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Automating IBM Spectrum Scale Deployment with Ubuntu OpenStack Cloud and Juju Charms

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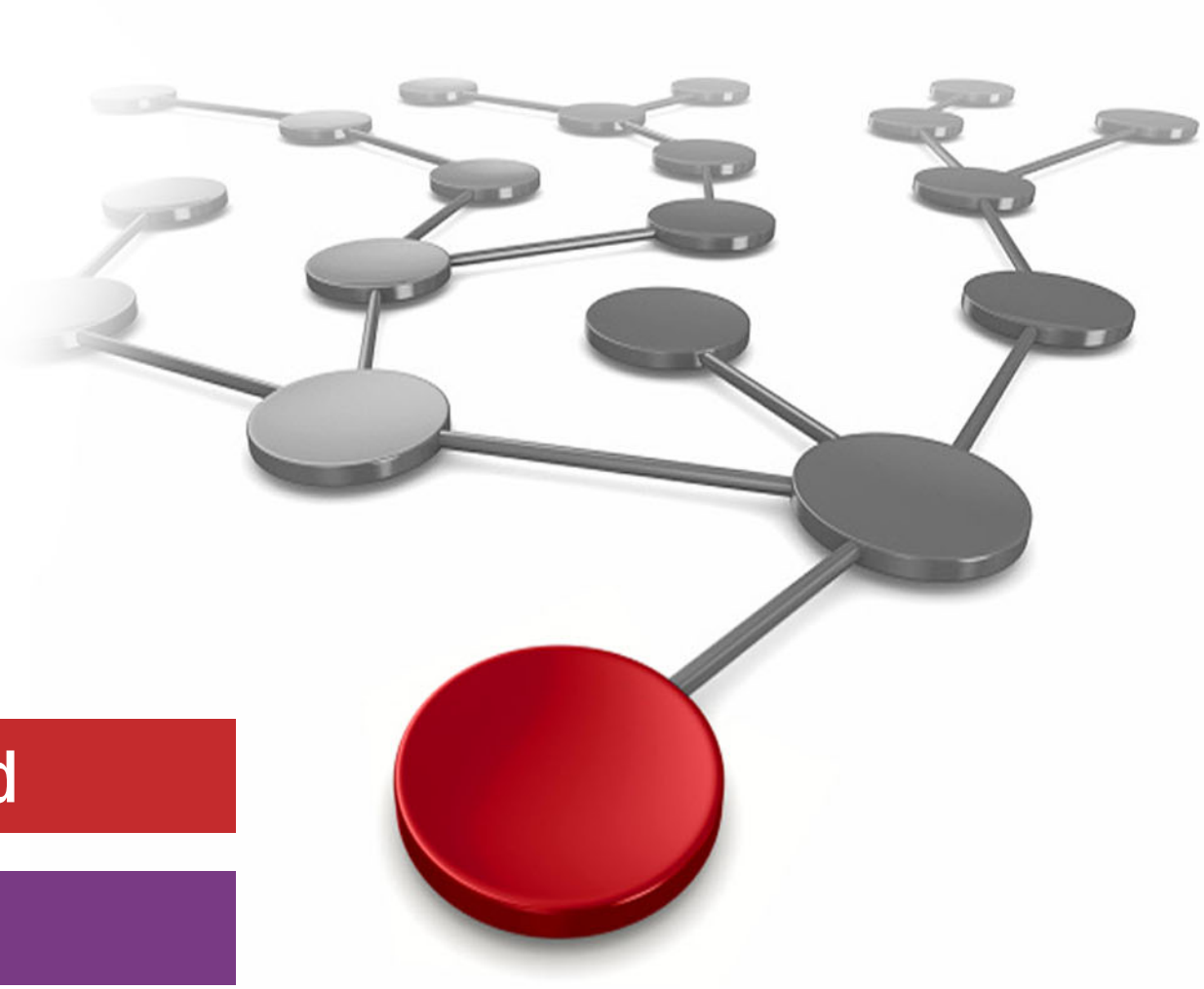

Cloud

Storage

IBM

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Automating IBM Spectrum Scale Deployment with Ubuntu OpenStack Cloud and Juju Charms

Automation is key to faster deployments with fewer resources. Now Juju charms can help to automatically deploy and operate IBM® Spectrum Scale with Ubuntu OpenStack cloud.

IBM Spectrum Scale Overview

IBM Spectrum™ Scale is software that is used to manage storage, provide massive scale, a global namespace, and high performance with many key enterprise features. IBM Spectrum Scale™ is used in clustered environments and provides file protocol (POSIX, NFS, and SMB) and object protocol (Swift and S3) with unified access capabilities.

IBM Spectrum Scale also supports automated tiering of data to cloud Object Storage providers, such as IBM Cloud Object Storage (previously known as IBM Cleversafe®) or Amazon S3 by using Transparent Cloud Tiering (TCT). The IBM Spectrum Scale features and benefits are shown in Figure 1.

IBM Spectrum Scale Features and Benefits

Storage management at scale	Store everywhere, run anywhere	Improve data economics	Software Defined Open Platform
Common IBM Spectrum GUI and health monitoring	Advanced routing with latency awareness	Tier seamlessly	Heterogeneous commodity storage: flash, disk, and tape
Unified File, Object, and HDFS	Read and write caching	Policy-driven compression	Software, appliance, or Cloud
Distributed metadata and high-speed scanning	Active File Management for WAN deployments	Data protection with erasure code and replication	Data-driven migration to practically any target
QoS management	File Placement Optimization	Native Encryption and Secure Erase compliance	File/Object In/Out with OpenStack SWIFT and S3
Billions of files and yottabytes of data	End-to-end data integrity	Tier data to tape, object store, or cloud storage using rule based policy engine	Transparent native HDFS
Multi-cluster management with IBM Spectrum Control	Space efficient snapshots	Leading performance for Backup and Archive	Integration with cloud with Transparent Cloud Tiering
	Sync or Async DR		

Figure 1 IBM Spectrum Scale features and benefits

IBM Spectrum Scale provides various interfaces (see Figure 2) that allow your traditional applications and your new generation applications to access data directly without requiring data movement or translation.

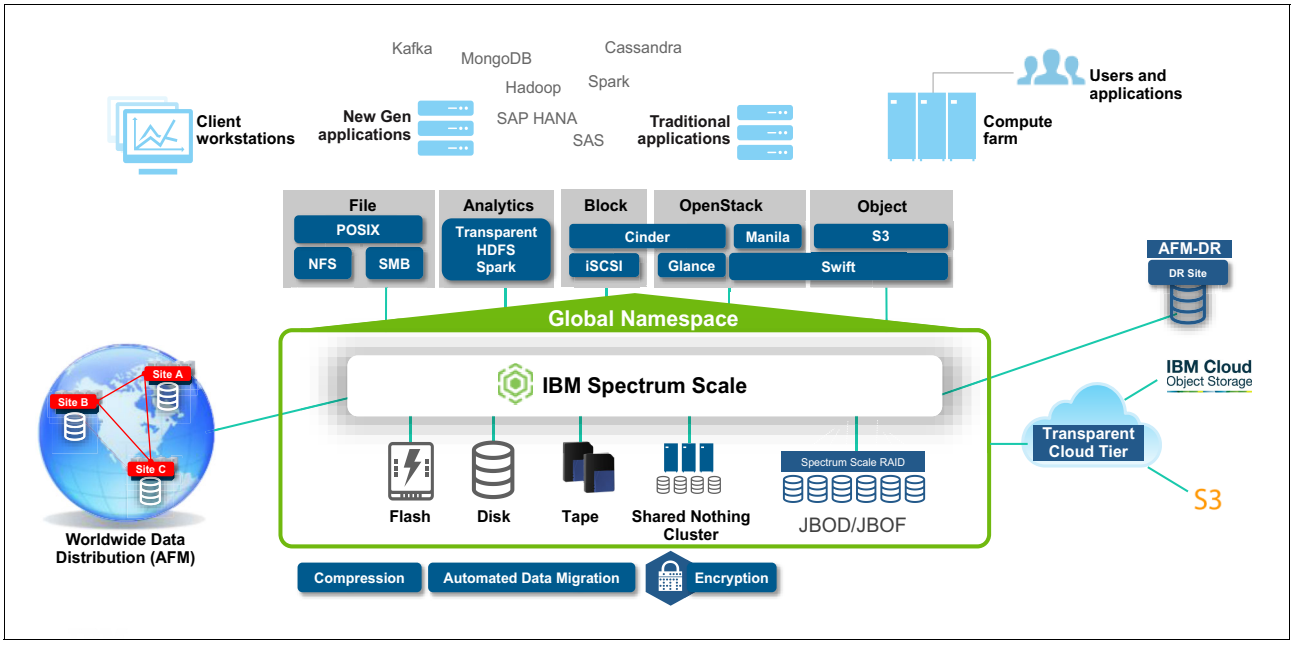

Figure 2 IBM Spectrum Scale supports various interfaces for new storage economics on a global scale

OpenStack software

OpenStack cloud is open source software that is widely used as a base to build cloud and infrastructure as a service solution. OpenStack cloud is used to virtualize various parts of the infrastructure (compute, storage, and network) to ease the sharing of the infrastructure across applications, use cases, or workloads.

When configured with IBM Spectrum Scale storage, OpenStack components can easily share data, and management operations can be run from a single data management plan. For example, OpenStack Cinder (block storage) and Glance (image storage) can share data efficiently by using IBM Spectrum Scale copy on write capability to almost instantly deploy bootable volumes from Glance images.

Ubuntu OpenStack cloud

Ubuntu OpenStack cloud is the most widely used private cloud platform among enterprises and service providers with over 50% of OpenStack deployments, more than all other vendor solutions combined. One key feature of Ubuntu's management software is an open source application modeling tool. Juju simplifies deployment, configuration, scaling, and operations of software on public and private clouds, including Ubuntu OpenStack on bare metal.

Juju charms

Juju works with Juju charms. Juju charms specify how applications are deployed, how to operate them, and how they integrate with other applications. That is, imagine Juju charms as encapsulated operations. Technically, a charm is a set of scripts that is written in any language (typically Python, Node.js, PHP, or other high-level language), one charm per application. A bundle is a collection of charms that is defined in a single configuration file that links applications so that you can deploy an entire software solution in one operation.

IBM and Canonical have a long and innovative alliance and worked to ensure that IBM Power Systems™ and OpenPOWER customers can have the same Ubuntu usage and management experience that Ubuntu x86 production OpenStack customers have today.

As part of this alliance, we recently completed a collection of Juju charms with which you can deploy and manage systems that use Ubuntu OpenStack cloud with IBM Spectrum Scale storage in a highly automated way.

The charms are available in the Canonical Charm Store and can be used with the OpenStack charms to install IBM Spectrum Scale storage cluster, install IBM Spectrum Scale client software on your compute nodes, configure an IBM Spectrum Scale file system to work these clients, and configure OpenStack Cinder and Glance components to use the storage that is provided by IBM Spectrum Scale in the most efficient way. Maintenance operations, such as adding and replacing compute, cinder, or glance nodes are also handled by the set of Juju charms.

By using IBM Spectrum Scale charms, you can now easily enhance OpenStack bundles that are available at the Juju charms website. You also can create a bundle that is based on your needs to deploy a full OpenStack with IBM Spectrum Scale in one step. An example of an OpenStack bundle with IBM Spectrum Scale charms (represented by the green icon) is shown in Figure 3.

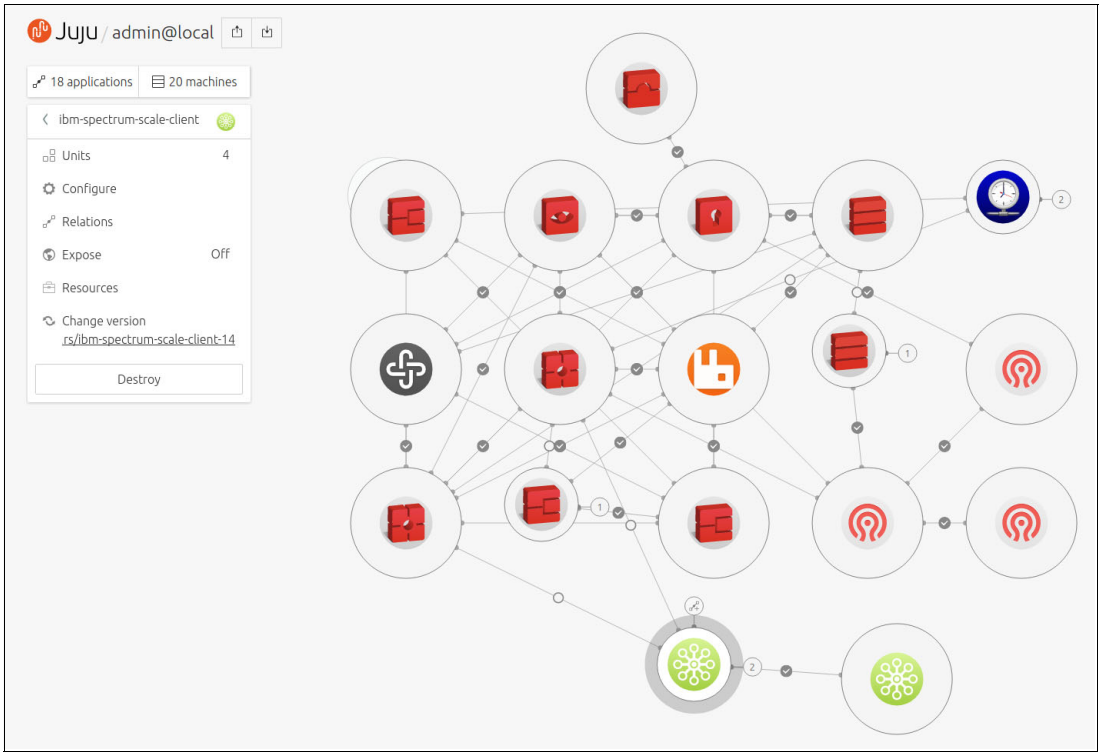

Figure 3 Juju graphical user interface showing OpenStack bundle with IBM Spectrum Scale charms

For more information, see the Canonical Charm Store.

For a demonstration that uses Juju charms for deploying OpenStack cloud with IBM Spectrum Scale storage, see the Automating IBM Spectrum Scale Deployment with Ubuntu OpenStack Cloud and Juju Charms video.

Summary

IBM Spectrum Scale is a proven, enterprise-class file system. OpenStack cloud is the leading open source Infrastructure-as-a-Service cloud platform and Ubuntu is the most used operating system for OpenStack clouds. When used together, these technologies provide a unique cloud platform that accelerates time to value by alleviating many of the storage and management headaches IT administrators, architects, and managers encounter.

By integrating the OpenStack storage services within a single storage plane, administrators avoid silos of storage and their corresponding data management headaches, which allows enterprises to realize the full value of their data. By using Canonical's Juju Charms, your deployment and management operations can be highly automated, and maintenance operations greatly simplified.

For more information, see *IBM Spectrum Scale in an OpenStack Environment*, REDP-5331, which is available at this website or scan the QR code that is shown in Figure 4.

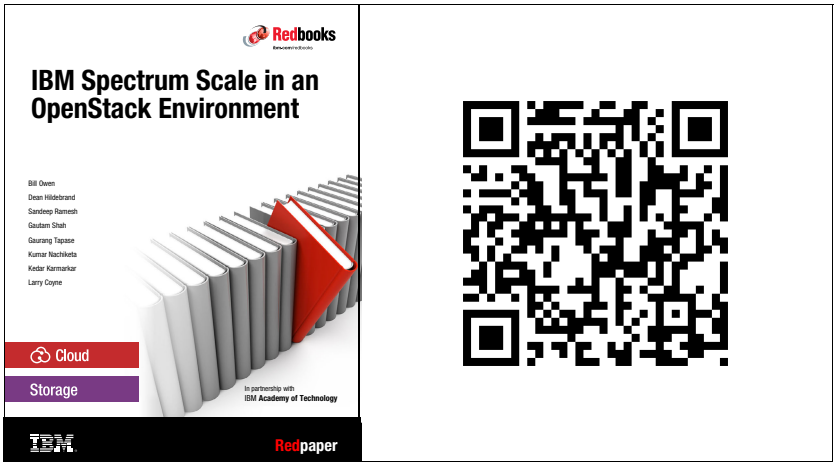

Figure 4 REDP-5331 with QR code

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