud and managing it over time still takes a lot of work.

This is why organizations need OpenStack solutions that are complemented by enhanced management capabilities that simplify configuration, speed deployment, and reduce downtime through advanced monitoring and powerful management.

In particular, a complete OpenStack solution for production workloads must address several common issues including:

**Easier installation:** OpenStack installation software assumes you are starting with a working cluster — one that has the operating system and basic network interfaces installed and configured. A comprehensive solution will allow you to start with bare metal and take care of installing and configuring the operating system and other systems level software needed to get work done.

**Simpler deployment process:** There is a wide array of configuration decisions you need to make in any OpenStack cluster. You have to assign nodes, allocate storage, set network configurations, make adjustments for advanced services like high availability, and more. These steps are time-consuming, complex, and often error-prone. A comprehensive solution will automate these tasks and make management of the process simpler. For example, instead of relying on a simple configuration UI, a solution might offer a deployment wizard that takes you through the configuration steps, creates the needed OpenStack configuration files, and installs the software on the cluster nodes. Such a solution would allow you to get up and running faster, reduce the time investment of your IT staff, and reduce errors that can occur when configuring an OpenStack deployment.

**Simpler network set-up:** Networking within OpenStack is an area where many people struggle, since it can get complicated quickly. Today’s datacenters contain more servers, storage systems, and network equipment than ever before, many of which are further divided into virtual machines and virtual networks. The number of IP addresses, routing configurations, and security rules can grow into the millions. Traditional network management techniques fall short of providing a truly scalable, automated approach to managing today’s next-generation networks. An ideal complete OpenStack solution would help you create the needed networks, control traffic, and

**“Bright OpenStack installs on bare metal.”**
connect servers and devices to one or more networks. The solution should automate many of the manual tasks and create configuration files. It should also help provide advanced capabilities such as resiliency and responsiveness through redundancy and load-balancing.

**Improved storage management:** Storage management can be complex and time-consuming. With differing performance demands on storage systems, most organizations want to leverage commodity hardware and take advantage of both distributed object and block storage. A storage management solution that complements OpenStack must treat distributed object and block storage elements as a single, unified resource so you do not need to concern yourself with where the physical storage for the cloud is located. Ideally, other management features would provide more time-saving capabilities and higher-end enterprise-class features such as redundancy to protect from failures.

**Integrated OpenStack monitoring and health check:** All of the issues discussed so far have to do with getting an OpenStack cloud environment up and running. Equally important is the need for help keeping the cloud running efficiently without draining IT resources. Getting insight into the complex environment requires the ability to view both physical and virtual assets. Naturally, you want some indication when performance begins to drop or other issues develop that might lead to a disruption. There also needs to be some way to quickly get at root causes of problems. To that end, you need a solution that tightly integrates with OpenStack's monitoring capabilities. You should be able to use your existing advanced systems management and health check solutions to can keep tabs on your cloud's operation and be assured that your cloud is running as it should.

The benefits from a solution with these characteristics include:

**Faster setup:** Each new deployment is not a lab experiment where your staff must spend many hours fixing this problem or that, or configuring this setting or that.

**Enterprise features for your critical apps:** You can control your production environment ensuring that it is secure, high performing, and robust (resilient to common failures).

**Reduced time commitment and labor costs:** Your staff does not need to invest vast amounts of time configuring, deploying, and managing systems over time. This allows your IT department to do more with the same number of staffers and enables the staffers to spend more time on projects critical to the future success of the organization.
Given the desirability of these features, Bright Computing offers a complete OpenStack solution for the enterprise.

The Bright OpenStack solution leverages Bright Computing’s cluster management expertise and solutions. It is a complete solution that lets you build and manage private clouds. It can be installed on bare metal and simplifies configuration, deployment, storage management, and network setup.

The solution meets the highest levels of interoperability demanded by the OpenStack Foundation. As an OpenStack Powered Platform, you can rest assured that Bright OpenStack is and remains true to its OpenStack heritage.

One of the biggest differentiators of Bright OpenStack is its ability to install on bare metal. With Bright OpenStack, you do not need to install an operating system on the servers before you get started. Bright integrates the installation and configuration of all software on your OpenStack cloud infrastructure, making it easier to get your production environment up and running.

The solution has a simple deployment process. Bright OpenStack’s deployment wizard takes care of creating all of the necessary OpenStack configuration files, and installs the software for you. This means you can get a private cloud up and running quickly, saving time and money.

Another major differentiator is configuration and operation of OpenStack based on role assignments. Bright OpenStack’s role-based configuration system automates the creation of configuration files so they do not have to be managed manually.

Bright Computing also makes another time-consuming task, network configuration, much easier to perform. With Bright OpenStack, you will get a working networking configuration on the first try that is resilient and responsive through redundancy and load-balancing.
In addition to simplifying installation and configuration, Bright offers superior monitoring and managing once systems are up and running. OpenStack monitoring is integrated into the Bright OpenStack user interface so you can keep tabs on your cloud’s operation and be assured that your cloud is running as it should. If it is not, Bright OpenStack will let you know.

Simplified management extends to storage. Bright OpenStack lets you take advantage of Ceph for storage in an OpenStack Powered Platform. Ceph presents distributed object and block storage as a single, unified resource so you do not need to concern yourself with where the physical storage for the cloud is located.

Finally, Bright OpenStack offers a single pane of glass User Interface (UI) architecture. From its management console, you can manage the OpenStack cloud software, the hardware, and operating system software that supports it all at once. If your organization also uses HPC clusters for compute-intensive work, or Hadoop clusters for Big Data Analytics, you can even manage your OpenStack clouds plus HPC and Hadoop clusters together, making it easier to spot problems and fix them quickly.
USE CASES

There are several ways Bright OpenStack can be used in an organization. Common use cases include:

Quickly building and deploying a private cloud in your data center: Switching your data center from discrete services to a cloud can let you get the most from your equipment. Bright OpenStack makes it easy to build a working cloud, optimizing the utilization of the servers in your data center while maintaining the service levels your customers demand.

Building an expandable cloud infrastructure to meet expected growth in demand: If your business plan calls for infrastructure-as-a-service (IaaS) that grows over time, you need a cost effective way to do that. By using Bright OpenStack to build and manage your OpenStack cloud right from the start, you can eliminate much of the cost in both resources and time. The task of adding nodes, loading them with the right software, and configuring them properly to join the cloud becomes quick and easy.

Building a hybrid public/private cloud solution: Many organizations are looking to build a private-cloud infrastructure in their own data centers in order to reduce their dependence on public cloud services. Bright OpenStack puts this capability in the hands of virtually any organization. Bright OpenStack can turn a rack of servers into a working cloud in less time than you'd imagine, leaving you free to start deploying services. Now you can choose to run applications in a public OpenStack cloud or your own private cloud.

Offering Cluster-as-a-Service capabilities: There are many times when a group or department quickly needs a cluster. Rather than deploying and setting up new hardware, Bright OpenStack can be used to rapidly provision virtual clusters inside of an OpenStack private cloud. Such virtualized clusters are managed with Bright Cluster Manager. All you have to do to create a virtual cluster is define the size of the cluster (number of nodes), flavor (type) of the virtual machines, pick which version of Bright Cluster Manager you want to have installed on their cluster, which Linux distribution, and hit ENTER.
CONCLUSION

There are many benefits that operating a private cloud can bring to your organization.

A solution that combines the power of OpenStack with enterprise-class systems management and monitoring can help deliver an infrastructure to run your business today.

Such a complete solution lets you tailor the infrastructure to meet your specific performance requirements. If you’re already using a public cloud based on OpenStack, you can continue to use the same processes and tools you are familiar with in your OpenStack private cloud. No new skills or user training required. This saves time and money.

Simply put, a complete solution with the attributes discussed above can help you get clouds running quickly and keep them running reliably throughout their life cycle.

For more information about the Bright OpenStack solution, visit:

www.brightopenstack.com

“Complementing OpenStack with management software and services offers many benefits.”