Red Hat
Enterprise Linux

Brief

Increase storage reliability and availability

Red Hat Enterprise Linux Resilient Storage Add-On for your datacenter

62%

of CIOs consider delivering consistent and stable IT performance to be a top priority.[1]

Red Hat Enterprise Linux provides a consistent, predictable foundation for reliable, stable operations across your hybrid datacenter and organization. Red Hat Enterprise Linux Resilient Storage Add-On further increases availability and stability with several new features:

- More efficient (iomap based) input/output (I/O)
- Improved journal recovery speed
- Support for "punch hole"
- More efficient writeback (in the default, "ordered" mode)

IT reliability is critical to business success

Modern business relies on IT services and applications. If those services and applications are not available, business suffers. In fact, delivering consistent and stable IT performance to the business is a top operational priority for 62% of CIOs.[1]

A more reliable datacenter begins with your operating system. Red Hat® Enterprise Linux® provides a consistent foundation for predictable, stable operations across your hybrid datacenter and organization. Support for resilient storage across your environment — including x86, IBM® Power Systems, and IBM Z® architectures — lets you use the platforms of your choice without compromising reliability. Red Hat Enterprise Linux Resilient Storage Add-On builds on the Red Hat Enterprise Linux High Availability Add-On to provide a nearly POSIX[2] file system interface to shared storage through the GFS2 filesystem.

GFS2

The Red Hat Global File System 2 (GFS2) file system is a 64-bit symmetric cluster file system that provides a shared namespace and manages coherency between multiple nodes sharing a common block device. This shared block device is usually a LUN on a Fibre Channel or iSCSI SAN providing an appropriate RAID level, but could be any shared storage device providing the appropriate coherency guarantees.[2]

This configuration provides a feature set that is as close as possible to a local file system while enforcing full cluster coherency between nodes. In a few cases, the Linux file system application programming interface (API) does not allow the clustered nature of GFS2 to be totally transparent. However, in most cases, the functionality is identical to that of a local file system with a shared namespace.

Applications

GFS2 is aimed at high-availability (HA) workloads, and it runs some of the most critical applications at many well-known companies. The emphasis is on stability and reliability – and providing a functional experience that is as close to that of a local file system as possible. It is important to assess the suitability of an application to run in a clustered environment before deployment, and Red Hat support teams are available to advise in any specific case.

Some applications that run well on GFS2 are SAS, Tibco MQ, IBM Websphere MQ, and Red Hat AMQ. In addition, web and file transfer protocol (FTP) servers have been successfully deployed on GFS2, as well as many custom applications. Failover active/passive network file system (NFS) servers also can be run on top of GFS2. Red Hat Enterprise Linux Resilient Storage Add-On includes CTDB, which allows deployment of active/active Samba (SMB) servers.

1 *Harvey Nash / KPMG, "CIO survey 2018." April 2018. https://assets.kpmg/content/dam/kpmg/ch/pdf/cio-survey-harvey-nash-report-2018.pdf*

2 *Portable operating system interface (POSIX), logical unit number (LUN), internet small computer system interface (ISCSI), storage area network (SAN), redundant array of independent disk (RAID)*

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No single point of failure (SPoF)

GFS2 provides a clustered file system (CFS) solution with no single point of failure. Hardware fencing allows automatic rebooting of failed or stuck nodes, bringing them back into the cluster. GFS2 is journaled to allow fast recovery while maintaining consistency when a node fails. Dual attached storage provides for redundancy in the storage network to protect against cable or switch failure.

Integrated virtualization

The Red Hat Enterprise Linux Resilient Storage Add-On works directly with the Red Hat Enterprise Linux kernel to increase reliability within virtualized environments. Virtualization is directly integrated using Kernel-based Virtual Machine (KVM) technology. Virtual machines can serve as a platform for clusters to protect applications. This feature allows Red Hat Enterprise Linux to support high-availability functions—including virtual machine fencing and failover—within virtualized environments like Red Hat Virtualization and VMware. You can also create clusters within virtual machines to permit application failover across Red Hat Virtualization nodes.

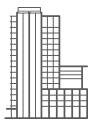
Monitoring

Performance monitoring data from GFS2 can be gathered using Performance Co-Pilot (PCP) and either displayed directly or fed into other subsystems for further analysis. PCP is integrated with Cockpit, Red Hat Enterprise Linux's management interface, to display all critical parameters from a single, web-based dashboard.

Conclusion

IT service and application reliability is critical for modern businesses. Red Hat Enterprise Linux Resilient Storage Add-On can help you improve file system availability across your IT environment to better support your business.

Learn more at redhat.com/en/technologies/linux-platforms/enterprise-linux.



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