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DPS924

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EAC234

ECL500

GAM531

GAM666

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GPU610

LUX Program

MAP524

OOP344

OPS235

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OSD600

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OSL640

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# ULI101 Week 6

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## What is Live Linux? [\[edit\]](#)

Most major Linux distributions offer a Live version, which allows users to run the OS without installing it. Most often, the Live OS is in a form of a CD or DVD, but it is possible to have Live USB Linux as well. Users can boot the OS without affecting the existing OS which can be very useful:

- Troubleshooting
- Hardware compatibility testing before install
- Virus removal
- Trying out a new/unknown distribution

Although any files created and changed during a live session are not saved after restart, you can save files on portable storage (such as a USB memory stick) or on the local hard drive after manual mount. You will be asked to use one such Live Linux: Knoppix during this week's lab. Instructions on how to do so will be given later.

## mail [\[edit\]](#)

- Send or receive electronic email
- `mail` as a set of own commands, similar to `ftp` in concept
- Some systems may have an updated version called `mailx`. Using mail will call `mailx` transparently.

Real World Mozilla

RHT524

SBR600

SEC520

SPO600

SRT210

ULI101

course projects

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- Steps when sending email:
  - Type: `mail recipient@hostname` [press Enter]
  - Enter subject [press Enter]
  - Type the body of the message
  - Exit by pressing `Ctrl+D` simultaneously when finished typing message
- Alternatively, you can use a previously composed message (in a file)

`mail recipient@hostname -s "Subject" < file`

# Copying Files Over Network [\[edit\]](#)

Linux command-line utility `scp`, copies files securely across a network. Files can be transferred between local and remote host as well as between two remote hosts. Transmission is encrypted using SSL.

Usage is similar to the `cp` command with the addition of host names, for example:

```
scp local.file user@host:/destination
```

The user name in the command can be omitted if it's the same username as on the local host. Multiple file and recursive directory copy is supported.

# sftp [\[edit\]](#)

A secure version of the legacy ftp utility.

- Usage: `sftp user@host`

=sftp= is similar to `scp` as both of them transfer files to and from local and remote computers. Like `scp`, the user name can be left out if the username name on the remote server is the same as the username on the local machine.

Provides some level of interaction with the remote file system - listing files, changing directories etc. Linux offers many GUI tools simplifying the process of transferring files from local to remote, one such graphical program is `gFTP`.

Unlike `scp`, however, `sftp` cannot connect between two remote hosts. When you are connected to a server the following terms apply:

## Local Server

Your current machine.

## Remote Server

Server that you are connected, or want to connect, to.

- The term remote is loosely used because if your local machine is running Windows and you run Live Linux in a virtual machine, then the remote server from the Windows machine can be your Linux running in a VM.
- Similarly, if your local machine has access to a USB storage device, you can transfer files for backup purposes from the server.

- `sftp` commands to navigate throughout your remote server:

```
ls List files
```

`pwd` Display current directory`cd` Change remote directory

- `sftp` commands to navigate throughout your local server:

`!ls` List local files`!pwd` Display current local directory`lcd` Change local directory

- `sftp` commands to transfer files between local and remote server:

```
# to tranfer some_remote_file from remote to local, do the
following
$ sftp user@host
get some_remote_file
<CTRL+d>

# to tranfer some_local_file from local to remote, do the
following
$ sftp user@host
put some_local_file
<CTRL+d>
```

\* It is advised to set your local and remote directories before you transfer.

- The commands `mget` and `mput` can be used to copy multiple files using wildcard characters like `*`

After transferring a file between servers, always verify that the transfer has been successfully completed (refer to commands to navigate throughout local and remote servers).

To exit the `sftp` shell, you can enter the commands:

- `bye`
- `exit`
- `Ctrl+d`

## Linux GUI and remote files [\[edit\]](#)

Linux GUI file managers such as Nautilus have the ability to access remote file-systems. Various protocols are supported, but the typical choice for remote Linux hosts is the SSH. You get the security of SSH with the convenience of the GUI interface.

Use the “File...Connect to Server...” menu choice. You can do this from the Live Linux disc or your own Linux system to access your files on Matrix.

Once connected, the remote file system will appear as a directory/folder for all GUI applications - this is how cloud storage is implemented

## Installing Linux [\[edit\]](#)

- Standalone installation
- Linux is the only OS on the computer

- Any existing data on disk will be erased
- Multi-boot setup
- A boot menu allows the user to select the desired OS
- The installation process will take some of the free disk space from OS already installed
- Back up important data before proceeding
- Install Linux last, as other operating systems may not offer a multi-boot option
- Virtualized installation

## Where to install Linux? [\[edit\]](#)

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- Desktop
- Personal use or corporate use
- Open Source community member
- Very good products
- GPL: Free
- Server
- Very popular as part of LAMP stack
- Linux, Apache, MySQL, PHP
- Open source and cost benefits

## Linux On Your Desktop [\[edit\]](#)

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If you would like to use your own Linux OS, you will need to install it. Having your own Linux system offers a great learning opportunity and gives you access to a large library of software.

The installation process transfers the live image to a disk (or flash memory) and configures the system. The OS requires compatible hardware.

For most distribution the installation involves a guided graphical environment and it is easy to accomplish.

## Linux on the Server (vs. Windows) [\[edit\]](#)

---

### Stability

Greater reliability, less crash, better for large number of processes because of UNIX roots

### Security

Unix security roots, less vulnerable to virus and malware

### Hardware

Slim, trim, flexible and scalable

### Total Cost of Ownership

Licensing and community-based

### Freedom

Ability to modify the source code to add non-existent features or fix bugs.

## Virtualization [\[edit\]](#)

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Virtualization requires a compatible processor - not all processors support that feature. Most recent multi-core processors support virtualization.

The virtualized OS is installed and run in a window under another OS. The installation can be usually completed from an ISO image. One or more virtual machines can be run at the same time. The guest OS shares the hardware with the host OS and possibly other virtualized systems. Special software is used to manage the entire process this is the “hypervisor”. The guest systems have network access through the host.

## Virtualization Software [\[edit\]](#)

The selection of virtualization software (which allows creation and running of virtual machines) depends mainly on the host OS, although some are cross-platform.

Other considerations as to virtualization software may be features, support, price and/or personal preferences.

Popular VM software for Windows, Linux, and macOS include:

- VMware
- Oracle Virtual Box

Popular Linux virtualization software include:

- KVM
- XEN

## Server Virtualization [\[edit\]](#)

- Major market today
- Benefits
- Consolidation of servers
- Resource sharing/ increase utilization
- Energy efficiency
- Dynamic (change config without reboot): scalability and elasticity
- Basis for CLOUD computing

## Virtualization Benefits [\[edit\]](#)

### Software testing

Try a new OS without changing your existing one. Study malware.

### Network simulation

Build entire networks on your laptop!

### Server consolidation

Run multiple servers on the same physical computer. Save hardware costs and energy

- Easier disaster recovery:: A virtual machine is stored as a single file on disk.

## Virtualization Pros and Cons [\[edit\]](#)

	Pros	Cons
Standalone	Fast and Simple. Example: refurbish old PC	All resources are committed to a single OS

Partition	Can boot one system with multiple OS	Example: Enable Mac to run Windows	Resources are partitioned
Virtualized	Run multiple OS on single system	Example: Consolidated system on laptop or machine room	Virtualization overheads

## Basic Linux System Administration [\[edit\]](#)

Running your own system requires completing some administrative tasks, such as:

- Updating the system
- Installing and removing software packages
- Managing users and hardware
- Running backups
- File and printer sharing

Most Linux distributions have GUI applications which allow you to complete the above. Keep in mind, that seasoned administrators tend to use the command line to manage their systems.

## Software Packages on Knoppix [\[edit\]](#)

Knoppix comes with an easy to use GUI interface to manage software packages on your system. This is used to install, update and remove software This utility connects to an on-line repository to access thousands of free software titles. The system is configured to find the nearest mirror automatically.

Other software can be obtained from other repositories, but you will need to configure your system to connect to them.

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