Linux and OpenStack: The Perfect Partners for Virtualization and Cloud

When IT organizations step up their virtualization efforts and begin transitioning to cloud computing, infrastructure and platform decisions take on added significance. Here's why many IT leaders are placing their bets on SUSE® Linux Enterprise Server and SUSE OpenStack Cloud as the best platform for virtualization and cloud computing.

Contents

Most organizations today have committed to virtualization for their data centers as a way to reduce costs, improve flexibility and increase the use of their core IT assets. Virtualization has also become an essential springboard to cloud computing; the two architectural frameworks now go hand in hand in most IT organizations' strategies for both the near and long term.

Given this tight relationship, it makes sense to consider how decisions about your organization's underlying infrastructure — particularly server operating systems — can go a long way towards enhancing interoperability, easing deployment and improving ongoing operations.

Brought to you compliments of

The Enterprise Software Platform Transition

Making decisions about enterprise software platforms is no simple task. The choices have expanded dramatically over the past decade. The options in operating systems, middleware and virtualization hypervisors have become more numerous — and also more confusing. For instance, it's typical to see data centers with a broad mix of operating systems, from Unix and Linux to Windows and even legacy proprietary operating systems.

The same holds true for virtualization, where options have proliferated and multiple hypervisors coexist within the same IT infrastructure. Initially, VMware vSphere dominated the market. But dramatic improvements in competitors' hypervisor technologies, product support and usability have resulted in a much richer set of options. In fact, research indicates that enterprises are now just as likely to install Hyper-V, KVM or Xen as they are to use vSphere. It's also increasingly common for organizations to have two or more hypervisors running in order to optimize performance and cost based on the type of workload. However, it's harder to manage and support mixed hypervisor environments..

Sorting through the Alternatives

Given this move to increasingly heterogeneous software environments, IT organizations need to resist the urge to simplify their lives by going in the opposite direction: locking-in a single standard for operating systems and hypervisors.

There are two starkly different approaches to creating the ideal framework for virtualization and cloud computing: proprietary platforms or open source. Keep in mind that software can become standardized but still be proprietary: there can be vendor lock-in for either the software or the hardware platform.

IT organizations tempted to focus on a single operating system and hypervisor platform will likely end up limiting their ability to take advantage of technology improvements and economic efficiencies. Instead, organizations should consider an approach that combines the flexibility and cost advantages of open source operating systems, hypervisors and cloud management platforms, which are optimized to create a more interoperable, extensible and agile enterprise software framework for virtualization and cloud computing.

For many IT organizations looking to transition to virtualization and cloud computing, selecting an operating system and cloud environment comes down to a few key considerations:

- **Avoiding vendor lock-in** is an absolute requirement for achieving maximum flexibility over the long term and avoiding high-cost solutions.
- The operating environment must support **easy, on-demand scalability** — ideally in a self-service model — to ensure that IT can keep up with rapidly changing performance, capacity and utilization requirements.
- If an organization is going to transition more of its critical workloads to virtual machines and clouds, the environment must be **highly secure and highly available**
- The economics of deploying and managing a server operating system should match the key goal of **cost efficiency in transitioning to virtualization and cloud computing** in the first place.

Why Linux and OpenStack?

With increasing frequency, IT organizations are building their virtualization and cloud strategies on open source technologies. As the primary operating system platform for delivering workloads within open environments, Linux makes the most sense. When combined with a cost-efficient and highly scalable commodity hardware infrastructure, Linux represents an ideal springboard for organizations of all sizes looking to adopt these architectural frameworks. Linux offers the benefits of cost efficiency, an established development community and proven enterprise support options. Most important, the secure, reliable and scalable platform offers an established alternative to UNIX, which for years was the prevalent — but pricey — server operating system for enterprises' mission-critical environments.

"Inevitably, the operating system decision for organizations moving to cloud is about interoperability and portability," said Jeff Kaplan, managing director of THINKstrategies, a consulting firm focused on cloud computing. "Nothing is more flexible than Linux and open source, and it has been driving the cloud phenomenon since its inception. It's easy to see that there is an intimate relationship between cloud computing and Linux."

While there are alternatives for deploying Linux-based cloud environments, OpenStack is widely acclaimed as the best path to a truly open, vendor-independent standard for cloud solutions. OpenStack software has now reached a level of maturity and market acceptance; Forrester, in its 2015 report "OpenStack is Ready – are you?" said that it has been "irrefutably proven that OpenStack is viable for production environments" and that it has "become a compatibility standard for the private cloud market."

What sets OpenStack apart from other open source cloud software solutions is its widespread support from software platform providers, application vendors, hardware suppliers and cloud service providers. OpenStack has more than 32,000 individual members from more than 550 supporting companies, representing more than 170 different countries. This gives it the greatest industry support and most vibrant community among open source cloud software projects. Over the long term, the breadth and depth of support from the community will lead to more rapid innovation and investment protection than competing projects and proprietary solutions.

Another key point of differentiation is the OpenStack Foundation, which helps to ensure the long-term viability of the project. It also ensures that, as with Linux, OpenStack is not driven or controlled by a single vendor or even a small group of vendors pushing a specific product solution. The OpenStack project is a truly collaborative effort designed to benefit all users. As a founding member of the OpenStack Foundation, SUSE has been focused on ensuring that OpenStack software is enterprise business-ready to provide the best possible customer experience.

OpenStack consists of core technology components essential to deploying a secure, on-demand cloud computing environment. However, OpenStack also has a large and growing ecosystem of providers that are developing solutions to address user requirements that are not part of the OpenStack core. These third-party applications use the OpenStack APIs to ensure proper integration with OpenStack, which provides users the flexibility to choose the best solution for their needs. It's also important to note that OpenStack is hypervisor-

agnostic: it supports a full range of hypervisors including KVM, Xen, Hyper-V and VMware. This is an important requirement, given the growth of mixed hypervisor environments. As the original OpenStack distribution, SUSE provides the widest hypervisor support available in today's market.

What to Look for in a Linux or OpenStack Cloud Distribution

Like cloud computing itself, Linux is all about responsiveness and flexibility. Its straightforward but feature-rich design allows IT organizations to provision cloud computing quickly, easily and more cost-efficiently than is the case with other server operating systems. Of course, there are different versions of Linux, each with different levels of support, performance and functionality, as well as different implementation approaches for OpenStack cloud computing.

The key requirements in sorting through your options for a Linux or OpenStack cloud are to focus on a distribution from a partner with a proven track record for rock solid, reliable enterprise workload support, on interoperability and on industry-leading support for environments with a mix of operating systems and hypervisors. Your selection also should take into account how well-suited your infrastructure will be for the rapid development of new business applications and how easily you can migrate your business-critical workloads to your cloud environment. As you step up your deployment of cloud-enabled workloads, your Linux and OpenStack distribution choice will be critical.

Some of the things IT decision-makers should look for when selecting a Linux-based cloud management solution are:

- Easy implementation of private clouds that take advantage of current and planned cloud-based applications
- Easy, fast, efficient deployment and administration
- Support for leading open standards
- A large community ecosystem for development, deployment and support
- A single point of contact for problem resolution and efficient, ongoing management of the whole situation

Although IT organizations may consider numerous Linux and OpenStack distributions, not all Linux vendors offer the full range of features, services, support and management necessary to handle enterprise-class cloud deployments. To fully realize the wide range of Linux benefits, decision-makers need to carefully evaluate their options before partnering with one Linux supplier.

Conclusion

There probably isn't an IT executive in the world who hasn't already adopted virtualization or isn't putting in place plans to adopt cloud computing. Their big issue, however, is whether to choose a proprietary, vendor-specific cloud management platform or an open source platform that supports multi-hypervisor environments and is underpinned by an open operating system environment. The choices are dramatically different, and the final selection has huge implications for an organization's ability to stay ahead of the curve in building a more efficient, agile and optimized architecture.

Linux has proved to be the most secure, reliable and flexible operating system for virtualization and as a foundation for cloud computing. The rapid development of OpenStack further enhances the ability of IT managers to deploy a cloud platform that aligns with their current IT architecture to meet the rapidly changing needs of their business. With SUSE Linux Enterprise Server and SUSE OpenStack Cloud as the foundation, enterprises can be sure that their IT and business objectives will be met well into the future.