



System Administration Fundamentals

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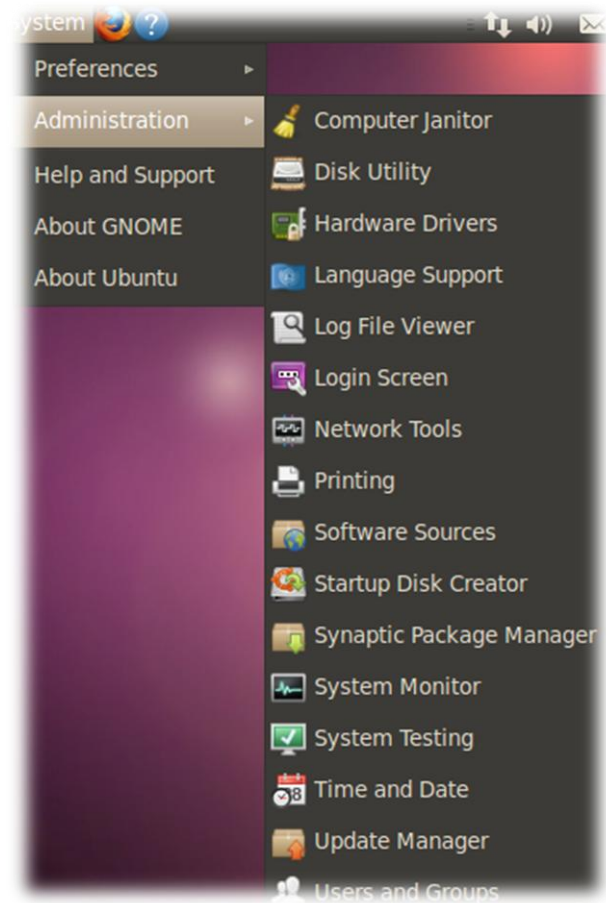
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Lesson Overview

Linux administrators have many responsibilities that call upon their expertise to keep computer systems running efficiently with minimal downtime. As such, their role is essential to any organization that relies on computer systems to complete important functions or keep them in business.

In a perfect world, computers would work well at all times, but anyone who has used a computer frequently knows they fail at critical times. When computer systems fail, an administrator will attempt to diagnose the problem and apply a fix. In cases, where data is lost, a good Admin will have backups available to restore data. Additionally, he/she will anticipate problems and make modifications to avert them.

In this lesson, you will explore the roles and responsibilities of a Linux System Administrator. Learning this content is important because it offers a practical approach to the daily responsibilities of a Linux Administrator so that you can decide whether this job or role is right for you.



Student Expectations

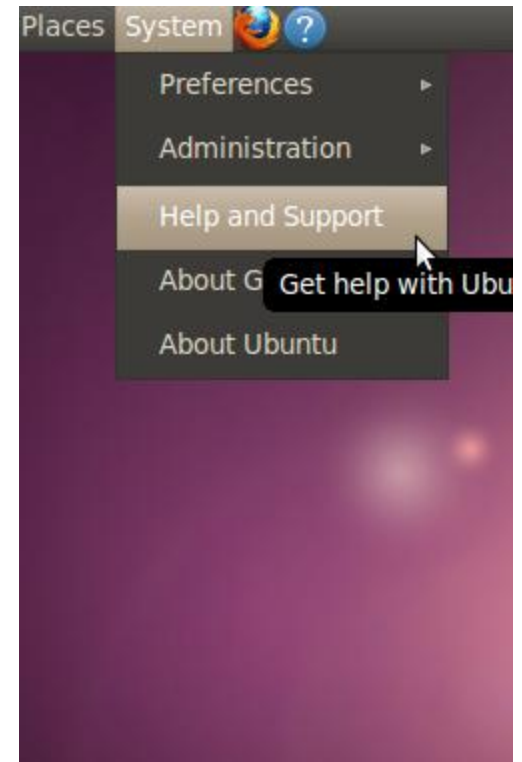
You should know what will be expected of you when you complete this lesson. These expectations are presented as objectives.

Objectives are short statements of expectations that tell you what you must be able to do, perform, learn, or adjust after reviewing the lesson.



Objective

Given a default installation of Ubuntu Linux on a desktop computer, students will be able to perform basic administrative tasks correctly using the Administration GUI and the command line interface.



Lesson Outline

During this lesson, you will explore:

Admin Responsibilities

Sudo (Super User Account)

Command Line Interface

System Admin GUIs

Managing Users

Logs Review

Introduction to Administration

Duties of a Linux Administrator

The system administrator is responsible for :

- Providing enough storage to accommodate users' reasonable needs
- Ensuring computer systems are reasonably fast to minimize users' frustration while waiting for the system to respond or complete a task
- Providing a working environment appropriate to each user's abilities and individual requirements
- Maintaining and managing internal and external system resources
- Maintaining an environment that is secure from malicious and accidental acts that may alter its performance or compromise the security of the data it holds and exchanges with other systems
- Performing backups regularly and safeguards recently backed-up files so they readily available to users
- Maintaining recent copies of software that users need
- Planning for emergency rollouts if critical computer systems go offline
- Providing technical input to non-technical upper level management



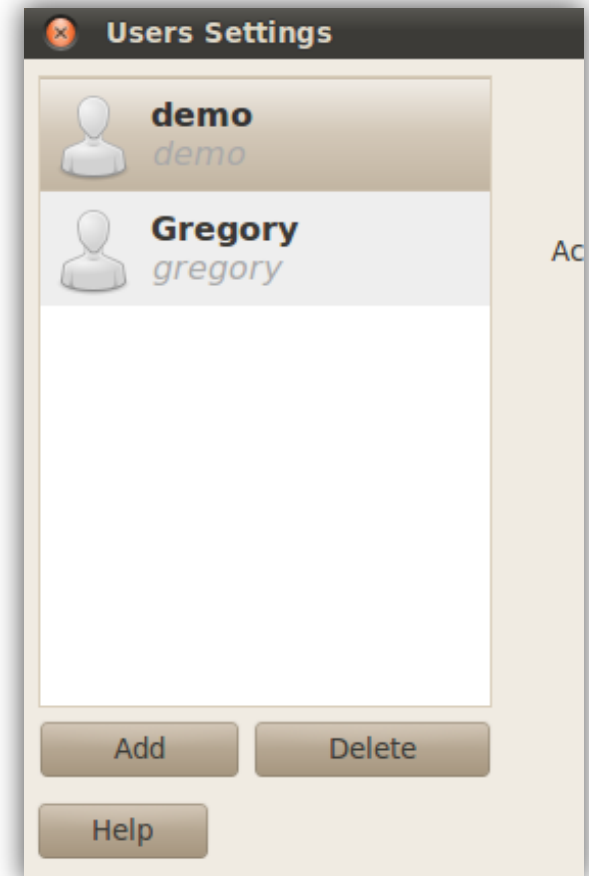
User Accounts

When you use a Linux computer, you will select a user to login or enter a user name and password before gaining access. If you are the only user and you installed the Linux operating system, your login credentials will give you special privileges.

Linux computer systems [assign roles to all its users](#), so that it knows what each user is allowed to do on the computer. There are three main types of users in Linux:

- **Initial user** – the user name and password given to the person who installs the Linux OS to the computer
- **Root user** – the administrator account that usually has maximum privileges. This account should be rarely used.
- **Basic user** – regular users of the computer system

Additional basic users [may be added](#) after installation of the OS using the System Admin GUI application or the command line interface.



Sudo Account

The administrative account in Linux is called [Sudo](#).

Sudo (aka... **superuser do** and **substitute user do**) allows a system administrator to give certain users (or groups of users) the ability to run some (or all) commands as [root](#) while logging all commands and arguments.

Sudo operates on a per-command basis and can be accessed through the [terminal](#) program.

By default, sudo requires users to authenticate themselves with a password (NOTE: by default this is the user's password, not the root password).

Tech Tip... **su** (superuser) should not be used on a routine basis; always consider using **sudo** for most tasks. It is important to establish proper operating procedures early. (Bad habits are hard to break).



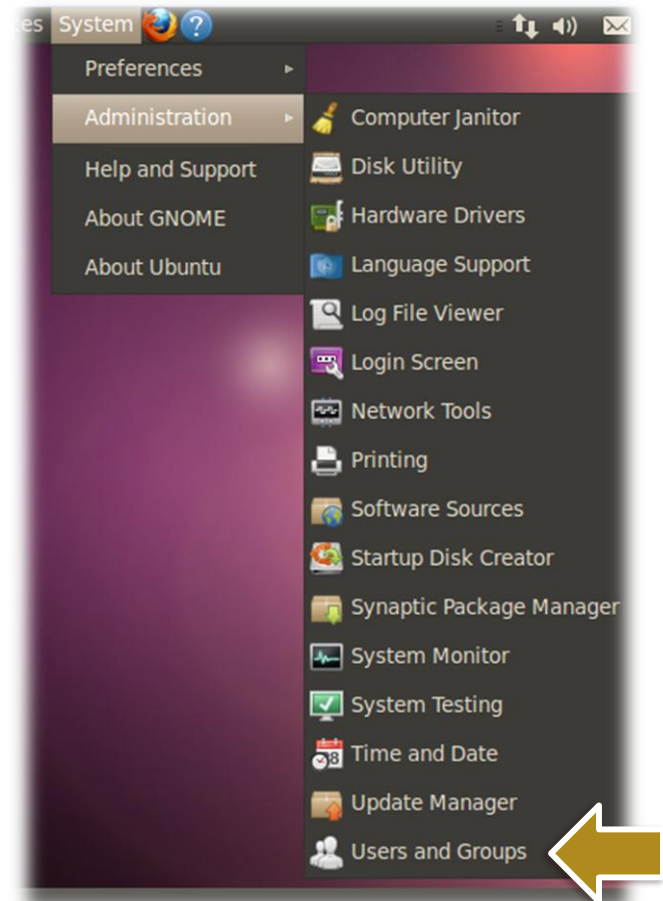
Privileged Access

As an administrator, you will be required to provide physical restrictions to your system. The most common forms of physical controls are doors/locks, fences to your work area, security guards, cameras, etc.

Once users are within the physical controls of your server environment, they have direct access to your system. For users that have physical access, you can provide them with either unprivileged or privileged access.

Privileged access is similar to the system admin account in other operating systems and allows users to modify system files, access other users' data, files, and folders.

Tech tip... Users with privileged access can wreak havoc on a working system if they do not understand what they are doing. Be careful about who gets this level of access!



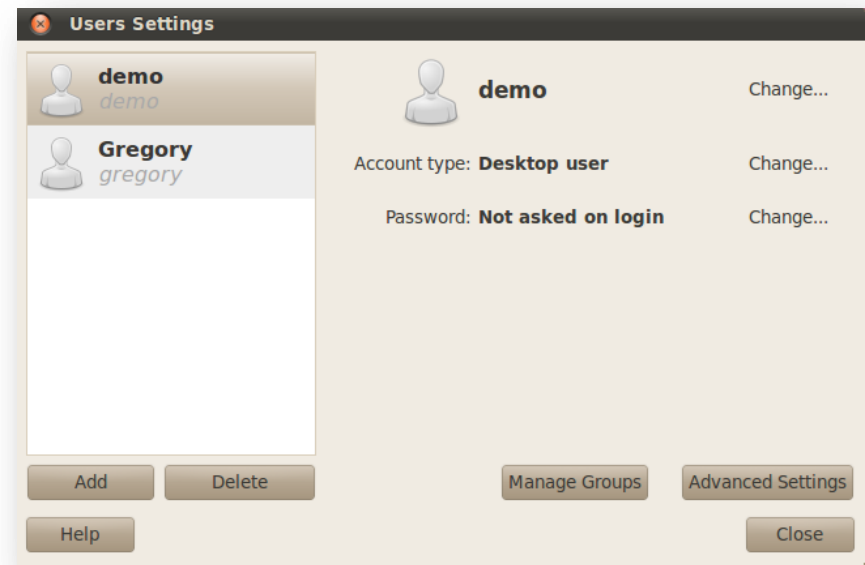
Unprivileged Access

Unprivileged access is the default setting for most users on a Linux system. With unprivileged access, a user may access his own data, files, and applications. He will also have basic use of system resources to complete day to day assignments and responsibilities.

However, he cannot access the files of other users, and he cannot make major changes to the computer system.

Review:

[Linux Users and Sudo](#)



Command Line Interface

The command line offers a quick and easy way to administer basic system tasks such as managing users, passwords, and other tasks.

The command line can be accessed through the terminal by selecting the following menu items on the desktop:

Applications>>Accessories>>Terminal

Review:

[Using Linux Terminal](#)



Introduction to Administration

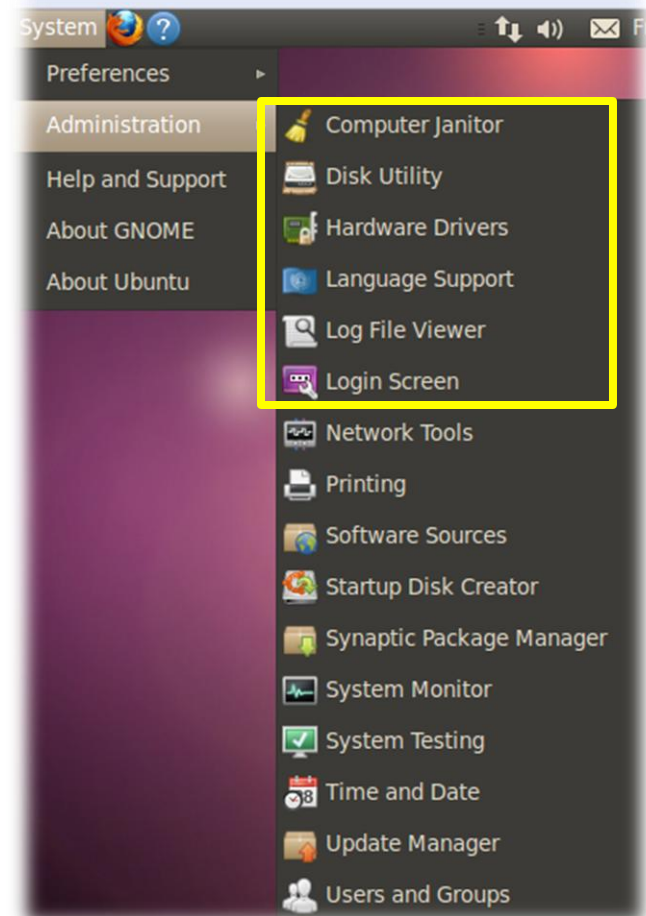
System Admin GUIs

The default system administrative panel offers a wealth of utilities to manage a Ubuntu system. These utilities include:

- **Computer Janitor** – Used to clean up files that are no longer required by the Operating system.
- **Disk Utility** – Used to manage the basic setup and monitoring of installed disks.
- **Hardware Drivers** – Used to manage device drivers, proprietary and custom drivers specifically.
- **Language Support** – Used to manage different language packs and language options.
- **Log File Viewer** – Used to view and research various system logs.
- **Login Screen** – Used to manage log in options.

Review:

[Ubuntu System Administration](#)

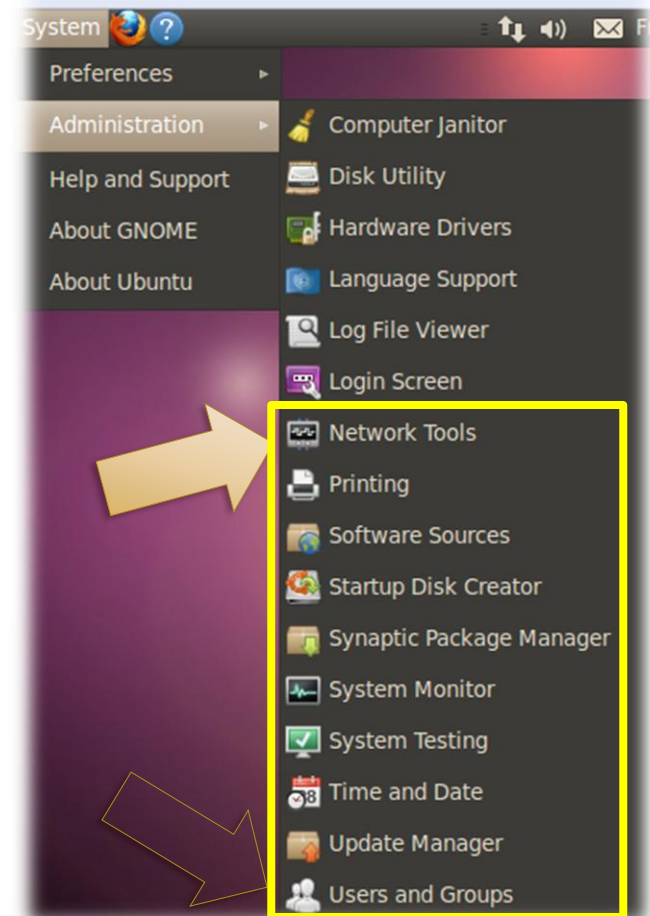


Introduction to Administration

Additional System Admin GUIs

Additional System Admin GUIs include:

- **Network Tools** – Used to manage network devices and services.
- **Printing Utility** – Used to manage printers and print services.
- **Software Sources** – Used to select different repositories to be synchronized with.
- **Synaptic Package Manager** – Used to install and manage applications.
- **System Monitor** – Used to monitor system resources such as CPU, memory and networking components.
- **System Testing** – Used to test installed devices such as sound cards, video cards and other devices.
- **Time and Date** – Used to manage time and date.
- **Update Manager** – Used to update operating system components as modifications are made to the packages.
- **Users and Groups** – Used to manage (add, delete, modify) system Users and Groups.



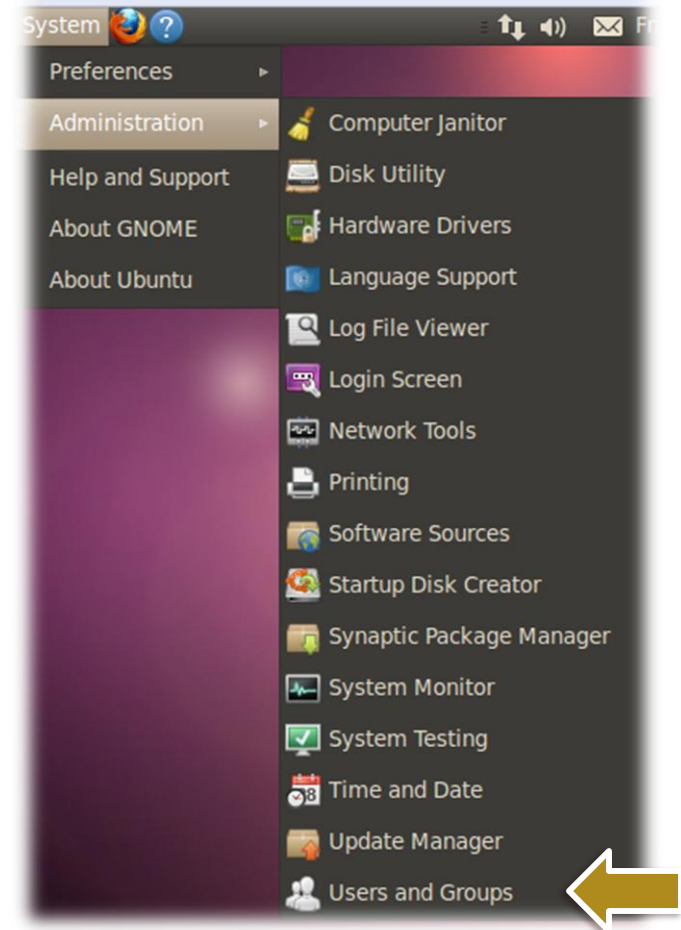
Introduction to Administration

Managing Users

A system administrator can always add users to a Linux computer system by selecting the **Users and Groups** option on the **Administration** menu.

Review:

[How to Add Users](#)



Introduction to Administration

Log Viewer

When a Linux computer system is running, it keeps a record of the activities it is doing. This record is generally stored in a log file.

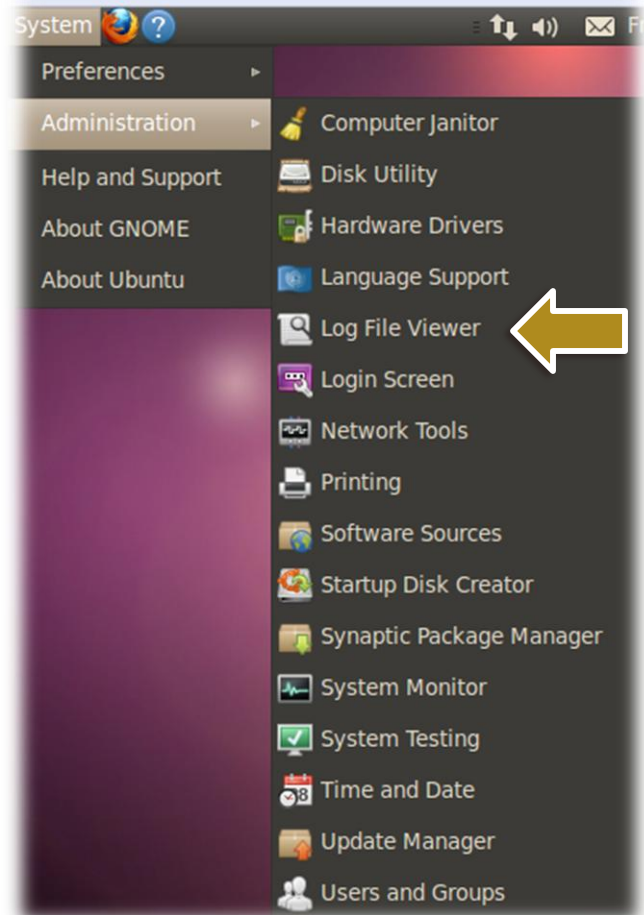
The log viewer utility allows for easy management and viewing of system logs and log files.

System logs are vital to maintaining and troubleshooting Linux systems. Some logs (kernel log, user log, system log, and mail server log) are accessible through the log viewer.

Linux makes it easy to view system logs compared to other operating systems.

Review:

[Linux log files](#)



Introduction to Administration Videos

Select each bulleted link below to review important videos for administration functions:

Basic System Maintenance

- [Access administration options](#)

View Video - VideoLesson6AdminOptions(C1L6S24).swf

- [System administration overview](#)

View Video - VideoLesson6SystemAdmin(C1L6S24).swf

- [Update system](#)

View Video - VideoLesson6SystemUpdate(C1L6S24).swf

- [Explore Package Manager](#)

View Video - VideoLesson6PackageManager(C1L6S24).swf

- [Set time and date](#)

View Video - VideoLesson6TimeAndDate(C1L6S24).swf

Tools and Utilities

- [Explore Disk Utility](#)

View Video - VideoLesson6DiskUtility(C1L6S24).swf

- [Configure Login Manager](#)

View Video - VideoLesson6ConfigLoginManager(C1L6S24).swf

- [Review System Monitor](#)

View Video - VideoLesson6SystemMonitor(C1L6S24).swf

- [View logs](#)

View Video - VideoLesson6ViewAdminLogs(C1L6S24).swf

Introduction to Administration Videos

Select each bulleted link below to review important videos for administration functions:

Manage Users using GUI

- **Add user**

[View Video - VideoLesson6AddUserGUI\(C1L6S25\).swf](#)

- **Configure user**

[View Video - VideoLesson6ConfigUser\(C1L6S25\).swf](#)

- **Manage user**

[View Video - VideoLesson6ManageUsers\(C1L6S25\).swf](#)

- **Delete user**

[View Video - VideoLesson6DeleteUser\(C1L6S25\).swf](#)

Introduction to Administration Videos

Select each bulleted link below to review important videos for administration functions:

Command Line Interface

- [Review Command Line Interface](#)

View Video - VideoLesson6CLIIntro(C1L6S26).swf

- [Update system](#)

View Video - VideoLesson6CLISystemUpdate(C1L6S26).swf

- [Update date and time](#)

View Video - VideoLesson6CLIDateandTime(C1L6S26).swf

- [Add Applications](#)

View Video - VideoLesson6CLIAddApp(C1L6S26).swf

Command Line Interface

- [View Man page for addusers](#)

View Video - VideoLesson6CLIAddUserMan(C1L6S26).swf

- [Add user - Shortcut](#)

View Video - VideoLesson6CLIAddUser(C1L6S26).swf

- [Delete User](#)

View Video - VideoLesson6CLIDeleteUser(C1L6S26).swf

Summary

A Linux System Admin is an individual who installs, configures, and maintains computer systems and networks. Administrators generally work within an Information Technology department and provide various computer related services as required.

Linux offers various tools and utilities to assist administrators as they troubleshoot or configure computer systems. Linux tools are available in the GUI environment, but they can also be used in a command line interface where simple tasks such as adding new users can be done very quickly.

Ubuntu Linux assigns special access to certain users. Privileged users can make critical changes to a computer system, so this kind of access should be rarely used and reserved for administrators or super users. Regular users have unprivileged access and cannot make critical changes.

