



Glossary

access control list (ACL) Access control lists (ACLs) provide an additional layer of access control to files and directories; associated with the **setfacl** and **getfacl** commands.

Address Resolution Protocol (ARP) A protocol that maps an IP address to the hardware address on a network card.

alternatives The **alternatives** command supports changes to default configurations; for example, the **alternatives --config mta** command supports administrators who change the current SMTP server between sendmail and Postfix.

anacron The anacron service is designed to run **cron** jobs that could not run while a server was powered down; now integrated into periodic job management through the */etc/anacrontab* file.

apachectl The **apachectl** command is the preferred method to start, stop, and reload an Apache server; the **apachectl graceful** command reloads a revised configuration file without kicking off connected users.

Apache web server The Apache web server provides both normal and secure web services, controlled by the **httpd** daemon.

arp (Address Resolution Protocol) The **arp** command is used to view or modify the kernel's ARP table. Using **arp**, you can detect problems such as duplicate addresses on the network. Alternatively, you can use **arp** to add the required entries from your LAN.

at The **at** command is similar to **cron**, but it allows you to run a job on a one-time basis.

automounter The automounter can be configured to mount local and network directories on an as-needed basis. It's configured in the *auto.master*, *auto.net*, *auto.misc*, and *auto.smb* files in the */etc* directory.

bash The default shell for Linux users is bash, also known as the Bourne-Again Shell.

BIND (Berkeley Internet Name Domain) BIND is the software that is used to set up a Domain Name System (DNS) service. The associated daemon is named.

BIOS The BIOS is the Basic Input/Output System that runs basic commands when you power up your computer. On most modern systems, it's been replaced by the UEFI. The BIOS menu allows you to customize many options, including the sequence of boot media.

/boot The directory with the main files required to boot Linux, including the Linux kernel and initial RAM disk. By default, /boot is mounted on a separate partition.

caching-only name server A caching-only name server that performs many of the functions of a DNS server. It stores the IP address associated with recent name searches, for use by other computers on your LAN.

CentOS The Community Enterprise Operating System, a “rebuild” of RHEL, based on Red Hat source code.

chage The **chage** command manages the expiration date of a password.

chattr The **chattr** command allows you to change file attributes.

chgrp The **chgrp** command changes the group that owns a file.

chkconfig The **chkconfig** command manages runlevel service information. It can activate or deactivate services. It can also customize services at specific runlevels.

chmod The **chmod** command changes the permissions on a file.

chown The **chown** command changes ownership on a file.

CIFS (Common Internet File System) CIFS is the Microsoft name for advances in its networking software. It's also covered by the latest version of Samba, 3.5.4, which is included with RHEL 6.

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cron A service that runs jobs on a periodic basis. It's configured in `/etc/crontab`; by default, it executes jobs in the `/etc/cron.hourly`, `/etc/cron.daily`, `/etc/cron.weekly`, and `/etc/cron.monthly` directories.

crontab Individual users can run the **crontab** command to configure jobs that are run periodically.

cryptsetup The **cryptsetup** command can be used to configure a volume with LUKS encryption.

/dev The directory with device files, used to represent hardware and software components.

DHCP (Dynamic Host Configuration Protocol) DHCP clients lease IP addresses for a fixed period of time from a DHCP server on a local network.

Disk Druid Anaconda's hard disk management program. While the functionality is similar to **fdisk** and **parted**, Disk Druid is easier to use. However, it is available only during the Linux installation process.

dmesg The **dmesg** command lists the kernel ring buffer and the initial boot messages. If your system successfully boots, `/var/log/dmesg` is one place to look for messages.

DNS (Domain Name System) The DNS service maintains a database of fully qualified domain names such as `www.mcgraw-hill.com` and IP addresses such as `198.45.24.143`. If the domain name is not in the local database, DNS is normally configured to look to other, more authoritative, DNS servers. The associated daemon is **named**.

dumpe2fs The **dumpe2fs** command provides a lot of information about the format of a partition.

e2label The **e2label** command associates a device with a label, typically a filesystem directory.

edquota The **edquota** command edits the quota for a user or a group.

environment Each user's environment specifies default settings such as login prompts, terminals, the PATH, mail directories, and more.

/etc/fstab The `/etc/fstab` configuration file defines default mounted directories.

/etc/inittab The `/etc/inittab` configuration file sets the default runlevel and starts key processes such as terminal gettys.

exportfs The `exportfs` command allows shared NFS directories to be shared with a network.

ext2/ext3/ext4 The second, third, and fourth extended filesystems (`ext2`, `ext3`, `ext4`) are standard on RHEL 6. The `ext3` and `ext4` filesystems include journaling. The `ext4` filesystem can handle files up to 1 exabyte (1,000,000 TB).

fdisk A standard disk partition command utility that allows you to modify the physical and logical disk partition layout.

Fedora Linux The successor to the freely available version of Red Hat Linux; more information on this Linux distribution is available online at www.fedoraproject.org.

filesystem Filesystem has multiple meanings in Linux. It refers to mounted directories; the root directory (`/`) filesystem is formatted on its own partition. It also refers to file formats; RHEL 6 volumes are typically formatted to the `ext4` format.

firewall A hardware or software system that prevents unauthorized access to and from a network.

fsck The `fsck` command checks the filesystem on a Linux partition for consistency. Variations on this command are available for specific filesystems, such as `fsck.ext2`, `fsck.ext3`, `fsck.ext4`, and even `fsck.vfat`.

FTP (File Transfer Protocol) The FTP protocol is a TCP/IP protocol designed for optimal file transfer speeds.

gateway The word gateway has multiple meanings in Linux. A gateway can be a route from one computer or network to another network. A default gateway address

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is the IP address of a computer or router that connects a LAN with another network such as the Internet. A gateway can also be a router between networks.

genkey The **genkey** command supports the generation of SSL keys for secure web sites.

getfacl The **getfacl** command lets you read access control lists (ACLs) on files and directories.

getsebool The **getsebool** command lets you read the current status of a SELinux boolean.

getty A **getty** is a terminal program that includes prompts for a login and a password. Virtual console gettys are configured through the `start-ttys.conf` file in the `/etc/init` directory.

GNOME (GNU Network Object Model Environment) GNOME is the default GUI desktop for Red Hat Enterprise Linux.

GPG (GNU Privacy Guard) GPG is an implementation of the OpenPGP standard included with Red Hat Enterprise Linux. You can implement this on RHEL 6 with the help of the **gpg2** command.

GPL The GPL is the Linux General Public License, under which most Linux software is released.

group ID Every Linux group has a group ID, as defined in `/etc/group`.

GRUB (Grand Unified Bootloader) The default boot loader for RHEL.

grub-install The **grub-install** command adds a pointer from the MBR to the GRUB bootloader configuration file, `/boot/grub/grub.conf`.

home directory The home directory is the login directory for Linux users. Normally, this is `/home/user`, where *user* is the user's login name. It's also represented by the tilde (`~`) in any Linux command.

htpasswd The `htpasswd` command helps create passwords that can be configured with an Apache web server.

hypervisor A virtual machine manager that allows a guest operating system to run on a host computer, using hardware-assisted virtualization.

ICMP (Internet Control Message Protocol) A protocol for sending online error control messages. Associated with the `ping` command.

ifconfig The `ifconfig` command is used to configure and display network devices.

init The `init` process is the first Linux process called by the kernel. This process starts other processes that compose a working Linux system, including the shell.

Initial RAM Disk RHEL uses an initial RAM disk in the boot process; it's stored as an `initrd-uname -r.img` file in the `/boot` directory.

IP forwarding IP forwarding refers to data transfer, from one external system, redirected through a local system, and sent to a second external system.

iptables The `iptables` command is the basic command for firewalls and network address translation (NAT).

IPv4, IPv6 IPv4 and IPv6 are different systems of IP addressing. Version 4 is what we use today and is based on 32-bit addresses; version 6 is coming on line and is based on 128-bit addresses.

iSCSI (Internet SCSI) Internet SCSI is an IP-based network protocol standard for connections to remote storage devices.

iscsiadm The `iscsiadm` command allows you to set up connections to remote iSCSI storage.

Kdump Kdump is a crash dump service for Linux.

kernel The kernel is the heart of any operating system. The Linux kernel is monolithic, where the operating system works alone.

kernel module Kernel modules are pluggable drivers that can be loaded and unloaded into the kernel as needed. Loaded kernel modules are shown with the `lsmod` command.

Kickstart Kickstart is the Red Hat automated installation system, where answers to installation questions can be supplied from a single text file.

KVM KVM, the Kernel-based Virtual Machine, is the default virtualization technology for RHEL 6.

lftp The `lftp` command starts a flexible FTP command line client.

Lightweight Directory Access Protocol (LDAP) The Lightweight Directory Access Protocol supports a central authentication database.

Live CD Used in reference to a complete Linux operating system that can be booted directly from CD/DVD media.

locate The `locate` command searches through a default database of files and directories. The database is refreshed daily with the `mlocate.cron` script in the `/etc/cron.daily` directory.

logical extent (LE) A logical extent (LE) chunk of disk space that corresponds to a physical extent (PE).

logical volume (LV) A logical volume (LV) is composed of a group of logical extents (LEs).

Logical Volume Management (LVM) Logical Volume Management (LVM) allows you to set up a filesystem on multiple partitions. Also known as the Logical Volume Manager.

logrotate The `logrotate` command utility supports automated log file maintenance. With the help of cron, it rotates, compresses, and removes various log files.

lsattr The `lsattr` command lists file attributes.

Linux Unified Key Setup (LUKS) LUKS is a specification for volume encryption on RHEL. It requires the `dm_crypt` and `dm_mod` modules as well as the `cryptsetup` command.

lvcreate The `lvcreate` command creates a logical volume (LV) from a specified number of available physical extents (PEs).

lvdisplay The `lvdisplay` command specifies current configuration information for logical volumes (LVs).

lvextend The `lvextend` command allows you to increase the physical volume (PV) area allocated to a logical volume (LV).

lvremove Functionally opposite to the `lvcreate` command.

masquerading Masquerading enables you to provide Internet access to all of the computers on a LAN with a single public IP address; a form of network address translation (NAT).

MBR (Master Boot Record) The first sector of a bootable disk. Once the UEFI/BIOS cycle is complete, it looks for a pointer on the boot disk's MBR, which then looks at a boot loader configuration file such as `grub.conf` for directions on how to start an operating system.

MD5 (Message Digest 5) An encryption algorithm used for passwords. While it's no longer the default encryption scheme for Linux user passwords, it is still used for other passwords such as those in the GRUB configuration file.

mkfs The `mkfs` command can help you format a newly configured volume. Variations are available including `mkfs.ext4`, which formats to the default `ext4` filesystem.

mkswap The `mkswap` command can help you set up a newly configured volume as swap space.

modprobe You can use the `modprobe` command to control device modules to be installed.

mount You can use the **mount** command to specify mounted partitions, or attach local or network partitions to specified directories. Variations are available for different network mounts such as **mount.nfs**, **mount.nfs4**, and **mount.cifs**.

NAT (Network Address Translation) NAT is a feature associated with firewall commands such as **iptables**, which connects computers inside a LAN to an external network such as the Internet while disguising their true IP addresses.

netstat The **netstat** command displays connectivity information for local network cards. For example, the **netstat -r** command is used to display the routing tables as stored in in the kernel.

Network Manager Network Manager (sometimes shown as one word) is integrated network management software, developed by the GNOME project, associated with the **nm-connection-editor** command.

Network Time Protocol (NTP) The Network Time Protocol supports synchronization between the local computer and a central timeserver.

/etc/ntp.conf The main NTP server configuration file; to set up NTP server peers, substitute **peer** for **server** in the **ntp.conf** file, specifying the hostname or IP address of the remote NTP peer.

NFS (Network File System) NFS is a file-sharing protocol originally developed by the company once known as Sun Microsystems; it is the networked filesystem most commonly used for networks of Linux and Unix computers.

nmap A port scanner that can review the open and available status of TCP/IP ports.

palimpsest The **palimpsest** command starts the RHEL 6 GUI Disk Utility, a front end to volume format and configuration commands.

PAM (Pluggable Authentication Modules) PAM separates the authentication process from individual applications. PAM consists of a set of dynamically loadable library modules that configures how an application verifies its users before allowing access.

parted **parted** is a standard disk partition command utility that allows you to modify the physical and logical disk partition layout. Be careful when using it, as changes are immediately written to the partition table.

PATH A shell variable that specifies the directories (and in what order) the shell automatically searches for input commands and files.

PGP (Pretty Good Privacy) A technique for encrypting messages, often used for e-mail. It includes a secure private- and public-key system similar to RSA. The Linux version of PGP is known as GPG (GNU Privacy Guard).

physical extent (PE) A chunk of disk space created from a physical volume (PV) for the Logical Volume Manager (LVM).

physical volume (PV) An area of space for the Logical Volume Manager (LVM) that usually corresponds to a partition or a hard drive.

PolicyKit The **PolicyKit** is a security framework used primarily for administrative configuration tools when working from a GNOME desktop environment.

Postfix A standard e-mail server application used by many Internet e-mail servers. The default Red Hat solution for RHEL 6.

Primary ATA (PATA) Primary ATA is the media standard associated with older IDE drives, also known as ATA (Advanced Technology Attachment).

/proc /proc is the Linux *virtual* filesystem. *Virtual* means that it doesn't occupy real disk space. /proc files are used to provide information on kernel configuration and device status.

public/private key Encryption standards such as PGP, GPG, or RSA are based on public/private key pairs. The private key is kept on the local computer; others can decrypt it with the public key.

pvcreate The **pvcreate** command allows you to configure physical extents (PEs) from a properly configured partition.

pvdisplay The **pvdisplay** command specifies current configuration information for physical volumes (PVs).

QEMU The hypervisor used with the Red Hat implementation of KVM. It is sometimes known by its former acronym, the quick emulator.

Red Hat Certified Engineer (RHCE) An elite certification available for Linux network professionals. Qualifies Linux administrators with significant experience in Linux services on Red Hat Enterprise Linux. While the RHCE exam can be taken first, a candidate must pass both the RHCSA and RHCE exams before Red Hat awards that person the RHCE credential.

Red Hat Certified System Administrator (RHCSA) Another elite certification available for Linux systems administrators. Designed to qualify Linux professionals with significant experience in systems administration.

Red Hat Network (RHN) The Red Hat Network (RHN) supports remote control and administration of systems with RHN subscriptions.

Red Hat Package Manager (RPM) The Red Hat Package Manager is a system that sets up software in discrete packages. The associated **rpm** command allows you to add, remove, upgrade, and erase packages and more.

relayhost The **relayhost** directive in Postfix supports a connection to a smart host.

resize2fs The **resize2fs** command allows you to change the size of a filesystem, often used after increasing the space associated with an LVM.

root This word has multiple meanings in Linux. The root user is the default administrative user. The root directory (/) is the top-level directory in Linux. The root user's home directory, /root, is a subdirectory of the root directory (/).

router A computer that transfers messages between LANs. Computers that are connected to multiple networks often serve as routers.

rpc.mountd The **rpc.mountd** daemon supports mount requests for shared NFS directories.

rpmbuild The **rpmbuild** command allows you to build source code based on information in a `.spec` file.

rpmdev-newspec The **rpmdev-newspec** command creates a RPM `.spec` template file in the local directory.

rpmdev-setuptree The **rpmdev-setuptree** command allows you to set up directories for building RPM source code.

runlevel RHEL includes six available runlevels, as defined in `/etc/inittab`. Key runlevels include 1, single-user mode; 3, text login; and 5, GUI login.

rxw/ugo A reference to basic Linux permissions and ownership on a file; `rxw/ugo` stands for read, write, execute, user, group, other.

Samba The Linux and Unix implementation of the Server Message Block protocol and the Common Internet File System (CIFS). Allows computers that run Linux and Unix to communicate with computers that run Microsoft Windows operating systems.

Scientific Linux A “rebuild” of RHEL developed by scientists associated with Fermilab and CERN. That rebuild is based on Red Hat source code.

sealert The **sealert** command, with audit log files in the `/var/log/audit` directory, supports detailed analysis of SELinux problems.

secure virtual hosts You can configure multiple secure virtual hosts on a single Apache server using the secure configuration file, `/etc/httpd/conf.d/ssl.conf`.

Security Enhanced Linux (SELinux) An implementation of mandatory access control integrated into the Linux kernel; in essence, a different way of layering security within Linux.

SELinux Troubleshoot Browser A GUI browser for troubleshooting logs in the `/var/log/audit` directory.

sendmail A standard e-mail server application used by most Internet e-mail. The default Red Hat solution through RHEL 5; still supported by Red Hat on RHEL 6.

Serial ATA (SATA) The new standard on hard drives that makes it easier to chain hard drives in a series inside a physical system.

server A computer that controls centralized resources such as files and printers. Servers can share these resources with client computers on a network.

setfacl The `setfacl` command lets you control access control lists (ACLs) on files and directories.

setsebool The `setsebool` command lets you change the status of a SELinux boolean.

SGID The SGID bit sets common group ID permissions on a file or directory.

SHA2 (SHA256, SHA512) A series of secure hash algorithms created by the NSA, now in more common use on RHEL 6. SHA-512 is the default encryption algorithm for user passwords.

Shadow Password Suite The Shadow Password Suite creates an additional layer of protection for Linux users and groups in the `/etc/shadow` and `/etc/gshadow` files.

showmount The `showmount` command lists the shared directories from an NFS server.

single-user mode When RHEL starts in single-user mode, it automatically connects as the root user. While it does not prompt for the root password, you can still change it in single-user mode.

smbpasswd The `smbpasswd` command helps you create usernames and passwords for a Samba network.

SMTP (Simple Mail Transfer Protocol) SMTP is a TCP/IP protocol for sending mail; used by sendmail.

spec file Spec files are associated with source RPMs (SRPMs). You can modify an SRPM spec file to change the way an RPM package is built.

SRPM (source RPM) SRPMs include the source code required to build a binary RPM package. SRPMs are installed with the **rpm -i** command, which installs SRPM files within the `/usr/src/redhat` directory. You can then use the **rpmbuild** command to create a binary RPM.

ssh-copy-id The **ssh-copy-id** command can help you copy a public key to the appropriate location on a remote system to set up secure connections without regular passwords.

ssh-keygen The **ssh-keygen** command can help you create a passphrase and a public-private keypair for more secure SSH-based authentication.

strings The **strings** command can be used to identify daemons with the `hosts_access` setting, which is a service regulated by TCP Wrappers.

SUID The SUID bit sets common user ID permissions on a file or directory.

superuser The superuser represents a regular user who has taken root user privileges. Closely associated with the **su** and **sudo** commands.

swap space Linux uses swap space for less frequently used data that would otherwise be stored in RAM. It is normally configured in Linux in a swap partition.

system-config-* Red Hat has created a series of GUI configuration tools to help configure a number of different systems and services. You can start them with a number of different commands that start with **system-config-***. While it's usually faster to configure a configuration file directly, not every experienced administrator knows every detail of every major configuration file.

Telnet A terminal emulation program that allows you to connect to remote computers. The **telnet** command can be used to test the availability of services on specified port numbers.

testparm The **testparm** command is a syntax checker for the main Samba configuration file, `smb.conf`.

tmpwatch The **tmpwatch** command removes files that have not been accessed in a specified number of hours. The default daily **tmpwatch** script checks files in the `/tmp` and `/var/tmp` directories.

UEFI The UEFI is the Unified Extensible Firmware Interface that runs basic commands when you power up your computer. On most modern systems, it has replaced the BIOS. The UEFI menu allows you to customize many options, including the sequence of boot media.

umask The **umask** command defines default permissions for newly created files.

Universally Unique Identifier (UUID) A UUID is a unique 128-bit number, often associated with formatted storage volumes. A current list is available in the output to the **blkid** command. It's used to identify volumes to be mounted in the `/etc/fstab` file.

user ID (UID) Every Linux user has a user ID, as defined in `/etc/passwd`.

usermod The **usermod** command modifies different settings in `/etc/passwd`, such as expiration date and additional groups.

Very Secure FTP (vsFTP) The Very Secure FTP service is the default FTP server for RHEL.

vgcreate The **vgcreate** command creates a volume group (VG) from one or more physical volumes (PVs) for the Logical Volume Manager (LVM).

vgdisplay The **vgdisplay** command specifies current configuration information for volume groups (VGs).

vgextend The **vgextend** command allows you to increase the extents or space allocated to a volume group (VG).

vi The vi editor is a basic Linux text editor. While other editors are more popular, vi (actually vi, improved, also known as vim) may be the only editor you have available in certain rescue environments.

virsh The **virsh** command supports the management of virtual machines on RHEL 6.

virt-clone The **virt-clone** command supports the copying of an existing virtual machine on RHEL 6.

virt-install The **virt-install** command supports the creation of a virtual machine on RHEL 6.

virtual hosts You can configure multiple web sites on a single Apache server by configuring a number of virtual hosts in the `/etc/httpd/conf/httpd.conf` configuration file.

virtual machine (VM) A system where an application or an entire operating system is run with the help of a hypervisor such as QEMU and a virtualization solution such as KVM. Virtual machines fall into five categories: application-level, platform-level, paravirtualization, hardware-assisted, and bare-metal. KVM-based virtual machines are hardware-assisted.

virtualization Virtualization is an abstraction of computer resources; most often associated with platform virtualization, in which you can include one or more virtual machines on a physical system. The default RHEL 6 virtualization solution is KVM.

VNC (Virtual Network Computing) VNC is a remote access system for GUI desktop environments.

vncviewer The **vncviewer** command can start a VNC client to connect to a remote GUI.

volume group (VG) A collection of physical volumes (PVs) in the Logical Volume Manager (LVM).

WINS (Windows Internet Name Service) WINS provides name resolution on Microsoft networks; it can be activated on Samba.