Welcome

A Basic Introduction to Linux

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Introduction

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GNU/Linux for those New to Linux , the true Beginners

Brought to you by the

Newlinux Linux Users Group

http://newlug.sluug.org/

A Special Interest Group of the

## St. Louis Unix Users Group (SLUUG)

http://www.sluug.org/

All About Me

Stan Reichardt

- I started a beginner friendly user group for Linux newcomers **formerly** known as the Hazelwood Linux Users Group (http://hzwlug.sluug.org) in November 2000.   Also, I am currently Vice-President of the St. Louis Unix Users Group. Both groups meet monthly. Membership and meetings are free.

- My start was around hobby computers back in the 1970's while on Active Duty with the U. S. Army Reserve. My interest became professional and over the next 10 years work included networked mini-computer systems, desktop PCs, help desk support for desktop users, data base programming, Unix System Administration, bulletin boards and more. I retired from Active Duty as an Information Systems Chief out of the U. S. Army Reserve Command.

- Contract work followed doing Software Deployment for the U. S. Postal Service, UNIX System Administration for U. S. Army Material Command, Linux Subject Matter Expert for Wave Technologies International, Senior Security Engineer auditing and evaluating security assessments for the U. S. Veterans Administration.

- I have received Linux +, and Security + certifications from CompTIA, the IT Industry Trade Association. That was years back.

Linux Basics
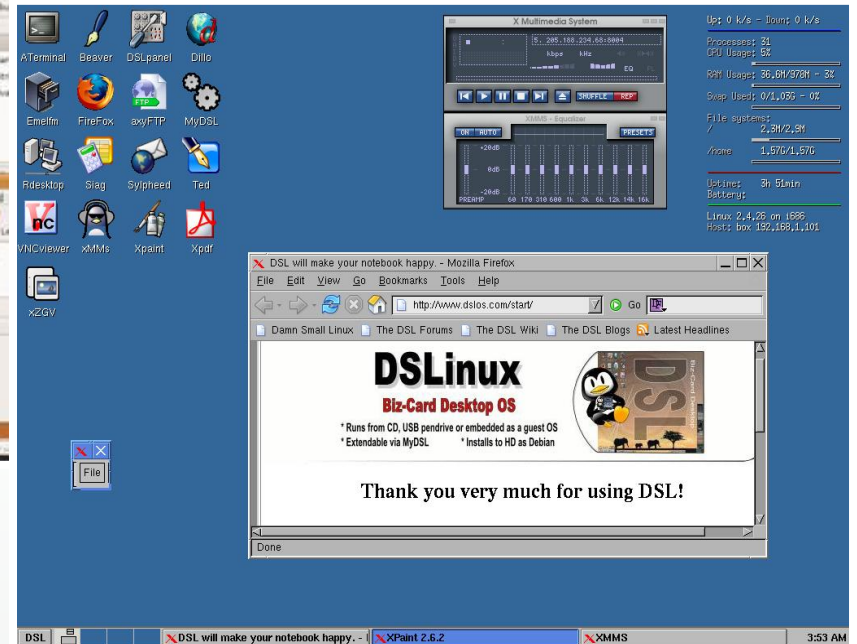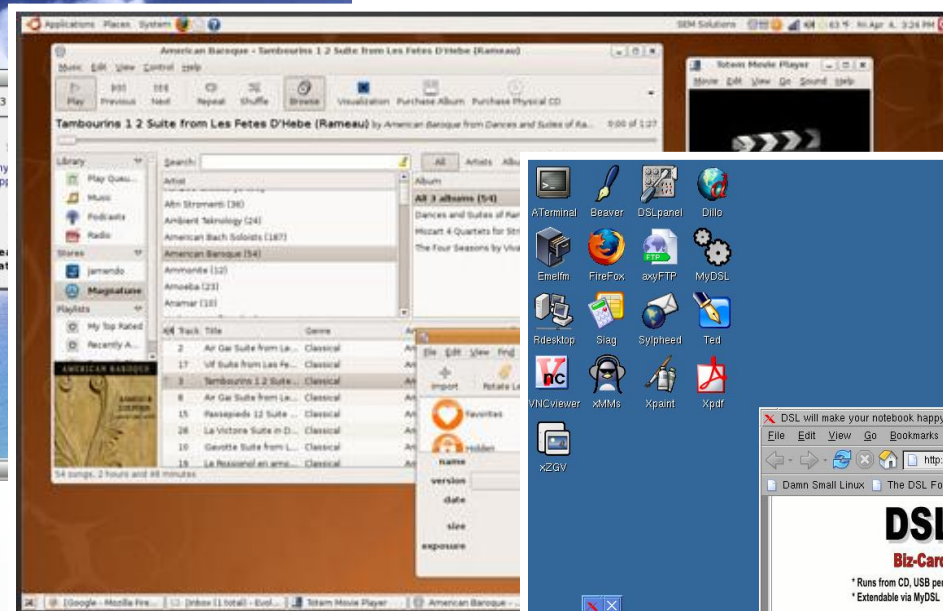
An Introduction

Preview

- Like DOS, MS Windows, or Mac OS-X, Linux is an Operating System.
- There have been more than 939 forms of Linux available. Currently 266 are active.

- Tux is the Linux mascot and official trade mark.
- Distrowatch tracks the top 100 versions.
- https://www.distrowatch.com/
- Linus Torvolds holds the Linux™ (Trademark).

What is an "Operating System"?

An operating system ("OS" for short) is a computer's *master control program.*

Application programs

OPERATING SYSTEM

Computer (hardware)
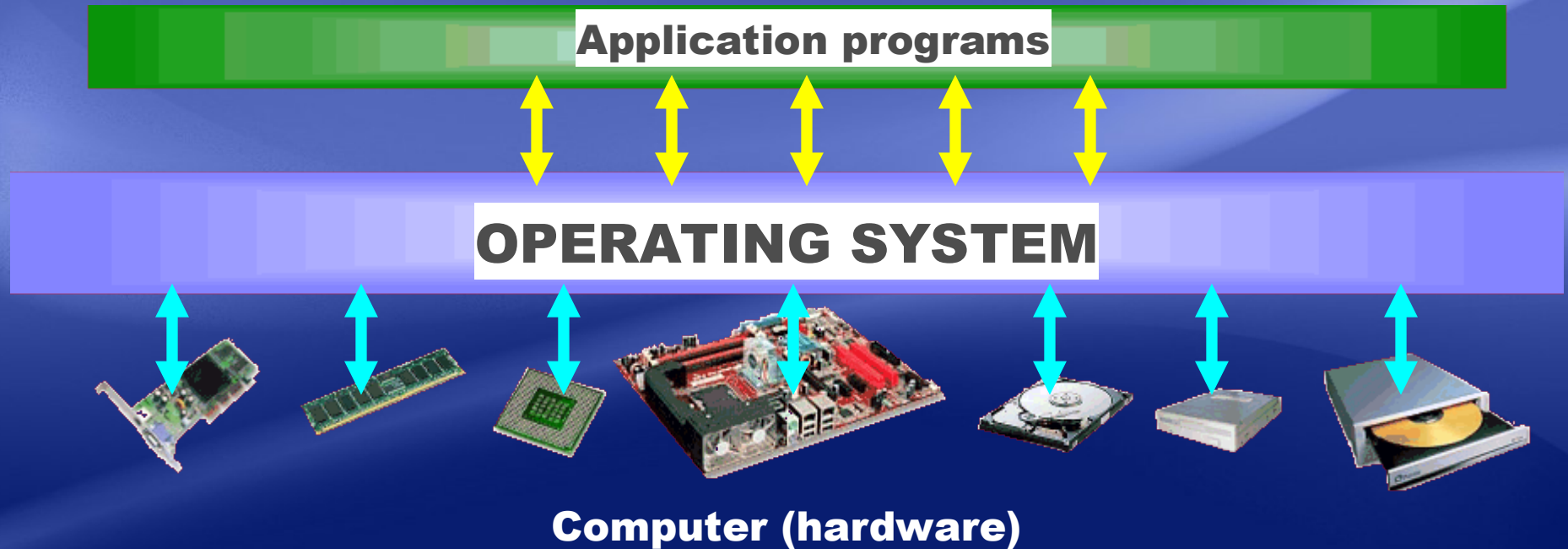
- It manages internal functions.
- It controls the computer's operations.
- It gives resources to other running programs.
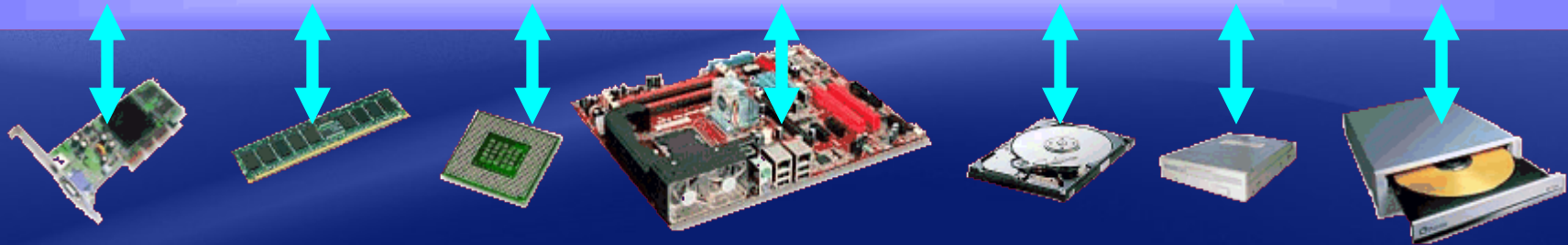
What does the OS Control?
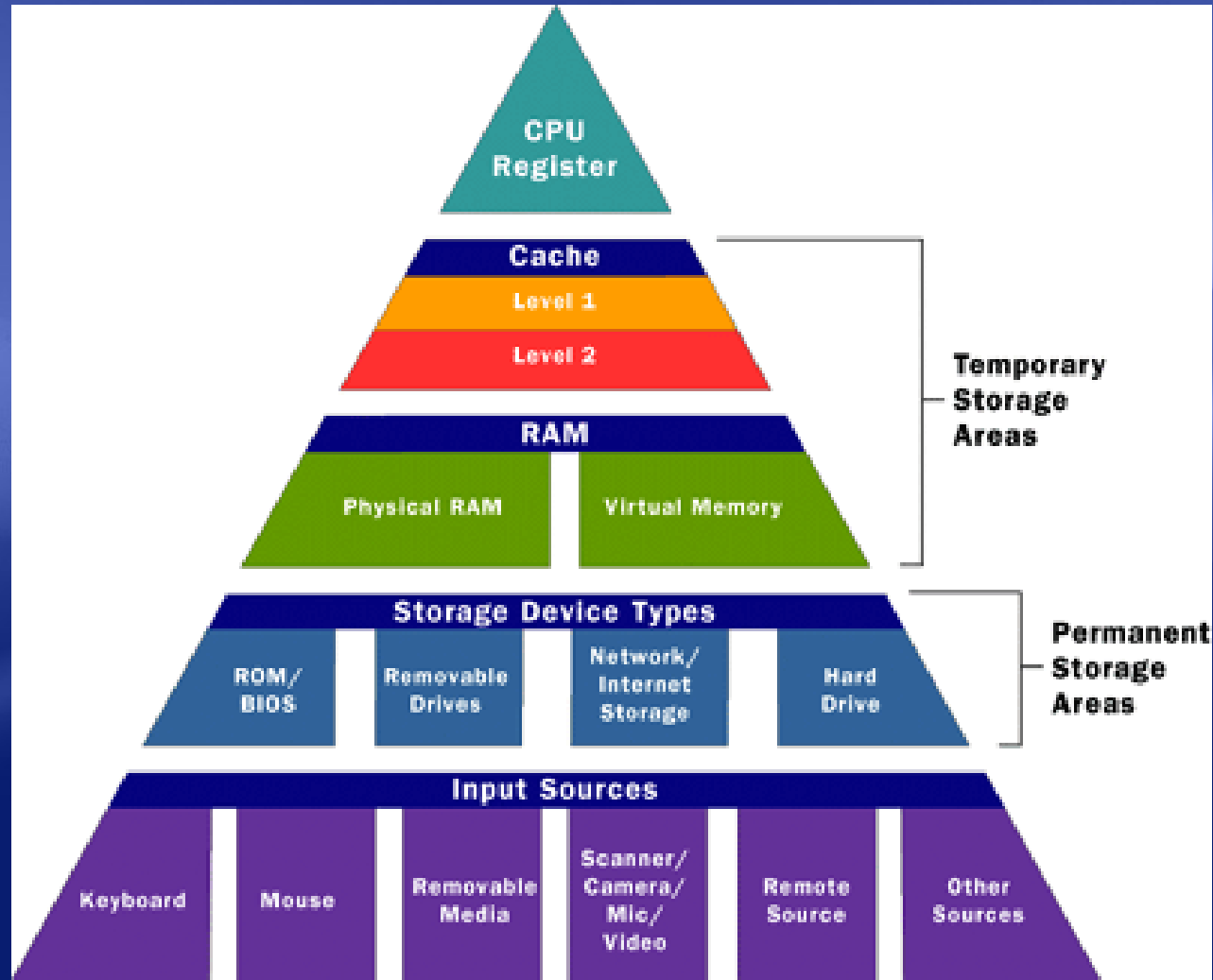
Why do we need an OS?

- **Without an operating system, each program installed in a computer would have to control all of the computer's hardware on its own.**

All Other Application Programs BLOCKED

ONE Application Program Running

Computer (hardware)

- **Programs would fight one another for hardware control, making "multi-tasking" impossible.**

How would we pick an OS?

- **OS Compatibility**
    - with your computer hardware
    - with other systems (i.e. networking)
    - with specific application software
- **OS Features**
    - Standard Features
    - Special Features
- **OS Cost**
    - Purchase price, availability of updates
    - License issues

Open Source Software

- http://www.opensource.org/
- Key Points of Open Source:
  - **Free** Acquisition & Redistribution
  - Source Code (must be included or available)
  - Derived Works (must allow modifications)
  - Integrity of Source Code (credit to authors)
  - No Discrimination (of persons, groups or use)
  - Distribution of License (can not be restricted)

How do we use an OS?

- An operating system has a "user interface" to accept commands.
- It can be *text-based...*

```
C:\>dir /w
 Volume in drive C has no label.
 Volume Serial Number is XXXX-XXXX

 Directory of C:\

[ACON]                   [ATI]                    AUTOEXEC.BAT
[Backup]                 CONFIG.SYS               [Documents and Settings]
[Downloads]              [drivers]                hpfr6500.log
[Powrspec]               [Program Files]          [SWSETUP]
[temp]                   txt.txt                  [WINDOWS]
              4 File(s)         13 412 bytes
             11 Dir(s)  464 501 514 240 bytes free
```
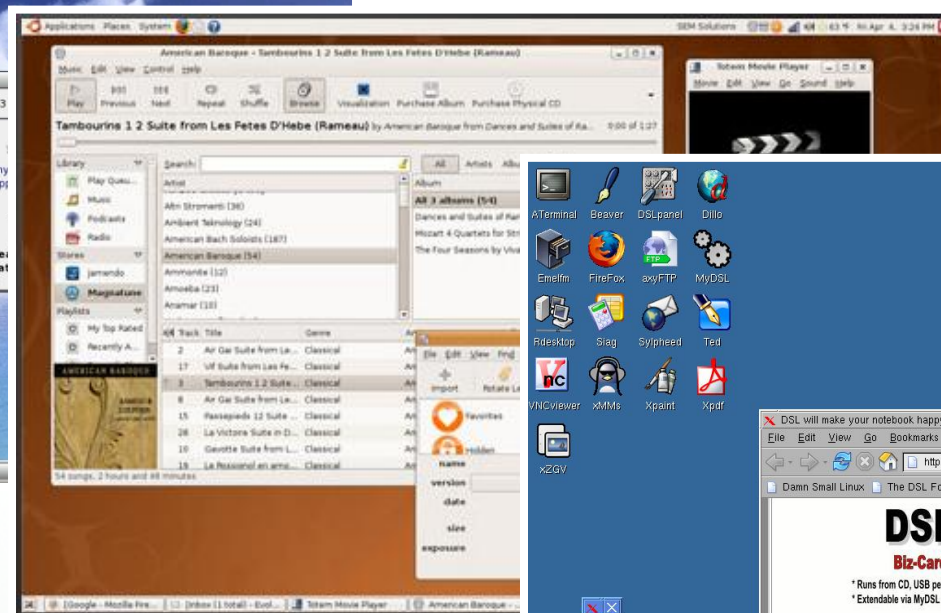
Training Facilitation

File Edit View Favorites Tools Help

Back

Address C:\Downloads\Train

Map Network Drive...
Disconnect Network Drive...
Synchronize...

Folder Options...

Picture Tasks

View as a slide show
Copy to CD

01 Clinic LAN
File Folder

02 Clinic WLAN
File Folder

03 Clinic BYOPC
File Folder

04 Clinic Dig Cameras
File Folder

05 Clinic Malware
File Folder

06 Clinic Troubleshooting
File Folder

- ...or *graphics-based.*

Linux Distributions
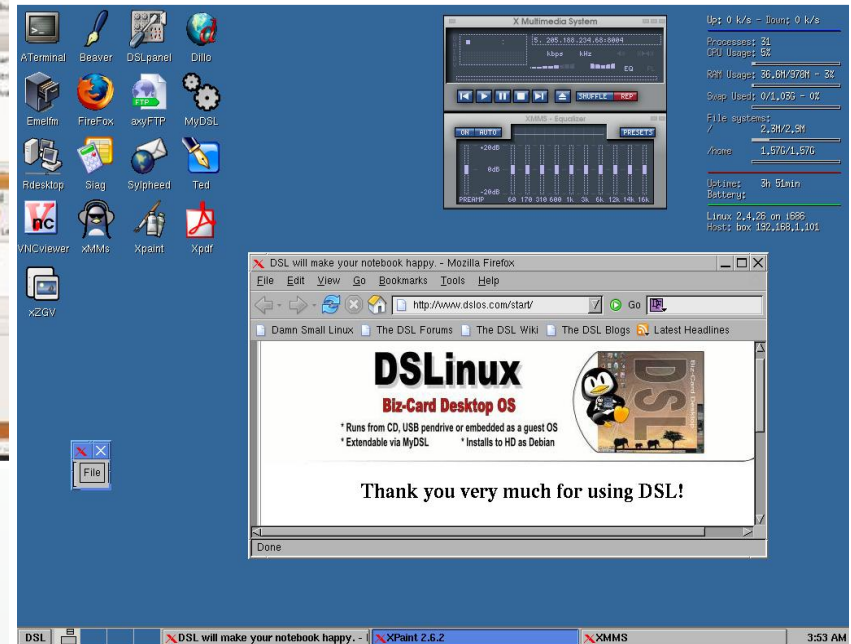
12/15/22 13:32

Variety Is The Spice Of Linux

- Currently there are **266** different active forms of Linux.

- Linux distributions, known as **"distros"** are based on one of several "**core**" versions.

- Compare distros at **https://www.distrowatch.com**

D@#% Small Linux

D@#% Small Linux

- Used frequently to "boot" Linux directly from a USB flash drive, or a small "business-card" CD.

- Capable of running on "legacy" PCs which may not support newer Windows operating systems.

Puppy Linux

Puppy Linux

- Puppy Linux uses a traditional "graphical user interface" desktop like many popular Linux distros, such as antiX, Knoppix, MEPHIS, openSUSE, PCLinuxOS, or Zorin.

- Users moving from MS Windows to these Linux distros will easily recognize many similarities to the MS Windows "desktop".

Ubuntu Linux

Ubuntu Linux

- An early Linux variant for both Macintosh or Microsoft Windows systems.

- Claims to be most popular Linux.

- Once used the traditional GNOME version 2 graphical user interface. It is now fairly similar to that of MacOS X, and shares some of its features, such as selectable "desktop panes".

- Once used the Unity desktop environment that was geared to newer touch screen hardware.

Edubuntu Kubuntu Xubuntu

Edubuntu Kubuntu Xubuntu

- ~~Edubuntu uses the new GNOME 3 graphical environment instead of Unity. Focus is on educational tools.~~

- Kubunute uses the **KDE** graphical environment.

- Xubuntu uses th **Xfce** graphical environment for low power computers.
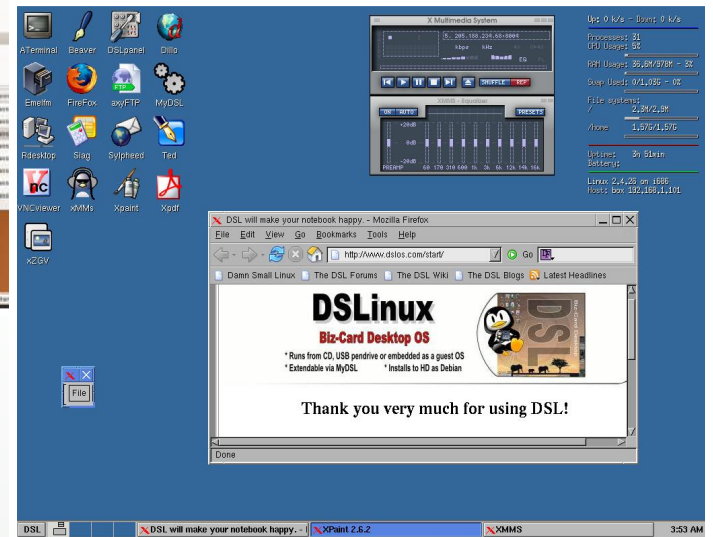
LinuxMint

LinuxMint

- Uses the Ubuntu software repositories.

- Uses the **MATE** , **Cinnamon** or **Xfce** desktop environment instead of Gnome or Unity. MATE and Cinnamon are more familiar and traditional than the new Ubuntu and its variants.

- Highly recommended for Linux **newcomers**, the true beginners.
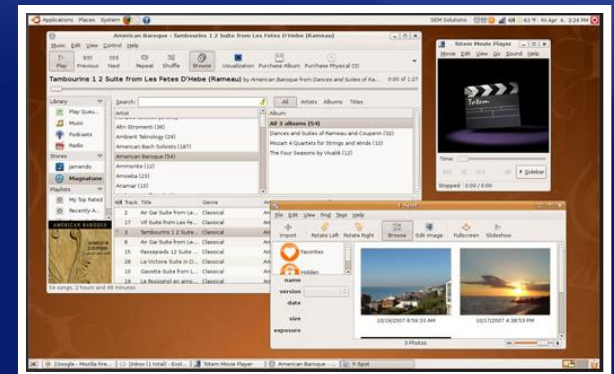
LinuxMint

Installing Linux

Systems Pre-Loaded with Linux

- Major vendors infrequently provide Linux pre-loaded
- Examples, such as the ASUS EeePC and the PowerSpec N108, used different Linux distributions as their default operating system

- Some computer vendors that pre-load Linux
  - Dell
  - System76
  - Tuxedo Computers
  - Star Labs
  - LinuxCertified

Disc Or Download

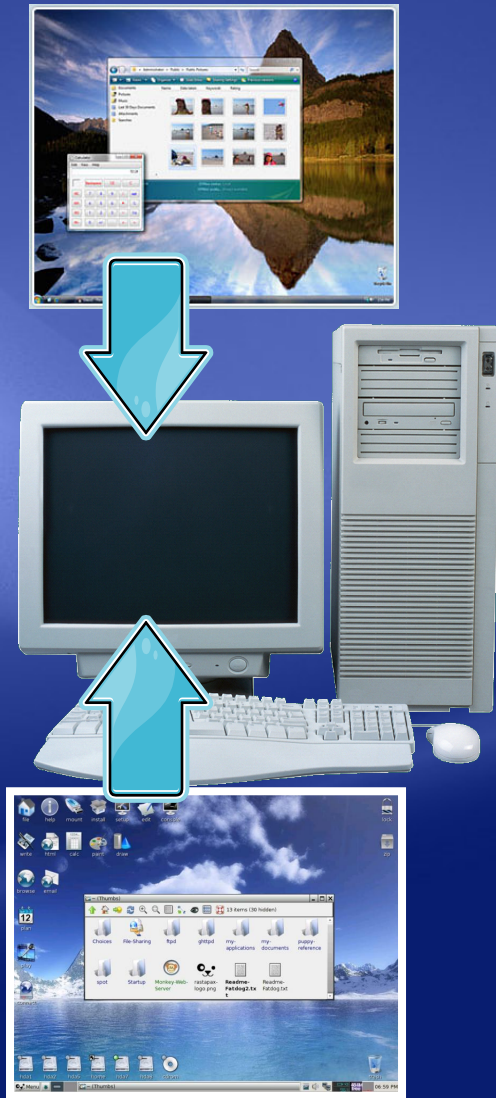- **Once Available at Micro Center:** Distributions of Linux could be purchased as low-cost "**stand-alone**" CDs or DVDs.
- ~~Or, order from~~ ~~**http://www.osdisc.com/**~~

- Linux can be **downloaded** via a "**broadband**" Internet service as an ISO disc-image file, and **burned** as a bootable CD, DVD or USBstick.

The Best Of Both Worlds

- Linux can usually be installed in what is called a "dual boot" mode.

- A startup "boot loader" menu allows the user to either start Linux or the vendor's original OS.

Virtualization is Safer

- Dual booting can run into problems, especially with Microsoft updates.
- Dual booting can be difficult to fix if something goes wrong.
- Dual booting should NOT be recommended for novice users.
- Better to run Linux or Microsoft inside virtualization application.

Safe Test Drive

- Most Linux distributions use a **"Run Live"** feature, allowing the user to safely run Linux directly from CD-ROM or other media **without making any permanent change**. A safe trial method.

- Test Bluetooth, mice, microphone, sound, touchpad, video camera, WiFi, etc.

```
INSTALL or UPDATE Linspire on this computer's hard drive
RUN Linspire directly from the CD without installing (LinspireLive!)
ADVANCED Options
```

Linux System Requirements
(YR 2008 example: Ubuntu Linux version 8.x)

- **32- or 64-bit PC with 800 MHz+ CPU**
  (including Macintosh G3 or newer)

- **384 MB of RAM recommended**
  (256 MB minimum)

- **Hard drive with 3 GB free space**

- **1024×768 or higher resolution monitor**
  (3-D graphics accelerator card for some games, screen savers, etc.)

- ***Keyboard and Mouse (or TouchPad)***

- ***Sound card and speakers (or headphones)***

- ***CD-ROM or DVD drive***

- ***Ethernet card for Internet/LAN connectivity***

- **56 Kbps hardware modem (optional)**

Linux System Requirements
(YR 2022 example: LinuxMint version 21.1)

- **64-bit PC**
  (most PCs made since 2015 have been 64-bit)

- **4 GB of RAM recommended**
  (2 GB minimum, most now come with 4 GB)

- **Hard drive with 20 GB free space**
  (100 GB recommended, most now come with much more)

- **1024×768 or higher resolution monitor**
  (3-D graphics accelerator card for some games, screen savers, etc.)

- *Keyboard and Mouse (or TrackPad)*

- *Sound card and speakers (or headphones)*

- *USB ports and WiFi on laptops*

- **CD-ROM or DVD drive (optional)**

- **Ethernet card for Internet/LAN connectivity (optional)**

PC Management
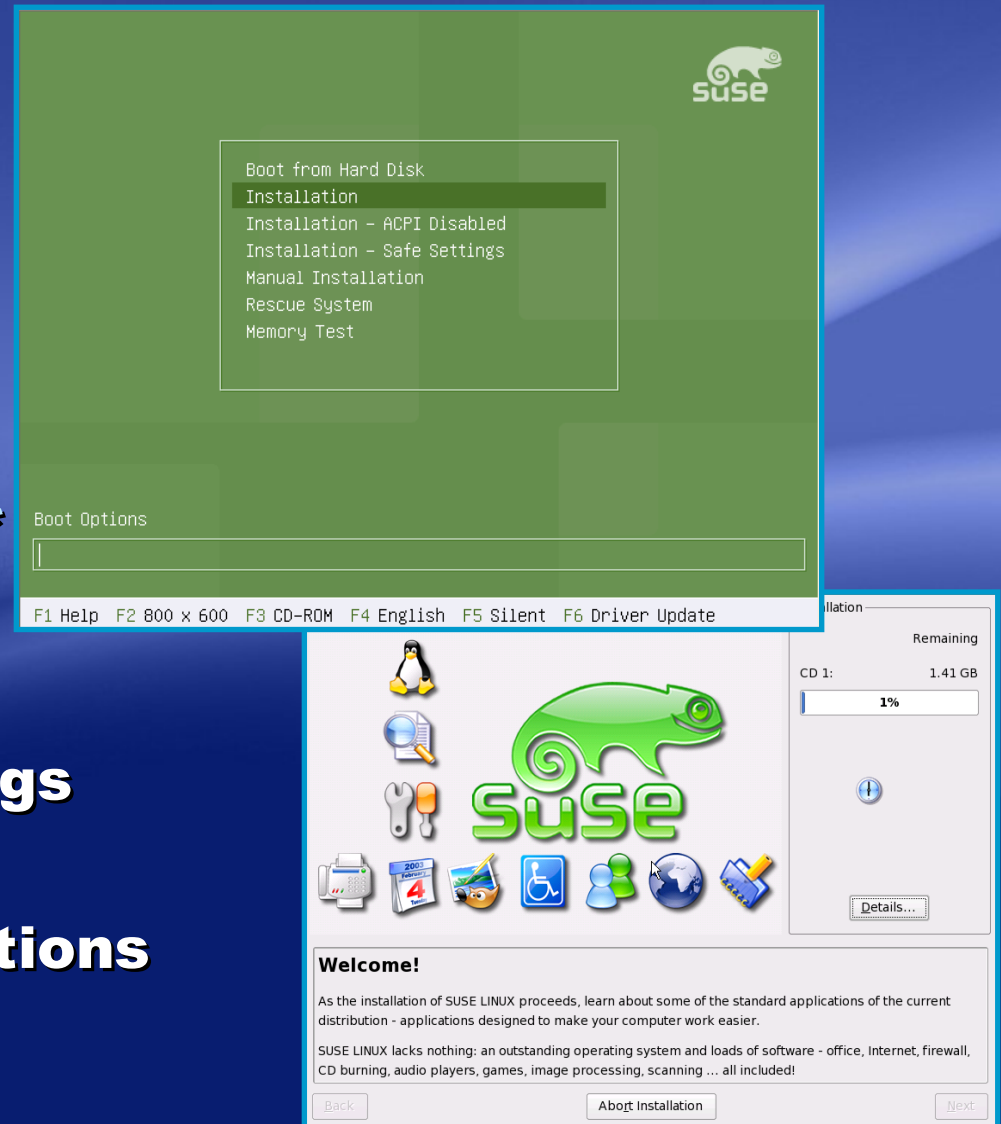
Most Linux distributions are "Plug and Play" Ready.

"Run Live" to test safely:

- New hardware detection
- Wired & wireless networking
- USB and Firewire detection
- Device support inclues:
  - Digital Cameras
  - Printers and Scanners
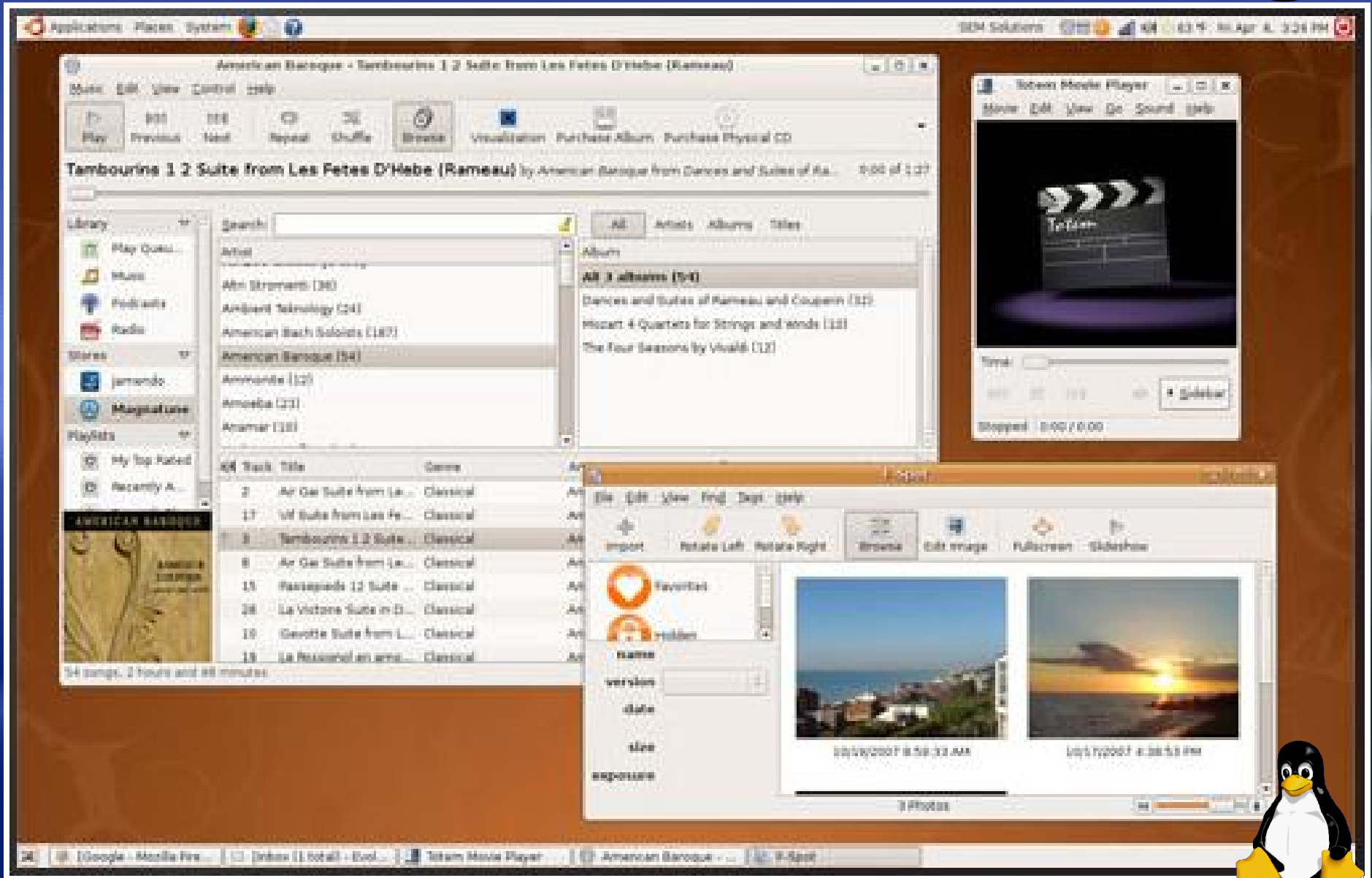 - MP3 Players
  - Flash drives, memory card readers

Install the OS

- **Backup your data files***
- **Partition the hard drive***
- **Format the hard drive***
- **Copy system files***
- Configure system settings
- Update drivers
- Install software applications
- Restore your data files
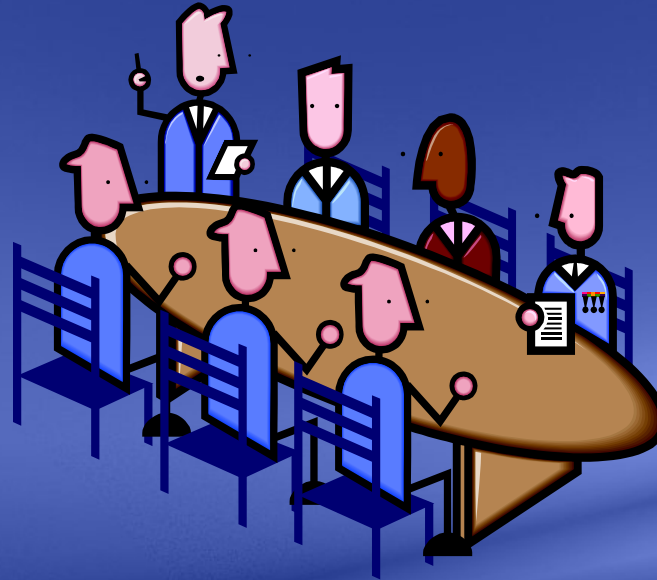
Linux Installed & Running

Linux Applications

Free Open Source

- The same community development model used to create distributions of Linux is also used to make application software to run on Linux systems.
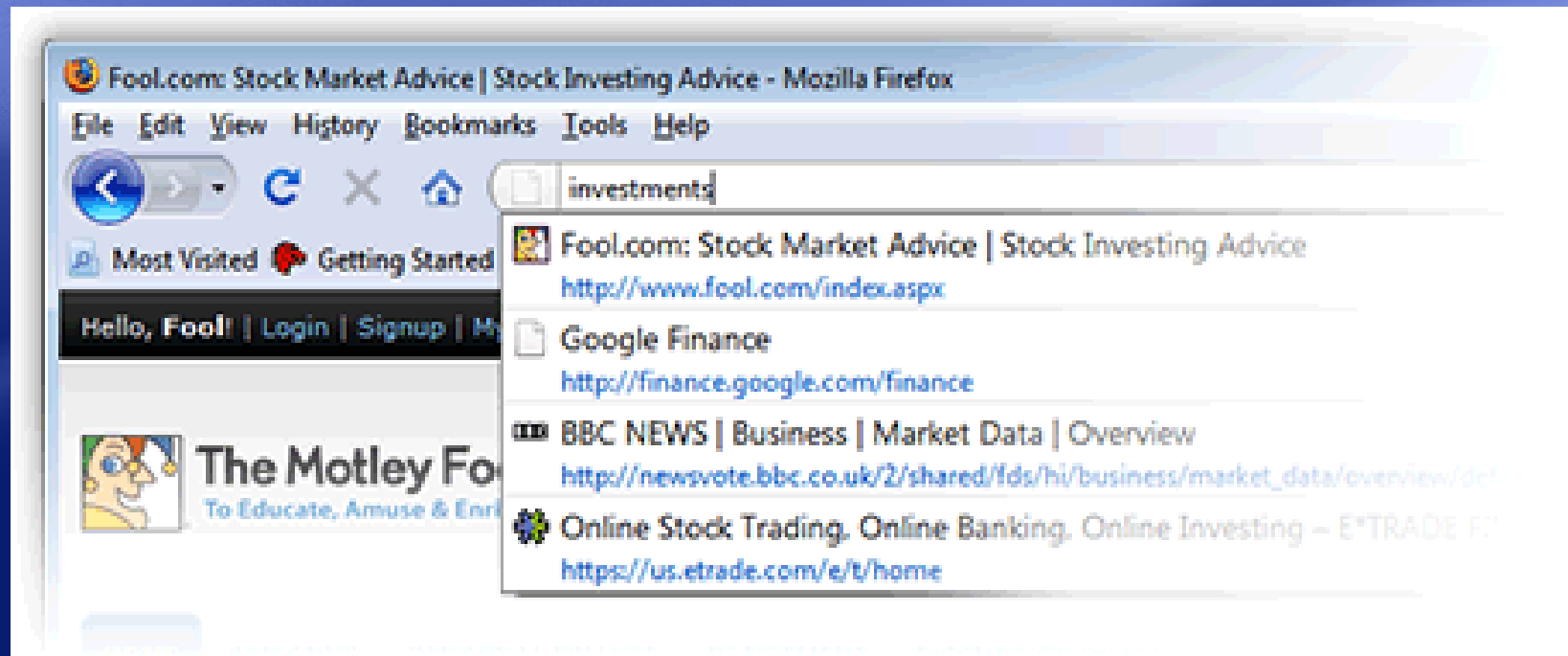
Works Well With Others
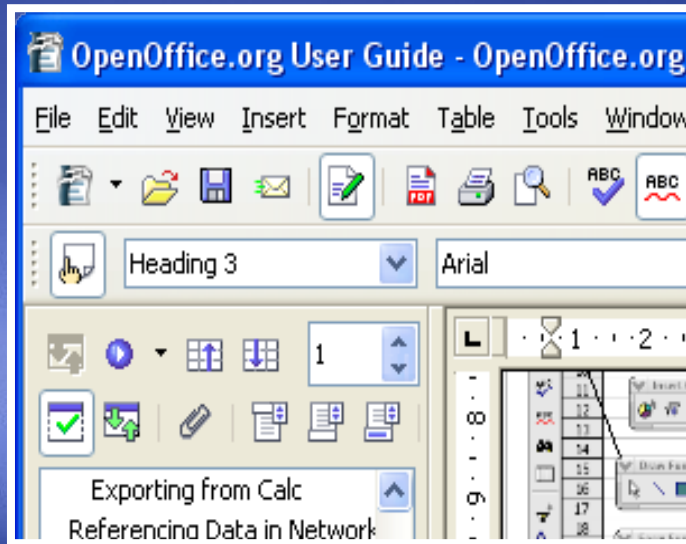
- Many open-source programs create and edit documents which are "cross-compatible" with their MacOS or Microsoft counterparts.
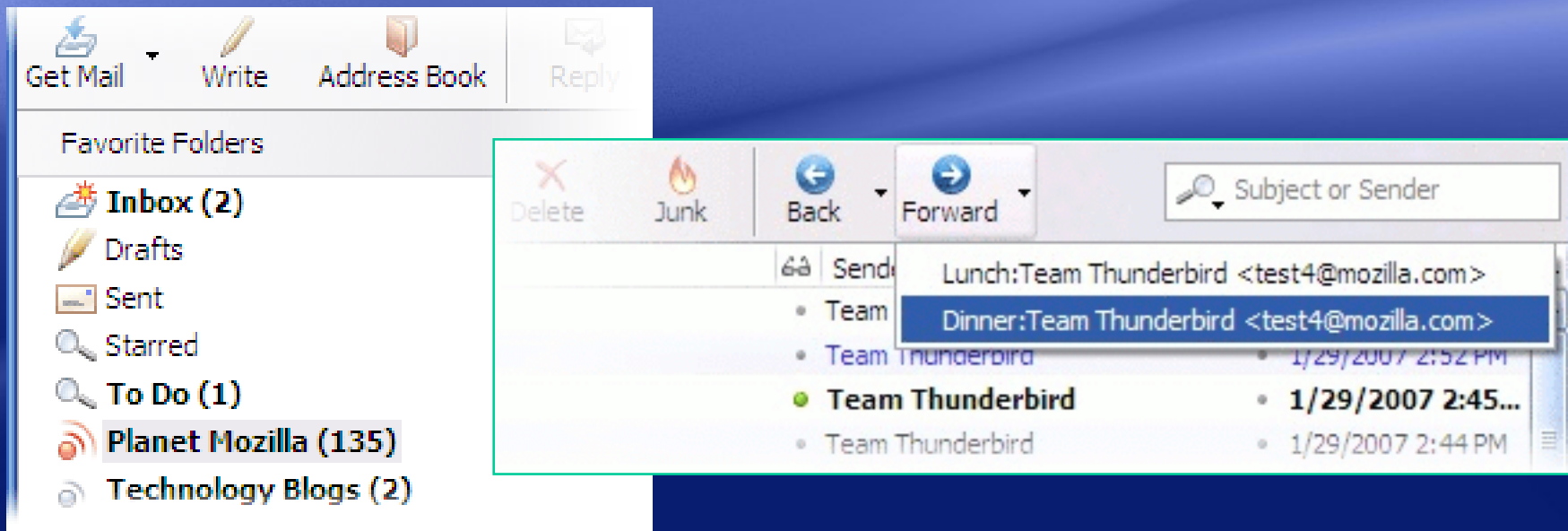- Many have "cross-platform" versions.

Communications

- ## Web Browser – Firefox, Brave, etc.
  - ### Features an adaptable address & search bar, making it easier to find information on the Internet.
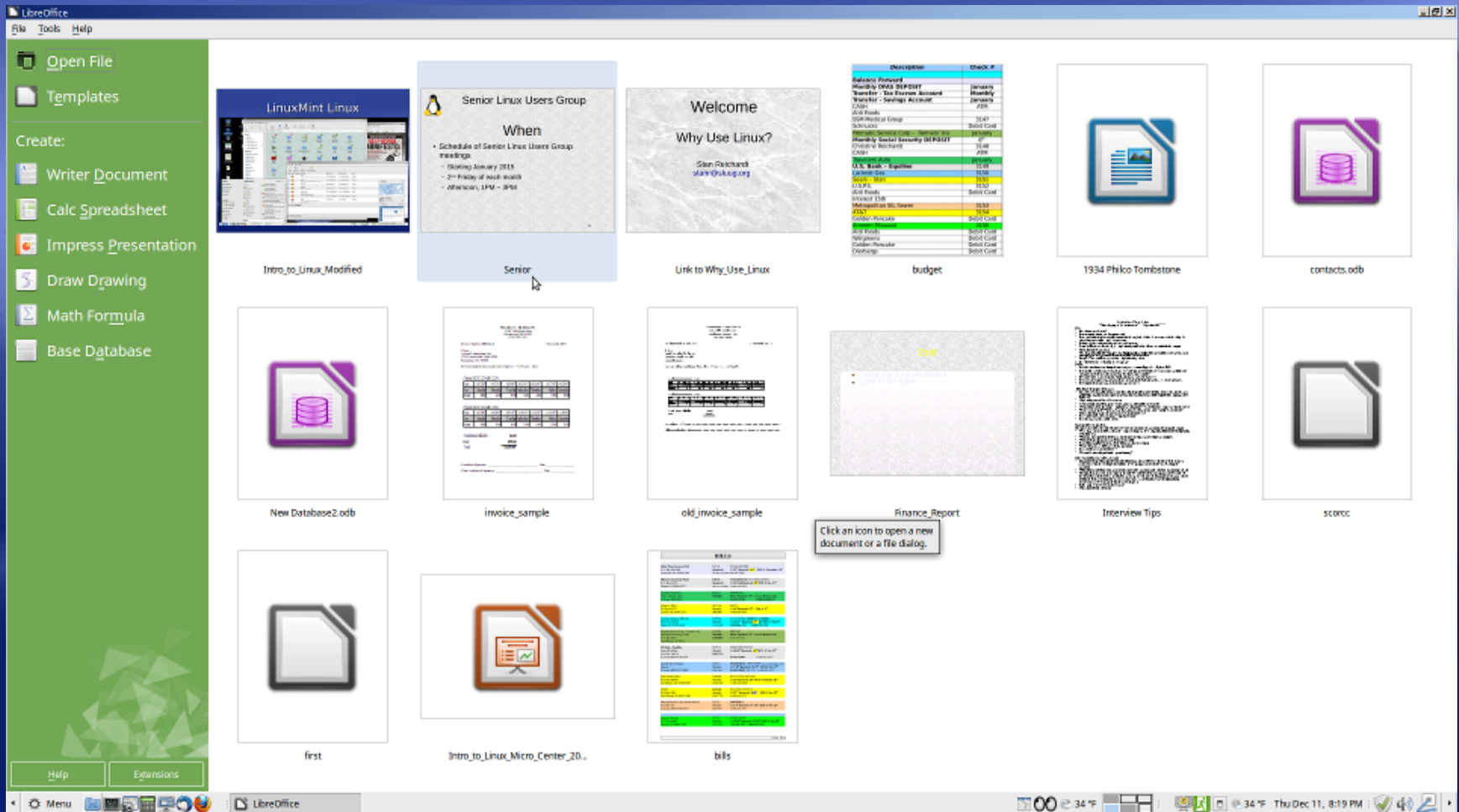
Communications

- ## E-mail Client – Thunderbird, etc.
  - Includes advanced searching features within the e-mail program itself.
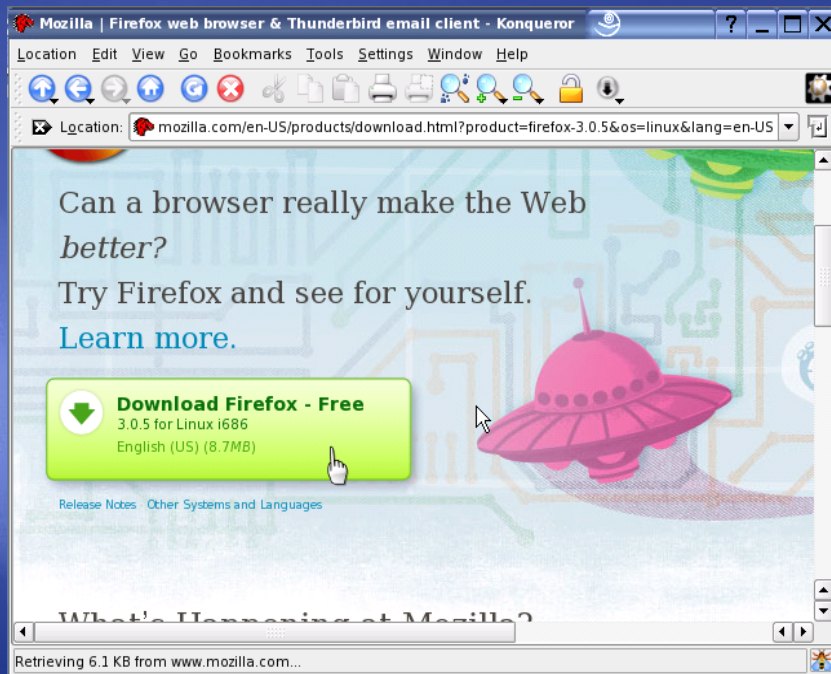
Productivity

- **The LibreOffice Suite, etc.**

Productivity

The **LibreOffice** Suite came from the OpenOffice Suite (... bought by Oracle).

- Developer community took the OpenOffice open source software code and greatly improved it.

- It started as an exact duplicate, added many fixes and continues to improve at faster rate.
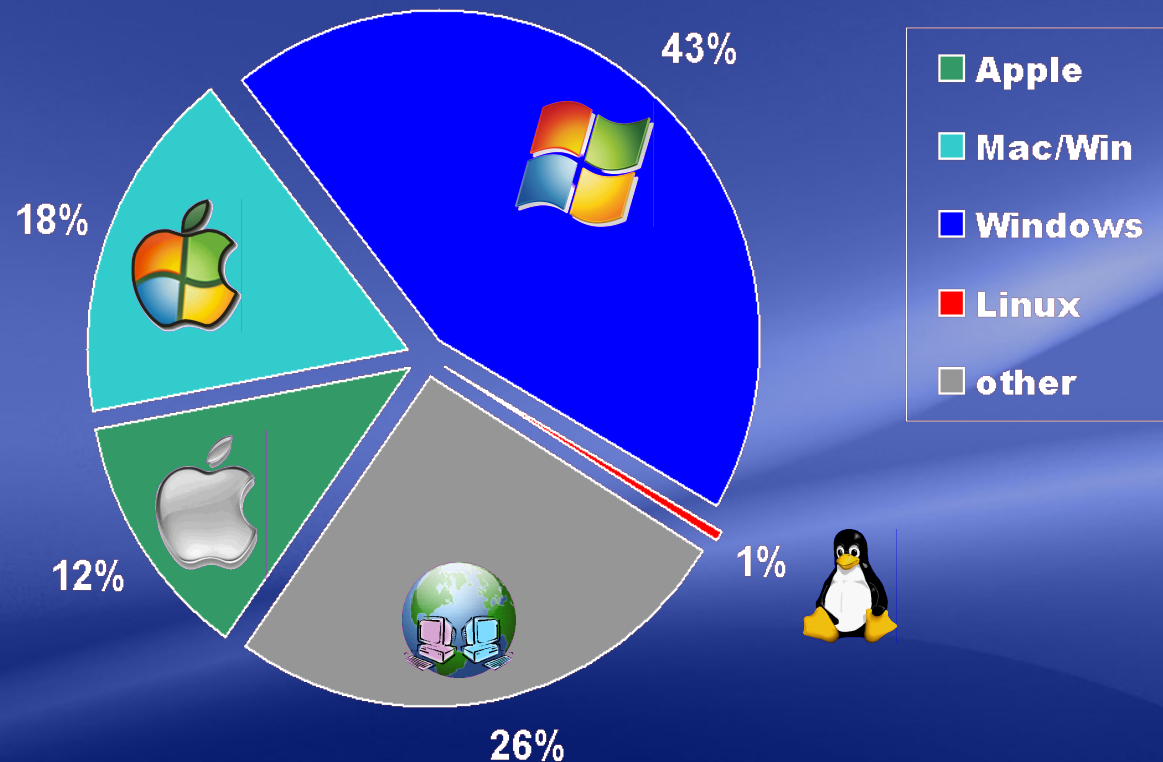
Program Downloads

- One of the "trade-offs" of using Linux is the relative lack of over-the-counter application software.
- Most distros provide many highly productive, recommended and useful applications.

- Also, Linux users can download and install nearly any kind of application software imaginable from the Internet.
- See https://AlternativeTo.net/

Security

Total US CERT Threat Bulletins issued between 2004-2009

43%

18%

12%

1%

26%

Legend:
- Apple
- Mac/Win
- Windows
- Linux
- other

- "Malware" threats still exist under Linux.
- Open source anti-virus and security programs are available.

Resources

- Orginal presentation came from MicroCenter

- https://en.wikipedia.org/wiki/Linux

- https://www.opensource.org

- https://www.distrowatch.org

- http://www.linuxscreenshots.org

- https://images.google.com

- https://www.linuxmint.org

- https://www.dedoimedo.com/computers/ubuntu-utopic-mate.html

- https://newlug.sluug.org

Summary

- *Advantages of Linux:*
  - *Inexpensive to buy, free to download*
  - *Multiple versions, different features*
  - *Safe "run Live" trial before installing*
  - *Works on many PC and Mac Systems*
  - *Can co-exist with orginal vendor OS*
- *Challenges (Trade-offs) of Linux:*
  - *Less over-the-counter software*
  - *Sometimes can require more complex installation of hardware and setup of peripherals*
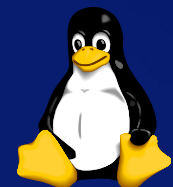
SLUUG Sponsored Groups

Loosely affiliated special interest groups

STLLINUX ~ Saint Louis Linux Users Group
https://stllinux.org

SLACC ~ Saint Louis Area Computer Club
https://slacc.org

NEWLINUX ~ Newcomer Linux Users Group
https://newlinux.org

Intro to Linux

Questions

What are your questions?

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