Linux System Configuration

Linux System Administration
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Localization

- Localization is usually specified at install time and is typically a single language, and set of culturally appropriate data formats (e.g. time, date)

- Multiple locales can be simultaneously be supported by a single Linux system

- The locale command can display information about all available locales on a system, showing only the current locale by default

- localectl can be used to view or change locale information, including keyboard mapping

System Clock

- Linux keeps time as UTC
- The /etc/timezone and /etc/localtime files are used in conjunction with the locale to define how dates and times are presented
- The default timezone is set at install time and can be changed with dpkg-reconfigure tzdata or timedatectl set-timezone *timezone*
- tzselect can be used to show times in other zones, or you can use the TZ variable to temporarily change only the timezone used by your shell
- The date command can be used to set the system clock

Network Time Protocol

- NTP can be used to check and set your system hardware clock
- The comand ntpdate (configured in /etc/default/ntpdate) can set the system clock using Network Time Protocol (e.g. ntpdate timeserver)
- The ntp package provides a daemon-based service that continuously updates your clock and provides NTP service on your network to local clients
- The ntp package sets up the service and is configured in the /etc/ntp.conf file

Host Identification

- Your host name is set during installation and is usually associated with your loopback network interface
- The hostname is kept in /etc/hostname and is also usually found in /etc/hosts
- The hostname command is used to display your hostname
- hostnamectl is a more comprehensive utiltity to display and change your host information (/etc/machine-info), does not update /etc/hosts

RAM vs. Swap

- RAM is physical memory, swap is disk space reserved for the kernel to use like slow, extra RAM
- If all of your running programs and their data fit in the RAM not used by the kernel, you don't need swap
- Swap is commonly allocated to be the same size as RAM during installation, for lack of a better default
- Swap can be a disk partition or just a regular file, regular file is created using fallocate then mkswap
- swapon is the command to display, add, or remove swap devices
- Persistence is gained by adding entries to /etc/fstab for swap devices

Filesystem Formats

- EXT4 is the most common filesystem format in Linux, and is fast, fault-tolerant, and reliable
- EXT2 is more efficient for read-only filesystems, or write-seldom devices such as USB sticks
- ISO is used for optical disks (also UDF)
- NTFS and various FAT flavours are supported in compatibility modes to allow interchange with Windows machines using removable devices such as USB sticks and drives
- ZFS is a format from Sun Microsystems, now Oracle, used for Linux containers and other enterprise filesystems, supporting drive pooling, shadow and copy-on-write features and other advanced capabilities
- BTRFS is next in line for the EXT4 throne, supporting many of the features of ZFS without the Oracle license
- https://www.howtogeek.com/howto/33552/htg-explains-which-linux-file-system-should-you-choose/ has a brief writeup on filesystem decision factors

Service Configuration

- Each software package makes its own decisions about how to configure the software
- Typical locations for configuration files are in subdirectories of /etc named after the package (e.g. /etc/ssh for the openssh package)
- Packages include their own man pages and other documentation
- Software package support or community websites provide how-tos, tutorials, and forum-based support

SSH Remote Access

- ssh/scp/sftp is the current preferred remote access toolset and supports much more than unix account access
- ssh tools support encryption and compression
- OpenSSH has both client and server side tools and configurations
- /etc/ssh holds the configuration files and is world accessible because client configuration files (ssh_config mainly) are kept there
- With your public key installed under your home directory on a server, any user who has your private key can log into the server without manual password entry - Protect your private key with a passphrase!
- See https://linux-audit.com/using-ssh-keys-instead-of-passwords/

SSH Server

- /etc/ssh/sshd_config is for server process
- options to consider include port number, host key files, syslog config, logingracetime, permitrootlogin, pubkey authentication, allowusers, denyusers, maxauthtries, maxstartups, passwordauthentication
- /etc/ssh has host key files offered to clients

https://help.ubuntu.com/lts/serverguide/openssh-server.html

Sudo

- Ubuntu default install adds the created user to the sudo group and allows anyone that belongs to the sudo group to run any command as root, probably not what you want for a production system
- Configured in /etc/sudoers, logs sudo usage in /var/log/auth.log
- You can create a file per user or command or whatever in /etc/sudoers.d and it will be included in your sudoers configuration
- sudoedit program can be used if the only purpose of sudo is to edit a file, editor is specified in an environment variable (SUDO_EDITOR, VISUAL, EDITOR) or the sudoers file
- sudo -l tells you what commands you can use sudo for
- sudo -u username uses sudo to run commands as a specified username, root is the default

Linux Standards Base

- Provides guidelines on how to reduce the differences between Linux distros from a system management perspective with the goal being lowered cost and effort to implement Linux in an organization

- Part of the Linux Standards Base (LSB) (see https://wiki.linuxfoundation.org/lsb/start) is the File System Hierarchy Standard which provides guidelines with respect to how the Linux filesystem should be organized

- https://wiki.linuxfoundation.org/lsb/fhs hosts the documents for the standard (historically was at pathname.com/fhs)