

LINUX INSTALLATION

LINUX DISTRIBUTIONS

- Recall: What's a Linux Distribution?



- These are common across all distributions
 - The Linux Kernel (the core OS component)
 - The default GNU software tools (e.g. ls, rm, etc)
 - Some general software expected of a Linux distro (e.g. vi)

WHERE DO LINUX DISTROS DIFFER?

Hardware
Compatibility

Bundled
Software

Community
Support

Desktop
Environment

Stability

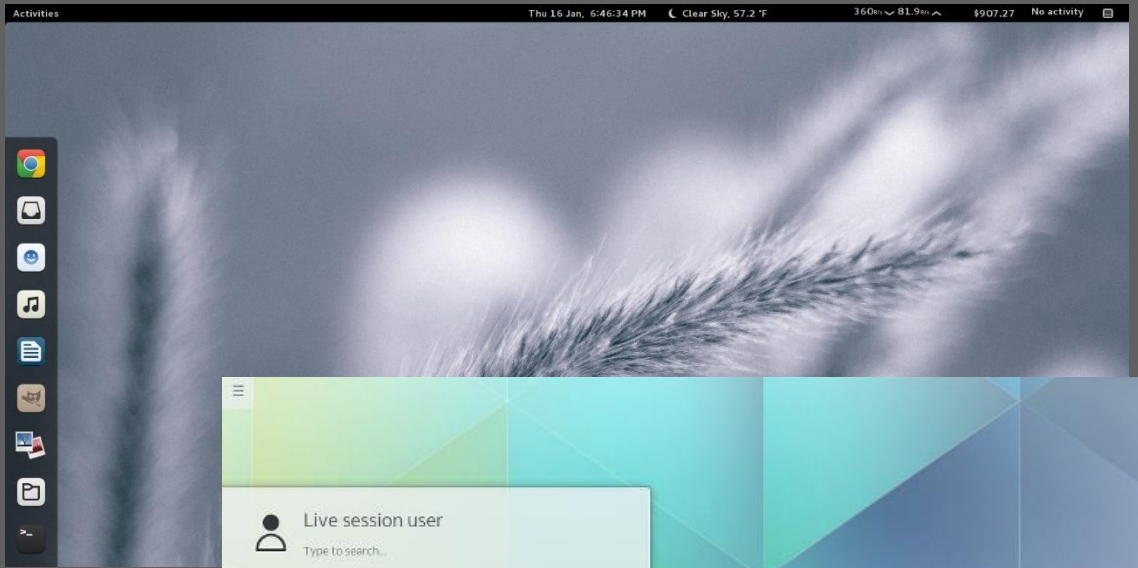
Cost

DESKTOP ENVIRONMENTS

- How do they differ?
 - The basic look and feel
 - Customizability
 - Resource usage
 - GUI options
 - Program integration with desktop

DESKTOP ENVIRONMENTS

GNOME



KDE



UNITY



STABILITY

Stable

- Longer update cycles
- Generally less buggy
- E.g. Debian Linux



Cutting Edge

- Software always up to date
- Risk of buggy software
- e.g. Fedora Linux



COST - I THOUGHT LINUX WAS FREE....?

- Paid versions of Linux offer some extras that are not available on free distros.
 - Printed manuals
 - Installer disks
 - Vendor support for a particular period of time
 - Guaranteed service level response (e.g. enterprise editions)
 - Sometimes you may get more software than with other distributions (eg extra DVDs instead of downloads).
 - Commercial software titles (e.g. copyrighted / patented technologies)

CHOOSING A DISTRO

In general, choose the Linux distribution that is closest to your ideal setup.

INSTALLATION TASKS

- Linux installation procedures usually need the following basic tasks:

Set the time zone.

Setting up the disk partitions

Create, user account and password

Select / install software packages

LINUX DISK PARTITIONS

- Linux requires at least one partition, for the *root filesystem* to hold the Linux kernel
- Optional
 - A *swap partition* can be created to be used as virtual memory
 - Separate partitions to hold other system components (e.g. \usr for software, \home for personal files)
- Why have multiple partitions
 - Usually makes the system boot up faster
 - Less tedious to backup and restore in case of issues
 - Prevents files from growing too large

INSTALLING FROM SOURCE CODE

- Sometimes, software needs to be compiled prior to installation
 - Pre-built package is not available
 - Need certain software options that are not enabled in the pre-built package
- To get software in source form
 - Download from developer repository; or
 - Download using the package manager but specify to get the source instead of a precompiled version (e.g. apt-get build-dep)

BUILDING SOFTWARE

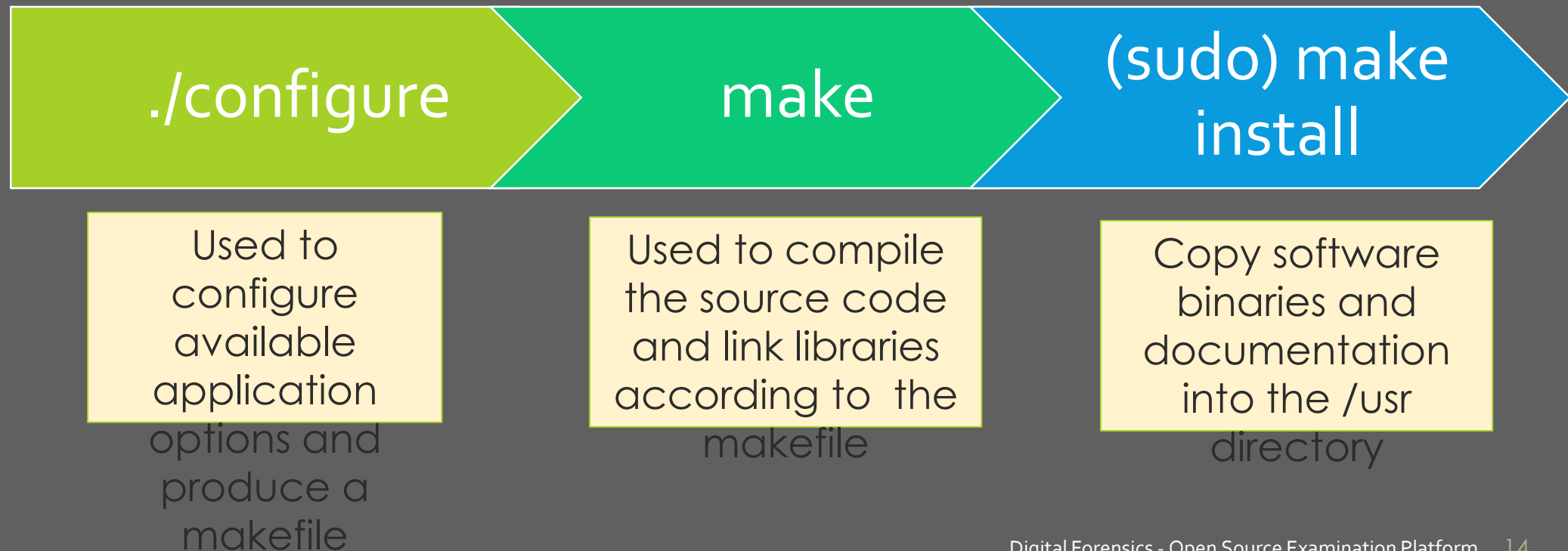
- Downloaded packages are usually in compressed archives (tarballs)
- Extract using the command

```
tar <options> <filename>
```

Options	Use for
x	Extraction
c	Creation
z	For files with extension .tgz or .tar.gz
j	For file with extension .tbz, .tbz2, .tar.bzz2, or .tar.bz
v	verbose
f	Following is archive name

BUILDING SOFTWARE

- GNU Autotools - aka GNU build system
 - A suite of tools that help simplify the building of programs distributed as source code across different platforms



MANAGING SOFTWARE PACKAGES

- At installation, you will usually have the option to include some available packages in addition to kernel installation
- To add more packages in the future, you can use a Package Manager – collection of tools that automates the installation, configuration and removal of system software
- Usual capabilities
 - Software lookup from a repository
 - Software download, extraction and installation in standard locations
 - Resolving software dependencies
 - Version tracking and update

MANAGING SOFTWARE PACKAGES

- Debian Family (includes Ubuntu)
 - Software packages are distributed as files with a '.deb' extension
 - Package Managers
 - dpkg - lowest level package manager
 - Advanced Package Manager (APT) – Command line front-end for dpkg to make it a little more 'user friendly'
- Red-Hat Family (CentOS, Red Hat, Fedora)
 - Software packages are distributed as files with a '.rpm' extension
 - Package Managers
 - Rpm – low level command line
 - Yum – Command line front end

MANAGING SOFTWARE PACKAGES

- Dpkg
 - `dpkg -l` - lists installed packages and their versions
 - `dpkg -L <package>` - lists files associated with a package
- Advanced Package Manager (APT)
 - `apt-get update` - Reads the `/etc/apt/sources.list` file and updates the system's database of packages available for installation
 - `apt-cache search` - Looks for packages with keywords that can match the given string
 - `apt-get install` - Installs the package(s) specified, along with any dependencies
 - `apt-get remove` - Removes the package(s) specified, but does not remove dependencies and configurations
 - `apt-get --purge remove` - Removes package(s) and downloaded files including configuration
 - `apt-get upgrade` - Upgrades all packages if there are updates available (after an `apt-get update`)

SHUTTING DOWN

shutdown [time] [message]

- Shuts down or reboots the system

Option	What it does
-h	Turns off the system (alternative command: poweroff)
-r	Reboot the system (alternative command: reboot)

- Time may be specified as
 - hh:mm – specifies time to shutdown
 - +m – specifies number of minutes from current time
 - Now – immediate shutdown