

# RED HAT ENTERPRISE LINUX SYSTEM MANAGEMENT WITH SYSTEMD

TECHNOLOGY BRIEF

## TRANSITION SMOOTHLY TO SYSTEMD

Systemd includes all of the capabilities of SysV. Transitioning to the new framework is straightforward because:

- The SysV commands map clearly to the systemd commands.
- Over 95% of SysV initialization scripts written to the Linux Base Standard execute in the systemd framework.
- Guidelines for converting SysV scripts to systemd unit files are well documented.

Systemd is the system and service manager for Red Hat® Enterprise Linux® 7 beta. In contrast to traditional init systems, systemd more efficiently starts and stops systems and services, provides system administrators with more status detail and enhanced journaling, and integrates resource management capabilities.

Systemd takes a modern approach to bringing up user space using startless parallelizing. The systemd management framework meets the requirements of densely virtualized systems, such as those found in on-premise or hosted clouds, where parallelization and rapid startup times significantly benefit infrastructure operations.

## FEATURES AND CAPABILITIES

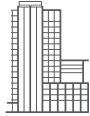
### EFFICIENTLY RUN AND MANAGE SYSTEMS AND SERVICES

In addition to making systems and services more agile, systemd streamlines many of the typical administrative tasks with simpler commands and processes that are aggregated into service units.

Systemd lets you manage many aspects of a system. Table 1 contains descriptions of these aspects and main actions associated with each unit.

TABLE 1: SYSTEMD UNITS

UNIT	DESCRIPTION
Service	Describe a daemon's type, execution, environment, and how it's monitored.
Socket	Endpoint for inter-process communication; can be file, network, or UNIX sockets.
Target	Logical grouping of units; allows for defining run levels.
Device	Automatically created by the kernel; can be provided to services as dependents.
Mounts, automounts, swap	Monitor the mounting and unmounting of file systems.
Snapshots	Save the state of units; useful for testing.
Timers	Set timer-based activation.
Paths	Monitor a path.
Scopes	Organizational units group services' worker processes.
Slices	Manage organized units that group services' worker processes; facilitate resource allocation.



**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.

**BALANCE SYSTEM AND APPLICATION RESOURCES FOR BEST PERFORMANCE**

A powerful attribute of systemd is the integration of resource management through cgroups, which can improve throughput or performance predictability. Administrators can shift CPU, network, and disk resources between processes to reduce resource contention or to improve the performance of applications in real time. Figure 1 shows one possible resource allocation scenario.

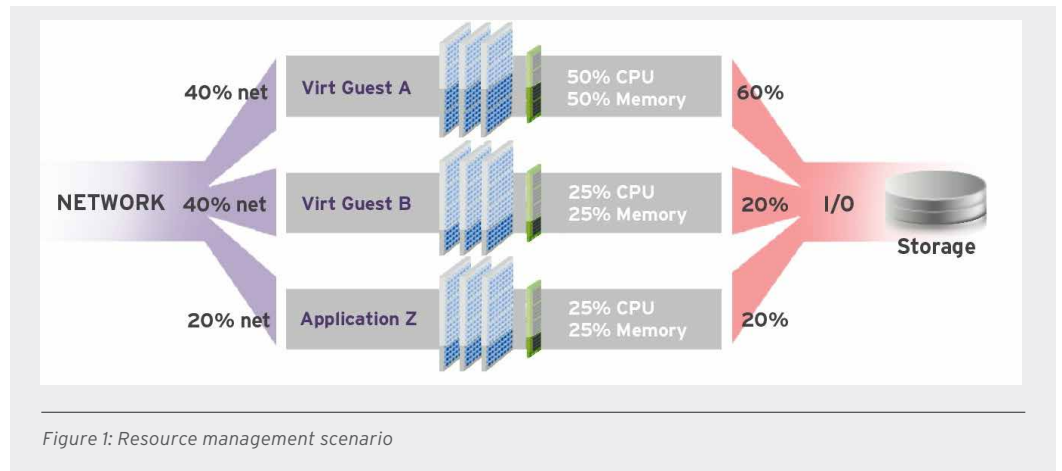


Figure 1: Resource management scenario

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**APPLY JOURNAL INFORMATION TO IMPROVE SYSTEM OPERATIONS**

Systemd includes a journaling service that makes log file data more accessible and the information easier to consume. It includes the following features:

- Rich data is recorded and securely stored, which means it is available even after a reboot for troubleshooting.
- Allows interactive, real-time viewing of log files using a graphical tool that supports filtering and highlighting.
- Group-based access means that system administrators view only relevant logs.
- Filtering occurs on time and according to priority means admins can show only the log entries that fit a specific condition.