

RED HAT® ENTERPRISE LINUX®

DATASHEET

AVAILABILITY ADD-ONS Scalable File System

RED HAT ENTERPRISE LINUX SCALABLE FILE SYSTEM ADD-ON

Improve performance over traditional networking by providing greater network throughput at reduced CPU load



Red Hat's Scalable File System Add-On incorporates the Linux XFS file system. XFS is a highly scalable, high performance journaling file system proficient at handling extremely large files. XFS provides support for file systems

larger than supported by ext4, up to 100 terabytes in size. The XFS file system manages these large data stores using advanced features such as 64-bit journaling and advanced locking algorithms. In addition to supporting very large files, XFS also performs well on smaller systems running multi-threaded parallel I/O workloads.

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ADD-ON OPTIONS
AVAILABLE

www.redhat.com/rhel/add-ons/

The Scalable File System Add-On should be selected when:

- You require a very large file system – greater than 16 terabytes
- Your needs are such that you expect your file system to continue to grow larger
- Your users have very large files – such as video files, engineering designs, and large databases
- Your file system is not necessarily large but requires high performance for multi-threaded applications such as dedicated mail servers and database servers
- You need to perform backups and snapshots of the live file system

KEY FEATURES

In conjunction with Red Hat Enterprise Linux, Red Hat offers a portfolio of Add-Ons to extend the features of your Red Hat Enterprise Linux subscription. Add-Ons allow you to tailor your application environment to suit your particular computing requirements. With increased flexibility and choice, you can select the availability, scalability, and management features required by your organization when and where they are needed.

A high performance file system, especially one supporting very large files, requires high reliability and file system integrity. The XFS file system supports metadata journaling, which facilitates quicker crash recovery in the event of a system failure. Multi-threaded operations, extent-based allocation and sorted lists of available free extents improve file system performance.

To improve usability, the XFS file system can also be defragmented and enlarged while mounted and on-line. Red Hat Enterprise Linux 6 includes backup and restore utilities specific to the XFS file system.

Allocation

File system performance and integrity are critically important for a very large file system. The XFS file system was designed with the many disk space allocation features necessary to improve performance and ensure the data integrity of very large files.

Extent Based Allocation

The XFS file system manages the blocks used in files with variable length extents where one extent describes one or more blocks, shortening the list of blocks used by a file. The extent oriented structure makes for very efficient location of free extents, significantly improving file system performance.

Stripe-aware Allocation Policies

In order to maximize throughput when an XFS file system is created on a striped RAID array, a stripe unit can be specified. This ensures that data allocations, inode allocations and the file system journal are aligned with the stripe unit.

Delayed Allocation

The XFS file system performs actual block allocation only when the buffer cache is flushed to the disk. This increases the chance that a file will be written in a contiguous group of blocks, reducing fragmentation and improving file system performance.

Space Pre-allocation

In order to reduce fragmentation and improve file system performance for large databases and applications such as streaming media, the XFS file system allows for pre-allocation of file disk space when the file is created.

OTHER XFS FILE SYSTEM FEATURES

Project/directory Quotas

The XFS file system supports project quotas. Project quotas can be used to restrict the amount of storage used by a given directory tree.

Live File System Back-ups and Snapshots

The XFS file system supports live backups. XFS also allows freezing the file system I/O while a hardware snapshot is taken.

Online Resizing

The XFS file systems can be grown as long as there is sufficient available space on the file system device.

KEY BENEFITS

With Red Hat Enterprise Linux and the Scalable File System Add-On, you receive.

- The Scalable File System Add-On uses the XFS® file system to provide high performance support for file systems that are between 16 terabytes and 100 terabytes in size.
- Thousands of certified applications from independent software vendors (ISVs)
redhat.com/partners/isv
- Hundreds of certified hardware systems and peripherals from leading original equipment manufacturer (OEM) vendors and independent hardware vendors (IHVs) spanning multiple processor architectures. Support for the latest hardware architectures and standards.
redhat.com/partners/hardwarepartners
- Excellent performance, security, scalability, and availability, with audited industry benchmarks
- Every major version provides stable application interfaces and seven years of product support with an option for up to 10 years of life cycle support.
- A product family that enables seamless interoperability of systems from the laptop, to the datacenter, to the mainframe, and interoperability with existing UNIX and Microsoft Windows deployments
- Up to 24/7 support with one-hour response time available from Red Hat and selected ISV and OEM partners redhat.com/support
- Red Hat Consulting will maximize cost savings and overall return on investment (ROI) and help you plan and execute successful IT initiatives. Red Hat Consulting has a proven track record of helping customers fully utilize the value of their Red Hat Enterprise Linux investment across unique and varying environments. redhat.com/consulting
- Red Hat offers a variety of learning styles, delivery methods, certifications, savings programs, and customized solutions to maximize return on your Red Hat Enterprise Linux investment.
redhat.com/training

ADVANTAGES OF RED HAT ENTERPRISE LINUX

The Red Hat's Scalable File System Add-On leverages all the advantages of Red Hat Enterprise Linux. Customers receive operational flexibility through automated deployment features such as kickstart tools, automatic system updates, and the auditing capabilities of Red Hat Network. Red Hat Network and its on-premise version Red Hat Network Satellite helps organizations lower their per-system deployment and management costs, reduces unplanned downtime by automating and centralizing routine tasks, and creates a consistent manageable environment.

FEATURE SUMMARIES

High Performance	<ul style="list-style-type: none"> • Intelligent organization of file system metadata minimizes wasted space and generates lists of used and free space to speed write operations • Multi-threaded operations perform simultaneous file system operations that increase scalability • Extent-based allocation and sorted lists of available free extents speed up selection of needed space • Delaying allocation of disk extents until data is flushed minimizes fragmentation
Quota Support	Project quotas can be used to restrict the amount of storage used by a given directory tree
Online Properties	Common operations such as defragmentation and filesystem growth may be performed while the file system remains mounted. Online properties reduces the downtime often associated with unmounting to perform administrative tasks
Snapshots and Backups	<ul style="list-style-type: none"> • Hardware snapshots can be facilitated by freezing an XFS® file system while the snapshot is taken • Backups can be made from live XFS file systems

SERVER AND VERSION COMPATIBILITY

Red Hat Enterprise Linux Version	Variants	Releases
Red Hat Enterprise Linux 5	Red Hat Enterprise Linux Server Red Hat Enterprise Linux AP	Red Hat Enterprise Linux 5.5 and later
Red Hat Enterprise Linux 6	Red Hat Enterprise Linux Serve Red Hat Enterprise Linux for HPC Head Node Red Hat Enterprise Linux for HPC Compute Node Red Hat Enterprise Linux for SAP Business Apps	Red Hat Enterprise Linux 6.0 and later

DATASHEET**EXECUTIVE SUMMARY**

Red Hat's Scalable File System Add-On enables your most critical applications to be highly available by reducing downtime and ensuring that there is no single point of failure in a cluster. The Scalable File System Add-On also isolates unresponsive applications and nodes so they can't corrupt critical enterprise data. You can read about our additional Add-On offerings by visiting <http://www.redhat.com/rhel/add-ons/>.

HOW TO ORDER THE SCALABLE FILE SYSTEM ADD-ON

The Red Hat Enterprise Linux Scalable File System Add-On is delivered through Red Hat Network, similar to the way regular Red Hat Enterprise Linux content is provided. Customers using the RHN Satellite can make use of Satellite to manage Load-Balancer systems.

To order Red Hat Enterprise Linux Scalable File System Add-On, please contact your local Red Hat Account Representative.

PURCHASING ADD-ON SUPPORT WITH YOUR CURRENT SUBSCRIPTION

The purchase process for Red Hat Add-On products may be materially different than the purchase process for the underlying Red Hat Enterprise Linux subscription. The differences may include both service levels (Standard versus Premium) as well as the channel where they were purchased (OEM partner, VAR or Reseller, directly from Red Hat). These differences may create a mixed support situation for the customer. In such situations, the customer should expect two things: 1) a best effort from their primary support organization to manage their support experience, and 2) that the support organization provide the most appropriate service level to resolve the issue brought forth.

ABOUT RED HAT

Red Hat, the world's leading provider of open source solutions and an S&P 500 company, is headquartered in Raleigh, NC with more than 70 offices spanning the globe. Red Hat provides high-quality, affordable technology with its operating system platform, Red Hat Enterprise Linux, together with cloud, virtualization, management, storage and service-oriented architecture (SOA) solutions, including Red Hat Enterprise Virtualization and JBoss Enterprise Middleware. Red Hat also offers support, training and consulting services to its customers worldwide.

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