

# RED HAT ENTERPRISE LINUX AS A FILE SERVER

You're familiar with Red Hat® products that provide general-purpose environments for server-based software applications or desktop/workstation users. But did you know that Red Hat Enterprise Linux® can also be used as a file server?

File servers are a critical part of every organization's IT infrastructure. They provide access to files and databases for desktop/notebook users and for server-based applications.

File servers allow companies to store files on central, shared disks, which users and applications can access as if they were Direct-Attached Storage (DAS) on their individual machines. Centralizing files onto centralized servers improves storage security, backup, and administration.

- File servers enable files to be shared easily by multiple users and eliminate the need for users to leave their computer on for other users who need access their files.
- File servers enable you to allocate storage quickly and easily. Increase available storage more cost-effectively. Replace or add internal drives to desktops or application servers without taking them offline.
- File servers improve data security and backups. Recover faster from system problems. Search and locate specific files more quickly and easily. Comply with regulations and improve business continuity.

A file server based on Red Hat Enterprise Linux allows IT to replace older Microsoft® Windows®-based machines or expensive-to-maintain Unix®/Solaris® systems with new commodity-priced hardware that delivers high reliability, availability and performance.

Red Hat Enterprise Linux file servers can provide file serving for central IT facilities. They also let you deploy smaller, less expensive, highly-reliable file servers to branch and remote locations to provide users with responsive local service. A Red Hat Enterprise Linux file server can be part of scale-out blade or scale-up server consolidation.

A Red Hat Enterprise Linux server can perform other tasks in addition to file serving. Your server could act as a print server, name server, web server, or mail server, depending on system capacity and performance requirements. Red Hat Enterprise Linux-based servers are widely used throughout the world in these capacities. For example, Ticketmaster's website is powered by Red Hat Enterprise Linux.

Another benefit of using a Red Hat Enterprise Linux-based file server is that no client licenses are needed. This helps further reduce/control IT costs and simplifies adding and managing users.

Red Hat Enterprise Linux offers out-of-the-box cost-effective solutions to your company's file serving needs, whether you are using low-end servers to repurpose older hardware or deploying high-end, high-performance servers for mission-critical transactions and very-large-file applications. Red Hat Enterprise Linux file servers are also good candidates for virtualization-based server consolidation.

A Red Hat Enterprise Linux-based file server can act as a starting point for companies considering adding or migrating to Linux for its reliability, flexibility, and cost benefits. For companies already running Red Hat Enterprise Linux workstations, network security, or application servers, Red Hat Enterprise Linux-based file servers leverage your management tools and staff expertise.

## Features

To support your organization's performance needs, Red Hat Enterprise Linux runs on a wide range of hardware. The hardware can be an existing machine that is repurposed, a new commodity-based server, or a high-end, high-performance machine.

Windows users can access files and storage space through Red Hat Enterprise Linux file servers the same way they do with Windows-based file servers: "My Network Places" or "Map Network Drive." Unlike Windows-based file servers, a Red Hat Enterprise Linux file server does not require any client licenses. This reduces the cost and management of user administration.

Red Hat Enterprise Linux includes all the software components needed to let it act as a file server for Windows, MacOS®, Linux and Unix client systems:

- Samba provides access for Windows, Linux/Unix, and MacOS clients.

Samba uses the Windows Server Message Block (SMB) and Common Internet Filesystem (CIFS) protocols. Samba provides an interface for networks using Microsoft's Active Directory.

- Network File System (NFS) provides file access for Linux/Unix MacOS clients and for Microsoft systems using Microsoft's Services For Unix.

NFS is an open standard, cross-platform file system utility with implementations available for a wide range of operating systems, architectures, platforms, and appliances, from embedded systems to mainframes and high-performance clusters. NFS provides file sharing for Unix, Linux, mainframes, and other file systems, including Mac OS X.

Both Samba and NFS are mature, well-established technologies. A Red Hat Enterprise Linux file server can run Samba and NFS concurrently. This dual system can be more effective than using these protocols in separate servers.

For specialized file serving needs, such as high-end clusters, Red Hat also offers other file server technologies such as Global File System and Cluster Suite.

A Red Hat Enterprise Linux file server can provide related network services, including name resolution and browsing, and can be used as a WINS (Windows Internet Name Server) server to resolve NetBios™ name service requests.

A Red Hat Enterprise Linux file server also includes:

- The Samba Web Administration Tool (SWAT), which lets administrators configure a Samba server remotely via web browser.
- A simple SMB client with an FTP-like interface, which allows Linux/Unix systems to connect to remote SMB shares to transfer files and to send files to remote printers (“print shares”).

### **Benefits of a Linux-based file server**

Linux systems have consistently earned a reputation for being highly stable and reliable. Most of today’s gateway and security appliances use Linux, with the expectation that the user will never have to touch the operating system.

Benchmarks for Linux-based file servers against Windows have shown Linux systems offer much better performance and sustain performance levels for many more clients than Windows-based file servers.

Other benefits of using Linux include:

#### **Price Scaling.**

Linux servers offer low entrance cost in terms of server licenses and no per-client costs as you add more file-sharing user clients to the network.

#### **Comparative high performance.**

While Windows can be fast, its kernel must be large to provide the variety of services users may want to employ. Linux lets system administrators remove services that aren’t needed, which eliminates unproductive loads on the hardware.

#### **Tunable.**

Linux allows IT to tune the kernel on each system (or virtual machine) appropriately for the services it will provide. This improves performance, security, and reliability, reducing the ongoing system administration needed.

#### **Easier, more comprehensive maintenance.**

Having source code available means your organization can inspect code. Monitoring, debugging and performance tuning are much easier and more effective. Troubleshoot drivers for storage devices and protocols including SCSI, Fibre Channel and iSCSI (SCSI over Ethernet).

#### **Ideal for server consolidation and virtualization.**

Running your file servers on Linux lets you consolidate distributed Windows and Windows server workloads. This helps reduce the cost of maintaining and administering systems.

Linux is also a good candidate for server virtualization using server virtualization utilities such as Xen. Virtualization lets you consolidate multiple file servers or a file server and other types of servers on a single, larger machine more securely and with easier, more flexible control over performance allocations.

#### **Wider choice of file systems and volume managers.**

In addition to cost-effective performance, using Linux rather than Windows gives you

a wider, growing choice of file systems and volume managers. This lets you provide the best file services for various scenarios.

A number of file systems are supported for Linux, including:

- EXT3, a journaling filesystem
- Microsoft FAT
- Red Hat Global File System (GFS), a cluster-aware file system available as an add-on to Red Hat Enterprise Linux that allows a cluster of Linux servers to share data in a common pool of storage simultaneously. Few other cluster file systems can do this.

A number of volume management systems are supported for Linux, including:

- Logical Volume Manager (LVM)
- RAID tools (mdtools)

These choices and tools make it easier to migrate blocks of physical storage in and out without disrupting your file system.

Linux file systems include easy-to-use features that let you set up multiple servers accessing a single file system and/or replicate a file system to two physically distant servers and automatically keep them in synch. (Possible, but considerably more expensive in Windows or Solaris.)

### **Implementation and optimization**

Setting up a Red Hat Enterprise Linux machine as a file server is simple and straightforward. When you do the install, select “File server.”

(Before setting your network, determine whether it will be primarily Windows- or Linux/Unix-based, as transferring accounts from one to the other can be non-trivial.)

To install a Samba server:

1. Log into the system.
2. Verify that the Samba packages have been installed.
3. Configure the Samba server.
4. Enter server settings.
5. Add users.
6. Add share.
7. Start the Samba server.

### **Benefits of a Red Hat Enterprise Linux file server**

Red Hat Enterprise Linux offers numerous benefits for IT departments looking to make use of Linux for their server platform. Red Hat Enterprise Linux offers numerous benefits for IT departments looking to make use of Linux for their server platform. We provide a framework that is a foundation for IT services, including file, print and web serving, that can be used and moved on a range of operating systems and hardware environments.

Red Hat includes utilities, tools, documentation, support, and other value-added services. Red Hat

extensively tests all software included in its Enterprise offering. This testing, bundled with support services, adds value to customers, especially to businesses and other organizations where confidence in service and support is as important as the software itself.

### **About Red Hat**

Founded in 1993, Red Hat is the premier Linux and open source provider. Rated as CIO Insight Magazine's Most Valued Vendor for the second consecutive year, Red Hat maintains the highest value and reliability rankings among its customers, and is the most recognized Linux brand in the world.

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