Linux Academy

Course Notes

Managing Files in Linux

Contents

Video One: File Naming Basics and File Commands

- Naming conventions
  - Case sensitive
    - `test.TXT` and `Test.txt` and `TEST.txt` are all completely separate files
    - Spaces are permitted, but require an escape character (\)
    - "Dot" files are files preceded by a period (`.`), these do not appear when using the `ls` command; `ls -a` lists all files, including dot files
- Wildcards
  - **`*`** • Substitutes any value from 1 to n characters
    - bul* would be valid to refer to filenames bulk, bull, bullshark
  - **`?`** • Substitutes a single charactder
    - bul? is valid for 'bulk' but not 'bulkrate'
  - **`[char]`** • Character-based substitution, allows specific character designation as substitutes for a file name
    - bu[a-z]k would be valid for files bulk, buok, bukk but not bu3k, bu#k, bu@k
  - **`ls`** • Lists files and directories
  - **`cp`** • Copies existing file

Video Two: File Archiving and rm, mv

- **`mv`** • "Moves" file
  - Cannot 'move' a directory to a file, or vice versa
  - **`mv file1 file2`** • Effectively renames the file1 to file2
  - **`-i`** • Prompts before override
  - Same filesystem moves simply update the location and reference to the content, date/timestamp of the file will remain the same
  - Moves across filesystems (devices or network) recreates the file in a new location, adds the directory references to its location and then deletes the original file, as a result, the date/timestamp will reflect the time/date of the move

- **`rm`** • Removes file
  - **`-r`** • Recursive removal
  - **`-f`** • Force
- **`tar`** • Archives and unarchives files and directories, can be used with or without additional compression
  - **`-x`** • Extracts file
  - **`-t`** • Lists files in archive
  - **`-c`** • Create archive
  - **`-v`** • Verbose output
  - **`-z`** • Decompress with `gzip`
  - **`-j`** • Decompress with `bzip2`
  - **`-A`** • Adds to existing archive
  - **`-f`** • Name of tar file

Video Three: Linux Links

- **`ln`** • Similar to Windows "shortcuts" or OSX's "aliases"; gives alternative name or location of file
- Soft links verse hard links
  - **`-s`** • Soft link. Creates a special file that 'refers' to the original file (path and name) but does not duplicate the file content. Deleting this does not delete the original.
  - **Hard links** • Creates a duplicate of the original file and cannot be used across, nor can they refer to a directory
    - Removing the hard link does not remove the original
    - Hard linked file updates are replicated to all hard linked locations

Video Four: Basic Directory and Group Commands

- **`mkdir`** • Makes new directory; one directory level at a time
  - **`-p`** • Makes base directory and all sub directories in command
- **`rmdir`** • Removes directory, if directory is empty

- **`-p`** • Removes all directories in path

- **`chgroup`** • Changes group ownership of file or directory; can only change to groups you are a member of

Video Five: Special Permission Bits

- Easiest to work with as *root* user
- **`sh`** • Shell interpreter the runs any application
- **`+s`** • For `chmod`; changes the file/application to run with same permissions as file-owner
- **`setuid`** • Runs the file with the same permissions as the user that owns the file
- **`sgid`** • Runs the file with the same permissions as the group that owns the file
- Stick bit permissions:
  - **`+t`** • Protects file or directory from being deleted by non-file-owners
  - Can override normal file/directory permissions

Video Six: Default Permissions

- **`newgrp groupname`** • Changes the default group that files/folders are created under
- **`umask`** • Displays the permissions that files and folders are created under
  - Uses octal notation or symbolic notation
  - Defaults to 666
- **`chattr`** • Changes the attributes on a Linux filesystem
  - **`-i`** • Immutable (cannot write, delete or link file)
  - **`-s`** • Sets the file attribute for deletion so that recovery is not possible, the inode is overwritten with zeros
  - **`-A`** • Do not update the modified time if file is written to

Video Seven: Linux Core Directories

- **`/etc`** • System files, configurations, start up information, locale, link to parameters, etc
  - **`/etc/init.d`** • Initialization scripts and services that start on boot up

- **`/boot`** • Grub, kernel parameters; can be a separate partition from root
- **`/bin`** • Common system scripts, applications and utilities
- **`/sbin`** • System administration scripts, applications and utilities
- **`/lib`** • System binary libraries that are shared and linked to by applications
- **`/usr`** • Bulk of the Linux base applications and scripts; common directories for all users, binary files, libraries, local binary files by user, etc
- **`/opt`** • User level or post installation user applications that are installed
- **`/root`** • Home directory of *root* user
- **`/var`** • Logs, spools (mail and print), html files, libraries for applications, etc.
- **`/tmp`** • Temporary system or application directory, this is cleaned up periodically and automatically
- **`/mnt`** • Typical location for mounting external filesystems
- **`/dev`** • Device directory for Linux, direct references to all the devices on the system
- **`/proc`** • List of files that contain system level information; used by system utilities to cleanly display system level behavior and information

Video Eight: Finding Files in Linux

- **`find /home/username -name "file*"`** • Looks in the `/home/username` directory for a file with the name "file*"
- **`locate etc`** • Displays any files or directories containing 'etc' in the name or path
- **`whereis`** • Searches path directories
- **`which`** • Searches the binary path directories
- **`type`** • Displays how the system interprets the command