RED HAT® ENTERPRISE LINUX® OPENSTACK® PLATFORM

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NetApp Alliance Partner

OPENSTACK FOR ENTERPRISE-GRADE HYBRID CLOUDS

Red Hat and NetApp introduce a secure IaaS foundation for mission-critical workloads

TECHNOLOGY OVERVIEW

64%

of IT managers have OpenStack on their technology roadmaps[1]

The Red Hat and NetApp solution allows you to efficiently and effectively deploy OpenStack in an enterprise environment with strict SLAs while taking advantage of your current infrastructure investments.

INTRODUCTION

For many organizations, the role of IT teams are evolving from datacenter administration to strategic business partners and service brokers. Cloud technologies offer the flexibility and innovation needed for these teams to meet increasing business demands, and cloud deployments are becoming essential to business strategy and competitiveness. Both public and private clouds have a place in enterprise environments, and implementing a hybrid cloud model allows companies to take advantage of the benefits of each.

OpenStack® is gaining popularity as the hybrid cloud platform of choice. With an open source foundation and flexible deployment options, OpenStack allows IT organizations to customize their cloud environments with the functionaity and third-party software and hardware that best meets their needs. Additionally, its strong and growing community encourages fast-paced OpenStack innovation and advanced functionality.

However, deploying OpenStack in enterprise environments is often complex. Many enterprises and service providers are concerned with the potential risks of implementing, operating, and supporting an OpenStack environment. With OpenStack, IT organizations must:

- Design, acquire, and implement their clouds from a variety of hardware and software components.
- Customize and compile OpenStack's source code.
- Test and tune servers and storage in the OpenStack environment, because the community doesn't certify hardware interoperability.
- Support the OpenStack software.

In addition, spikes in demand can drastically reduce storage performance if your storage infrastructure is not designed for scalability, performance, and high availability. All of this can contribute to increased security risks and inefficient operations if careful consideration is not given to each component.

To make OpenStack more consumable, manageable, and secure in enterprise environments, Red Hat and NetApp have collaborated to build a secure, efficient OpenStack hybrid cloud foundation. This foundation allows you to unify your public and private cloud environments and support your high-value applications that require strict service level agreements and data security.

OVERCOMING ENTERPRISE OPENSTACK CHALLENGES

Through their longtime partnership, Red Hat and NetApp have developed a tight technology alliance and many integrated joint solutions. They're also proactively collaborating in the upstream and downstream open source communities to make enterprise-class availability, reliability, performance, and scale a reality. With a large customer overlap, Red Hat and NetApp actively cross-train their support engineers on each other's products and technologies and offer joint support through the TSANet Multi Vendor Support community.

1 *IDG,"CIO QuickPulse Survey: OpenStack Hype vs. Reality," July 2013*

The top barrier to OpenStack deployment is lack of deployment and implementation expertise and training. Slow and complex integration with existing infrastructure and lack of continued support from OpenStack providers during and after deployment are also prominent obstacles.

IDG, "CIO QUICKPULSE SURVEY: OPENSTACK HYPE VS. REALITY," JULY 2013

A STABLE, SECURE CLOUD FOUNDATION FROM PARTNERS YOU TRUST

Red Hat® Enterprise Linux® OpenStack Platform and NetApp clustered Data ONTAP storage systems have been pre-intergrated, pre-tested, and certified to work together, The Red Hat and NetApp joint Infrastructure-as-a-Service (IaaS) solution incorporates enterprise features, reliability, and availability with streamlined management and predictable performance to meet even the most stringent SLAs. Each component in the Red Hat and NetApp hybrid cloud foundation delivers critical features to the solution.

Red Hat Enterprise Linux OpenStack Platform

Red Hat brings OpenStack from the community to the enterprise with the commercially hardened and readily consumable Red Hat Enterprise Linux OpenStack Platform. The platform includes:

- A pre-compiled installer that eliminates the need to customize source code.
- A longer enterprise lifecycle that prevents the constant upgrades required with the six-month community release cadence.
- Integration with Red Hat Enterprise Linux that provides the security, reliability, and performance you need to meet strict SLAs.
- Award-winning[2] enterprise support that allows you to operate with confidence.

NetApp clustered Data ONTAP, E-Series, and EF-Series storage solutions

NetApp's high-performance, scalable software and systems allow you to maximize storage utilization and simplify data management for increased efficiency and lower costs. Additionally, NetApp's contributions to the OpenStack Cinder and Manila projects expose value-add features in NetApp block and file storage through an easy-to-consume storage service catalog, This allows you to use key features—including SnapShots, data-deduplication, rapid cloning, and secure multi-tenancy—in your enterprise cloud deployment.

A Swift reference architecture featuring NetApp's E-Series and EF-Series all-flash arrays defines a scalable, high-performance object-based storage infrastructure optimized for OpenStack deployments. NetApp's Dynamic Disk Pool technology greatly reduces the footprint and operating costs of object-based storage, while increasing performance, protection, and speed of recovery.

GAIN A COMPETITIVE EDGE WITH ENTERPRISE OPENSTACK

Together, Red Hat and NetApp provide an elastic, on-demand IaaS solution for enterprises that need to support applications and workloads with demanding SLA, security, and scalability requirements while reducing total cost of ownership (TCO) and operational expenses (OPEX).

SPEED CLOUD DEPLOYMENT

Many IT teams don't have the resources to build an OpenStack environment from scratch. In fact, a recent CIO QuickPulse survey noted that the top barrier to OpenStack deployment is a lack of deployment and implementation expertise and training.[3] Red Hat and NetApp collaborate in both upstream and downstream OpenStack projects to ensure their solutions work well together from the start. The fully integrated and pre-certified solution eliminates the need for complex in-house design, testing, validation, and tuning. The result is faster, streamlined deployment requiring fewer staff resources and reduced costs.

2 Association of Support Professionals, 2013.

3 IDG,"CIO QuickPulse Survey: OpenStack Hype vs. Reality," July 2013

Security is integrated across the entire solution stack, so your data and applications are protected.

INTEGRATE OPENSTACK WITH YOUR CURRENT INFRASTRUCTURE

Enterprises already using NetApp storage in the datacenter can easily expand current storage infrastructure to cover a hybrid cloud as well, eliminating the need to purchase a separate cloud storage infrastructure. With NetApp clustered Data ONTAP storage, existing traditional storage and new cloud storage can be managed as a single storage infrastructure, simplifying operation and administration and allowing easy expansion over time. Plus, Red Hat Enterprise Linux certifications extend to Red Hat Enterprise Linux OpenStack Platform, so you can migrate your applications to the cloud at your own pace in line with business demands.

STREAMLINE MANAGEMENT WITH AUTOMATION

Complex infrastructures often require multiple tools for management and administration. With the certified Red Hat and NetApp solution you can streamline storage and cloud management to increase IT productivity and reduce OPEX. Your entire storage infrastructure can be managed through NetApp Data ONTAP, while Red Hat CloudForms can be used to manage your complete hybrid cloud. Both tools help you automate common management tasks, making routine maintenance easy and fast.

IMPROVE SECURITY AND COMPLIANCE

Disparate infrastructure solutions are more likely to have security risks and make it more difficult to ensure regulatory and reporting compliance. With the Red Hat and NetApp solution, security is integrated over the entire stack—from storage to application—without requiring complex, time consuming, and risky do-it-yourself design and operation processes. You can be confident that your data and applications are secure and in compliance with regulations.

MEET SLAS WITH SCALABLE, PREDICTABLE PERFORMANCE

If SLAs are not met, productivity decreases and your business suffers. In a cloud environment, storage is often the performance bottleneck, slowing applications during peak demand and overwhelming network capacities. With the Red Hat and NetApp solution, your storage scales as fast as your cloud applications, ensuring you can easily meet even the strictest SLAs.

INCREASE CLOUD RELIABILITY

Through contributions to the Cinder and Manila OpenStack projects, NetApp ensures that the storage and management features included in NetApp systems are also available for use in an OpenStack cloud environment. And, Red Hat Enterprise Linux OpenStack Platform brings enterprise software features, such as a longer lifecycle and integrated security, to your cloud environment for even greater reliability.

REDUCE CLOUD IMPLEMENTATION RISKS

Any change to IT infrastructure involves risk, and a large change, such as migration to the cloud, implies even greater risk. With the pre-validated Red Hat and NetApp solution, you can reduce design, implementation, and infrastructure tuning risks to get your cloud up and running quickly. Scalable, predictable performance eliminates the need for costly overprovisioning, while simplified management and automated maintenance dramatically reduce operational risks.

ESTABLISH A RATIONAL RELATIONSHIP WITH PUBLIC CLOUD PROVIDERS

Public cloud providers are an essential part of modern IT operations. However, public cloud services can be costly and create security and compliance concerns about sensitive data. The Red Hat and NetApp solution allows you to take advantage of the best of both private and public clouds by unifying your cloud environment. You can develop and deploy applications in the appropriate public or private cloud environment and move them as needs change throughout the application's lifecycle.

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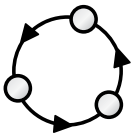
TECHNOLOGY OVERVIEW OpenStack for enterprise-grade hybrid clouds



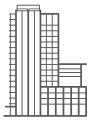
Red Hat and NetApp make OpenStack consumable and safe for enterprise use through collaborative development and integration.

BUILD A HIGHLY AVAILABLE CLOUD SERVICES INFRASTRUCTURE

If you are a service provider, you know that broadening your cloud services portfolio can help you differentiate yourself from your competitors. However, in order to be successful, your cloud offerings must be extremely flexible, secure, and cost-effective. The scalability and efficiency of the Red Hat and NetApp solution give you the means to meet customer demands quickly. With secure multi-tenancy built into the storage infrastructure, you can be sure that your customers' data is protected. A robust open ecosystem ensures that the third-party hardware and software you need will be interoperable with your environment. Plus, improved storage utilization and streamlined management provide high value with low TCO so you can offer services at a competitive price point.

CONCLUSION

Through collaborative development and integration, Red Hat and NetApp make OpenStack consumable and safe for the enterprise. Building your enterprise OpenStack cloud on the Red Hat and NetApp solution unifies your private and public clouds into a single, easily managed environment. To learn more about how you can reduce your cloud migration risks, contact your Red Hat or NetApp sales representative or visit www.redhat.com/openstack.



ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.

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